

PEBBLE PROJECT
ENVIRONMENTAL BASELINE DOCUMENT
2004 through 2008

CHAPTER 10.
TRACE ELEMENTS
AND OTHER NATURALLY OCCURING CONSTITUENTS
Bristol Bay Drainages

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TABLE OF CONTENTS

TABLE OF CONTENTS 10-i
LIST OF TABLES 10-iv
LIST OF FIGURES 10-ix
LIST OF APPENDICES 10-xiv
ACRONYMS AND ABBREVIATIONS 10-xv
10. TRACE ELEMENTS 10.1-1
10.1 Soil/Vegetation—Mine Study Area 10.1-1
10.1.1 Introduction 10.1-1
10.1.2 Study Objectives 10.1-1
10.1.3 Study Area 10.1-1
10.1.4 Scope of Work 10.1-2
10.1.4.1 2004 ..... 10.1-2
10.1.4.2 2005 ..... 10.1-2
10.1.4.3 2006 ..... 10.1-2
10.1.4.4 2007 ..... 10.1-3
10.1.5 Methods 10.1-3
10.1.5.1 Soil 10.1-7
10.1.5.2 Vegetation 10.1-7
10.1.6 Data Reduction 10.1-8
10.1.6.1 Soil 10.1-8
10.1.6.2 Vegetation 10.1-9
10.1.7 Results and Discussion 10.1-11
10.1.7.1 Soil 10.1-11
10.1.7.2 Vegetation 10.1-15
10.1.8 Summary 10.1-23
10.1.9 References 10.1-24
10.1.10 Glossary 10.1-24
10.2 Sediment—Mine Study Area 10.2-1
10.2.1 Introduction 10.2-1
10.2.2 Study Objectives 10.2-1
10.2.3 Study Area 10.2-1
10.2.4 Scope of Work 10.2-1
10.2.4.1 2004 ..... 10.2-1
10.2.4.2 2005 ..... 10.2-2
10.2.4.3 2006 ..... 10.2-2
10.2.4.4 2007 ..... 10.2-2

10.2.5 Methods 10.2-3
10.2.6 Data Reduction 10.2-3
10.2.7 Results and Discussion 10.2-4
10.2.7.1 Trace Elements 10.2-4
10.2.7.2 Anions and Cations 10.2-5
10.2.7.3 Petroleum-range Hydrocarbons and Other Compounds 10.2-6
10.2.7.4 Total Organic Carbon 10.2-6
10.2.7.5 Evaluation of Minor Drainages 10.2-6
10.2.7.6 Evaluation of Major River Drainages 10.2-7
10.2.7.7 Evaluation of Ponds 10.2-7
10.2.7.8 Evaluation of Seeps 10.2-8
10.2.7.9 Evaluation of Kaskanak Creek 10.2-8
10.2.7.10 Comparison of Trace Element Concentrations by Waterbody 10.2-9
10.2.8 Summary 10.2-11
10.3 Fish Tissue—Mine Study Area 10.3-1
10.3.1 Introduction 10.3-1
10.3.2 Study Objectives 10.3-1
10.3.3 Study Area 10.3-1
10.3.4 Scope of Work 10.3-1
10.3.4.1 2004 ..... 10.3-1
10.3.4.2 2005 ..... 10.3-2
10.3.4.3 2006 ..... 10.3-3
10.3.4.4 2007 ..... 10.3-3
10.3.4.5 2008 ..... 10.3-3
10.3.5 Methods 10.3-3
10.3.6 Data Reduction 10.3-4
10.3.7 Results and Discussion 10.3-5
10.3.7.1 Whole Fish 10.3-5
10.3.7.2 Statistical Comparison of Results for Whole Fish among Species and Waterbodies 10.3-9
10.3.7.3 Muscle and Liver Fish Tissues 10.3-12
10.3.8 Summary 10.3-14
10.4 Soil/Vegetation—Transportation-corridor Study Area 10.4-1
10.4.1 Introduction 10.4-1
10.4.2 Study Objectives 10.4-1
10.4.3 Study Area 10.4-1
10.4.4 Scope of Work 10.4-1
10.4.5 Methods 10.4-2
10.4.5.1 Soil 10.4-2
10.4.5.2 Vegetation 10.4-2
10.4.6 Data Reduction 10.4-3
10.4.6.1 Soil 10.4-3
10.4.6.2 Vegetation 10.4-3

10.4.7 Results and Discussion 10.4-4
10.4.7.1 Soil 10.4-4
10.4.7.2 Vegetation 10.4-5
10.4.8 Summary 10.4-11
10.4.9 References 10.4-11
10.5 Sediment—Transportation-corridor Study Area 10.5-1
10.5.1 Introduction 10.5-1
10.5.2 Study Objectives 10.5-1
10.5.3 Study Area 10.5-1
10.5.4 Scope of Work 10.5-1
10.5.4.1 2004 ..... 10.5-1
10.5.4.2 2005 ..... 10.5-1
10.5.5 Methods 10.5-1
10.5.6 Data Reduction 10.5-2
10.5.7 Results and Discussion 10.5-2
10.5.7.1 Evaluation of Streams 10.5-2
10.5.7.2 Evaluation of Ponds 10.5-3
10.5.7.3 Comparison of Naturally Occurring Constituent Concentrations by Type of Waterbody 10.5-4
10.5.8 Summary 10.5-5
10.6 Fish Tissue—Transportation-corridor Study Area 10.6-1
10.6.1 Introduction 10.6-1
10.6.2 Study Objectives 10.6-1
10.6.3 Study Area 10.6-1
10.6.4 Scope of Work 10.6-1
10.6.4.1 2004 ..... 10.6-1
10.6.4.2 2005 ..... 10.6-1
10.6.5 Methods 10.6-1
10.6.6 Data Reduction 10.6-2
10.6.7 Results and Discussion 10.6-2
10.6.7.1 Ursa Creek 10.6-3
10.6.7.2 Red Creek 10.6-3
10.6.7.3 Bear Den Creek 10.6-3
10.6.7.4 Statistical Comparison of Results for Fish from Different Creeks 10.6-4
10.6.8 Summary 10.6-5
10.7 Iliamna Lake, Mussel Tissue and Sediment 10.7-1
10.7.1 Introduction 10.7-1
10.7.2 Summary of Results and Discussion for Mussel Samples 10.7-1
10.7.3 Summary of Results and Discussion for Sediment Sampling 10.7-1

LIST OF TABLES

Table 10.1-1, Analytical Methods for Soil and Plant Tissue

Table 10.1-2, Soil and Vegetation Sample Information Summary, Mine Study Area, 2004-2007

Table 10.1-3, Surface Soil—Trace Elements, Anions, and Cations; Data Summary and Descriptive Statistics; Mine Study Area, 2004-2007

Table 10.1-4, Subsurface Soil—Trace Elements, Anions, and Cations; Data Summary and Descriptive Statistics; Mine Study Area, 2004-2007

Table 10.1-5, Surface Soil—Diesel-range and Residual-range Organics and Total Organic Carbon, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-6, Subsurface Soil—Diesel-range and Residual-range Organics and Total Organic Carbon, Data Summary and Descriptive Statistics, Mine Study Area, 2004

Table 10.1-7, Plant Species Sample Summary, Mine Study Area, 2004-2007

Table 10.1-8, Vegetative Tissue, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-9, Fruit Tissue, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-10, Alaska Cotton/Cotton Grass, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-11, Balsam Poplar, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2006

Table 10.1-12, Barclay's Willow, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-13, Blue Joint Grass, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-14, Bog Blueberry, Fruit Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-15, Bog Blueberry, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-16, Cloudberry, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-17, Coltsfoot, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-18, Crowberry, Fruit Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-19, Crowberry, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-20, Diamond-leaf Willow, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-21, Dwarf Dogwood, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-22, Dwarf Birch, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-23, Early Blueberry, Fruit Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Table 10.1-24, Early Blueberry, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Table 10.1-25, Feather Moss, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Table 10.1-26, Field Horsetail, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-27, Fireweed, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-28, Green Terrestrial Moss, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-29, Ledge Stone Crop, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-30, Lichens (Species Not Identified), Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Table 10.1-31, Lingonberry, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-32, Lingonberry, Fruit Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-33, Mare's Tail, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-34, Marsh Five-finger, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-35, Marsh Labrador Tea, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Table 10.1-36, Narrow Leaf Labrador Tea, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-37, Netleaf Willow, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-38, Reindeer Lichen, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-39, Short-stalk Sedge, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.1-40, Sitka Alder, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.1-41, Sour Dock, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004, 2005, and 2007

Table 10.1-42, Sphagnum Moss, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Table 10.1-43, Stair Step Moss, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Table 10.1-44, Water Horsetail, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Table 10.1-45, Whiteworm Lichen, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Table 10.1-46, Willow (Species Not Identified), Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2005

Table 10.2-1, Analytical Methods for Sediment, Mine Study Area

Table 10.2-2, Sediment, Data Summary and Descriptive Statistics for Inorganic Constituents, Mine Study Area, 2004-2007

Table 10.2-3, Sediment, Data Summary and Descriptive Statistics for SEMs and Organic Constituents, Mine Study Area, 2004-2007

Table 10.2-4, Sediment—Minor Drainages, Data Summary and Descriptive Statistics, Mine Study Area, 2004

Table 10.2-5, Sediment—South Fork Koktuli River, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.2-6, Sediment—North Fork Koktuli River, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.2-7, Sediment—Upper Talarik Creek, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Table 10.2-8, Sediment—Ponds, Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Table 10.2-9, Sediment—Seeps, Data Summary and Descriptive Statistics, Mine Study Area, 2005

Table 10.2-10, Sediment—Kaskanak Creek, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2005

Table 10.2-11, Mann-Whitney U-Test Results for Sediment, Comparisons between Major River Drainages, Mine Study Area

Table 10.3-1, Trace Elements in Whole Fish from Major Rivers, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2005

Table 10.3-2, Trace Elements in Whole Fish from Major Rivers, Data Summary and Descriptive Statistics, Mine Study Area 2004

Table 10.3-3, Trace Elements in Whole Fish from Major Rivers, Data Summary and Descriptive Statistics, Mine Study Area, 2005

Table 10.3-4, Trace Elements in Whole Fish from North Fork Koktuli River, Data Summary and Descriptive Statistics, 2004-2005

Table 10.3-5, Trace Elements in Whole Fish from South Fork Koktuli River, Data Summary and Descriptive Statistics, 2004-2005

Table 10.3-6, Trace Elements in Whole Fish from Upper Talarik Creek, Data Summary and Descriptive Statistics, 2004-2005

Table 10.3-7, Trace Elements in Whole Fish from Kaskanak Creek, Data Summary and Descriptive Statistics, 2004-2005

Table 10.3-8, Trace Elements in Fish Muscle Tissue from Lakes and Rivers, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2008

Table 10.3-9, Trace Elements in Fish Muscle Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2004

Table 10.3-10, Trace Elements in Fish Muscle Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2005

Table 10.3-11, Trace Elements in Fish Muscle Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2006

Table 10.3-12, Trace Elements in Fish Muscle Tissue from Lakes and Rivers, Data Summary and Descriptive Statistics, Mine Study Area, 2007

Table 10.3-13, Trace Elements in Fish Muscle Tissue from Lakes and Rivers, Data Summary and Descriptive Statistics, Mine Study Area, 2008

Table 10.3-14, Trace Elements in Fish Liver Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2006

Table 10.3-15, Trace Elements in Fish Liver Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2004

Table 10.3-16, Trace Elements in Fish Liver Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2005

Table 10.3-17, Trace Elements in Fish Liver Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2006

Table 10.4-1, Plant Species Sampled, by Habitats Type, Transportation-corridor Study Area

Table 10.4-2, Soil, Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Table 10.4-3, Fruit Tissues, Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Table 10.4-4, Forbs, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Table 10.4-5, Grasses, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Table 10.4-6, Lichens, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Table 10.4-7, Mosses, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Table 10.4-8, Shrubs, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Table 10.4-9, Trees, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Table 10.4-10, Comparison of Concentrations in Fruit and Vegetative Tissues, by Species, Transportation-corridor Study Area

Table 10.4-11, Data Summary for Vegetation in the Moist Tundra/Shrub Thicket Habitat, Transportation-corridor Study Area, 2004

Table 10.4-12, Data Summary for Vegetation in the Spruce Hardwood Forest Habitat, Transportation-corridor Study Area, 2004

Table 10.4-13, Data Summary for Vegetation in the Lowland Shrub Thicket/Forest and Alpine Tundra Habitat, Transportation-corridor Study Area, 2004

Table 10.4-14, Data Summary for Vegetation in the Open Spruce Forest/Shrub Thicket Habitat, Transportation-corridor Study Area, 2004

Table 10.5-1, Analytical Methods for Stream Sediment, Transportation-corridor Study Area

Table 10.5-2, Stream Sediment, Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004-2005

Table 10.5-3, Pond Sediment, Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004-2005

Table 10.6-1, Trace Elements in Whole Fish, Transportation-corridor Study Area, 2004

Table 10.6-2, Trace Elements in Whole Fish, Transportation-corridor Study Area, 2005

Table 10.6-3, Trace Elements in Whole Fish (Coho Salmon) from Ursa Creek, Transportation-corridor Study Area, 2004 and 2005

Table 10.6-4, Trace Elements in Whole Fish (Dolly Varden) from Red Creek, Transportation-corridor Study Area, 2004 and 2005

Table 10.6-5, Trace Elements in Whole Fish (Coho Salmon) from Bear Den Creek, Transportation-corridor Study Area, 2004 and 2005

LIST OF FIGURES

Figure 10.1-1, Trace Elements Study, Sampling Locations for Soil, Vegetation, Sediment, and Fish, Mine Study Area, 2004-2008

Figure 10.1-2, Mean Aluminum Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-3, Mean Antimony Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-4, Mean Arsenic Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-5, Mean Barium Concentrations in Vegetative Tissue Samples , Mine Study Area, 2005-2007

Figure 10.1-6, Mean Boron Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-7, Mean Cadmium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-8, Mean Calcium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-9, Mean Cobalt Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-10, Mean Copper Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-11, Mean Cyanide Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-12, Mean Iron Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-13, Mean Lead Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-14, Mean Magnesium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-15, Mean Manganese Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-16, Mean Mercury Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-17, Mean Molybdenum Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-18, Mean Nickel Concentrations in Vegetative Tissue Samples , Mine Study Area, 2005-2007

Figure 10.1-19, Mean Potassium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-20, Mean Sodium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-21, Mean Thallium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-22, Mean Vanadium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-23, Mean Zinc Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

Figure 10.1-24, Mean Aluminum Concentrations in Vegetative Tissue Samples , All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-25, Mean Antimony Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-26, Mean Arsenic Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-27, Mean Barium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-28, Mean Boron Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-29, Mean Cadmium Concentrations in Vegetative Tissue Samples , All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-30, Mean Calcium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-31, Mean Cobalt Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-32, Mean Copper Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-33, Mean Cyanide Concentrations in Vegetative Tissue Samples , All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-34, Mean Iron Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-35, Mean Lead Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-36, Mean Magnesium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-37, Mean Manganese Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-38, Mean Mercury Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-39, Mean Molybdenum Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-40, Mean Nickel Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-41, Mean Potassium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-42, Mean Sodium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-43, Mean Thallium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-44, Mean Vanadium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.1-45, Mean Zinc Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

Figure 10.2-1, Mean Aluminum Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-2, Mean Antimony Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-3, Mean Arsenic Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-4, Mean Barium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-5, Mean Beryllium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-6, Mean Bismuth Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-7, Mean Boron Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-8, Mean Cadmium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-9, Mean Calcium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-10, Mean Chloride Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-11, Mean Chromium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-12, Mean Cobalt Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-13, Mean Copper Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-14, Mean Cyanide Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-15, Mean Fluoride Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-16, Mean Iron Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-17, Mean Lead Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-18, Mean Magnesium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-19, Mean Manganese Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-20, Mean Mercury Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-21, Mean Molybdenum Concentrations in Sediment, Mine Study Area, 2005-2007

Figure 10.2-22, Mean Nickel Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-23, Mean Ammonia (as N) Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-24, Mean Potassium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-25, Mean Selenium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-26, Mean Silver Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-27, Mean Sodium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-28, Mean Sulfate Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-29, Mean Thallium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-30, Mean Tin Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-31, Mean Vanadium Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.2-32, Mean Zinc Concentrations in Sediments, Mine Study Area, 2005-2007

Figure 10.3-1, Mean Arsenic Concentrations in Whole Fish, Mine Study Area, 2004-2005

Figure 10.3-2, Mean Cadmium Concentrations in Whole Fish, Mine Study Area, 2004-2005

Figure 10.3-3, Mean Copper Concentrations in Whole Fish, Mine Study Area, 2004-2005

Figure 10.3-4, Mean Mercury Concentrations in Whole Fish, Mine Study Area, 2004-2005

Figure 10.3-5, Mean Nickel Concentrations in Whole Fish, Mine Study Area, 2004-2005

Figure 10.3-6, Mean Arsenic Concentrations in Fish Muscle Tissue, Mine Study Area, 2004-2008

Figure 10.3-7, Mean Arsenic Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

Figure 10.3-8, Mean Cadmium Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

Figure 10.3-9, Mean Copper Concentrations in Fish Muscle Tissue, Mine Study Area, 2004-2008

Figure 10.3-10, Mean Copper Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

Figure 10.3-11, Mean Mercury Concentrations in Fish Muscle Tissue, Mine Study Area, 2004-2008

Figure 10.3-12, Mean Mercury Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

Figure 10.3-13, Mean Nickel Concentrations in Fish Muscle Tissue, Mine Study Area, 2004-2008

Figure 10.3-14, Mean Nickel Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

Figure 10.3-15, Mean Selenium Concentrations in Fish Muscle Tissue, Mine Study Area, 2004-2008

Figure 10.3-16, Mean Selenium Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

Figure 10.3-17, Mean Silver Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

Figure 10.4-1, Trace Elements Study, Sampling Locations for Soil, Vegetation, Sediment, and Fish, Transportation-corridor Study Area, 2004-2008

Figure 10.6-1, Mean Arsenic Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-2, Mean Cadmium Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-3, Mean Chromium Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-4, Mean Copper Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-5, Mean Lead Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-6, Mean Mercury Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-7, Mean Molybdenum Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-8, Mean Nickel Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-9, Mean Selenium Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-10, Mean Silver Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-11, Mean Thallium Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

Figure 10.6-12, Mean Zinc Concentrations in Whole Fish, Transportation-corridor Study Area, 2004 and 2005

LIST OF APPENDICES

Appendix 10.1A, Photographic Log, Soil and Vegetation Sampling, Mine Study Area

Appendix 10.1B, Soil Samples Results Summary, Mine Study Area, 2004-2007

Appendix 10.1C, Box-and-Whisker Plots for Soil Data by Chemical Parameter, Mine Study Area, 2004-2007

Appendix 10.1D, Kruskal-Wallis Test Results for NOCs in Surface Soil by Geological Landform

Appendix 10.1E, Box-and-Whisker Plots for Soil Data by Landform, Mine Study Area, 2004-2007

Appendix 10.1F, Mann-Whitney U-test Results, Comparison of Vegetation Data for July and August, Mine Study Area, 2005-2007

Appendix 10.1G, Mann-Whitney U-test Results, Comparison of Data for Fruit and Vegetative Tissues, Mine Study Area, 2005-2007

Appendix 10.1H, Box-and-Whisker Plots for Vegetation Data by Habitat Type, Mine Study Area, 2004-2007

Appendix 10.1I, Vegetation Samples Results Summary, Mine Study Area, 2004-2007

Appendix 10.1J, Data Summary for Infrequently Sampled Plant Species, Mine Study Area, 2004-2007

Appendix 10.2A, Photographic Log, Sediment and Aquatic Vegetation Sampling, Mine Study Area

Appendix 10.2B, Sediment Samples Results Summary, Mine Study Area, 2004-2007

Appendix 10.2C, Box-and-Whisker Plots for Sediment Data, Mine Study Area, 2004-2007

Appendix 10.3A, Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2007

Appendix 10.3B, Results of Statistical Comparison of Concentrations of Trace Elements in Whole-body Fish Samples between Species, Mine Study Area, 2004-2005

Appendix 10.3C, Box-and-Whisker Plots of Fish Data—Whole-body, Liver, and Muscle Tissue Samples, Mine Study Area, 2004-2008

Appendix 10.4A, Photographic Log, Soil and Vegetation Sampling, Transportation-corridor Study Area

Appendix 10.4B, Soil Samples Results Summary, Transportation-corridor Study Area, 2004

Appendix 10.4C, Vegetation Samples Results Summary, Transportation-corridor Study Area, 2004

Appendix 10.5A, Photographic Log, Sediment Sampling, Transportation-corridor Study Area

Appendix 10.5B, Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Appendix 10.5C, Box-and-Whisker Plots for Sediment Data, Transportation-corridor Study Area, 2004-2005

Appendix 10.6A, Freshwater Fish Samples Results Summary, Transportation-corridor Study Area, 2004-2005

ACRONYMS AND ABBREVIATIONS

ACZ	ACZ Laboratories, Inc.
al	alluvium (landform type)
ANOVA	analysis of variance
AS	alpine rock and dwarf scrub (habitat type)
AVS	acid-volatile sulfide
B	bedrock, undifferentiated (landform type)
Bg	bedrock, glaciated (landform type)
bgs	below ground surface
c	colluvium, undivided (landform type)
CAS	Columbia Analytical Services, Inc.
CV	coefficient of variation
D	drainage channel, undifferentiated (landform type)
d0	drift of pre-Brooks Lake age (landform type)
d1	drift of Brooks Lake glaciation, Kvichak stade (landform type)
d2	drift of Brooks Lake glaciation, Iliamna stade (landform type)
d3	drift of Brooks Lake glaciation, Newhalen stade (landform type)
DRO	diesel-range organics
fd	fan-delta deposits (landform type)
FOD	frequency of detection
Gl	glacial-lake deposits (landform type)
GPS	global positioning system
GRO	gasoline-range organics
KC	Kaskanak Creek
LM	lowland wet graminoid, moss meadow (habitat type)
LS	lowland low and tall alder/willow scrub (habitat type)
MDL	method detection limit
mg/kg	milligrams per kilogram
MRL	method reporting limit
MTST	moist tundra/shrub thicket
N	nitrogen
NK	North Fork Koktuli River
NOC	naturally occurring constituent
o/gl	outwash/glaciation (landform type)
o1	outwash associated with drift of Kvichak Stade (landform type)

o2	outwash associated with drift of Iliamna Stade (landform type)
PAHs	polynuclear aromatic hydrocarbons
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RRO	residual-range organics
RS	riverine willow scrub (habitat type)
s	solifluction (landform type)
SEM	simultaneously extractable metals
SFST	open spruce forest/shrub thicket
SGS	SGS North America, Inc.
Shaw	Shaw Alaska, Inc.
SHF	spruce hardwood forest
SK	South Fork Koktuli River
SS	subalpine dwarf, low, and tall scrub (habitat type)
STAT	lowland shrub thicket/forest and alpine tundra
STL	Severn Trent Laboratories, Inc.
SVOC	semivolatile organic compound
tg	terrace gravel (landform type)
TOC	total organic carbon
UF	upland dwarf scrub, lichen flats (habitat type)
US	upland dwarf, low, and tall scrub (habitat type)
UT	Upper Talarik Creek
VOC	volatile organic compound
WAD	weak acid dissociable

10. TRACE ELEMENTS

This chapter presents the findings of studies of naturally occurring constituents (NOCs) conducted during 2004 through 2008 for the Pebble Project. The majority of the chapter focuses on soil and vegetation in the mine study area and transportation corridor. Studies of NOCs in freshwater sediment and fish tissue also are included.

The target analytes in the Pebble Project study of trace elements and other NOCs (referred to herein as the trace elements study) are trace elements (also called metals) and other analytes that occur naturally in the environment. These other NOCs include compounds such as cations, anions, total organic carbon and petroleum-range hydrocarbons.

10.1 Soil/Vegetation—Mine Study Area

10.1.1 Introduction

Soil and vegetation were sampled in the summer of 2004 through 2007 to assess spatial and temporal variability of NOCs in the mine study area. A subset of soil samples also was analyzed for petroleum-range hydrocarbons (2004 through 2006) and organic-carbon content (2004 through 2007).

10.1.2 Study Objectives

The objectives of the soil and vegetation portions of the trace elements study are as follows:

- Collect baseline data to provide scientific documentation of the existing natural levels of trace elements, anions, and cations in surface soil, subsurface soil, and terrestrial and aquatic vegetation.
    - For terrestrial vegetation, additionally collect baseline data for separate characterization of fruit (e.g., berries) and vegetative (e.g., leaf) tissues.
- Evaluate the baseline data to identify major factors influencing the distributions of NOCs.
- Evaluate naturally occurring biogenic fingerprints in surface soil associated with petroleum-range-hydrocarbon analysis.
- Determine organic content in surface and subsurface soils.

10.1.3 Study Area

The Pebble Deposit is located in southwestern Alaska in the headwater areas of the Koktuli River and Upper Talarik Creek. The mine study area for the trace elements study encompasses a large area (larger than 150 square miles), including and surrounding the deposit area (Figure 10.1-1).

The mine study area for the trace elements study encompasses a wide enough area to ensure that sufficient samples are collected from each landform and habitat type to provide statistically valid characterization of NOC distributions. This approach also allows for adequate and accurate

characterization of variability in NOC concentrations associated with the habitat types and landforms across the mine study area. The sampling locations in the mine study area are depicted on Figure 10.1-1.

10.1.4 Scope of Work

The research and field work for this study were conducted by CH_2M Hill during 2004 and by SLR International Corp. in 2005 through 2007. The study was led by ecologist and risk assessor Dr. Mark Stelljes and principal scientist Karen Cougan.

The scope of work for the trace elements program included the following:

10.1.4.1 2004

Sampling of 32 soil locations and 20 terrestrial vegetative tissue/fruit tissue locations in August and September.

- Collection of 80 primary soil samples from the upper 6 inches of the soil profile in August and September, and analysis for trace elements, anions, cations, petroleum-range hydrocarbons (approximately 10 percent of samples), and total organic carbon.
- Collection of nine primary soil samples from a depth of 18 inches below ground surface (bgs) in September and analysis for total trace elements, anions, cations, petroleum-range hydrocarbons (approximately 10 percent of samples), and total organic carbon.
- Collection of 75 primary vegetative tissue and fruit tissue samples (63 vegetative tissue and 12 fruit tissue) from a variety of species in August and nine primary vegetative tissue samples from a variety of species in September, and analysis for total trace elements, anions, and cations.

10.1.4.2 2005

Sampling 82 soil locations and 26 terrestrial vegetation/berry locations in July and August, and three aquatic vegetation locations in August only.

- Collection of 86 primary soil samples from the upper 6 inches of the soil profile in July and August, and analysis for total trace elements, anions, cations, petroleum-range hydrocarbons (approximately 10 percent of samples), and total organic carbon.
- Collection of seven primary soil samples from a depth of 18 inches below ground surface in July and analysis for total trace elements, anions, and cations.
- Collection of 82 primary terrestrial vegetation samples from a variety of species in July, 123 primary vegetation and berry samples (89 terrestrial vegetation, 27 berry, and seven aquatic vegetation) from a variety of species in August, and analysis for total trace elements, anions, and cations.

10.1.4.3 2006

Sampling 41 soil locations in July, and 47 terrestrial vegetative tissue/fruit tissue locations and six aquatic vegetation locations in July and August.

- Collection of 41 primary soil samples from the upper 6 inches of the soil profile in July and analysis for total trace elements, anions, cations, petroleum-range hydrocarbons, and total organic carbon.
- Collection of 98 primary vegetation samples (97 terrestrial and one aquatic) from a variety of species in July, 133 primary vegetation and berry samples (110 terrestrial vegetation, 16 berry, and seven aquatic vegetation) from a variety of species in August, and analysis for total trace elements, anions, and cations.

10.1.4.4 2007

Sampling 30 soil locations in July, and 44 terrestrial vegetation/berry locations and six aquatic vegetation locations in July and August.

- Collection of 30 primary soil samples from the upper 6 inches of the soil profile in July and analysis for total trace elements, anions, cations, and total organic carbon.
- Collection of 100 primary vegetation samples (99 terrestrial and one aquatic) from a variety of species in July, 167 primary vegetation and berry samples (135 terrestrial vegetation, 25 berry, and seven aquatic vegetation) from a variety of species in August, and analysis for total trace elements, anions, and cations.

Other work related to trace elements was conducted in the mine study area on lake, seep, and river sediments (Section 10.2); fish (Section 10.3); and surface water (Chapter 9, Section 9.1).

10.1.5 Methods

Soil samples and vegetation samples were documented and packaged in accordance with the consolidated study program for Pebble Project (a copy of which is provided in Appendix E of this environmental baseline document) and quality assurance project plans (QAPPs) for Pebble Project (copies of which are provided in Appendix G of this environmental baseline document). The samples were submitted to Shaw Alaska, Inc. (Shaw) in Iliamna for sample tracking and logging.

Shaw sent the soil samples to SGS North America, Inc. (SGS) in Anchorage, Alaska, for analysis in 2004, 2005, and 2006. Columbia Analytical Services, Inc. (CAS) in Kelso, Washington, was the quality assurance (QA) laboratory for all soil samples. In 2007, soil samples were sent to SGS and ACZ Laboratories, Inc. (ACZ), in Colorado Springs, Colorado. CAS was the QA laboratory.

Vegetation samples (both fruit tissue (berries) and vegetative tissue (leaves and shoots)) were sent to the CAS laboratory for analysis. TestAmerica Laboratories, Inc. (formerly North Creek Analytical) in Portland, Oregon, was the QA laboratory for vegetation samples in 2004 and 2005. In 2006 and 2007, Severn Trent Laboratories, Inc. (STL) in Tacoma, Washington, was the QA laboratory for vegetation samples.

Samples were analyzed for the NOCs listed in Table 10.1-1 by the indicated analysis methods. Analyses for petroleum-range hydrocarbons (as diesel-range and residual-range organics) were not performed on the 2007 soil samples. Vegetation samples were analyzed for chloride, fluoride, sulfate, and ammonia (as nitrogen) in 2004 only.

NOC concentrations in the mine study area are influenced by several factors, including landform, habitat, depth of sample (for soil), geologic source or lithology, plant species, soil type, and season (for plants). Also, year-to-year sampling variability is likely to occur as a result of the heterogeneous conditions found in the field.

In 2004, information on the landforms and habitats was not readily available, so a random grid pattern was established to determine where samples were collected. In 2005, habitat and landform information became available from studies conducted by ABR. and CH2M Hill, respectively. As a result, for studies conducted from 2005 through 2007 the sampling pattern was modified to target specific habitats, soil types, landforms, and plant species and thus to ensure representative coverage based on these probable factors.

To adequately characterize baseline levels of target analytes in soil and vegetation, a sampling strategy was initially developed in 2004 to ensure sufficient numbers of samples for statistically meaningful evaluation of each type of landform. A systematic, random sampling program was developed by CH_2M Hill and was employed within the study area to establish sampling locations that would allow for rigorous statistical analyses of the data. This systematic, random sampling program was based on the township-range-section cadastral-survey system used by the Bureau of Land Management; use of this system allowed sampling locations to be identified in the field via global positioning system (GPS). A grid using the existing cadastral-survey sections as separate cells was laid out over the study area, which encompasses 160 grid cells. Each grid cell was assigned a sequential number, and a random-number generator was used to select 50 cells, referred to as sections. Each selected section was then observed in the field to identify landform types. Sample locations within the sections were then randomly selected using distance and direction from a random-number generator until three locations were selected within a given section.

Within the study area, four geological landform types (talus slope, moraine, outwash plain, and flood plain) were identified in 2004 by CH2MHillresearchers in the field. At each sampling location, soil types were categorized into one of four groups (organic rich soils, fine sands with silts and clays, poorly graded gravel with sand and silts, or glacial till).

In 2004, the different habitat types and their relative abundance were unknown. Beginning in 2005, general habitat information was available from ABR. Seven major habitat types were identified across the study area:

- Subalpine dwarf, low, and tall scrub (SS)
- Upland dwarf scrub, lichen flats (UF)
- Upland dwarf, low, and tall scrub (US)
- Alpine rock and dwarf scrub (AS)
- Lowland low and tall alder/willow scrub (LS)
- Lowland wet, graminoid (grassy), moss meadow (LM)
- Riverine willow scrub (RS)

The areal extent of the seven habitat types was considered in light of the landforms recognized in 2004. The habitats were mapped and overlain on the study area map to estimate their relative distribution and the associated number of soil and vegetation samples collected in 2004 from each habitat type. Results from this mapping showed that in 2004, twenty vegetation-sampling locations had been distributed across four of these habitat types, and no samples had been collected in three habitat types. One to six species of plants had been sampled at any given location in 2004. Also in 2004, 124 soil samples had been collected from five of these habitat types.

If possible, the vegetation sampling locations used in 2004 were sampled again in subsequent years; however, sample locations were adjusted after 2004 to get a sample set representative of the habitat types and distribution in the study area. For some habitats (e.g., UF), fewer vegetation samples were collected after 2004. For habitats where additional sample locations were needed (e.g., AS), additional grid sections were randomly selected until enough sections that contained the target habitat types were identified. In 2005 through 2007, soil samples also were collected from the locations where vegetation was sampled. More soil samples were collected in some habitats in 2004 than were necessary based on habitat distribution; therefore, fewer soil samples were collected in subsequent years in these habitats (e.g., SS). Approximately the same number of soil samples was collected in 2004 and 2005, but several of the sample locations differed. Fewer soil samples were collected in 2006 and 2007. Most of the locations sampled in 2006 and 2007 were different from those sampled in 2004 and 2005 because the focus of the study shifted eastward after discovery of the Pebble East deposit. The soil sampling locations that were removed from the program were those where no vegetation was sampled in 2004; thus, pairing of vegetation and soil sampling at single locations was retained. All sample locations were sampled in multiple years to ensure a minimum of two years of data for each location.

In 2007, a surficial geology map became available. The map identified geological landforms in the mine study area. To provide consistent landform information across all years (2004 through 2007), this map was used to compare these landforms (which replaced the preliminary landforms identified in the field in 2004) with the sampling locations for each year. Over the years, soil and vegetation samples were collected from 16 major landforms across the study area:

- Alluvium (al)
- Bedrock, glaciated (Bg)
- Bedrock, undifferentiated (B)
- Colluvium, undivided (c)
- Drainage channel, undifferentiated (D)
- Drift of Brooks Lake glaciation, Iliamna stade (d2)
- Drift of Brooks Lake glaciation, Kvichak stade (d1)
- Drift of Brooks Lake glaciation, Newhalen stade (d3)
- Drift of pre-Brooks Lake Age (d0)
- Fan-delta deposits (fd)
- Glacial-lake deposits (Gl)
- Outwash associated with drift of Iliamna stade (o2)

- Outwash associated with drift of Kvichak stade (o1)
- Outwash/glaciation (o/gl)
- Solifluction (s)
- Terrace gravel (tg)

The numbers of soil and vegetation samples collected in 2004 through 2007 are presented by habitat type and by landform in Table 10.1-2. Locations of the soil and vegetation sampling sites are shown on Figure 10.1-1.

As noted under scope of work, above, in 2004, a single sampling event was conducted in late August and early September; soil and vegetation fruit tissue (berries), and vegetative tissue (leaves and shoots) - samples were collected. In 2005, soil and vegetation sampling was conducted during two sampling events—one in July and one in August. In 2006 and 2007, soil sampling was conducted in July of each year, and vegetation sampling was conducted twice each year—once concurrently with the July soil sampling and once in August. The purpose of two separate vegetation-sampling events was to address the different browse available at different times during summer, as well as the different types of receptors that may ingest vegetative material at different times. In July in the mine study area, willow shrubs begin to flower, and these flowers and new growth provide a food source for caribou. Although it is likely that caribou movement patterns will vary during summer and caribou will possibly frequent different areas from year to year, observations indicate that they are most abundant in July. July is therefore the most appropriate time to collect samples of vegetation that may be eaten by caribou. Also, small mammals will eat primarily new vegetative growth when it is available, and these animals provide part of the food base for wolves and brown bears; therefore, collection and analysis of new vegetative growth that appears during summer will provide an indication of the baseline levels of NOCs in the diet of ecological receptors in the mine study area.

By mid-August, fruit (berries) have developed on plants. Berries serve as a food source for brown bears and for humans. NOC uptake into fruit tissue is generally known to differ from that for new vegetative tissue growth, and as a result, the concentrations of NOCs in edible plant parts are likely different between July and August; therefore, it is important to collect samples at both times.

Portions of some plants are used by humans for medicinal purposes (e.g., fireweed leaves may be boiled and used to treat asthma and coughs, while crowberries may be used as a remedy for stomachache or diarrhea). Plants used by humans were included as target species for vegetation collection in all sampling events.

In general, methods used for sample collection were consistent with those described in the consolidated study plan for Pebble Project (a copy of which is provided in Appendix E of this environmental baseline document). After 2004, these methods were updated to incorporate habitat as a separate criterion, and as previously noted, based on the habitat information, the number and location of some samples were changed after the first year of sampling. Except for identifying sampling locations, methods for sample collection were consistent from year to year. Specific methods for collection of soil and vegetation samples are summarized in the sections below. A photographic log of the sampling conducted in 2005 through 2007 is provided as Appendix 10.1A. (No photographic log is available for the sampling done by CH_2M Hill in 2004.)

Before soil and vegetation sampling began, sample locations in sections selected using the random grid system were translated into longitude/latitude coordinates and transferred to a navigational GPS onboard a helicopter. The GPS data were recorded in a format compatible with the Pebble Project geographic information system (GIS).

The field team used the helicopter and its navigational systems to locate each section, where up to three sample locations were staked, flagged, and marked with the sampling station name. Information taken from the field notes prepared by CH_2M Hill in August and September 2004 suggests that in 2004 more than three locations were sampled in several sections, while only a single sample from a single location was collected in other sections. Supporting documentation was not provided by CH_2M Hill. This approach was modified in 2005 through 2007 such that three locations were sampled in each section, unless conditions (e.g., insufficient vegetation) prevented it.

Surface soil sampling in August and September 2004 was concurrent with soil and vegetation sampling for the transportation corridor. Based on the field notes, it appears that in many cases, surface soil and vegetation samples were collected from within the same 1-mile-square section, but not from the exact same location within that section. In a few rare cases, the exact same sample location appears to have been used for both soil and vegetation; however, it appears that soil and vegetation samples generally were not co-located. This practice was modified in subsequent years and all vegetation samples were directly co-located with soil samples: soil samples were collected from the center of the area in which vegetation was collected. As a result, only those soil and vegetation samples collected after 2004 are relevant for direct correlation analysis across media.

10.1.5.1 Soil

Surface soil samples were collected from depths of up to 6 inches using hand tools, such as stainless steel shovels or disposable polyethylene shovels and trowels. The tools used were washed with an Alconox detergent and water solution and rinsed with deionized water before and between samples. Quality assurance/quality control (QA/QC) protocols followed those described in the QAPPs (Appendix G). If an organic mat was present at ground surface, the mat was removed before the soil sample was collected. Shallow subsurface soil samples were collected at a depth of 18 inches using similar methods. Rocks were removed from soil samples with gloved hands before the sampling jars were sealed. Sample analysis followed state and federal guidelines for analytical requirements. At each location, soil from the top 18 inches was classified in the field. The classifications were later updated using a surficial geology map compiled by Pebble Partnership.

10.1.5.2 Vegetation

At each vegetation sample site, a sample area encompassing a 10-foot radius of typical vegetation for the area was designated. All observed plant species within each sample area were documented. Four to nine species were sampled at each location. One of the primary pathways of interest in the trace elements study is the settling of dust on vegetation and subsequent absorption of trace elements. To consider dust on vegetation surfaces, vegetation sampling was conducted at least one day after a rain event whenever possible. Both non-woody vegetative tissue and fruit tissue samples were collected, where appropriate, to ensure that edible portions of the plant species were analyzed. Approximately 50 grams (weighed on a portable scale) of non-woody vegetative tissue were collected from the vegetation using clippers and/or gloved hands and were placed into plastic bags that were then sealed. The non-woody vegetative tissue

included leaves and browsable twigs and shoots. Where possible, each sample represented a composite from at least three plants within a taxonomic group (genus or species). All non-disposable sampling equipment was decontaminated before and between sampling sites. The target analyte list for anions and cations in vegetative and fruit -tissue samples was reduced beginning in 2005 to include only cyanide and sodium. In 2004, vegetative and fruit tissues were analyzed for chloride, fluoride, ammonia as nitrogen, and sulfate. Analyses for these anions and cations were discontinued because they are not typically associated with any human or ecological health threat in vegetation.

Selection of the target species for sampling was based on overall dominance, bio-uptake potential, use as wildlife forage, and/or subsistence use, including use as traditional medicines. In the field, species selection was largely influenced by what was available at the selected sampling locations.

10.1.6 Data Reduction

The sections below summarize how the raw data were processed and evaluated.

10.1.6.1 Soil

Data for each analyte were sorted and evaluated to examine differences by year, by depth (for soil from 2004 and 2005 only), and between landforms. Only data for primary samples were used for evaluation.

Statistical tests for differences between soil depths were conducted for arsenic, lead, and copper. Tests for differences among years were done for those three analytes and aluminum. The analytes were chosen as being representative of key trace elements present in the Pebble Deposit and other elements, present in both vegetation and soil that have the potential for uptake and toxicity. No significant differences among depths or years were identified by these tests. Based on these findings, shallow soil data from all years of sampling were combined for further evaluation. For all statistical tests, “non-detect” results (analyte not detected at the method detection limit) are included as one-half the method detection limit (MDL), and non-detect results flagged with a qualifier of “U” or “UJ” are included as one-half the method reporting limit (MRL).

The following general statistics were calculated separately for surface and subsurface soil samples across all years:

- Number of samples in which analytes were detected above the MDL compared to the number of samples analyzed, and the resulting percentage of detections (i.e., the frequency of detection [FOD]).
- Minimum and maximum detected concentrations.
- Minimum and maximum MDLs and MRLs.
- Mean and median concentrations detected.
- Standard deviations and coefficients of variation (CVs).

All soil results for 2004 through 2007 are summarized in Appendix 10.1B.

Medians and other percentiles are provided in box-and-whisker plots (Appendix 10.1C). For all box-and-whisker plots, non-detect results are included as one-half the MDL, and non-detect results flagged with a "U" or "UJ" qualifier are included as one-half the MRL.

To examine differences in analyte concentrations across landforms, surface soil data from all sampling events were compared using the nonparametric Kruskal-Wallis analysis of variance (ANOVA) by ranks test (the Kruskal-Wallis test). NOCs showing significant differences across landforms were further evaluated by comparing the ranks assigned by the Kruskal-Wallis test to identify trends between the individual landforms. Results of this evaluation are presented in Appendix 10.1D. Box-and-whisker plots showing concentrations of a subset of NOCs in soil by landform are presented in Appendix 10.1E.

No outliers were eliminated from the data sets used in calculating summary statistics. Before creating box-and-whisker plots for soil across all years of sampling, four soil sample locations from 2004 were removed from the data set because of uncertainties regarding the exact sample locations. In addition, seven more 2004 soil samples were removed from the data set before the landform evaluation was done because the exact locations of the samples could not be determined. One sample location from 2005 was removed from the soil data set for landform comparisons because the location was farther south than the southern extent of the geologic landform map used to determine landforms for sampling locations; therefore, the landform for that sample location could not be identified. Finally, the Kruskal-Wallis evaluation did not include landforms for which fewer than three soil samples were collected (alluvium; drift of Brooks Lake glaciation, Newhalen stade; outwash associated with drift of Brooks Lake glaciation, Iliamna stade; and outwash/glaciation) because there were not enough samples from these landforms to provide a statistically meaningful comparison with other landforms. As a result, nineteen samples were removed from the surface soil data set before the landform evaluation was performed.

10.1.6.2 Vegetation

Sample data for each element and plant species were sorted and evaluated to examine differences across the growing season (i.e., July versus August) for 2005 through 2007 and among habitats and landforms for 2004 through 2007. Only data for primary samples were evaluated.

The following general statistics were calculated for plant tissues (vegetative tissue and fruit tissue) across all species:

- FODs.
- Minimum and maximum detected concentrations.
- Minimum and maximum MDLs and MRLs.
- Mean and median concentrations detected.
- Standard deviations and CVs.

Summary statistics were also compiled by plant species and analyte. For summary statistics, non-detect results are included as one-half the MDL. Non-detect results flagged with a "U" or "UJ" qualifier are included as one-half the MRL. No outliers were eliminated from the data sets used to compile summary statistics.

For plant species with sufficient numbers of samples (short-stalk sedge, bog blueberry, lingonberry, crowberry, cloudberry, diamond-leaf willow, field horsetail, narrow leaf Labrador tea, dwarf birch, reindeer lichen, and mosses [combined species]), the Mann-Whitney U-test was used to compare the data for July and for August. When detection frequencies were sufficient for meaningful statistical comparisons, the trace elements with the highest toxicological significance (arsenic, barium, cadmium, copper, lead, mercury, manganese, nickel, silver, vanadium, and zinc) were evaluated in this way to identify potential differences in elemental uptake during different stages of the growth season. Results of this evaluation are presented in Appendix 10.1F.

The same statistical test used to compare data for July and August was used to compare data for fruit tissues and for non-woody vegetative tissue from the berry-producing species with sufficient numbers of fruit and vegetative tissue samples (crowberry, bog blueberry, early blueberry, and lingonberry). Data for the different plant components were compared to evaluate potential differences in elemental uptake between different edible plant parts that may be consumed by different receptors. This evaluation was performed for the same NOCs for which the July and August data were compared, except arsenic was not included in the plant-part evaluation because of insufficient detection frequencies. Results of this evaluation are presented in Appendix 10.1G.

For species with sufficient numbers of vegetation samples from different habitats and landforms (Sitka alder, dwarf birch, short-stalk sedge, reindeer lichen, marsh five-finger, blue joint grass, field horsetail, crowberry, cotton grass, stair step moss, mare's tail, narrow leaf Labrador tea, green terrestrial moss, feather moss, cloudberry, diamond-leaf willow, sphagnum moss, bog blueberry, and lingonberry, ledge stone crop), data were compared to evaluate potential differences in uptake among different habitats or landforms. This evaluation was performed for the same NOCs for which July and August data were compared. First, the Kruskal-Wallis test was used to compare concentrations of NOCs across all habitats or landforms for each species. (The Mann-Whitney U-test was used for species with sufficient sample numbers in two habitats or landforms.) Trace elements for which there were significant differences among habitats or landforms were then evaluated further for each species; the ranks assigned to each habitat or landform were compared to determine trends in NOCs uptake in different habitats and landforms. For those NOCs showing significant differences between habitats, data for individual plant species across habitats are presented in box-and-whisker plots (Appendix 10.1J). For statistical tests and box-and-whisker plots, non-detect results are excluded, and non-detect results flagged with a "U" or "UJ" qualifier are included as one-half the MRL.

Samples for plant species included in the habitat comparisons were removed from the comparisons if the greatest number of vegetative tissue samples from any habitat was insufficient to allow for meaningful statistical comparisons; 18 samples were removed from the vegetative tissue on data set before the habitat evaluation was performed.

Prior to the landform evaluation, two vegetation samples from 2004 were removed from the data set because the exact sample locations could not be determined. Eighteen vegetation samples from two locations were removed from the data set because the locations were outside the boundaries of the geological landform map used to determine landforms for sampling locations, and the appropriate landform for those two locations therefore could not be identified. Finally, landforms with fewer than three samples for the species under evaluation were excluded from the Kruskal-Wallis/Mann-Whitney evaluation because there were not enough samples from these landforms to provide a statistically

meaningful comparison. As a result, sixty three vegetation samples were removed from the vegetation data set before the landform evaluation was performed.

10.1.7 Results and Discussion

The sections below describe the results of the soil and vegetation sampling efforts conducted in 2004 through 2007. For ease in readability, concentrations greater than 1,000 milligrams per kilogram (mg/kg) were rounded to the nearest hundred for presentation in the following discussion.

10.1.7.1 Soil

In 2004 through 2007, 237 primary surface soil samples were collected from the upper 6 inches of the soil profile and were analyzed. The surface soil samples comprised 80 samples in 2004, 86 samples in 2005, 41 samples in 2006, and 30 samples in 2007. In addition, 16 primary subsurface samples, comprising nine samples in 2004 and seven samples in 2005, were collected from a depth of 18 inches in 2004 and 2005. The data for these samples represent a compendium across 117 separate locations in the mine study area. Subsurface soil samples were collected at roughly 10 percent of these locations to evaluate variability of NOC concentration by depth. Only validated data for primary samples are included in the following discussion.

Analyses for trace elements, as well as for cyanide and sodium, were conducted on 253 soil samples (237 for surface soil), and analyses for other anions and cations (chloride, fluoride, ammonia as nitrogen, and sulfate) were performed on 251 soil samples (235 for surface soil). Analyses for petroleum-range hydrocarbons (diesel-range organics and residual-range organics) were conducted on 31 samples (23 for surface soil), and 61 samples (53 for surface soil) were analyzed for total organic carbon.

Trace Elements

Surface Soil: All 26 trace elements for which samples were analyzed were detected in at least some surface soil samples (Table 10.1-3). Six trace elements (aluminum, barium, calcium, iron, magnesium, and manganese), were present above MDLs in all samples, and another 11 trace elements (arsenic, beryllium, chromium, cobalt, copper, lead, mercury, nickel, potassium, selenium, and zinc) were detected in at least 90 percent (but less than 100 percent) of all samples. Only four trace elements (bismuth, boron, silver, and tin) were detected in less than 50 percent of all samples. Tin was detected at the lowest frequency (11 percent) of all the trace elements.

Aluminum and iron were generally present at the highest concentrations (mean concentrations of 17,600 and 20,700 mg/kg, respectively).Levels of calcium and magnesium, the elements with the next highest mean concentrations, were roughly an order of magnitude lower (mean concentrations of 2,600 to 3,100 mg/kg, respectively). Concentrations of all other trace elements were substantially lower. Manganese and potassium were the only other trace elements present at mean concentrations exceeding 100 mg/kg, with means of 388 and 621 mg/kg, respectively. Mercury (mean of 0.12 mg/kg) and silver (mean of 0.11 mg/kg) were present at the lowest average concentrations. Individual trace elements varied greatly in concentration across sampling locations, and concentrations among different trace elements at individual locations also varied greatly. For example, CVs ranged from 0.65 (iron) to 3.27 (bismuth), and the average CV for trace elements across all surface soil data was 1.27.

In general, certain trace elements are present in soil at substantially greater concentrations than others. The U.S. Geological Survey (USGS) has evaluated a wide variety of soils across the United States. According to the results of that evaluation, of the trace elements listed in Table 10.1-3, aluminum (72,000 mg/kg), iron (26,000 mg/kg), calcium (24,000 mg/kg), potassium (15,000 mg/kg), and magnesium (9,000 mg/kg) occur at the highest mean concentrations nationwide, and mercury (0.09 mg/kg), selenium (0.39 mg/kg), antimony (0.66 mg/kg), and beryllium (0.92 mg/kg) occur at the lowest mean concentrations (Shacklette and Boerngen, 1984). Therefore, the relative distribution (high versus low) of concentrations of trace elements reported for surface soils in the mine study area is consistent with the distribution reported for surface soils across the United States.

Subsurface Soil: All 26 trace elements for which samples were analyzed were detected in at least some subsurface soil samples (Table 10.1-4). Eleven trace elements (aluminum, barium, calcium, chromium, copper, iron, lead, magnesium, manganese, molybdenum, and vanadium) were present above MDLs in all samples, and another six trace elements (antimony, arsenic, beryllium, cobalt, nickel, and zinc) were detected in at least 90 percent (but less than 100 percent) of all samples. Similar to surface soil samples, only four trace elements (bismuth, boron, silver, and tin) were detected in less than 50 percent of all samples. Tin was detected with the lowest frequency (25 percent).

As in the surface soil, aluminum and iron were generally present at the highest concentrations in subsurface soil (mean concentrations of 16,900 and 20,600 mg/kg, respectively). Levels of calcium and magnesium, the trace elements with the next highest mean concentrations, were an order of magnitude lower (mean concentrations of 2,200 and 3,400 mg/kg, respectively). Concentrations of all other trace elements were substantially lower. Individual trace elements varied greatly in concentration across sampling locations, and concentrations among different trace elements at individual locations also varied greatly. The variability for subsurface soil was generally lower than for surface soil.CVs for subsurface soils ranged from 0.38 (lead) to 1.96 (selenium), and the average CV for the subsurface soil data was 0.69.

Comparison of Surface and Subsurface Soils: Comparison of Tables 10.1-3 and 10.1-4 shows that the relative concentrations (among trace elements) and the mean concentrations of the trace elements are generally similar at both depth intervals. The most notable exception is bismuth, which has a mean concentration in surface soil that is approximately 13 times higher than the mean concentration for deeper samples; even if the two highest concentrations of bismuth are removed from the surface soil data set, the mean surface concentration is still about 10 times higher than that at depth. Exceptions also are noted for selenium, silver, thallium, and tin, which have mean concentrations for surface samples that are approximately 2 to 3 times higher than the concentrations for the deeper samples. In addition, the mean surface concentration for mercury is almost double that for the subsurface samples.

Landform Analysis: The soil data were categorized by geological landform in an effort to discern patterns or differences in trace element concentrations among different landforms. Sixteen landforms were identified in the mine study area, and soil samples were collected from all 16.

Concentrations of most trace elements in surface soil differed significantly across landforms, although few overall trends were present because the variability across landforms differed among trace elements. The results of the statistical analysis of differences in elemental concentrations by landform are provided in Appendix 10.1D. Statistically significant differences were observed across landforms for 15 trace elements (arsenic, calcium, chromium, cobalt, copper, iron, mercury, molybdenum, nickel, potassium,

selenium, silver, tin, vanadium, and zinc). Concentrations of seven trace elements (arsenic, calcium, cobalt, iron, mercury, molybdenum, and tin) were significantly higher in fan-delta deposits than in most other landforms, and concentrations of eight trace elements (arsenic, copper, iron, molybdenum, potassium, selenium, silver, and vanadium) were higher in glaciated bedrock than in most other landforms. Conversely, calcium concentrations were much lower in glaciated bedrock than in other landforms. Seven trace elements (cobalt, copper, mercury, nickel, selenium, tin, and zinc) had significantly lower concentrations in terrace gravels, and five (arsenic, chromium, iron, nickel, and potassium) had lower concentrations in undivided colluvium than in other landforms. Selenium concentrations, conversely, were significantly higher in undivided colluvium.

As the discussion above illustrates, a number of landforms had significantly higher concentrations of some trace elements, while concentrations of other trace elements were significantly lower. For example, some of the highest concentrations of chromium, cobalt, copper, iron, nickel, potassium, and zinc were observed in the drift of Brooks Lake glaciation, Iliamna stade landform, which also contained some of the lowest concentrations of mercury, selenium, and silver.

Medians and percentiles for all of the trace elements (except calcium) for which significant differences in mean concentrations among landforms were identified are presented in box-and-whisker plots (Appendix 10.1E).

Anions and Cations

Anions and cations were included in the trace element study program for consistency with the target analytes in the hydrology program (Chapters 7 and 8). In 2004 through 2007, the anions that were evaluated were chloride, cyanide, fluoride, and sulfate, and the evaluated cations were ammonia (as nitrogen) and sodium.

Surface Soil: The FODs for the target analytes in surface soil samples ranged from 91 percent for sodium and ammonia (as nitrogen) to 23 percent for fluoride (Table 10.1-3). Among anions and cations, ammonia (as nitrogen) was present at the highest concentrations (mean of 363 mg/kg), and sodium occurred at the next highest concentrations (mean of 208 mg/kg). Cyanide was present at the lowest concentrations (mean of 0.19 mg/kg).

Subsurface Soil: The FODs for anions and cations ranged from 100 percent for ammonia (as nitrogen) to 44 percent for fluoride. Ammonia (as nitrogen) was present at the highest concentrations (mean concentration of 213 mg/kg), and sodium occurred at the next highest concentrations (mean of 194 mg/kg). Cyanide was present at the lowest concentrations (mean of 0.095 mg/kg).

Comparison of Surface and Subsurface Soils: Concentrations of some analytes were noticeably different in the two depth intervals (Tables 10.1-3 and 10.1-4). Mean concentrations for cyanide and ammonia (as nitrogen) were almost 2 times higher in the surface samples than in the deeper samples, possibly due to production by bacteria present in the biologically active zone (i.e. surface soil). Sulfate was the only analyte in this group with a higher mean concentration in subsurface samples than in surface samples, but the two mean concentrations were within a factor of 2.

Landform Analysis: Concentrations of anions and cations in surface soils also differed by landform, with the exceptions of cyanide and sodium. For those constituents with significant differences, the results

of the statistical analysis of differences in elemental concentrations by landform are provided in Appendix 10.1D. Concentrations of chloride and ammonia (as nitrogen) were statistically significantly higher in undivided colluvium than in most other landforms. Chloride, fluoride, and sulfate concentrations were higher in glacial-lake deposits, and fluoride, sulfate, and ammonia (as nitrogen) were significantly higher in outwash associated with the drift of Brooks Lake glaciation, Kvichak stade landform than in most other landforms. Fluoride concentrations were highest in the solifluction landform. Concentrations of chloride and sulfate were lower in the drift of Brooks Lake glaciation, Kvichak stade landform, while fluoride and ammonia (as nitrogen) concentrations were lowest in the drift of Brooks Lake glaciation, Iliamna stade landform.

Petroleum-range Hydrocarbons

Two petroleum-range hydrocarbons—diesel-range organics (DRO) and residual-range organics (RRO)—were considered in the trace elements study. Given the relatively small number of samples that were analyzed for DRO and RRO, data for these constituents are not evaluated separately by landform; however, they are evaluated separately by depth.

Surface Soil: Both DRO and RRO were detected in surface soil samples (Table 10.1-5). RRO was detected in all 23 samples, while DRO was detected in 13 samples (57 percent of all samples). Concentrations were higher than expected for background soils, since no known petroleum sources are present in the study area. The mean concentrations were 209 mg/kg for DRO and 2,000 mg/kg for RRO. Although these data are evidence that hydrocarbons within the size and weight range of petroleum products (e.g., DRO and RRO) occur naturally in soil in the mine study area at concentrations above MDLs, evaluation of the data indicate that hydrocarbons are a result of biogenic breakdown of organic materials such as plant matter. Evaluation of chromatograms was used to identify the pattern of chemical peaks as biogenic rather than petroleum in nature. Biogenic hydrocarbons, while not petroleum in nature, have characteristics similar to petroleum hydrocarbons and respond in the analysis designed and intended to detect DRO and RRO. The range of concentrations varied widely among sample locations. DRO concentrations ranged from a minimum of 11.7 mg/kg to a maximum of 1,300 mg/kg, and RRO concentrations ranged from a minimum of 32.7 mg/kg to a maximum of 12,300 mg/kg.

Subsurface Soil: Both DRO and RRO were detected in subsurface soil samples (Table 10.1-6). Similar to surface soil, RRO was detected in all eight samples, while DRO was detected in only 50 percent of the samples. The mean concentrations of DRO and RRO were 38 and 275 mg/kg, respectively. The range of concentrations in subsurface soil was highly variable among locations, but to a lesser extent than in the surface soil samples.

Comparison of Surface and Subsurface Soils: A difference in concentrations relative to the depth profile is apparent for petroleum-range hydrocarbons (Tables 10.1-5 and 10.1-6). The mean RRO concentration for surface samples was about 7 times higher than the mean for subsurface samples. For DRO, the mean concentration for surface samples was approximately 5 times higher than that for subsurface samples. An explanation for the difference in concentrations is that the biogenic hydrocarbons likely originate from decomposing plant material on the soil surface. The top 6 inches of soil therefore may be critical to appropriately identifying naturally occurring levels of biogenic petroleum-range hydrocarbons.

Total Organic Carbon

Given the relatively small number of samples analyzed for total organic carbon (TOC), these data are not evaluated separately by landform; however, the data are evaluated separately by depth.

Surface Soil: The mean concentration for TOC across 53 samples was 6.51 percent, but TOC concentrations also exhibited a wide variability across locations (0.30 to 65.1 percent; Table 10.1-5). This variability could affect the bioavailability and toxicity of some NOCs, because some NOCs have a tendency to form complexes with organic materials. The TOC concentrations at the high end of this range may be evidence that the soil samples contained a high proportion of plant roots that often extended below the main root ball and could not be completely separated from the soil during sample collection. The presence of these relatively high levels of TOC is an indication that the surface soils are generally enriched in organic carbon.

Subsurface Soil: TOC was present in subsurface soil at a mean concentration of 2.24 percent for eight samples (Table 10.1-6). The data for the subsurface samples showed less variability than the data for surface soils. The results for subsurface samples ranged from 0.46 to 4.73 percent. The concentrations at the high end of this range are much lower than those for surface soil and are evidence that plant roots were not present in these deeper samples.

Comparison of Surface and Subsurface Soils: TOC was present at a higher mean concentration in surface samples than in subsurface samples. This is consistent with expectations, because naturally occurring TOC is largely a function of the amount of plant material decaying in the soil, which typically results in higher TOC concentrations at shallow depths.

10.1.7.2 Vegetation

Vegetation sampling was conducted at approximately 70 locations, the great majority of which also were sampled for soil. Vegetation samples were organized by plant type and species. Table 10.1-7 summarizes the number of samples collected and analyzed by plant type and species, habitat type, and landform. For vegetation, 707 samples representing 51 species were collected. An additional 80 samples of fruit tissues from four species of berry-producing shrub species were also collected.

As is evident from the table, the greatest number of vegetation samples were collected from shrubs (42 percent), with forbs (21 percent) and mosses (13 percent) being next highest. The most diversity in species among plant types for vegetation samples was obtained for shrubs (17 species) and forbs (16 species). In addition to these, six species of grass or sedge, five species of moss, four species of tree, and three species of lichen were collected. It should be noted that samples classified as “green terrestrial moss” in 2004 and 2005 may have been incorrectly classified. These samples may actually encompass a variety of moss species, which are difficult to differentiate in the field. Some of the moss samples likely represent sphagnum moss, which was not separately identified in either 2004 or 2005. This oversight was corrected in the 2006 and 2007 sampling efforts.

The most frequently sampled species for vegetative tissues amongst all plant types in the mine study area was a shrub plant type species bog blueberry (51 samples). Short-stalk sedge and diamond-leaf willow (49 samples each), reindeer lichen (45 samples), and dwarf birch (43 samples) were next most frequently sampled. For the shrub plant type, more than 20 samples each of narrow leaf Labrador tea (27 samples),

lingonberry (21 samples), and crowberry (35 samples) were collected and analyzed from 2004 to 2007. The most commonly analyzed forbs were field horsetail (27 samples), cloudberry (24 samples), and marsh five-finger (21 samples). For the mosses, more than 20 samples each were classified as green terrestrial moss (24) or sphagnum moss (34), but as noted above, some samples may have been incorrectly classified in 2004 and 2005.

The most frequently sampled species for fruit tissues amongst all plant types in the mine study area was also from bog blueberry (36 samples). Crowberry (20 samples) and lingonberry (14 samples) were next most frequently sampled. Cloudberry was the least frequency sampled species for fruit tissues, with only two samples.

All results for vegetation samples (vegetative and fruit tissues) for 2004 through 2007 are summarized in Appendix 10.1I. (In that appendix, sample species are identified by scientific name only. Table 10.1-7 provides both the common and scientific names of the sampled plant species, for reference.) The results for analyses of vegetation samples collected in the mine study area are discussed below. Data for vegetative tissue samples and fruit tissue samples are presented separately, although comparisons are made.

Trace Elements

All of the 26 trace elements for which samples were analyzed were detected in at least some vegetative tissue samples (Table 10.1-8). Eleven trace elements (aluminum, barium, calcium, cobalt, copper, iron, magnesium, manganese, nickel, potassium, and zinc) were present above MDLs in almost all samples (>99%), lead was detected in 95 percent of samples, and five trace elements (boron, cadmium, mercury, molybdenum, and vanadium) detected in 80 to 90 percent of samples. Eight trace elements (arsenic, beryllium, bismuth, chromium, selenium, silver, thallium, and tin) were detected in less than 50 percent of the samples. Selenium and tin were detected with the lowest frequencies (18 and 14 percent, respectively).

For fruit tissue samples, only 25 trace elements were detected (Table 10.1-9). Of the 11 trace elements detected in all vegetative tissue samples, nine (all except aluminum and cobalt) also were detected in 100 percent of fruit tissue samples, and aluminum was detected in 95 percent of fruit tissue samples. Lead and cobalt were detected in 80 percent and 89 percent, respectively, of fruit tissue samples. Of the eight trace elements detected in less than 50 percent of all vegetative tissue samples, seven (arsenic, beryllium, bismuth, chromium, silver, thallium, and tin) were also detected in less than 50 percent of fruit tissue samples; beryllium was detected in only one of 80 samples, and arsenic was detected in only three samples. Selenium was not detected in any fruit tissue samples The essential nutrients calcium, magnesium, and potassium were present in vegetative tissues at the highest concentrations (mean concentrations over 1,000 mg/kg) among trace elements (Table 10.1-8). Aluminum, iron, and manganese had mean concentrations ranging from 192 and 716 mg/kg. All other trace elements occurred at substantially lower concentrations in vegetative tissues (mean concentrations less than 40 mg/kg).

Although a similar pattern was evident for fruit tissue (Table 10.1-9), only calcium and potassium had mean concentrations over 1,000 mg/kg, and magnesium and manganese had mean concentrations of 594 and 172 mg/kg, respectively. Aluminum and iron in fruit tissue occurred at lower mean concentrations (27.1 and 19.9 mg/kg, respectively), and all other trace elements were present at mean concentrations below 15 mg/kg.

Comparison of mean concentrations in vegetative tissue and fruit tissue samples demonstrates that elemental concentrations in fruit tissue were generally lower than those in the vegetative tissue. Mean concentrations of most trace elements were 1.5 to 7 times lower in fruit tissue. Differences were most notable for iron, cobalt, and arsenic, which had mean concentrations in fruit tissue samples that were 36 (iron), 14 (arsenic), and 11 (cobalt) times lower, respectively, than those in vegetative tissue samples. Only six trace elements (antimony, boron, copper, lead, nickel, and tin) had higher mean concentrations in fruit tissue samples than in vegetative tissue samples; however, concentrations of these six trace elements between tissue types were similar (within a factor of 2). This comparison demonstrates that plants not only have differential uptake of trace elements, but also have some ability to regulate the translocation of elements to fruit tissue.

Variability in concentration among vegetative tissue samples was high for most trace elements, with CVs of at least 1.0 for 16 of the 26 trace elements (Table 10.1-8). The lowest variability was for copper (CV of 0.57), and the highest was for arsenic (CV of 10.4). Variability among fruit tissue samples was generally lower, with CVs greater than 1.0 for only 11 of the 25 detected trace elements (Table 10.1-9). This is probably because only five different species were sampled and analyzed for fruit tissue, while 51 different species for vegetative tissues were sampled and analyzed. Similar to vegetative tissue, arsenic was the most variable trace element for fruit tissue, with a CV of 4.77. Cobalt, aluminum, and cadmium also had CVs above 2.0 (4.69, 2.17, and 2.03, respectively) in fruit tissue samples. Potassium was the least variable element in fruit tissue, with a CV of 0.46.

Interpretation of these results indicates that elements vary greatly in concentration among all samples and among plants within a given location, as well as between plant tissues. A comparison of concentrations in soil and in vegetation collected from the same area, based on the data provided in Appendices 10.1B (soil) and 10.1I (vegetation), showed that the elemental profile in vegetation is different than that in soil, indicating that differential chemical uptake is occurring. This differential uptake appears to be different among plant species, further complicating predictive ability.

To assess this issue in more detail, data were further summarized by plant species. (Tables 10.1-10 through 10.1-46 contain the results for individual species for which at least five samples were analyzed. Results for species for which between two and four samples were analyzed are included in Appendix 10.1J. Results for plant species with only one sample are included in Appendix 10.1I.) Six of the species included in this analysis are aquatic plants (coon’s tail, Eurasian water milfoil, yellow pond lily, northern slender pondweed, pondweed [not identified by species], and mare’s tail).

It is evident from evaluation of the data in the tables and Appendix 10.1J that trace element concentrations are quite different among species, this variability indicates the importance of species-specific measurements of baseline concentrations. Several examples are discussed below to illustrate this point. Only plant species with results for at least five samples are included in the following discussion. It should be noted that some of the variability in concentrations across species may be due to different levels of the trace elements in soil; however, because of the lack of significant and consistent correlation between vegetation and soil concentrations, variability across species cannot be attributed solely to variability in soil concentrations. At least a portion of the cross-species variability is likely due to differential uptake of trace elements by different species.

Because moss and lichen do not have vascular structures, the presence of trace elements in these organisms must occur differently than in vascular plants. Although trace element concentrations in lichens

in the mine study area were generally consistent with other plant types, it is clear that at least one species of moss (green terrestrial moss) shows different patterns of trace element composition and concentrations than the other sampled plants.

The green terrestrial moss samples had substantially higher mean concentrations of several trace elements (aluminum, beryllium, and nickel) for vegetative tissue than did other plant species. This was most dramatic for aluminum, which had a mean concentration in green terrestrial moss that was from 2 times to almost 400 times higher than the mean concentration in other species. The mean concentration of beryllium was 3 to 23 times higher in green terrestrial moss, and the mean concentration of nickel was 5 to 27 times higher than in other species. Antimony concentrations among the plant species were highest in green terrestrial moss and second highest in reindeer lichen, although the differences were much less pronounced compared to other analytes. Mosses and lichens had higher lead concentrations than all other plant types. The high lead level was most notable for green terrestrial moss, which had a mean lead concentration that was up to almost 30 times higher than mean concentrations in other species. The mean concentrations of lead in all moss and lichen species exceeded the mean concentrations in other species by a factor of up to 7. Aluminum concentrations also were noticeably higher on average in feather moss than other species, vanadium concentrations were higher in green terrestrial moss than in most other species, and mercury concentrations were generally higher in stair step moss and feather moss than most other species.

Two aquatic plant species had the highest concentrations of six trace elements across all of the frequently sampled species. Water horsetail had the highest concentrations of four trace elements (arsenic, chromium, molybdenum, and selenium); iron concentrations in this species were also among the highest observed. Mare's tail had the highest concentrations of two trace elements (iron and vanadium). Differences between these two species and other species were most notable for arsenic, iron, and molybdenum, for which mean concentrations were approximately 900, 350, and 175 times higher, respectively, than in certain other species, although differences were less extreme for most species.

Other findings that stand out are those for ledge stonecrop, which contained the highest mean concentrations of calcium and barium for vegetative tissues across all species. Concentrations of these trace elements averaged from almost 2 to as much as 47 times higher in ledge stonecrop than in other species.

The relative variability of trace element concentrations in vegetative tissues among the plant species that were "most frequently sampled" (i.e., those for which more than 25 samples were analyzed) among sampling events are depicted in Figures 10.1-2 through 10.1-23. Only plant species and trace elements with at least one detectable concentration in each sampling month of each year are included in the figures. Beryllium and silver are not included because of the high frequency of non-detect results across all sampling events and plant species. Several trace elements exhibited variability over time for certain species. Mean concentrations for aluminum in both reindeer lichen and mosses declined through each of the first four sampling events (Figure 10.1-2), although this pattern was not evident for the other commonly sampled plant species. Conversely, in diamond-leaf willow, mean cadmium concentrations for the latter three sampling events were approximately twice the mean concentrations for the first three sampling events (Figure 10.1-7). Some trace elements exhibited a pattern of generally higher mean concentrations for the August sampling events than for the July events. These elements include calcium (Figure 10.1-8), molybdenum (Figure 10.1-17), nickel (Figure 10.1-18), and sodium (Figure 10.1-20).

This could be due to active uptake of these elements during the short growing season, resulting in more chemical uptake by August than earlier in the growing season. Most elements exhibited variable concentrations over time, with no clear patterns over the six sampling events (e.g., copper [Figure 10.1-10] and lead [Figure 10.1-13]).

In addition to the differences in elemental concentrations among vegetative tissue in plant species over time (as discussed above), notable differences were apparent for several trace elements among the most frequently sampled plant species for all sampling events combined (Figures 10.1-24 through 10.1-45). The most frequently sampled species are dwarf birch, short-stalk sedge, reindeer lichen, crowberry, narrow-leaf Labrador tea, mosses (green terrestrial moss, sphagnum moss, feather moss, and stairstep moss combined), diamond-leaf willow, bog blueberry, and field horsetail. The mean concentration for cobalt was 3 to 50 times higher in diamond-leaf willow than in the other most frequently sampled species (Figure 10.1-31). Labrador tea had a mean thallium concentration that was 10 times higher than that for mosses (Figure 10.1-43); thallium was not detected regularly in any other of the most frequently sampled species. Similar patterns were observed for magnesium (Figure 10.1-36) and potassium (Figure 10.1-41), both of which were highest in field horsetail (mean concentrations from 2 to 23 times higher than in other most frequently sampled species) and lowest in reindeer lichen (means from 3 to 23 times lower than in other species). Reindeer lichen had a mean copper concentration that was 2 to 3 times lower than mean concentrations for the other eight species (Figure 10.1-32). The mean zinc concentration for dwarf birch was about 2 to 7 times higher than for the other species (Figure 10.1-45).

For all vegetative tissue samples, the range of trace element-specific mean concentrations across species was around 1,000-fold, with a minimum factor of 5 (for tin) and a maximum factor of 6,590 (for iron). Ranges of concentrations by species were at least 1,000-fold for aluminum, arsenic, calcium, iron, manganese, molybdenum, nickel, potassium, and vanadium, but were no more than 100-fold for antimony, bismuth, chromium, copper, selenium, and tin. The above evaluation demonstrates the complexity and variability of concentrations of naturally occurring trace elements in plants.

Anions and Cations

Most anions and cations were detected in at least 80 percent of all vegetation samples (Tables 10.1-8 and 10.1-9). The exceptions are cyanide, which was detected in only 37 of vegetative tissue samples and 25 percent of fruit tissue samples, and fluoride, which was detected in 67 percent of fruit tissue samples.

Across all vegetative tissue samples (Table 10.1-8), sulfate and chloride were present at much higher concentrations than the other analytes, with mean concentrations of about 1,400 and 1,600 mg/kg, respectively. Ammonia (as nitrogen) and sodium were present at lower concentrations (mean concentrations of 182 and 327 mg/kg, respectively), and fluoride and cyanide were present at the lowest concentrations (mean concentrations of 1.25 and 0.68 mg/kg, respectively).

In fruit tissue samples (Table 10.1-9), sulfate was present at the highest concentrations (mean of about 3,100 mg/kg). Chloride concentrations, however, were almost 20 times lower in fruit tissue (mean concentration of 82.9 mg/kg) than in vegetative tissue samples. Ammonia (as nitrogen) and sodium concentrations were also much lower in fruit tissue (mean concentrations of 17.6 and 55.4, respectively) than in vegetative tissue samples (about10 times lower for ammonia and 6 times lower for sodium). In both types of samples, fluoride and cyanide concentrations were low and were similar, although fluoride concentrations in fruit tissue samples (mean of 2.70 mg/kg) were slightly higher than in vegetative tissue

samples. These differences in NOC concentrations between fruit tissue samples and vegetative tissue samples demonstrate that plants have some regulation of anion and cation translocation to the fruit tissues.

Similar to the trace elements, analysis of anion and cation concentrations by plant species demonstrates wide variability of concentrations in vegetative tissues across species. (Species-specific results for species for which least five samples were analyzed are presented in Tables 10.1-10 through 10.1-46, while results for species for which fewer than five samples were analyzed are included in Appendix 10.1J.) Cyanide concentrations were highest in sour dock, with a mean concentration of 9.91 mg/kg, which is about 3.5 to nearly 200 times higher than the mean concentrations in other species. Concentrations of chloride and ammonia (as nitrogen) were also highest in sour dock; the mean chloride concentration was about 2 to 200 times higher in this species than in others, and the mean concentration for ammonia (as nitrogen) was about 3 to 450 times higher. Sodium concentrations were highest in mare's tail and coltsfoot, with a mean concentration in mare's tail that ranged from almost 7 to as much as 360 times higher than in other species, and a mean concentration in coltsfoot that ranged from 3 to 180 times higher than in other species. Concentrations of fluoride and sulfate were highest in dogwood samples; balsam poplar also had high sulfate concentrations relative to other species. Mean concentrations of sulfate were at least twice as high in dogwood and balsam poplar than in other plant species (except fireweed). Fluoride concentrations were the least variable among plant species, with mean concentrations differing by a factor of no more than 7 across species.

Fruit and Vegetative Tissue Comparisons

More than one sample of both vegetative and fruit tissues were collected from four berry-producing species: bog blueberry, lingonberry, early blueberry, and crowberry. Concentrations of some trace elements differed significantly between vegetative tissue and fruit tissue in these four species, according to the Mann-Whitney U-test results (Appendix 10.1G). Concentrations of most trace elements were lower in the fruit tissue than in vegetative tissue for individual species, although there were exceptions where concentrations of some elements were higher in the fruit tissue. Barium, manganese, and zinc concentrations were significantly lower in fruit tissue samples than in vegetative tissue samples for all four species. Concentrations of copper and lead were significantly different between tissue types in three of the four berry-producing species (all but bog blueberry for copper and crowberry for lead), but differed by species with regard to which tissue type had higher concentrations. Copper was significantly higher in fruit tissue samples than in vegetative tissue samples in crowberry and lingonberry. Lead was higher in fruit tissue than in vegetative tissue in bog blueberry and lingonberry. Nickel was significantly different between fruit and vegetative tissues only in bog blueberry, in which nickel concentrations were significantly higher in fruit tissue samples than in vegetative tissue samples. In early blueberry samples, concentrations of all elements that differed significantly between vegetative and berry tissues (barium, copper, lead, manganese, and zinc) were higher in vegetative tissue samples.

Evaluation of Patterns among Habitat Types, Landforms, and Seasons

Analytical results for trace elements were evaluated to discern any patterns among vegetative tissue in plant types, habitat types, and/or landforms. Nineteen species were evaluated for differences based on habitat types or landforms, and one additional species was evaluated for differences only among landforms. These species comprise the subset of frequently sampled species for which more than two samples were collected from each of multiple habitats or landforms. These species are categorized into the following plant types:

- Shrubs (Sitka alder, dwarf birch, diamond-leaf willow, bog blueberry, lingonberry, crowberry, narrow leaf Labrador tea). (Sitka alder is categorized elsewhere as a tree, but here it is included with shrubs because of growth-form similarities in the mine study area.)
- Grasses and sedges (short-stalk sedge, blue joint grass, cotton grass).
- Mosses (stair step moss, green terrestrial moss, feather moss, sphagnum moss).
- Forbs (marsh five-finger, cloudberry, field horsetail, ledge stonecrop [landform evaluation only]).
- Lichens (reindeer lichen).
- Aquatic plants (mare's tail [a forb]).

Barium, cadmium, manganese, vanadium, and zinc concentrations differed significantly across habitats in the most species; therefore, these trace elements were targeted for more in-depth cross-habitat comparisons. A distinct pattern was evident across habitats for zinc and manganese; these two elements were consistently higher for samples from the LS type of habitat. In contrast, barium concentrations were consistently lower for LS habitat—except in cloudberry (as described below)—and also for AS habitat (except in diamond-leaf willow). Barium concentrations were higher for samples from US habitat, again except for cloudberry samples. Cloudberry showed a different pattern of barium concentrations compared to other species. Barium concentrations in cloudberry were lower for US habitat than for any other habitats and were highest for RS and LS habitats.

A variety of species-specific differences in trace element concentrations were observed among different habitat types, but few overall cross-species patterns were identified. Green terrestrial moss and marsh five-finger were the only plant species for which trace element concentrations did not differ significantly across habitats. Reindeer lichen and cloudberry had statistically significant differences in elemental concentrations among habitat types for the greatest number of trace elements (five each). For reindeer lichen, barium, manganese, and zinc concentrations were lowest in AS habitat, while lead and vanadium concentrations were highest in this habitat (as well as SS habitat). For cloudberry, concentrations of barium, cadmium, manganese, and zinc were lower in US habitat. Barium, cadmium, and vanadium were higher in RS habitat, but manganese and zinc were lower in this habitat.

A few patterns also were observed for two elements within different plant types. For forbs (except marsh five-finger), barium concentrations were lowest in UF habitat. In shrubs, manganese concentrations were lowest in US habitat.

Molybdenum, barium, manganese, and cobalt showed statistically significant differences across landforms; therefore, these trace elements were targeted for further comparison among landforms. Molybdenum showed significant differences for the most species (15) of any element compared among landforms. Barium, manganese, and cobalt also differed among landforms for a substantial number of species.

Although trends in trace element concentrations differed between plant species, some general trends were observed across a number of species. Molybdenum concentrations were typically higher in plants collected in the undifferentiated bedrock, undivided colluvium, and glacial-lake deposit landforms. This is not consistent with the pattern observed for soil samples (Appendix 10.1E), in which molybdenum was highest in fan-delta deposits. This inconsistency indicates that soil enrichment was not influential in plant

uptake for this element. Molybdenum concentrations were generally lower in the solifluction landform. Barium concentrations were generally higher in plants in the undivided colluvium and drift of Brooks Lake glaciation, Kvichak stade, landforms. Cobalt concentrations were also generally higher in plants collected from undivided colluvium, although for cotton grass this landform had the lowest cobalt concentrations. Concentrations of manganese did not show any general patterns across species; in some landforms manganese concentrations were highest for some plant species and the lowest for other species. Within species, trace element concentrations showed many different patterns across landforms, and no single landform was associated with higher or lower concentrations in plant species across elements.

The discussion above indicates that the different plant species sometimes have different signatures of natural levels of trace elements in different habitats and landforms, but that landforms may not be associated with a clear signature of concentrations for most trace elements within plant species. There appear to be more distinct patterns of trace element levels for different habitat types, but these also differ by element and plant species.

Seasonal differences in concentrations in vegetative tissue were compared statistically with the Mann-Whitney U-test using the July and August data from 2005 through 2007 (Appendix 10.1F). The growing season is short in this part of Alaska. The early part of the growing season occurs in July, after all of the snow has melted and the weather is warmer. July is a relatively dry month during which time most plants focus on vegetative growth. The late part of the growing season occurs in August, which is a wetter month during which time most plants generate berries and other fruit tissues. By October, annual growth essentially stops as the weather grows colder and snow returns to the area. Therefore, comparing July and August data allow for evaluation of early-season and late-season differences in chemical composition of vegetative and fruit tissues. The following eleven species were evaluated: dwarf birch, short-stalk sedge, field horsetail, crowberry, reindeer lichen, narrow leaf Labrador tea, mosses [combined species], cloudberry, diamond leaf willow, bog blueberry, and lingonberry. This group of species is a subset of the species evaluated by landform and habitat and a subset of the frequently sampled plants for which more than one sample was collected in each month (July and August) in 2005 through 2007. This subset of species had sufficient samples across each month to allow for statistical evaluation. This group of species includes at least one each of the plant types shrub, forb, grass, moss, and lichen. Habitat and landform were not variables for this evaluation because the same locations were sampled in both months; therefore, any differences are most likely due to differential elemental uptake for a given species.

Within the plant species and trace elements included in the statistical analysis, seasonal trends in element concentrations differed depending on the plant species and element being evaluated, and in some cases, no trend was apparent. Only one of the 11 species (narrow leaf Labrador tea) had no significant difference in elemental concentrations between July and August. Significant differences between July and August were reported in the concentrations for nine trace elements: copper, nickel, barium, mercury, lead, vanadium, manganese, silver, and zinc. Copper concentrations were significantly different between July and August for the most species, five. Nickel concentrations were significantly different in four species. Barium and mercury concentrations were significantly different in three species each. Lead and vanadium concentrations differed significantly in two species each. Manganese, silver, and zinc concentrations were significantly different in only one species each.

Copper was the only trace element for which concentrations were consistently higher in July than in August across multiple plant species (dwarf birch, short-stalk sedge, cloudberry, diamond-leaf willow,

and bog blueberry). Silver concentrations were higher in July in short-stalk sedge. Lead, mercury, nickel, and zinc concentrations were higher in August than in July for all plant species in which these elements were significantly different. Other trace elements showed different trends between the two months depending on the plant species. For example, barium concentrations were higher in July for field horsetail, but higher in August for short-stalk sedge and bog blueberry; vanadium concentrations were higher in July for crowberry but higher in August for moss species. Among plant species, short-stalk sedge (five elements) and bog blueberry (four elements) showed the most monthly variation between trace element concentrations, but the trends differed among the specific elements.

10.1.8 Summary

The trace elements study for Pebble Project was initiated in 2004 and continued through 2007. Work in the mine study area focused on those portions of the South Fork Koktuli, North Fork Koktuli, Upper Talarik, and Newhalen watersheds that surround the Pebble West and Pebble East deposits.

The primary objectives of the trace elements study were to:

- Collect baseline data to provide scientific documentation of the existing natural levels of trace elements, anions, and cations in surface soil and vegetation.
- Evaluate the baseline data to identify major factors influencing the distributions of trace elements.
- Evaluate naturally occurring biogenic fingerprints in surface soil associated with petroleum-range-hydrocarbon analysis.
- Determine organic content in surface soils.

Each summer in 2004 through 2007 teams collected site-specific data from different habitat types and various landforms across the mine study area. Sample locations were randomly selected in 2004; this practice was changed in 2005 to ensure adequate coverage across the different habitat types in the study area. Approximately 117 individual locations were identified for surface soil sampling, and subsurface soil samples were collected at roughly 10 percent of these locations to evaluate variability of NOC concentrations by depth. To meet the project objectives, each sampling location retained in the program beyond 2004 was sampled in at least two years. During the trace elements study, 253 soil samples (237 surface soil and 16 subsurface soil) were collected.

Vegetation sampling was conducted at approximately 70 locations, the great majority of which also were sampled for soil. A variety of plant species were collected each summer, with a focus on those used as browse by animals or for subsistence purposes by humans. In 2004, sampling during the berry-producing season was conducted, and both vegetative tissues and fruit tissues were separately sampled and analyzed. In each of 2005, 2006, and 2007, two sampling events were conducted, one in the early part of the growing season (July) and one later in the season when berries were ripe (August), to evaluate differences in elemental uptake during different phases of the growing season. During the trace elements study, 787 plant samples (707 vegetative tissue and 80 fruit tissue) were collected. The samples were from 51 species representing trees, shrubs, forbs, grasses, sedges, mosses, and lichens.

Beginning in 2005, plant and soil samples were co-located in an effort to obtain data on plant uptake as a function of species, habitat type, and landform. For each sampling location, the following types of data were compiled:

- Vegetation composition—detailed lists of plants found.
- Soil descriptions—preliminary classification of soil from the top 18 inches of soil.
- NOC concentrations (including trace elements and major anions and cations) in surface soil samples.
- Biogenic fingerprints identified by the laboratory as petroleum-range hydrocarbons based on DRO and RRO analyses of soil samples (for 10 percent of all soil-sampling locations in 2004 through 2006).
- Total organic carbon content of soil samples (for 10 percent of all soil-sampling locations).
- NOC concentrations (including trace elements and major anions and cations) in vegetative tissue samples (all sampling events; samples composited from multiple plants).
- NOC concentrations (including trace elements and major anions and cations) in fruit tissue samples (late-season events only; samples composited from multiple plants).

In 2005 through 2007, aquatic plant samples were collected from a variety of ponds in the mine study area. (Sediment and surface water-quality samples were collected from the same locations.) The objectives and data collected for the pond samples are the same as those listed above for upland areas.

Interpretation of the analytical results indicates a wide variability of NOC concentrations across habitats, landforms, and (for vegetation samples) species. All trace elements, anions, and cations for which analyses were conducted were detected in soil and vegetation samples, and DRO and RRO (present as biogenic hydrocarbon compounds) were both detected in soil samples. Somewhat stronger relationships were observed between habitat type and chemical concentrations in vegetation than between landforms and chemical concentrations in vegetation, although consistent, significant correlations for a given plant category and a single chemical were not apparent. A few trends were evident in the data, but the wide degree of variability demonstrates the complexity in relating NOC composition in soil and vegetation to habitat types or landforms.

10.1.9 References

Shacklette, H.T., and J.G. Boerngen. 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States. U.S. Geological Survey Professional Paper 1270.

10.1.10 Glossary

Anion—a negatively charged ion

Biogenic fingerprints—the pattern of peaks on a gas chromatogram from the breakdown of biological tissues.

Cation—a positively charged ion.

Frequently sampled species—plant species for which at least five samples were collected and analyzed in 2004 through 2007.

Fruit tissue-berries and other reproductive plant parts.

Infrequently sampled species— plant species for which fewer than five samples were collected and analyzed in 2004 through 2007.

Most frequently sampled species—plant species for which at least 25 samples were collected and analyzed in 2004 through 2007.

Primary sample—a representative sample used in data interpretation and evaluation; not a sample used for quality assurance or quality control purposes.

Stade—a short period (less than 10,000 years) characterized by climatic conditions associated with maximum glacial extent.

Vegetative tissue-leaves and other non-woody above ground plant parts.

TABLES

TABLE 10.1-1
Analytical Methods for Soil and Plant Tissue

Constituent	Method
Soil	
Trace Elements [a]	SW6010B/6020
Mercury	SW7471A
Diesel-range Organics	AK102
Residual-range Organics	AK103
Ammonia (as nitrogen), 2004-2006	SM4500NH3G
Ammonia (as nitrogen), 2007	E350.1
Cyanide, Total	SM4500CN
Total Organic Carbon	E415.1
Chloride, Fluoride, and Sulfate	E300.0
Sodium	SW6020
Plant Tissue	
Trace Elements [a]	SW6010B/6020/E200.8
Mercury	SW7471A
Cyanide, Total	E335.2
Chloride and Sulfate, 2004 only	E300.0
Fluoride, 2004 only	E340.2/E340.2M
Ammonia (as nitrogen), 2004 only	E350.1M

Notes:

a. Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Pb, K, Mg, Mn, Mo, Ni, Sb, Se, Sn, Tl, V, Zn (chemical abbreviations are defined in Appendix D of this environmental baseline document).

AK = Methods for Determination of Petroleum Hydrocarbons in Diesel and Residual Range Organics. Version 3-1-99.

E = Methods for Chemical Analysis of Inorganic Substances in Environmental Samples, EPA/600/R-93-100, August 1993, and Methods for the Determination of Trace Elements in Environmental Samples, EPA/600/4-91-010, June 1991.

SM = Standard Methods for the Examination of Water and Wastewater, 20th Edition.

SW = U.S. EPA Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Third edition, September 1986.

TABLE 10.1-2
Soil and Vegetation Sample Information Summary, Mine Study Area, 2004-2007

		Habitat Type									Landform																	
Sample Matrix	Number of Samples	AS	LM	LS	POND	RS	SS	UF	US	ND	Alluvium	Bedrock, glaciated	Bedrock, undifferentiated	Colluvium, undivided	Drift of Brooks Lake glaciation, Iliamna stade	Drift of Brooks Lake glaciation, Kvichak stade	Drift of Brooks Lake glaciation, Newhalen stade	Drift of pre-Brooks Lake age	Fan delta deposits	Glacial-lake deposits	Outwash associated with drift of Iliamna stade	Outwash associated with drift of Kvichak stade	Outwash/glaciation	Solifluction	Terrace gravel	Drainage channel, undifferentiated	Not determined
Surface Soil	237	18	10	3	0	14	69	47	72	4	1	3	42	19	5	59	2	17	7	47	2	8	2	8	3	0	12
Subsurface Soil [a]	16	0	0	1	0	3	2	3	7	0																	
Vegetative Tissue	707	44	23	44	40	62	168	148	178	0	4	6	87	76	40	195	0	6	24	123	0	9	24	84	0	2	20
Fruit Tissue [b]	80	7	1	4	0	3	25	21	19	0	0	0	17	9	5	23	0	0	2	11	0	0	0	9	1	0	3
Total Soil and Vegetation Samples	**1040**	**69**	**34**	**52**	**40**	**82**	**264**	**219**	**276**	**4**	**5**	**9**	**146**	**104**	**50**	**277**	**2**	**23**	**33**	**181**	**2**	**17**	**26**	**101**	**4**	**2**	**35**

Notes:

a. Subsurface soil samples were collected from a subset of the locations where surface soil was sampled.

b. Fruit tissue samples were collected from a subset of the locations where vegetative tissue was sampled.

AS = alpine rock and dwarf scrub habitat.

LM = lowland wet graminoid, moss meadow habitat.

LS = lowland low and tall alder/willow scrub habitat.

RS = riverine willow scrub habitat.

SS = subalpine dwarf, low and tall scrub habitat.

UF = upland dwarf scrub, lichen flats habitat.

US = upland dwarf, low and tall scrub habitat.

ND = not determined.

TABLE 10.1-3
Surface Soil—Trace Elements, Anions, and Cations; Data Summary and Descriptive Statistics; Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	237 / 237	100%	932 - 109000	0.67 - 100	2.14 - 500	17644	16400	12175	0.69
Antimony	211 / 237	89%	0.040 - 2.14	0.033 - 2.13	0.11 - 6.86	0.24	0.20	0.22	0.93
Arsenic	227 / 237	96%	1.03 - 73.8	0.30 - 21.3	0.50 - 68.6	10.2	8.07	10.1	0.99
Barium	237 / 237	100%	14.8 - 576	0.050 - 10.0	0.30 - 50.0	84.9	65.5	67.1	0.79
Beryllium	224 / 237	95%	0.051 - 5.89	0.033 - 2.13	0.11 - 6.86	0.41	0.34	0.45	1.09
Bismuth	105 / 237	44%	0.073 - 1.05	0.066 - 20.0	0.21 - 100	1.30	0.13	4.26	3.27
Boron	65 / 237	27%	0.54 - 9.34	0.36 - 50.0	1.16 - 117	4.82	3.45	4.62	0.96
Cadmium	146 / 237	62%	0.072 - 3.06	0.050 - 4.26	0.21 - 13.7	0.24	0.16	0.32	1.33
Calcium	237 / 237	100%	222 - 31100	10.0 - 645	31.9 - 2060	2577	1700	2993	1.16
Chromium	233 / 237	98%	1.15 - 113	0.050 - 8.24	0.30 - 27.5	17.7	14.7	14.5	0.82
Cobalt	232 / 237	98%	0.45 - 24.2	0.030 - 10.3	0.10 - 34.3	6.55	5.63	4.60	0.70
Copper	236 / 237	100%	2.65 - 197	0.19 - 12.4	0.64 - 41.2	27.4	16.3	35.2	1.28
Iron	237 / 237	100%	588 - 103000	2.00 - 452	4.00 - 1460	20694	19300	13532	0.65
Lead	236 / 237	100%	0.66 - 78.4	0.050 - 4.26	0.21 - 13.7	8.74	7.54	8.85	1.01
Magnesium	237 / 237	100%	74.1 - 9930	10.0 - 795	31.9 - 2540	3076	2930	2022	0.66
Manganese	237 / 237	100%	5.43 - 6560	0.066 - 50.0	0.21 - 300	388	279	559	1.44
Mercury	224 / 237	95%	0.014 - 0.72	0.013 - 0.30	0.042 - 2.00	0.12	0.072	0.12	0.98
Molybdenum	179 / 237	76%	0.40 - 68.1	0.30 - 21.3	1.00 - 68.6	1.82	0.92	4.71	2.59
Nickel	235 / 237	99%	0.59 - 53.8	0.066 - 4.26	0.21 - 13.7	9.16	7.42	7.10	0.77
Potassium	224 / 237	95%	100 - 5510	30.0 - 2130	106 - 6860	621	511	523	0.84
Selenium	219 / 237	92%	0.18 - 79.3	0.050 - 10.3	0.30 - 34.3	2.76	1.10	7.34	2.66
Silver	117 / 237	49%	0.030 - 1.45	0.030 - 2.13	0.10 - 6.86	0.11	0.059	0.20	1.80
Thallium	179 / 237	76%	0.0099 - 5.00	0.0066 - 5.00	0.021 - 30.0	0.24	0.088	0.61	2.53
Tin	27 / 237	11%	1.06 - 2.90	0.33 - 21.3	1.06 - 100	1.94	0.96	2.99	1.54
Vanadium	210 / 237	89%	4.67 - 227	0.10 - 64.5	0.50 - 206	46.4	47.0	31.1	0.67
Zinc	235 / 237	99%	2.77 - 228	0.33 - 21.3	1.06 - 68.6	43.9	40.0	33.2	0.76
Anions and Cations [c]									
Ammonia (as nitrogen)	214 / 235	91%	0.50 - 2200	0.50 - 120	3.00 - 382	363	179	440	1.21
Chloride	158 / 235	67%	0.40 - 28.3	0.30 - 30.0	0.98 - 100	2.74	1.50	3.73	1.36
Cyanide	199 / 237	84%	0.028 - 0.75	0.024 - 4.00	0.049 - 20.0	0.19	0.15	0.18	0.92
Fluoride	54 / 235	23%	0.33 - 39.3	0.30 - 18.4	0.98 - 59.5	0.88	0.36	2.67	3.04
Sodium	215 / 237	91%	56.2 - 1860	30.0 - 2130	106 - 6860	208	153	181	0.87
Sulfate	211 / 235	90%	0.41 - 1820	0.30 - 30.0	0.98 - 100	19.8	4.26	122	6.19

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-4
Subsurface Soil—Trace Elements, Anions, and Cations; Data Summary and Descriptive Statistics; Mine Study Area, 2004-2005

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	16 / 16	100%	4900 - 29400	6.41 - 35.5	20.7 - 115	16869	17950	7304	0.43
Antimony	15 / 16	94%	0.13 - 0.44	0.032 - 0.18	0.10 - 0.57	0.23	0.23	0.093	0.40
Arsenic	15 / 16	94%	2.39 - 26.5	0.32 - 2.17	1.03 - 6.87	11.2	10.0	7.60	0.68
Barium	16 / 16	100%	24.6 - 196	0.097 - 0.54	0.31 - 1.72	89.9	73.0	49.7	0.55
Beryllium	15 / 16	94%	0.25 - 0.74	0.032 - 0.15	0.10 - 0.47	0.42	0.43	0.16	0.39
Bismuth	6 / 16	38%	0.082 - 0.41	0.064 - 0.29	0.21 - 0.95	0.098	0.082	0.093	0.96
Boron	5 / 16	31%	4.47 - 6.59	3.20 - 14.7	10.3 - 47.3	4.49	5.00	1.93	0.43
Cadmium	10 / 16	63%	0.074 - 1.31	0.064 - 0.29	0.21 - 0.95	0.27	0.11	0.38	1.41
Calcium	16 / 16	100%	1020 - 4700	9.72 - 53.9	31.0 - 172	2188	1750	1103	0.50
Chromium	16 / 16	100%	3.20 - 40.5	0.12 - 0.57	0.41 - 1.89	17.6	15.5	9.74	0.55
Cobalt	15 / 16	94%	1.39 - 13.4	0.16 - 0.71	0.52 - 2.36	7.37	7.54	4.07	0.55
Copper	16 / 16	100%	7.15 - 92.2	0.19 - 0.85	0.62 - 2.84	24.0	16.7	21.1	0.88
Iron	16 / 16	100%	3950 - 34700	8.15 - 178	26.3 - 573	20594	22900	9536	0.46
Lead	16 / 16	100%	1.48 - 10.5	0.064 - 0.29	0.21 - 0.95	6.37	6.77	2.42	0.38
Magnesium	16 / 16	100%	160 - 6000	9.72 - 115	31.0 - 366	3372	3645	1604	0.48
Manganese	16 / 16	100%	16.3 - 788	0.064 - 0.76	0.21 - 2.44	372	429	210	0.57
Mercury	14 / 16	88%	0.029 - 0.25	0.012 - 0.058	0.041 - 0.19	0.061	0.043	0.059	0.97
Molybdenum	16 / 16	100%	0.38 - 9.51	0.32 - 1.47	1.03 - 4.73	2.61	1.61	2.66	1.02
Nickel	15 / 16	94%	1.64 - 17.1	0.064 - 0.29	0.21 - 0.95	8.56	8.25	4.65	0.54
Potassium	14 / 16	88%	203 - 1400	32.0 - 178	103 - 573	605	700	348	0.58
Selenium	12 / 16	75%	0.28 - 10.2	0.16 - 0.71	0.52 - 2.36	1.30	0.46	2.54	1.96
Silver	6 / 16	38%	0.038 - 0.17	0.032 - 0.15	0.10 - 0.47	0.050	0.040	0.041	0.82
Thallium	12 / 16	75%	0.013 - 0.21	0.0064 - 0.029	0.021 - 0.095	0.078	0.090	0.064	0.83
Tin	4 / 16	25%	0.99 - 1.71	0.32 - 1.47	1.03 - 4.73	0.94	0.61	0.59	0.62
Vanadium	16 / 16	100%	13.7 - 91.7	0.97 - 4.44	3.10 - 14.2	54.1	54.4	21.9	0.40
Zinc	15 / 16	94%	12.1 - 83.8	0.32 - 11.8	1.03 - 38.2	42.0	40.0	20.8	0.50
Anions and Cations [c]									
Ammonia (as nitrogen)	16 / 16	100%	8.41 - 1070	2.49 - 57.8	7.90 - 183	213	80.4	311	1.46
Chloride	10 / 16	63%	0.50 - 33.8	0.32 - 11.2	1.04 - 36.0	2.68	0.51	8.32	3.11
Cyanide	13 / 16	81%	0.032 - 0.22	0.026 - 0.12	0.052 - 0.25	0.095	0.080	0.070	0.73
Fluoride	7 / 16	44%	0.33 - 1.27	0.32 - 11.2	1.04 - 36.0	0.76	0.40	1.32	1.73
Sodium	15 / 16	94%	112 - 310	32.0 - 178	103 - 573	194	168	72.7	0.38
Sulfate	13 / 16	81%	0.94 - 328	0.32 - 11.2	1.04 - 36.0	28.0	4.41	80.8	2.89

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-5

Surface Soil—Diesel-range and Residual-range Organics and Total Organic Carbon, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
DRO [c]	13 / 23	57%	11.7 - 1300	2.01 - 127	20.1 - 1270	209	72.5	299	1.43
RRO [c]	23 / 23	100%	32.7 - 12300	2.01 - 127	20.1 - 1270	2028	1150	2895	1.43
TOC [c, d]	53 / 53	100%	0.3% - 65.1%	0.00026% - 2.08%	0.0061% - 4.16%	6.51%	2.20%	12.6%	1.93

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

d. For TOC, unit of measure is percentage rather than mg/kg.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

DRO = diesel-range organics.

RRO = residual-range organics.

TOC = total organic carbon.

TABLE 10.1-6

Subsurface Soil—Diesel-range and Residual-range Organics and Total Organic Carbon, Data Summary and Descriptive Statistics, Mine Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
DRO [c]	4 / 8	50%	30.8 - 141	1.98 - 7.15	19.8 - 71.5	38.0	21.2	44.3	0.56
RRO [c]	8 / 8	100%	31.4 - 1050	1.98 - 7.15	19.8 - 71.5	275	204	335	0.74
TOC [c, d]	8 / 8	100%	0.46% - 4.73%	0.029% - 0.075%	0.058% - 0.15%	2.24%	2.71%	1.55%	1.21

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

d. For TOC, unit of measure is percentage rather than mg/kg.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

DRO = diesel-range organics

RRO = residual-range organics

TOC = total organic carbon

TABLE 10.1-7
Plant Species Sample Summary, Mine Study Area, 2004-2007

PLANT SPECIES			HABITAT TYPE								LANDFORM																
Common Name	Scientific Name	Number of Samples	AS	LM	LS	POND	RS	SS	UF	US	Alluvium	Bedrock, glaciated	Bedrock, undifferentiated	Colluvium, undivided	Drift of Brooks Lake Glaciation, Iliamna Stade	Drift of Brooks Lake Glaciation, Kvichak Stade	Drift of Brooks Lake Glaciation, Newholden Stade	Drift of pre-Brooks Lake age	Fan delta deposits	Glacial-lake deposits	Outwash Associated with Drift of Iliamna Stade	Outwash Associated with Drift of Kvichak Stade	Outwash/ Glaciation	Solifluction	Terrace gravel	Drainage channel, undifferentiated	Not Determined
FORBS - VEGETATIVE TISSUES																											
Coon's Tail/Hornwort	*Ceratophyllum demersum*	3				3									2												1
Fireweed	*Chamerion angustifolium*	14	2				1	1	3	7		1				10				2							
Marsh Five-finger	*Comarum palustre*	21				10	2		3	6	2				3	5				3			5				3
Field Horsetail	*Equisetum arvense*	27	1	4			6	4	6	6			6	6		6				5				4			
Water Horsetail	*Equisetum fluviatile*	6							4	2						2				2			2				
Mare's Tail	*Hippuris vulgaris*	13				6			4	3					3	3				2			2				3
Eurasian Water Milfoil	*Myriophyllum spicatum*	1				1																					1
Yellow Pond Lily	*Nuphar lutea ssp polysepala*	3				3									3												
Coltsfoot	*Petasites frigidus*	10				3		2	2	3						2				4			2	2			
Northern Slender Pondweed	*Potamogeton friesii*	2						2																2			
Pondweed	*Potamogeton sp.*	1				1																					1
Sour Dock	*Rumex arcticus*	5						5																5			
Cloudberry	*Rubus chamaemorus*	24			6		4	4	4	6				4						14				6			
Ledge Stonecrop	*Rhodiola integrifolia ssp integrifolia*	10						10					6											4			
Fineleaf Pondweed	*Stuckenia filiformis ssp alpinus*	2				2																					2
Alaska Spirea	*Spirea stevenii*	4						2		2						2				2							
Total Forbs - Vegetative Tissues		**146**	**3**	**4**	**6**	**29**	**13**	**30**	**26**	**35**	**2**	**1**	**12**	**10**	**11**	**30**	**0**	**0**	**0**	**34**	**0**	**0**	**11**	**23**	**0**	**0**	**11**
GRASSES and SEDGES - VEGETATIVE TISSUES																											
Blue Joint Grass	*Calamagrostis sp.*	18		5	6			3		4										9				9			
Alaska Cotton (Cotton Grass)	*Eriophorum scheuchzeri*	12					4		2	6	1			3		4				2			2				
Northern Water Sedge	*Carex aquatilus*	4	2							2						2				2							
Short-stalk Sedge	*Carex microchaeta*	49	5				2	13	18	11		1	16	4	1	24						1		1			
Northwest Territory Sedge	*Carex utriculata*	1				1																					1
Sedge (species not identified)		1					1				1																
Total Grasses and Sedges - Vegetative Tissues		**85**	**7**	**5**	**6**	**1**	**7**	**16**	**20**	**23**	**2**	**1**	**16**	**7**	**1**	**30**	**0**	**0**	**0**	**13**	**0**	**1**	**2**	**10**	**0**	**0**	**1**
LICHENS - VEGETATIVE TISSUES																											
Reindeer Lichen (Caribou Moss)	*Cladina rangiferina*	45	5				1	3	14	22		1	4	1	5	31						1		1			
Lichen (species not identified)	*Peltigera sp.*	6							2	4						6											
Whiteworm Lichen	*Thamnolia sp.*	15						8	7				2	2		2		2		7							
Total Lichens - Vegetative Tissues		**66**	**5**	**0**	**0**	**0**	**1**	**11**	**23**	**26**	**0**	**1**	**6**	**3**	**5**	**39**	**0**	**2**	**0**	**7**	**0**	**1**	**0**	**1**	**0**	**0**	**0**
MOSSES - VEGETATIVE TISSUES																											
Stair Step Moss	*Hylocomium splendens*	15			4		4			7				4	3					4				4			
Club Moss	*Lycopodium annotinum*	2						2								2											
Green Terrestrial Moss	*Ptilium crista-castrensis*	24	1		3		3	7	6	4		1	3	3	1	8						1		6			
Feather Moss	*Pleurozium schreberi*	18						2	6	10			2			10		2					4				
Sphagnum Moss	*Sphagnum sp.*	34				1	6	10	4	13			2	4		4			4	18				2			
Total Mosses - Vegetative Tissues		**93**	**1**	**0**	**7**	**1**	**13**	**21**	**16**	**34**	**0**	**1**	**7**	**11**	**4**	**24**	**0**	**2**	**4**	**22**	**0**	**1**	**4**	**12**	**0**	**0**	**0**

PLANT SPECIES			HABITAT TYPE								LANDFORM																	
Common Name	Scientific Name	Number of Samples	AS	LM	LS	POND	RS	SS	UF	US	Alluvium	Bedrock, glaciated	Bedrock, undifferentiated	Colluvium, undivided	Drift of Brooks Lake Glaciation, Iliamna Stade	Drift of Brooks Lake Glaciation, Kvichak Stade	Drift of Brooks Lake Glaciation, Newholden Stade	Drift of pre-Brooks Lake age	Fan delta deposits	Glacial-lake deposits	Outwash Associated with Drift of Iliamna Stade	Outwash Associated with Drift of Kvichak Stade	Outwash/ Glaciation	Solifluction	Terrace gravel	Drainage channel, undifferentiated	Not Determined
SHRUBS - VEGETATIVE TISSUES																												
Red-fruit Bearberry	*Arctostphylos rubra*	4	4											4					4									
Dwarf Birch	*Betula nana*	43	8	4	1		4	12	4	10			6	8	4	10			4	10				1				
Dwarf Dogwood	*Cornus canadensis*	9	1		6			1	1					1	1							1		6				
Crowberry	*Empetrum nigrum*	35	9					12	10	4			16	4		4			4	4		1		2				
Marsh Labrador Tea	*Ledum decumbens*	5					1			4					4				1									
Narrow Leaf Labrador Tea	*Ledum palustre*	27			6		7	1	8	5				4		14			3					6				
Arctic Willow	*Salix arctica*	4						1	3							3								1				
Barclay's Willow	*Salix barclayi*	9				7		2					2										3				4	
Barren Ground Willow	*Salix brachycarpa*	4				2		2					2														2	
Park Willow	*Salix monticola*	2						2																		2		
Diamond-leaf Willow	*Salix planifolia*	49	4	4			10	20	8	3				14		5			4	12		4	4	4				
Netleaf Willow	*Salix reticulata*	8						6	1	1			4			2								2				
Red Elderberry	*Sambucus racemosa*	1						1																1				
Willow (species not identified)	*Salix sp.*	11					1	7	2	1			2	3		2		2									2	
Early Blueberry	*Vaccinium oxycoccos*	17		2				4	7	4										17								
Bog Blueberry	*Vaccinium uliginosum*	51	2		6		5	14	10	14		1	14	9	5	14								7				
Lingonberry (Low Bush Cranberry)	*Vaccinium vitis-idaea*	21						5	7	9				2	4	13								2				
Total Shrubs - Vegetative Tissues		**300**	**28**	**10**	**19**	**9**	**28**	**90**	**61**	**55**	**0**	**1**	**46**	**45**	**18**	**67**	**0**	**2**	**20**	**43**	**0**	**6**	**7**	**32**	**0**	**2**	**8**
TREES - VEGETATIVE TISSUES																												
Mountain Alder	*Alnus crispa*	1			1																			1				
Sitka Alder	*Alnus viridis ssp sinuata*	9		4	5															4				5				
Balsam Poplar	*Populus balsamifera*	5								5						5												
White Spruce	*Picea glauca*	2							2			1			1													
Total Trees - Vegetative Tissues		**17**	**0**	**4**	**6**	**0**	**0**	**0**	**2**	**5**	**0**	**1**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	
FRUIT TISSUES																												
Cloudberry	*Rubus chamaemorus*	2			1					1										1				1				
Crowberry	*Empetrum nigrum*	20	5					9	4	2			8	2		3			2	2				2			1	
Early Blueberry	*Vaccinium oxycoccos*	8		1				2	4	1										7							1	
Bog Blueberry	*Vaccinium uliginosum*	36	2		3		3	10	8	10			8	5	3	13				1				4	1		1	
Lingonberry (Low Bush Cranberry)	*Vaccinium vitis-idaea*	14						4	5	5			1	2	2	7								2				
Total Fruit Tissues		**80**	**7**	**1**	**4**	**0**	**3**	**25**	**21**	**19**	**0**	**0**	**17**	**9**	**5**	**23**	**0**	**0**	**2**	**11**	**0**	**0**	**0**	**9**	**1**	**0**	**3**	

Notes:

AS = alpine rock and dwarf scrub habitat.

LM = lowland wet graminoid, moss meadow habitat.

LS = lowland low and tall alder/willow scrub habitat.

RS = riverine willow scrub habitat.

SS = subalpine dwarf, low and tall scrub habitat.

UF = upland dwarf scrub, lichen flats habitat.

US = upland dwarf, low and tall scrub habitat.

TABLE 10.1-8
Vegetative Tissue, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]									
Aluminum	704 / 707	100%	1.80 - 9730	0.40 - 50.2	1.90 - 201	192	42.6	609	3.17
Antimony	436 / 707	62%	0.020 - 0.66	0.020 - 0.080	0.040 - 0.14	0.058	0.040	0.066	1.14
Arsenic	246 / 707	35%	0.050 - 167	0.050 - 0.14	0.48 - 1.36	0.97	0.040	10.1	10.4
Barium	707 / 707	100%	0.71 - 258	0.020 - 0.22	0.020 - 2.00	30.5	22.3	29.5	0.97
Beryllium	172 / 707	24%	0.0030 - 1.18	0.0030 - 0.040	0.019 - 0.055	0.012	0.010	0.047	3.89
Bismuth	165 / 707	23%	0.0030 - 0.21	0.0010 - 0.050	0.010 - 0.27	0.014	0.0050	0.021	1.50
Boron	576 / 707	81%	0.10 - 75.0	0.10 - 3.70	4.90 - 28.3	9.80	9.40	6.73	0.69
Cadmium	604 / 707	85%	0.0040 - 2.35	0.0040 - 0.040	0.019 - 0.14	0.14	0.060	0.22	1.65
Calcium	707 / 707	100%	30.5 - 48900	0.50 - 20.3	4.90 - 102	6340	4630	6214	0.98
Chromium	195 / 691	28%	0.30 - 26.1	0.10 - 2.00	1.00 - 5.70	0.69	0.50	1.31	1.89
Cobalt	705 / 707	100%	0.011 - 7.57	0.0020 - 0.010	0.019 - 0.055	0.48	0.13	0.86	1.79
Copper	707 / 707	100%	0.60 - 24.5	0.020 - 0.30	0.10 - 0.30	3.45	3.39	1.97	0.57
Iron	707 / 707	100%	11.7 - 77100	0.30 - 6.10	1.90 - 40.3	716	62.0	4021	5.62
Lead	671 / 707	95%	0.020 - 6.75	0.020 - 0.050	0.020 - 0.14	0.29	0.11	0.51	1.75
Magnesium	707 / 707	100%	18.9 - 6550	0.20 - 7.10	1.90 - 40.7	1793	1370	1263	0.70
Manganese	707 / 707	100%	3.14 - 5500	0.020 - 0.90	0.050 - 20.3	637	434	610	0.96
Mercury	592 / 707	84%	0.0020 - 0.21	0.0010 - 0.15	0.0050 - 0.33	0.025	0.017	0.024	0.97
Molybdenum	602 / 707	85%	0.010 - 12.8	0.0080 - 0.050	0.049 - 0.14	0.48	0.14	1.08	2.24
Nickel	706 / 707	100%	0.090 - 244	0.020 - 0.40	0.19 - 2.00	2.21	1.00	10.1	4.57
Potassium	706 / 707	100%	20.0 - 46400	2.40 - 566	98.0 - 1130	8525	6550	6627	0.78
Selenium	122 / 691	18%	0.10 - 2.90	0.10 - 0.50	1.00 - 2.70	0.16	0.10	0.20	1.31
Silver	272 / 707	38%	0.0020 - 0.43	0.0020 - 0.020	0.018 - 0.057	0.010	0.0050	0.024	2.34
Thallium	337 / 707	48%	0.0020 - 0.60	0.0020 - 0.040	0.019 - 0.055	0.029	0.010	0.070	2.42
Tin	95 / 691	14%	2.10 - 9.90	1.00 - 14.1	4.90 - 28.3	4.94	4.90	2.86	0.58
Vanadium	618 / 707	87%	0.020 - 26.4	0.020 - 0.11	0.19 - 0.55	0.52	0.11	1.76	3.40
Zinc	707 / 707	100%	2.20 - 298	0.090 - 0.90	0.48 - 2.20	39.2	28.7	31.6	0.81
Anions and Cations [c]									
Ammonia (as nitrogen)	63 / 72	88%	4.50 - 1770	0.80 - 65.0	1.40 - 110	182	41.4	298	1.64
Chloride	71 / 72	99%	21.0 - 16100	3.00 - 150	20.0 - 1000	1636	609	2504	1.53
Cyanide	261 / 707	37%	0.040 - 44.8	0.030 - 1.50	0.10 - 4.90	0.68	0.20	2.17	3.18
Fluoride	59 / 72	82%	0.22 - 7.80	0.030 - 2.00	2.00 - 20.0	1.25	0.65	1.40	1.12
Sodium	678 / 707	96%	5.50 - 12500	1.50 - 57.0	9.70 - 202	327	51.2	1121	3.43
Sulfate	72 / 72	100%	36.0 - 10700	9.00 - 450	20.0 - 1000	1434	794	1911	1.33

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. FOD is rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-9
Fruit Tissue, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]									
Aluminum	76 / 80	95%	1.90 - 340	0.40 - 8.10	1.90 - 10.1	27.1	8.50	59.0	2.17
Antimony	43 / 80	54%	0.020 - 0.78	0.020 - 0.041	0.050 - 0.060	0.063	0.030	0.11	1.71
Arsenic	3 / 80	4%	0.080 - 3.05	0.050 - 0.10	0.48 - 1.00	0.071	0.025	0.34	4.77
Barium	80 / 80	100%	0.25 - 43.4	0.020 - 0.10	0.050 - 0.50	9.70	7.92	6.69	0.69
Beryllium	1 / 80	1%	0.0040 - 0.0040	0.0030 - 0.040	0.019 - 0.040	0.0037	0.0023	0.0034	NA
Bismuth	11 / 80	14%	0.0030 - 0.050	0.0020 - 0.020	0.010 - 0.10	0.0073	0.0025	0.011	1.44
Boron	60 / 80	75%	3.10 - 36.3	0.10 - 3.10	4.90 - 20.3	10.3	7.00	6.99	0.68
Cadmium	50 / 80	63%	0.0070 - 1.00	0.0040 - 0.040	0.048 - 0.10	0.061	0.021	0.12	2.03
Calcium	80 / 80	100%	454 - 18700	0.60 - 3.40	4.90 - 11.4	1348	1010	2122	1.57
Chromium	20 / 78	26%	0.30 - 1.60	0.20 - 1.00	1.00 - 2.30	0.43	0.35	0.25	0.57
Cobalt	71 / 80	89%	0.0030 - 1.84	0.0030 - 0.010	0.019 - 0.040	0.043	0.017	0.20	4.69
Copper	80 / 80	100%	1.66 - 39.9	0.020 - 0.10	0.10 - 0.20	6.50	4.43	5.90	0.91
Iron	80 / 80	100%	8.80 - 248	0.30 - 2.30	2.00 - 4.60	19.9	14.7	27.0	1.36
Lead	64 / 80	80%	0.020 - 3.24	0.020 - 0.040	0.050 - 0.10	0.34	0.13	0.57	1.69
Magnesium	80 / 80	100%	267 - 3940	0.20 - 2.30	2.00 - 4.60	594	512	457	0.77
Manganese	80 / 80	100%	14.5 - 985	0.020 - 0.20	0.49 - 2.08	172	146	149	0.87
Mercury	44 / 80	55%	0.0020 - 0.030	0.0010 - 0.023	0.013 - 0.076	0.010	0.0090	0.0061	0.60
Molybdenum	62 / 80	78%	0.020 - 1.08	0.0080 - 0.040	0.049 - 0.10	0.23	0.090	0.29	1.27
Nickel	80 / 80	100%	0.14 - 16.9	0.030 - 0.10	0.19 - 0.40	2.72	0.85	3.62	1.33
Potassium	80 / 80	100%	4350 - 29000	2.50 - 208	196 - 457	6537	5920	2991	0.46
Selenium	0 / 78	0%	NA - NA	0.10 - 0.20	1.00 - 2.00	NA	NA	NA	NA
Silver	23 / 80	29%	0.0020 - 0.030	0.0020 - 0.010	0.019 - 0.023	0.0061	0.0045	0.0049	0.81
Thallium	13 / 80	16%	0.0020 - 0.018	0.0020 - 0.040	0.019 - 0.040	0.0046	0.0020	0.0045	0.98
Tin	17 / 78	22%	2.90 - 8.30	1.00 - 7.10	4.90 - 20.3	5.13	4.90	2.81	0.55
Vanadium	63 / 80	79%	0.040 - 0.25	0.020 - 0.040	0.19 - 0.40	0.071	0.070	0.050	0.70
Zinc	80 / 80	100%	3.90 - 47.8	0.10 - 0.80	0.48 - 2.30	14.0	12.8	8.20	0.59
Anions and Cations [c]									
Ammonia (as nitrogen)	12 / 12	100%	12.5 - 29.0	2.60 - 6.50	4.20 - 11.0	17.6	15.5	4.85	0.28
Chloride	10 / 12	83%	16.0 - 606	4.00 - 38.0	25.0 - 250	82.9	23.0	172	2.08
Cyanide	20 / 80	25%	0.30 - 3.20	0.20 - 1.30	0.70 - 4.30	0.56	0.30	0.57	1.02
Fluoride	8 / 12	67%	0.29 - 9.80	0.040 - 1.40	2.50 - 10.0	2.70	1.29	3.20	1.19
Sodium	80 / 80	100%	14.3 - 158	1.50 - 21.0	9.80 - 41.0	55.4	50.6	26.1	0.47
Sulfate	12 / 12	100%	231 - 8110	45.0 - 120	100 - 250	3123	2600	2739	0.88

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. FOD is rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-10
Alaska Cotton/Cotton Grass, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	11 / 12	92%	3.30 - 1360	0.40 - 5.00	2.00 - 10.0	128	14.8	388	3.02
Antimony	4 / 12	33%	0.040 - 0.24	0.030 - 0.040	0.050 - 0.050	0.051	0.020	0.069	1.35
Arsenic	7 / 12	58%	0.070 - 0.88	0.050 - 0.10	0.50 - 0.99	0.15	0.080	0.24	1.60
Barium	12 / 12	100%	5.07 - 28.7	0.020 - 0.20	0.020 - 2.00	13.3	12.3	7.88	0.59
Beryllium	2 / 12	17%	0.0060 - 0.040	0.0040 - 0.040	0.020 - 0.040	0.0086	0.0030	0.011	1.31
Bismuth	1 / 12	8%	0.017 - 0.017	0.0020 - 0.050	0.020 - 0.10	0.0090	0.0025	0.010	1.16
Boron	6 / 12	50%	3.20 - 10.2	0.40 - 3.00	5.10 - 20.1	5.15	5.05	2.85	0.55
Cadmium	8 / 12	67%	0.0070 - 0.070	0.0040 - 0.040	0.020 - 0.10	0.025	0.021	0.020	0.78
Calcium	12 / 12	100%	1420 - 3540	0.60 - 3.00	5.10 - 10.2	2351	2225	665	0.28
Chromium	4 / 12	33%	0.40 - 2.80	0.20 - 1.00	1.00 - 2.00	0.72	0.50	0.71	0.99
Cobalt	12 / 12	100%	0.013 - 0.84	0.0020 - 0.0080	0.020 - 0.039	0.18	0.060	0.25	1.38
Copper	12 / 12	100%	1.25 - 9.00	0.020 - 0.10	0.10 - 0.20	3.46	2.80	2.42	0.70
Iron	12 / 12	100%	63.0 - 2210	0.30 - 2.00	2.00 - 4.10	547	139	766	1.40
Lead	11 / 12	92%	0.040 - 0.48	0.020 - 0.040	0.020 - 0.10	0.11	0.085	0.12	1.05
Magnesium	12 / 12	100%	513 - 2240	0.20 - 2.00	2.00 - 4.10	1183	1125	466	0.39
Manganese	12 / 12	100%	108 - 792	0.040 - 0.20	0.050 - 2.03	417	384	222	0.53
Mercury	10 / 12	83%	0.0050 - 0.094	0.0020 - 0.015	0.0080 - 0.034	0.016	0.0090	0.025	1.55
Molybdenum	12 / 12	100%	0.45 - 7.18	0.0080 - 0.050	0.050 - 0.10	2.13	1.43	2.01	0.94
Nickel	12 / 12	100%	0.21 - 1.57	0.020 - 0.090	0.20 - 0.39	0.61	0.50	0.42	0.69
Potassium	12 / 12	100%	6040 - 12300	6.90 - 203	101 - 407	9510	9865	2054	0.22
Selenium	5 / 12	42%	0.10 - 0.40	0.10 - 0.40	1.00 - 2.00	0.19	0.10	0.13	0.68
Silver	2 / 12	17%	0.0030 - 0.020	0.0020 - 0.010	0.020 - 0.020	0.0054	0.0035	0.0051	0.95
Thallium	6 / 12	50%	0.0030 - 0.15	0.0020 - 0.040	0.020 - 0.040	0.020	0.0035	0.042	2.13
Tin	3 / 12	25%	2.40 - 7.10	1.50 - 7.00	9.80 - 20.1	4.74	4.25	3.01	0.64
Vanadium	10 / 12	83%	0.020 - 3.52	0.020 - 0.070	0.20 - 0.39	0.44	0.13	0.98	2.24
Zinc	12 / 12	100%	21.2 - 49.9	0.20 - 0.80	0.50 - 2.00	34.1	32.6	7.93	0.23
Anions and Cations [c]									
Cyanide	1 / 12	8%	0.20 - 0.20	0.090 - 0.71	0.40 - 2.40	0.19	0.13	0.18	0.97
Sodium	12 / 12	100%	359 - 1520	2.00 - 20.0	10.1 - 40.0	982	940	396	0.40

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-11
Balsam Poplar, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2006

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	5 / 5	100%	11.3 - 28.0	0.50 - 7.90	2.00 - 9.90	18.8	20.1	7.23	0.38
Antimony	3 / 5	60%	0.060 - 0.12	0.020 - 0.040	0.050 - 0.050	0.063	0.060	0.047	0.74
Arsenic	0 / 5	0%	NA - NA	0.050 - 0.080	0.49 - 0.50	NA	NA	NA	NA
Barium	5 / 5	100%	6.11 - 14.3	0.020 - 0.20	0.050 - 1.00	10.6	12.5	3.77	0.36
Beryllium	1 / 5	20%	0.0040 - 0.0040	0.0030 - 0.020	0.020 - 0.020	0.0039	0.0020	0.0035	0.91
Bismuth	1 / 5	20%	0.012 - 0.012	0.0030 - 0.020	0.020 - 0.050	0.0060	0.0035	0.0047	0.78
Boron	5 / 5	100%	11.5 - 19.4	0.10 - 3.00	5.00 - 20.3	14.4	13.1	3.38	0.23
Cadmium	5 / 5	100%	0.26 - 0.30	0.0040 - 0.020	0.050 - 0.050	0.28	0.28	0.017	0.061
Calcium	5 / 5	100%	7520 - 15300	0.60 - 3.00	5.00 - 10.1	10130	8580	3218	0.32
Chromium	1 / 4	25%	0.60 - 0.60	0.40 - 1.00	2.00 - 2.00	0.41	0.43	0.18	0.42
Cobalt	5 / 5	100%	0.72 - 1.11	0.0020 - 0.010	0.020 - 0.020	0.90	0.89	0.15	0.17
Copper	5 / 5	100%	3.09 - 4.88	0.020 - 0.060	0.10 - 0.10	3.69	3.50	0.74	0.20
Iron	5 / 5	100%	30.5 - 40.9	0.30 - 2.00	2.00 - 4.10	36.8	38.9	4.39	0.12
Lead	4 / 5	80%	0.040 - 0.12	0.020 - 0.020	0.050 - 0.050	0.057	0.050	0.037	0.64
Magnesium	5 / 5	100%	1940 - 2380	0.20 - 4.00	2.00 - 4.10	2150	2150	189	0.088
Manganese	5 / 5	100%	33.7 - 61.8	0.030 - 0.20	0.50 - 1.01	47.8	44.5	13.1	0.27
Mercury	4 / 5	80%	0.013 - 0.040	0.0040 - 0.0080	0.011 - 0.020	0.017	0.013	0.014	0.83
Molybdenum	2 / 5	40%	0.020 - 0.030	0.0080 - 0.020	0.050 - 0.050	0.022	0.025	0.0076	0.34
Nickel	5 / 5	100%	0.76 - 3.09	0.030 - 0.090	0.20 - 0.20	1.41	1.04	0.96	0.68
Potassium	5 / 5	100%	8330 - 13200	2.50 - 203	200 - 406	11446	12100	1856	0.16
Selenium	1 / 4	25%	0.10 - 0.10	0.10 - 0.20	1.00 - 1.00	0.10	0.10	0	0
Silver	3 / 5	60%	0.0030 - 0.0040	0.0020 - 0.010	0.020 - 0.020	0.0038	0.0040	0.00084	0.22
Thallium	0 / 5	0%	NA - NA	0.0020 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Tin	0 / 4	0%	NA - NA	2.00 - 7.00	9.90 - 20.3	NA	NA	NA	NA
Vanadium	4 / 5	80%	0.020 - 0.090	0.020 - 0.070	0.20 - 0.20	0.051	0.035	0.032	0.62
Zinc	5 / 5	100%	22.6 - 82.2	0.20 - 0.80	0.50 - 2.00	49.4	46.5	24.3	0.49

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	1 / 1	100%	195 - 195	13.0 - 13.0	21.0 - 21.0	195	195	NA	NA
Chloride	1 / 1	100%	330 - 330	40.0 - 40.0	250 - 250	330	330	NA	NA
Cyanide	1 / 5	20%	1.80 - 1.80	0.070 - 0.32	0.35 - 1.30	0.45	0.15	0.76	1.69
Fluoride	1 / 1	100%	0.80 - 0.80	0.70 - 0.70	5.00 - 5.00	0.80	0.80	NA	NA
Sodium	5 / 5	100%	28.9 - 90.9	1.50 - 7.00	10.0 - 20.3	62.1	65.1	22.2	0.36
Sulfate	1 / 1	100%	5010 - 5010	115 - 115	250 - 250	5010	5010	NA	NA

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-12
Barclay's Willow, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	9 / 9	100%	6.70 - 58.6	0.40 - 0.50	2.00 - 2.50	18.3	12.2	16.0	0.87
Antimony	5 / 9	56%	0.030 - 0.075	0.030 - 0.040	0.050 - 0.050	0.034	0.030	0.021	0.62
Arsenic	4 / 9	44%	0.050 - 0.34	0.050 - 0.080	0.49 - 0.51	0.083	0.040	0.099	1.19
Barium	9 / 9	100%	5.40 - 16.5	0.020 - 0.040	0.050 - 0.050	8.96	8.26	3.41	0.38
Beryllium	3 / 9	33%	0.0050 - 0.023	0.0040 - 0.020	0.020 - 0.020	0.0069	0.0050	0.0068	0.99
Bismuth	1 / 9	11%	0.010 - 0.010	0.0020 - 0.0050	0.010 - 0.099	0.0023	0.0010	0.0029	1.29
Boron	7 / 9	78%	5.90 - 15.2	0.40 - 3.00	9.80 - 20.1	8.52	7.80	3.82	0.45
Cadmium	9 / 9	100%	0.044 - 0.99	0.0040 - 0.020	0.049 - 0.051	0.22	0.11	0.30	1.37
Calcium	9 / 9	100%	5030 - 15900	0.60 - 3.00	9.80 - 10.1	11198	11200	3714	0.33
Chromium	2 / 9	22%	0.40 - 1.30	0.40 - 1.00	2.00 - 2.00	0.44	0.35	0.34	0.77
Cobalt	9 / 9	100%	0.51 - 2.53	0.0020 - 0.0080	0.020 - 0.020	1.23	1.06	0.61	0.50
Copper	9 / 9	100%	2.12 - 4.27	0.020 - 0.10	0.10 - 0.10	3.00	3.01	0.74	0.25
Iron	9 / 9	100%	37.8 - 116	0.40 - 2.00	3.90 - 4.00	68.1	63.8	27.1	0.40
Lead	8 / 9	89%	0.060 - 0.15	0.020 - 0.020	0.050 - 0.050	0.088	0.080	0.043	0.49
Magnesium	9 / 9	100%	1290 - 4350	0.20 - 2.00	3.90 - 4.00	3278	3490	1110	0.34
Manganese	9 / 9	100%	102 - 1610	0.070 - 0.20	0.99 - 1.97	387	207	493	1.28
Mercury	7 / 9	78%	0.017 - 0.037	0.0040 - 0.011	0.010 - 0.024	0.021	0.025	0.011	0.51
Molybdenum	9 / 9	100%	0.040 - 0.56	0.0080 - 0.020	0.050 - 0.050	0.29	0.26	0.17	0.57
Nickel	9 / 9	100%	0.43 - 11.9	0.030 - 0.090	0.20 - 0.20	3.00	1.76	3.68	1.23
Potassium	9 / 9	100%	3570 - 11900	7.00 - 201	394 - 403	9573	10600	2728	0.28
Selenium	1 / 9	11%	0.10 - 0.10	0.10 - 0.20	1.00 - 1.00	0.094	0.10	0.017	0.18
Silver	1 / 9	11%	0.0040 - 0.0040	0.0020 - 0.0070	0.020 - 0.020	0.0063	0.0040	0.0035	0.56
Thallium	0 / 9	0%	NA - NA	0.0020 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Tin	0 / 9	0%	NA - NA	2.00 - 7.00	9.80 - 20.1	NA	NA	NA	NA
Vanadium	6 / 9	67%	0.030 - 0.13	0.020 - 0.070	0.20 - 0.20	0.078	0.090	0.043	0.55
Zinc	9 / 9	100%	29.2 - 76.2	0.090 - 0.70	0.50 - 2.00	51.0	46.9	18.4	0.36
Anions and Cations [c]									
Cyanide	5 / 9	56%	0.040 - 3.70	0.040 - 1.30	0.10 - 4.30	0.87	0.36	1.24	1.44
Sodium	8 / 9	89%	18.0 - 114	5.00 - 20.0	19.8 - 20.2	58.9	63.8	37.4	0.63

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-13
Blue Joint Grass, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	16 / 18	89%	1.90 - 10.7	0.40 - 0.90	2.00 - 2.00	4.21	4.00	2.54	0.60
Antimony	12 / 18	67%	0.030 - 0.15	0.030 - 0.041	0.050 - 0.051	0.049	0.040	0.040	0.80
Arsenic	3 / 18	17%	0.050 - 0.12	0.050 - 0.10	0.49 - 0.51	0.040	0.028	0.025	0.62
Barium	18 / 18	100%	3.57 - 30.2	0.020 - 0.20	0.050 - 1.00	14.4	14.3	6.34	0.44
Beryllium	0 / 18	0%	NA - NA	0.0040 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Bismuth	1 / 18	6%	0.012 - 0.012	0.0030 - 0.050	0.010 - 0.10	0.0089	0.0038	0.0094	1.05
Boron	13 / 18	72%	1.90 - 8.00	0.40 - 3.00	4.90 - 20.3	4.56	5.03	1.89	0.42
Cadmium	9 / 18	50%	0.0060 - 0.042	0.0040 - 0.020	0.020 - 0.051	0.015	0.012	0.010	0.69
Calcium	18 / 18	100%	662 - 5740	0.60 - 3.00	4.90 - 10.10	2578	2210	1360	0.53
Chromium	5 / 18	28%	0.50 - 1.60	0.10 - 1.00	1.00 - 2.00	0.58	0.50	0.31	0.53
Cobalt	18 / 18	100%	0.013 - 0.089	0.0020 - 0.0080	0.020 - 0.020	0.038	0.029	0.022	0.59
Copper	18 / 18	100%	1.06 - 6.19	0.020 - 0.10	0.10 - 0.10	2.39	1.98	1.18	0.49
Iron	18 / 18	100%	28.8 - 83.0	0.30 - 2.00	2.00 - 4.10	51.0	47.2	17.6	0.34
Lead	17 / 18	94%	0.020 - 0.31	0.020 - 0.020	0.050 - 0.050	0.094	0.070	0.070	0.75
Magnesium	18 / 18	100%	537 - 2040	0.20 - 4.00	2.00 - 4.10	1088	1029	355	0.33
Manganese	18 / 18	100%	272 - 1370	0.040 - 0.20	0.98 - 2.02	575	536	274	0.48
Mercury	11 / 18	61%	0.0070 - 0.034	0.0020 - 0.0080	0.0090 - 0.028	0.011	0.011	0.0091	0.82
Molybdenum	17 / 18	94%	0.030 - 1.08	0.0080 - 0.050	0.049 - 0.050	0.23	0.12	0.28	1.22
Nickel	18 / 18	100%	0.28 - 5.20	0.020 - 0.10	0.20 - 0.20	1.19	0.73	1.25	1.05
Potassium	18 / 18	100%	5200 - 20700	6.90 - 203	99.0 - 406	10510	9180	4259	0.41
Selenium	0 / 18	0%	NA - NA	0.10 - 0.40	1.00 - 1.01	NA	NA	NA	NA
Silver	2 / 18	11%	0.0030 - 0.014	0.0020 - 0.010	0.020 - 0.020	0.0049	0.0035	0.0031	0.65
Thallium	6 / 18	33%	0.0020 - 0.058	0.0020 - 0.020	0.020 - 0.020	0.010	0.0070	0.014	1.36
Tin	6 / 18	33%	3.20 - 5.80	1.50 - 7.00	9.80 - 20.3	5.00	4.63	2.59	0.52
Vanadium	15 / 18	83%	0.030 - 0.23	0.020 - 0.070	0.20 - 0.20	0.073	0.055	0.052	0.71
Zinc	18 / 18	100%	14.2 - 49.3	0.20 - 0.80	0.50 - 2.00	28.9	29.2	9.44	0.33
Anions and Cations [c]									
Cyanide	8 / 18	44%	0.080 - 2.20	0.070 - 0.40	0.32 - 1.30	0.31	0.16	0.50	1.63
Sodium	18 / 18	100%	14.7 - 116	2.00 - 20.0	9.90 - 40.0	46.5	33.9	28.3	0.61

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-14
Bog Blueberry, Fruit Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	36 / 36	100%	5.60 - 340	0.40 - 8.10	1.90 - 10.1	39.7	9.85	81.5	2.05
Antimony	24 / 36	67%	0.020 - 0.78	0.020 - 0.040	0.050 - 0.060	0.085	0.035	0.14	1.71
Arsenic	1 / 36	3%	0.11 - 0.11	0.050 - 0.090	0.48 - 0.57	0.032	0.025	0.015	0.47
Barium	36 / 36	100%	4.96 - 43.4	0.020 - 0.10	0.050 - 0.50	14.3	14.0	7.16	0.50
Beryllium	1 / 36	3%	0.0040 - 0.0040	0.0030 - 0.020	0.019 - 0.023	0.0033	0.0020	0.0028	0.83
Bismuth	4 / 36	11%	0.0040 - 0.010	0.0020 - 0.020	0.019 - 0.10	0.0088	0.0038	0.012	1.37
Boron	30 / 36	83%	4.90 - 36.3	0.10 - 3.00	4.90 - 20.2	11.6	7.40	8.02	0.69
Cadmium	35 / 36	97%	0.016 - 1.00	0.0040 - 0.020	0.048 - 0.057	0.11	0.068	0.17	1.44
Calcium	36 / 36	100%	654 - 6830	0.60 - 3.40	4.90 - 11.4	1518	1330	1047	0.69
Chromium	10 / 34	29%	0.30 - 1.10	0.20 - 1.00	1.00 - 2.30	0.41	0.35	0.21	0.52
Cobalt	33 / 36	92%	0.0040 - 1.84	0.0030 - 0.010	0.019 - 0.023	0.076	0.020	0.30	3.98
Copper	36 / 36	100%	1.66 - 39.9	0.020 - 0.10	0.10 - 0.11	6.46	4.07	6.71	1.04
Iron	36 / 36	100%	10.3 - 54.5	0.30 - 2.30	2.00 - 4.60	17.8	15.6	8.45	0.47
Lead	31 / 36	86%	0.030 - 1.65	0.020 - 0.020	0.050 - 0.060	0.27	0.16	0.34	1.27
Magnesium	36 / 36	100%	411 - 1360	0.20 - 2.30	2.00 - 4.60	613	589	206	0.34
Manganese	36 / 36	100%	37.4 - 985	0.020 - 0.20	0.49 - 2.08	167	143	156	0.94
Mercury	24 / 36	67%	0.0020 - 0.030	0.0020 - 0.023	0.018 - 0.076	0.011	0.0090	0.0066	0.62
Molybdenum	33 / 36	92%	0.030 - 1.08	0.0080 - 0.030	0.049 - 0.060	0.25	0.11	0.29	1.12
Nickel	36 / 36	100%	0.16 - 11.1	0.030 - 0.10	0.19 - 0.23	2.98	0.99	3.21	1.08
Potassium	36 / 36	100%	4350 - 12000	2.50 - 208	196 - 457	6032	5715	1473	0.24
Selenium	0 / 34	0%	NA - NA	0.10 - 0.20	1.00 - 1.10	NA	NA	NA	NA
Silver	12 / 36	33%	0.0050 - 0.030	0.0020 - 0.010	0.019 - 0.023	0.0074	0.0050	0.0064	0.87
Thallium	7 / 36	19%	0.0020 - 0.018	0.0020 - 0.020	0.019 - 0.023	0.0047	0.0020	0.0045	0.95
Tin	6 / 34	18%	3.10 - 5.60	1.00 - 6.90	4.90 - 20.2	4.58	3.45	2.76	0.60
Vanadium	28 / 36	78%	0.040 - 0.24	0.020 - 0.040	0.19 - 0.23	0.072	0.065	0.055	0.76
Zinc	36 / 36	100%	8.06 - 47.8	0.10 - 0.80	0.48 - 2.30	18.5	16.2	8.18	0.44

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	9 / 9	100%	12.5 - 23.0	2.60 - 6.50	4.20 - 11.0	16.9	15.7	3.64	0.21
Chloride	8 / 9	89%	16.0 - 195	4.00 - 30.0	25.0 - 200	40.2	23.0	58.4	1.45
Cyanide	9 / 36	25%	0.30 - 2.70	0.20 - 0.71	0.70 - 2.40	0.52	0.33	0.51	0.99
Fluoride	6 / 9	67%	0.29 - 9.80	0.040 - 1.40	2.50 - 10.0	2.50	1.18	3.27	1.31
Sodium	36 / 36	100%	16.1 - 111	1.50 - 21.0	9.80 - 41.0	43.6	43.1	20.5	0.47
Sulfate	9 / 9	100%	231 - 8110	45.0 - 120	100 - 250	3522	2960	3042	0.86

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-15
Bog Blueberry, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	51 / 51	100%	29.4 - 132	0.40 - 8.00	2.00 - 10.1	66.4	67.1	21.8	0.33
Antimony	34 / 51	67%	0.020 - 0.66	0.020 - 0.040	0.050 - 0.050	0.066	0.040	0.095	1.44
Arsenic	0 / 51	0%	NA - NA	0.050 - 0.080	0.49 - 0.51	NA	NA	NA	NA
Barium	51 / 51	100%	20.5 - 101	0.020 - 0.20	0.050 - 1.99	44.0	39.7	18.5	0.42
Beryllium	0 / 51	0%	NA - NA	0.0030 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Bismuth	10 / 51	20%	0.0030 - 0.023	0.0020 - 0.050	0.010 - 0.10	0.010	0.0050	0.011	1.04
Boron	47 / 51	92%	6.80 - 29.7	0.10 - 3.00	4.90 - 20.2	13.6	13.0	5.38	0.40
Cadmium	51 / 51	100%	0.069 - 0.47	0.0040 - 0.020	0.020 - 0.051	0.19	0.17	0.10	0.52
Calcium	51 / 51	100%	2530 - 8660	0.60 - 3.00	4.90 - 10.1	5001	4700	1374	0.27
Chromium	6 / 48	13%	0.40 - 1.60	0.10 - 1.00	1.00 - 2.00	0.42	0.35	0.24	0.56
Cobalt	51 / 51	100%	0.011 - 0.24	0.0020 - 0.010	0.020 - 0.020	0.063	0.052	0.043	0.68
Copper	51 / 51	100%	2.79 - 6.01	0.020 - 0.10	0.10 - 0.10	3.94	3.80	0.72	0.18
Iron	51 / 51	100%	22.4 - 90.5	0.30 - 2.00	2.00 - 4.10	34.0	30.2	12.8	0.38
Lead	45 / 51	88%	0.030 - 0.35	0.020 - 0.020	0.050 - 0.050	0.085	0.050	0.074	0.87
Magnesium	51 / 51	100%	679 - 2860	0.20 - 4.00	2.00 - 4.10	1695	1700	365	0.22
Manganese	51 / 51	100%	181 - 2450	0.020 - 0.89	0.050 - 9.90	691	622	393	0.57
Mercury	44 / 51	86%	0.0040 - 0.048	0.0020 - 0.012	0.0070 - 0.029	0.017	0.014	0.011	0.66
Molybdenum	41 / 51	80%	0.030 - 0.92	0.0080 - 0.050	0.049 - 0.050	0.19	0.080	0.22	1.18
Nickel	51 / 51	100%	0.24 - 12.8	0.020 - 0.10	0.20 - 0.20	1.13	0.56	1.84	1.63
Potassium	51 / 51	100%	3530 - 9040	2.50 - 202	98.0 - 405	6175	5950	1450	0.23
Selenium	0 / 48	0%	NA - NA	0.10 - 0.40	1.00 - 1.01	NA	NA	NA	NA
Silver	10 / 51	20%	0.0020 - 0.020	0.0020 - 0.010	0.020 - 0.020	0.0045	0.0035	0.0037	0.81
Thallium	13 / 51	25%	0.0020 - 0.014	0.0020 - 0.020	0.020 - 0.020	0.0053	0.0030	0.0043	0.83
Tin	7 / 48	15%	2.20 - 7.00	1.00 - 7.00	4.90 - 20.2	4.61	3.50	2.70	0.58
Vanadium	40 / 51	78%	0.020 - 0.28	0.020 - 0.070	0.20 - 0.20	0.080	0.070	0.059	0.74
Zinc	51 / 51	100%	16.3 - 41.2	0.090 - 0.80	0.49 - 2.00	26.4	24.9	6.48	0.25

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	9 / 9	100%	60.0 - 210	2.60 - 31.0	4.20 - 55.0	143	157	56.4	0.40
Chloride	9 / 9	100%	23.0 - 372	5.00 - 50.0	34.0 - 340	277	302	107	0.39
Cyanide	13 / 51	25%	0.040 - 2.40	0.040 - 0.71	0.10 - 2.40	0.32	0.15	0.45	1.40
Fluoride	7 / 9	78%	0.31 - 2.50	0.030 - 2.00	2.00 - 20.0	0.93	0.40	0.92	1.00
Sodium	47 / 51	92%	7.10 - 57.1	1.50 - 20.0	9.80 - 40.0	23.8	23.3	11.9	0.50
Sulfate	9 / 9	100%	272 - 1710	12.0 - 90.0	34.0 - 250	624	395	475	0.76

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-16
Cloudberry, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	24 / 24	100%	4.70 - 60.1	0.40 - 8.00	2.00 - 10.1	26.3	27.4	12.7	0.48
Antimony	14 / 24	58%	0.030 - 0.21	0.030 - 0.040	0.050 - 0.050	0.051	0.040	0.046	0.90
Arsenic	0 / 24	0%	NA - NA	0.050 - 0.10	0.49 - 1.00	NA	NA	NA	NA
Barium	24 / 24	100%	0.71 - 6.96	0.020 - 0.20	0.050 - 2.00	3.26	2.92	1.57	0.48
Beryllium	0 / 24	0%	NA - NA	0.0040 - 0.040	0.020 - 0.040	NA	NA	NA	NA
Bismuth	5 / 24	21%	0.0040 - 0.090	0.0020 - 0.050	0.010 - 0.10	0.015	0.0050	0.020	1.38
Boron	23 / 24	96%	9.30 - 20.5	0.40 - 3.00	5.00 - 20.2	14.3	13.8	3.82	0.27
Cadmium	21 / 24	88%	0.017 - 0.65	0.0040 - 0.040	0.020 - 0.10	0.33	0.40	0.21	0.64
Calcium	24 / 24	100%	2560 - 9290	0.60 - 20.2	5.00 - 101	5383	5205	1676	0.31
Chromium	5 / 24	21%	0.50 - 0.90	0.10 - 1.00	1.00 - 2.00	0.47	0.50	0.22	0.46
Cobalt	23 / 24	96%	0.012 - 0.16	0.0020 - 0.0080	0.020 - 0.040	0.062	0.056	0.036	0.57
Copper	24 / 24	100%	1.01 - 8.08	0.020 - 0.10	0.10 - 0.20	3.49	3.58	1.55	0.45
Iron	24 / 24	100%	27.5 - 168	0.30 - 2.00	2.00 - 4.10	87.1	82.8	47.1	0.54
Lead	23 / 24	96%	0.030 - 0.48	0.020 - 0.040	0.050 - 0.10	0.093	0.070	0.096	1.03
Magnesium	24 / 24	100%	4060 - 6550	0.20 - 7.10	2.00 - 40.4	4824	4695	671	0.14
Manganese	24 / 24	100%	1090 - 2650	0.040 - 0.71	0.99 - 20.2	1906	1830	523	0.27
Mercury	22 / 24	92%	0.014 - 0.057	0.0020 - 0.017	0.010 - 0.037	0.026	0.025	0.013	0.50
Molybdenum	24 / 24	100%	0.066 - 10.4	0.0080 - 0.050	0.050 - 0.10	1.51	0.34	2.58	1.71
Nickel	24 / 24	100%	0.30 - 1.62	0.020 - 0.10	0.20 - 0.40	0.68	0.55	0.36	0.52
Potassium	24 / 24	100%	4890 - 15200	6.90 - 204	99.0 - 407	11135	11550	2474	0.22
Selenium	0 / 24	0%	NA - NA	0.10 - 0.40	1.00 - 2.00	NA	NA	NA	NA
Silver	4 / 24	17%	0.0060 - 0.023	0.0020 - 0.010	0.020 - 0.020	0.0060	0.0040	0.0044	0.73
Thallium	5 / 24	21%	0.0020 - 0.015	0.0020 - 0.040	0.020 - 0.040	0.0051	0.0020	0.0052	1.02
Tin	4 / 24	17%	2.10 - 5.50	1.50 - 7.00	9.80 - 20.2	4.04	3.40	2.65	0.65
Vanadium	22 / 24	92%	0.030 - 1.26	0.020 - 0.070	0.20 - 0.40	0.23	0.085	0.32	1.39
Zinc	24 / 24	100%	31.6 - 152	0.20 - 0.80	0.49 - 2.00	64.5	52.8	34.1	0.53
Anions and Cations [c]									
Cyanide	8 / 24	33%	0.14 - 1.24	0.070 - 0.71	0.33 - 2.40	0.32	0.16	0.34	1.05
Sodium	24 / 24	100%	31.7 - 1460	2.00 - 20.0	9.9 - 40.0	307	153	358	1.17

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE10.1-17

Coltsfoot, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	10 / 10	100%	5.80 - 1010	0.40 - 10.0	2.00 - 50.0	212	109	301	1.42
Antimony	7 / 10	70%	0.030 - 0.20	0.030 - 0.080	0.050 - 0.14	0.068	0.040	0.060	0.88
Arsenic	8 / 10	80%	0.19 - 1.32	0.050 - 0.14	0.49 - 1.36	0.64	0.67	0.50	0.77
Barium	10 / 10	100%	9.04 - 47.4	0.020 - 0.20	0.020 - 0.99	24.3	22.4	11.8	0.48
Beryllium	3 / 10	30%	0.0060 - 0.035	0.0040 - 0.020	0.020 - 0.055	0.010	0.0090	0.0097	0.96
Bismuth	1 / 10	10%	0.018 - 0.018	0.0030 - 0.020	0.020 - 0.27	0.0074	0.0025	0.0082	1.11
Boron	8 / 10	80%	7.50 - 21.3	0.40 - 3.10	9.80 - 28.3	10.4	9.15	5.05	0.48
Cadmium	7 / 10	70%	0.030 - 0.20	0.0040 - 0.020	0.020 - 0.14	0.077	0.050	0.063	0.83
Calcium	10 / 10	100%	8240 - 18900	0.60 - 5.70	9.80 - 28.3	11482	9810	3622	0.32
Chromium	2 / 10	20%	1.70 - 3.40	0.40 - 2.00	2.00 - 5.70	0.91	0.50	0.98	1.08
Cobalt	10 / 10	100%	0.21 - 3.34	0.0020 - 0.0080	0.020 - 0.055	1.06	0.78	0.92	0.86
Copper	10 / 10	100%	0.73 - 15.5	0.020 - 0.30	0.10 - 0.30	5.61	4.72	3.92	0.70
Iron	10 / 10	100%	35.9 - 3000	0.40 - 2.00	3.90 - 11.3	1140	915	1027	0.90
Lead	10 / 10	100%	0.040 - 1.27	0.020 - 0.050	0.020 - 0.14	0.31	0.13	0.40	1.29
Magnesium	10 / 10	100%	1740 - 4020	0.20 - 2.00	3.90 - 11.3	3098	3215	631	0.20
Manganese	10 / 10	100%	129 - 1340	0.070 - 0.20	0.99 - 5.66	580	492	381	0.66
Mercury	4 / 10	40%	0.0070 - 0.042	0.0040 - 0.054	0.020 - 0.18	0.013	0.0083	0.012	0.98
Molybdenum	10 / 10	100%	0.060 - 12.8	0.010 - 0.050	0.050 - 0.14	2.52	0.95	4.03	1.60
Nickel	10 / 10	100%	0.65 - 3.05	0.030 - 0.14	0.20 - 0.55	1.47	1.36	0.70	0.48
Potassium	10 / 10	100%	8560 - 45900	7.00 - 566	392 - 1130	22766	20650	10959	0.48
Selenium	7 / 10	70%	0.10 - 0.70	0.10 - 0.50	1.00 - 2.70	0.28	0.20	0.21	0.76
Silver	5 / 10	50%	0.0020 - 0.33	0.0020 - 0.020	0.020 - 0.057	0.040	0.0078	0.10	2.53
Thallium	8 / 10	80%	0.022 - 0.17	0.0020 - 0.020	0.020 - 0.055	0.047	0.036	0.049	1.03
Tin	1 / 10	10%	7.10 - 7.10	2.00 - 14.1	9.80 - 28.3	6.81	7.08	3.27	0.48
Vanadium	10 / 10	100%	0.090 - 3.15	0.020 - 0.11	0.20 - 0.55	0.99	0.65	0.96	0.98
Zinc	10 / 10	100%	13.1 - 30.2	0.20 - 0.80	0.50 - 2.00	22.6	23.9	5.22	0.23
Anions and Cations [c]									
Cyanide	4 / 10	40%	0.39 - 6.00	0.090 - 1.30	0.50 - 4.30	1.11	0.43	1.78	1.60
Sodium	10 / 10	100%	73.9 - 9220	5.00 - 57.0	19.8 - 57.0	3348	2710	2925	0.87

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-18

Crowberry, Fruit Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	20 / 20	100%	2.90 - 110	0.40 - 4.00	2.00 - 5.00	10.0	4.50	23.6	2.36
Antimony	8 / 20	40%	0.030 - 0.35	0.020 - 0.041	0.050 - 0.051	0.049	0.018	0.077	1.57
Arsenic	0 / 20	0%	NA - NA	0.050 - 0.10	0.49 - 1.00	NA	NA	NA	NA
Barium	20 / 20	100%	2.74 - 7.71	0.030 - 0.10	0.050 - 0.50	4.56	4.08	1.49	0.33
Beryllium	0 / 20	0%	NA - NA	0.0030 - 0.040	0.020 - 0.040	NA	NA	NA	NA
Bismuth	5 / 20	25%	0.0030 - 0.050	0.0020 - 0.020	0.020 - 0.10	0.0081	0.0025	0.012	1.53
Boron	12 / 20	60%	3.10 - 15.9	0.10 - 3.00	5.00 - 20.3	6.98	5.08	4.02	0.58
Cadmium	4 / 20	20%	0.0090 - 0.031	0.0060 - 0.040	0.049 - 0.10	0.0086	0.0035	0.0080	0.93
Calcium	20 / 20	100%	454 - 929	1.50 - 3.10	5.00 - 10.2	606	560	130	0.21
Chromium	2 / 20	10%	0.40 - 0.40	0.30 - 1.00	1.00 - 2.10	0.34	0.35	0.11	0.32
Cobalt	15 / 20	75%	0.0030 - 0.030	0.0030 - 0.010	0.020 - 0.040	0.0091	0.0070	0.0064	0.71
Copper	20 / 20	100%	2.92 - 18.1	0.020 - 0.10	0.10 - 0.20	5.61	4.50	3.39	0.60
Iron	20 / 20	100%	8.80 - 27.5	0.30 - 2.10	2.00 - 4.10	13.4	11.5	4.94	0.37
Lead	16 / 20	80%	0.020 - 1.56	0.020 - 0.040	0.050 - 0.10	0.22	0.055	0.39	1.72
Magnesium	20 / 20	100%	267 - 516	0.20 - 2.10	2.00 - 4.10	362	349	57.8	0.16
Manganese	20 / 20	100%	14.5 - 144	0.030 - 0.20	0.50 - 2.03	45.5	38.1	30.0	0.66
Mercury	10 / 20	50%	0.0050 - 0.030	0.0020 - 0.021	0.018 - 0.070	0.010	0.0085	0.0059	0.57
Molybdenum	14 / 20	70%	0.020 - 0.41	0.0080 - 0.040	0.050 - 0.10	0.094	0.065	0.099	1.05
Nickel	20 / 20	100%	0.15 - 16.9	0.030 - 0.090	0.20 - 0.40	2.35	0.70	4.49	1.91
Potassium	20 / 20	100%	4400 - 8980	2.50 - 203	200 - 410	6551	6385	1227	0.19
Selenium	0 / 20	0%	NA - NA	0.10 - 0.20	1.00 - 2.00	NA	NA	NA	NA
Silver	3 / 20	15%	0.0030 - 0.0060	0.0020 - 0.010	0.020 - 0.021	0.0050	0.0038	0.0028	0.56
Thallium	1 / 20	5%	0.0020 - 0.0020	0.0020 - 0.040	0.020 - 0.040	0.0037	0.0020	0.0050	1.34
Tin	4 / 20	20%	4.00 - 7.90	1.00 - 5.10	5.00 - 20.3	5.07	4.93	2.67	0.53
Vanadium	17 / 20	85%	0.040 - 0.25	0.020 - 0.040	0.20 - 0.40	0.075	0.080	0.051	0.67
Zinc	20 / 20	100%	3.90 - 24.2	0.20 - 0.70	0.49 - 2.10	6.78	5.52	4.42	0.65

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	1 / 1	100%	29.0 - 29.0	6.50 - 6.50	11.0 - 11.0	29.0	29.0	NA	NA
Chloride	1 / 1	100%	606 - 606	38.0 - 38.0	250 - 250	606	606	NA	NA
Cyanide	5 / 20	25%	0.40 - 1.76	0.30 - 1.20	0.70 - 2.70	0.55	0.33	0.47	0.85
Fluoride	1 / 1	100%	1.80 - 1.80	1.40 - 1.40	10.0 - 10.0	1.80	1.80	NA	NA
Sodium	20 / 20	100%	49.4 - 116	1.50 - 20.0	10.0 - 40.0	77.4	74.3	19.0	0.24
Sulfate	1 / 1	100%	582 - 582	113 - 113	250 - 250	582	582	NA	NA

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-19
Crowberry, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	35 / 35	100%	12.6 - 92.3	0.40 - 7.90	2.00 - 10.1	44.6	42.6	21.0	0.47
Antimony	19 / 35	54%	0.030 - 0.13	0.020 - 0.040	0.050 - 0.051	0.044	0.030	0.035	0.80
Arsenic	0 / 35	0%	NA - NA	0.050 - 0.10	0.49 - 0.51	NA	NA	NA	NA
Barium	35 / 35	100%	15.7 - 44.0	0.020 - 0.20	0.050 - 2.00	30.3	30.6	6.98	0.23
Beryllium	1 / 35	3%	0.0040 - 0.0040	0.0030 - 0.020	0.020 - 0.020	0.0057	0.0030	0.0038	0.67
Bismuth	6 / 35	17%	0.0060 - 0.20	0.0020 - 0.050	0.010 - 0.10	0.016	0.0050	0.034	2.17
Boron	33 / 35	94%	8.00 - 27.1	0.10 - 3.00	4.90 - 20.2	13.4	12.6	4.01	0.30
Cadmium	17 / 35	49%	0.0040 - 0.077	0.0040 - 0.020	0.020 - 0.051	0.010	0.0090	0.013	1.26
Calcium	35 / 35	100%	3500 - 6020	0.60 - 3.00	4.90 - 10.1	4869	4830	556	0.11
Chromium	5 / 35	14%	0.40 - 0.90	0.10 - 1.00	1.00 - 2.00	0.44	0.50	0.13	0.29
Cobalt	35 / 35	100%	0.016 - 0.18	0.0020 - 0.010	0.020 - 0.020	0.062	0.051	0.034	0.55
Copper	35 / 35	100%	2.29 - 6.59	0.020 - 0.10	0.10 - 0.10	4.09	3.95	1.09	0.27
Iron	35 / 35	100%	20.0 - 129	0.30 - 2.00	2.00 - 4.10	42.2	33.9	24.7	0.58
Lead	35 / 35	100%	0.060 - 0.44	0.020 - 0.020	0.050 - 0.050	0.14	0.13	0.071	0.50
Magnesium	35 / 35	100%	870 - 1530	0.20 - 2.00	2.00 - 4.10	1181	1170	157	0.13
Manganese	35 / 35	100%	273 - 1230	0.030 - 0.20	0.050 - 2.02	512	464	208	0.41
Mercury	31 / 35	89%	0.0080 - 0.040	0.0010 - 0.010	0.0070 - 0.020	0.014	0.013	0.0068	0.49
Molybdenum	32 / 35	91%	0.020 - 0.51	0.0080 - 0.050	0.050 - 0.050	0.18	0.15	0.15	0.81
Nickel	35 / 35	100%	0.40 - 2.84	0.020 - 0.10	0.20 - 0.20	1.14	1.03	0.59	0.51
Potassium	35 / 35	100%	2490 - 6840	2.50 - 202	99.0 - 405	4197	4200	928	0.22
Selenium	0 / 35	0%	NA - NA	0.10 - 0.40	1.00 - 1.02	NA	NA	NA	NA
Silver	10 / 35	29%	0.0020 - 0.020	0.0020 - 0.010	0.020 - 0.020	0.0062	0.0040	0.0045	0.72
Thallium	13 / 35	37%	0.0020 - 0.058	0.0020 - 0.020	0.020 - 0.020	0.0066	0.0040	0.0098	1.48
Tin	6 / 35	17%	3.40 - 8.40	1.00 - 7.00	5.00 - 20.2	5.27	4.95	2.83	0.54
Vanadium	32 / 35	91%	0.030 - 0.29	0.020 - 0.070	0.20 - 0.20	0.11	0.10	0.061	0.55
Zinc	35 / 35	100%	8.56 - 21.1	0.090 - 0.80	0.49 - 2.00	12.8	11.7	3.32	0.26

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	0 / 1	0%	NA - NA	6.10 - 6.10	11.0 - 11.0	NA	NA	NA	NA
Chloride	1 / 1	100%	144 - 144	15.0 - 15.0	100 - 100	144	144	NA	NA
Cyanide	10 / 35	29%	0.090 - 4.50	0.040 - 0.71	0.10 - 2.40	0.47	0.10	0.93	1.97
Fluoride	1 / 1	100%	0.38 - 0.38	0.030 - 0.030	2.00 - 2.00	0.38	0.38	NA	NA
Sodium	33 / 35	94%	17.3 - 63.8	1.50 - 20.0	9.90 - 40.0	30.4	28.8	12.7	0.42
Sulfate	1 / 1	100%	757 - 757	45.0 - 45.0	100 - 100	757	757	NA	NA

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-20
Diamond-leaf Willow, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	49 / 49	100%	3.30 - 135	0.40 - 8.10	2.00 - 10.1	22.3	11.6	27.4	1.23
Antimony	16 / 49	33%	0.030 - 0.14	0.030 - 0.041	0.050 - 0.051	0.033	0.020	0.030	0.90
Arsenic	10 / 49	20%	0.060 - 0.83	0.050 - 0.10	0.49 - 1.01	0.060	0.040	0.12	1.92
Barium	49 / 49	100%	1.07 - 18.6	0.020 - 0.20	0.050 - 2.00	6.81	5.84	4.22	0.62
Beryllium	14 / 49	29%	0.0060 - 0.030	0.0040 - 0.040	0.020 - 0.040	0.0089	0.010	0.0058	0.65
Bismuth	6 / 49	12%	0.0070 - 0.10	0.0020 - 0.050	0.010 - 0.10	0.012	0.0025	0.017	1.36
Boron	46 / 49	94%	4.70 - 20.1	0.40 - 3.00	4.90 - 20.3	9.74	8.60	3.91	0.40
Cadmium	47 / 49	96%	0.017 - 2.16	0.0040 - 0.040	0.020 - 0.10	0.30	0.21	0.35	1.15
Calcium	49 / 49	100%	1880 - 11500	0.60 - 3.00	4.90 - 10.2	5894	5690	1877	0.32
Chromium	1 / 49	2%	1.30 - 1.30	0.10 - 1.00	1.00 - 2.00	0.41	0.35	0.17	0.41
Cobalt	49 / 49	100%	0.33 - 7.57	0.0020 - 0.0080	0.020 - 0.041	1.68	1.54	1.16	0.69
Copper	49 / 49	100%	1.53 - 6.66	0.020 - 0.10	0.10 - 0.20	3.35	3.38	0.88	0.26
Iron	49 / 49	100%	26.4 - 212	0.30 - 2.00	2.00 - 4.10	75.1	68.9	41.7	0.55
Lead	40 / 49	82%	0.030 - 0.40	0.020 - 0.040	0.050 - 0.10	0.069	0.050	0.070	1.01
Magnesium	49 / 49	100%	674 - 3300	0.20 - 4.00	2.00 - 4.10	1808	1740	539	0.30
Manganese	49 / 49	100%	98.4 - 1570	0.030 - 0.45	0.050 - 4.99	629	629	333	0.53
Mercury	41 / 49	84%	0.0040 - 0.032	0.0020 - 0.012	0.0080 - 0.027	0.014	0.014	0.0079	0.55
Molybdenum	43 / 49	88%	0.030 - 1.35	0.0080 - 0.050	0.049 - 0.10	0.32	0.22	0.29	0.92
Nickel	49 / 49	100%	0.40 - 28.5	0.020 - 0.10	0.20 - 0.41	1.71	0.86	3.98	2.33
Potassium	49 / 49	100%	3690 - 18200	6.90 - 204	98.0 - 408	9984	9820	3431	0.34
Selenium	3 / 49	6%	0.10 - 0.50	0.10 - 0.40	1.00 - 2.00	0.11	0.10	0.071	0.64
Silver	12 / 49	24%	0.0020 - 0.029	0.0020 - 0.010	0.020 - 0.020	0.0063	0.0050	0.0047	0.76
Thallium	10 / 49	20%	0.0030 - 0.014	0.0020 - 0.040	0.020 - 0.040	0.0064	0.0030	0.0057	0.88
Tin	10 / 49	20%	3.00 - 6.50	1.50 - 7.00	9.80 - 20.3	4.49	3.50	2.63	0.59
Vanadium	41 / 49	84%	0.020 - 0.60	0.020 - 0.070	0.20 - 0.41	0.12	0.070	0.14	1.11
Zinc	49 / 49	100%	15.4 - 298	0.090 - 0.80	0.49 - 2.00	57.7	47.2	43.3	0.75
Anions and Cations [c]									
Cyanide	21 / 49	43%	0.12 - 3.40	0.040 - 0.71	0.10 - 2.40	0.56	0.26	0.71	1.26
Sodium	49 / 49	100%	20.7 - 354	2.00 - 20.0	9.80 - 39.0	84.0	72.7	67.1	0.80

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-21
Dwarf Dogwood, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	9 / 9	100%	199 - 625	0.40 - 8.10	2.00 - 20.2	381	276	176	0.46
Antimony	7 / 9	78%	0.030 - 0.11	0.020 - 0.040	0.050 - 0.050	0.047	0.040	0.029	0.61
Arsenic	0 / 9	0%	NA - NA	0.050 - 0.080	0.50 - 0.51	NA	NA	NA	NA
Barium	9 / 9	100%	39.0 - 167	0.020 - 0.20	0.050 - 0.99	87.2	79.4	38.9	0.45
Beryllium	2 / 9	22%	0.0060 - 0.012	0.0030 - 0.020	0.020 - 0.020	0.0053	0.0030	0.0043	0.80
Bismuth	2 / 9	22%	0.020 - 0.10	0.0030 - 0.050	0.020 - 0.10	0.017	0.0050	0.032	1.93
Boron	9 / 9	100%	7.90 - 18.1	0.10 - 3.00	5.00 - 19.9	12.9	12.0	3.28	0.25
Cadmium	9 / 9	100%	0.044 - 0.19	0.0040 - 0.020	0.020 - 0.050	0.080	0.060	0.044	0.55
Calcium	9 / 9	100%	13000 - 34400	0.60 - 3.00	5.00 - 10.1	22178	20400	7637	0.34
Chromium	3 / 9	33%	0.40 - 0.80	0.20 - 1.00	1.00 - 2.00	0.41	0.40	0.19	0.47
Cobalt	9 / 9	100%	0.040 - 0.34	0.0020 - 0.010	0.020 - 0.020	0.15	0.11	0.11	0.75
Copper	9 / 9	100%	1.67 - 4.14	0.020 - 0.10	0.10 - 0.10	2.32	2.03	0.80	0.34
Iron	9 / 9	100%	31.6 - 71.5	0.30 - 2.00	2.00 - 4.10	46.8	41.1	14.3	0.30
Lead	9 / 9	100%	0.070 - 0.41	0.020 - 0.020	0.050 - 0.050	0.20	0.15	0.13	0.66
Magnesium	9 / 9	100%	3780 - 5990	0.20 - 4.10	2.00 - 4.10	4952	5050	795	0.16
Manganese	9 / 9	100%	44.9 - 309	0.030 - 0.20	0.50 - 1.99	210	257	110	0.52
Mercury	9 / 9	100%	0.012 - 0.097	0.0020 - 0.010	0.013 - 0.040	0.061	0.084	0.036	0.60
Molybdenum	9 / 9	100%	0.10 - 3.50	0.0080 - 0.050	0.050 - 0.050	0.54	0.17	1.11	2.07
Nickel	9 / 9	100%	0.45 - 4.07	0.020 - 0.090	0.20 - 0.20	2.29	2.28	1.34	0.59
Potassium	9 / 9	100%	7810 - 18100	2.50 - 199	101 - 406	10843	9720	3283	0.30
Selenium	0 / 9	0%	NA - NA	0.10 - 0.40	1.00 - 1.01	NA	NA	NA	NA
Silver	1 / 9	11%	0.0070 - 0.0070	0.0020 - 0.010	0.020 - 0.020	0.0042	0.0040	0.0028	0.67
Thallium	2 / 9	22%	0.0050 - 0.011	0.0020 - 0.020	0.020 - 0.020	0.0059	0.0050	0.0043	0.73
Tin	1 / 9	11%	2.70 - 2.70	1.00 - 6.90	5.00 - 19.9	3.15	2.50	2.66	0.85
Vanadium	8 / 9	89%	0.050 - 0.28	0.020 - 0.070	0.20 - 0.20	0.13	0.13	0.073	0.58
Zinc	9 / 9	100%	12.6 - 43.4	0.20 - 0.80	0.50 - 2.00	20.5	18.4	9.73	0.47

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	3 / 3	100%	139 - 217	13.0 - 33.0	22.0 - 55.0	175	169	39.3	0.22
Chloride	3 / 3	100%	5370 - 7270	30.0 - 80.0	200 - 500	6517	6910	1009	0.15
Cyanide	0 / 9	0%	NA - NA	0.11 - 0.40	0.54 - 1.20	NA	NA	NA	NA
Fluoride	3 / 3	100%	1.21 - 3.40	0.030 - 0.70	2.00 - 5.00	2.54	3.00	1.17	0.46
Sodium	9 / 9	100%	128 - 460	1.50 - 20.0	10.0 - 20.3	247	224	100	0.41
Sulfate	3 / 3	100%	6070 - 10700	90.0 - 230	200 - 500	7880	6870	2475	0.31

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-22
Dwarf Birch, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	43 / 43	100%	1.80 - 36.1	0.40 - 1.00	2.00 - 4.00	10.4	7.40	7.68	0.74
Antimony	19 / 43	44%	0.030 - 0.16	0.030 - 0.040	0.050 - 0.050	0.041	0.020	0.039	0.95
Arsenic	0 / 43	0%	NA - NA	0.050 - 0.10	0.49 - 1.01	NA	NA	NA	NA
Barium	43 / 43	100%	5.90 - 65.2	0.020 - 0.20	0.050 - 2.00	27.6	27.6	14.7	0.53
Beryllium	1 / 43	2%	0.0080 - 0.0080	0.0040 - 0.040	0.020 - 0.040	0.0061	0.0030	0.0048	0.79
Bismuth	4 / 43	9%	0.0050 - 0.10	0.0010 - 0.050	0.010 - 0.10	0.010	0.0025	0.017	1.67
Boron	40 / 43	93%	4.50 - 14.5	0.40 - 3.00	4.90 - 20.2	8.98	8.90	2.56	0.29
Cadmium	42 / 43	98%	0.016 - 0.39	0.0040 - 0.040	0.020 - 0.10	0.10	0.089	0.072	0.69
Calcium	43 / 43	100%	2000 - 5520	0.60 - 20.2	4.90 - 101	3090	2940	785	0.25
Chromium	7 / 43	16%	0.40 - 1.50	0.10 - 1.00	1.00 - 2.00	0.45	0.50	0.21	0.46
Cobalt	43 / 43	100%	0.078 - 0.58	0.0020 - 0.0080	0.020 - 0.040	0.25	0.24	0.12	0.48
Copper	43 / 43	100%	2.69 - 6.85	0.020 - 0.10	0.10 - 0.20	4.01	3.87	0.85	0.21
Iron	43 / 43	100%	25.4 - 149	0.30 - 2.00	2.00 - 4.10	46.0	39.2	24.6	0.53
Lead	40 / 43	93%	0.040 - 0.56	0.020 - 0.040	0.050 - 0.10	0.11	0.080	0.094	0.89
Magnesium	43 / 43	100%	925 - 2210	0.20 - 7.10	2.00 - 40.5	1594	1570	278	0.17
Manganese	43 / 43	100%	208 - 2290	0.030 - 0.71	0.98 - 20.3	935	832	524	0.56
Mercury	35 / 43	81%	0.0040 - 0.20	0.0020 - 0.011	0.0070 - 0.025	0.017	0.014	0.029	1.74
Molybdenum	19 / 43	44%	0.030 - 0.36	0.0080 - 0.050	0.049 - 0.10	0.063	0.025	0.080	1.27
Nickel	43 / 43	100%	0.54 - 12.2	0.020 - 0.10	0.20 - 0.40	1.83	1.37	1.81	0.99
Potassium	43 / 43	100%	3430 - 7610	6.90 - 203	98.0 - 406	5535	5470	941	0.17
Selenium	1 / 43	2%	0.20 - 0.20	0.10 - 0.40	1.00 - 2.00	0.11	0.10	0.049	0.43
Silver	12 / 43	28%	0.0020 - 0.016	0.0020 - 0.010	0.020 - 0.020	0.0054	0.0040	0.0038	0.70
Thallium	5 / 43	12%	0.0040 - 0.013	0.0020 - 0.040	0.020 - 0.040	0.0048	0.0020	0.0051	1.05
Tin	4 / 43	9%	2.90 - 4.50	1.50 - 7.00	9.80 - 20.2	4.64	3.90	2.66	0.57
Vanadium	36 / 43	84%	0.020 - 0.57	0.020 - 0.070	0.20 - 0.40	0.096	0.070	0.10	1.04
Zinc	43 / 43	100%	42.3 - 178	0.090 - 0.80	0.49 - 2.00	91.6	82.6	27.9	0.30
Anions and Cations [c]									
Cyanide	13 / 43	30%	0.090 - 4.70	0.040 - 1.30	0.10 - 4.30	0.44	0.16	0.81	1.83
Sodium	39 / 43	91%	13.1 - 69.4	2.00 - 20.0	9.80 - 40.0	27.9	26.3	14.0	0.50

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-23
Early Blueberry, Fruit Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	6 / 8	75%	1.90 - 6.60	0.50 - 0.50	2.00 - 2.00	3.08	2.70	1.96	0.64
Antimony	5 / 8	63%	0.050 - 0.090	0.030 - 0.040	0.050 - 0.050	0.049	0.055	0.029	0.59
Arsenic	1 / 8	13%	3.05 - 3.05	0.050 - 0.10	0.50 - 0.51	0.41	0.025	1.07	2.63
Barium	8 / 8	100%	2.38 - 12.5	0.020 - 0.030	0.050 - 0.10	6.69	6.24	3.01	0.45
Beryllium	0 / 8	0%	NA - NA	0.0040 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Bismuth	0 / 8	0%	NA - NA	0.0030 - 0.010	0.050 - 0.10	NA	NA	NA	NA
Boron	4 / 8	50%	3.90 - 6.40	0.40 - 3.10	9.90 - 20.3	4.69	4.98	1.45	0.31
Cadmium	2 / 8	25%	0.011 - 0.014	0.0040 - 0.020	0.049 - 0.051	0.012	0.010	0.0062	0.53
Calcium	8 / 8	100%	759 - 1230	2.00 - 2.00	9.90 - 10.2	958	922	173	0.18
Chromium	2 / 8	25%	0.70 - 1.60	0.70 - 1.00	2.00 - 2.00	0.63	0.50	0.41	0.65
Cobalt	8 / 8	100%	0.012 - 0.055	0.0030 - 0.0040	0.020 - 0.020	0.024	0.020	0.013	0.56
Copper	8 / 8	100%	2.10 - 4.22	0.020 - 0.10	0.10 - 0.10	3.29	3.31	0.73	0.22
Iron	8 / 8	100%	12.9 - 248	0.40 - 0.60	3.90 - 4.10	45.6	16.5	81.9	1.79
Lead	5 / 8	63%	0.030 - 0.070	0.020 - 0.020	0.050 - 0.050	0.033	0.035	0.019	0.59
Magnesium	8 / 8	100%	527 - 680	0.20 - 0.70	3.90 - 4.10	601	591	60.6	0.10
Manganese	8 / 8	100%	280 - 562	0.070 - 0.070	0.99 - 2.00	361	331	91.9	0.25
Mercury	6 / 8	75%	0.0050 - 0.026	0.0020 - 0.013	0.019 - 0.044	0.0092	0.0075	0.0072	0.79
Molybdenum	8 / 8	100%	0.22 - 0.97	0.020 - 0.020	0.050 - 0.050	0.59	0.63	0.29	0.49
Nickel	8 / 8	100%	0.21 - 4.05	0.030 - 0.090	0.20 - 0.20	0.84	0.33	1.31	1.56
Potassium	8 / 8	100%	5260 - 7290	197 - 203	394 - 407	6379	6470	697	0.11
Selenium	0 / 8	0%	NA - NA	0.10 - 0.20	1.00 - 1.00	NA	NA	NA	NA
Silver	1 / 8	13%	0.0080 - 0.0080	0.0060 - 0.010	0.020 - 0.020	0.0048	0.0050	0.0015	0.31
Thallium	0 / 8	0%	NA - NA	0.0020 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Tin	1 / 8	13%	5.70 - 5.70	3.00 - 5.00	9.90 - 20.3	7.60	9.93	3.48	0.46
Vanadium	3 / 8	38%	0.050 - 0.080	0.020 - 0.040	0.20 - 0.20	0.043	0.030	0.037	0.88
Zinc	8 / 8	100%	9.57 - 12.6	0.20 - 0.70	0.49 - 2.00	10.9	10.9	0.91	0.083
Anions and Cations [c]									
Cyanide	1 / 8	13%	3.20 - 3.20	0.40 - 0.60	1.70 - 2.00	0.61	0.23	1.05	1.73
Sodium	8 / 8	100%	40.6 - 67.1	4.90 - 20.0	19.7 - 40.0	52.0	48.4	11.4	0.22

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-24
Early Blueberry, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	17 / 17	100%	11.8 - 55.3	0.40 - 2.50	2.00 - 10.0	37.3	36.2	11.1	0.30
Antimony	12 / 17	71%	0.050 - 0.16	0.030 - 0.040	0.050 - 0.050	0.060	0.050	0.040	0.68
Arsenic	4 / 17	24%	0.060 - 12.2	0.050 - 0.10	0.49 - 0.51	0.75	0.025	2.95	3.92
Barium	17 / 17	100%	29.4 - 69.4	0.020 - 0.030	0.050 - 0.10	46.9	45.7	10.9	0.23
Beryllium	0 / 17	0%	NA - NA	0.0040 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Bismuth	5 / 17	29%	0.0030 - 0.21	0.0030 - 0.050	0.010 - 0.10	0.023	0.0050	0.048	2.09
Boron	15 / 17	88%	7.70 - 13.3	0.40 - 3.00	4.90 - 20.2	9.71	9.80	2.42	0.25
Cadmium	16 / 17	94%	0.020 - 0.20	0.0040 - 0.020	0.020 - 0.051	0.052	0.040	0.042	0.82
Calcium	17 / 17	100%	3340 - 6830	1.00 - 20.2	4.90 - 101	4415	4290	841	0.19
Chromium	2 / 17	12%	0.90 - 1.00	0.10 - 1.00	1.00 - 2.00	0.54	0.50	0.16	0.31
Cobalt	17 / 17	100%	0.045 - 0.14	0.0030 - 0.0040	0.020 - 0.020	0.090	0.086	0.025	0.27
Copper	17 / 17	100%	2.07 - 5.10	0.020 - 0.10	0.10 - 0.10	4.00	4.18	0.77	0.19
Iron	17 / 17	100%	33.3 - 1010	0.30 - 0.60	2.00 - 4.10	154	72.9	247	1.61
Lead	17 / 17	100%	0.14 - 1.81	0.020 - 0.020	0.050 - 0.050	0.34	0.23	0.40	1.17
Magnesium	17 / 17	100%	1030 - 1360	0.20 - 7.10	2.00 - 40.3	1146	1150	98.2	0.086
Manganese	17 / 17	100%	1160 - 2210	0.040 - 0.71	0.99 - 19.9	1774	1760	270	0.15
Mercury	16 / 17	94%	0.0060 - 0.029	0.0010 - 0.0070	0.010 - 0.024	0.016	0.014	0.0059	0.38
Molybdenum	17 / 17	100%	0.34 - 1.96	0.020 - 0.050	0.050 - 0.050	0.71	0.68	0.38	0.54
Nickel	17 / 17	100%	0.27 - 1.65	0.020 - 0.10	0.20 - 0.20	0.65	0.63	0.36	0.55
Potassium	17 / 17	100%	3350 - 5540	10.0 - 202	99.0 - 405	4263	4150	618	0.14
Selenium	2 / 17	12%	0.30 - 2.90	0.10 - 0.40	1.00 - 1.01	0.27	0.10	0.68	2.52
Silver	2 / 17	12%	0.020 - 0.021	0.0060 - 0.010	0.020 - 0.020	0.0057	0.0035	0.0056	0.99
Thallium	9 / 17	53%	0.0090 - 0.39	0.0020 - 0.020	0.020 - 0.020	0.040	0.010	0.090	2.27
Tin	2 / 17	12%	5.30 - 5.70	1.50 - 5.00	9.80 - 20.2	7.69	9.95	2.96	0.38
Vanadium	16 / 17	94%	0.040 - 0.36	0.020 - 0.040	0.20 - 0.20	0.12	0.10	0.076	0.62
Zinc	17 / 17	100%	28.1 - 43.5	0.20 - 0.70	0.49 - 2.00	33.8	32.5	3.84	0.11
Anions and Cations [c]									
Cyanide	8 / 17	47%	0.10 - 1.60	0.050 - 0.20	0.25 - 0.60	0.37	0.10	0.46	1.25
Sodium	17 / 17	100%	14.4 - 64.6	2.00 - 20.0	9.90 - 40.0	33.6	35.8	14.8	0.44

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-25
Feather Moss, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	18 / 18	100%	140 - 3570	0.40 - 36.1	2.00 - 102	723	269	951	1.32
Antimony	14 / 18	78%	0.030 - 0.16	0.030 - 0.040	0.050 - 0.050	0.062	0.055	0.042	0.67
Arsenic	14 / 18	78%	0.060 - 0.48	0.050 - 0.10	0.49 - 1.00	0.12	0.11	0.11	0.87
Barium	18 / 18	100%	9.94 - 58.3	0.020 - 0.060	0.050 - 0.10	26.3	21.4	13.0	0.49
Beryllium	6 / 18	33%	0.015 - 0.060	0.0060 - 0.040	0.020 - 0.040	0.019	0.010	0.017	0.87
Bismuth	9 / 18	50%	0.0060 - 0.092	0.0030 - 0.050	0.010 - 0.10	0.033	0.025	0.021	0.65
Boron	13 / 18	72%	1.40 - 9.00	0.40 - 3.00	4.90 - 20.2	3.74	3.85	2.08	0.56
Cadmium	18 / 18	100%	0.060 - 0.46	0.0040 - 0.040	0.020 - 0.10	0.18	0.16	0.12	0.67
Calcium	18 / 18	100%	1650 - 5410	1.00 - 2.00	4.90 - 10.1	2781	2740	899	0.32
Chromium	10 / 18	56%	0.80 - 3.60	0.10 - 1.00	1.00 - 2.00	1.09	0.95	0.82	0.76
Cobalt	18 / 18	100%	0.11 - 1.72	0.0030 - 0.0080	0.020 - 0.040	0.42	0.17	0.48	1.14
Copper	18 / 18	100%	1.42 - 5.51	0.020 - 0.10	0.10 - 0.20	3.98	4.05	0.91	0.23
Iron	18 / 18	100%	113 - 5560	0.30 - 0.60	2.00 - 4.10	849	308	1490	1.75
Lead	18 / 18	100%	0.51 - 1.77	0.020 - 0.040	0.050 - 0.10	0.92	0.83	0.34	0.37
Magnesium	18 / 18	100%	594 - 1460	0.20 - 1.00	2.00 - 4.10	1134	1210	202	0.18
Manganese	18 / 18	100%	266 - 1450	0.040 - 0.070	0.050 - 2.02	732	641	380	0.52
Mercury	18 / 18	100%	0.035 - 0.088	0.0020 - 0.0080	0.018 - 0.048	0.062	0.065	0.017	0.28
Molybdenum	17 / 18	94%	0.060 - 0.46	0.020 - 0.050	0.050 - 0.10	0.17	0.080	0.15	0.88
Nickel	18 / 18	100%	0.40 - 10.8	0.020 - 0.10	0.20 - 0.40	2.55	1.63	2.55	1.00
Potassium	18 / 18	100%	825 - 6020	10.0 - 202	99.0 - 405	4740	4955	1216	0.26
Selenium	5 / 18	28%	0.10 - 0.50	0.10 - 0.40	1.00 - 2.00	0.16	0.10	0.13	0.82
Silver	11 / 18	61%	0.0070 - 0.031	0.0060 - 0.010	0.020 - 0.020	0.013	0.012	0.0079	0.60
Thallium	13 / 18	72%	0.0060 - 0.080	0.0020 - 0.040	0.020 - 0.040	0.022	0.018	0.020	0.89
Tin	2 / 18	11%	4.10 - 5.70	1.50 - 5.10	9.90 - 20.2	6.61	5.38	3.31	0.50
Vanadium	18 / 18	100%	0.20 - 5.49	0.020 - 0.040	0.20 - 0.40	1.09	0.60	1.40	1.29
Zinc	18 / 18	100%	30.2 - 137	0.20 - 0.70	0.50 - 2.00	61.5	48.6	34.0	0.55
Anions and Cations [c]									
Cyanide	9 / 18	50%	0.21 - 3.50	0.040 - 0.60	0.20 - 2.20	0.59	0.30	0.84	1.43
Sodium	18 / 18	100%	42.8 - 152	2.00 - 20.0	9.90 - 40.0	85.0	83.7	25.9	0.30

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-26
Field Horsetail, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	27 / 27	100%	3.00 - 95.5	0.40 - 8.00	2.00 - 10.2	26.4	18.6	25.5	0.97
Antimony	15 / 27	56%	0.030 - 0.15	0.030 - 0.040	0.050 - 0.050	0.046	0.040	0.040	0.87
Arsenic	16 / 27	59%	0.050 - 1.04	0.050 - 0.10	0.49 - 1.01	0.17	0.10	0.22	1.31
Barium	27 / 27	100%	7.45 - 87.7	0.020 - 0.20	0.020 - 1.00	32.1	19.9	24.2	0.75
Beryllium	10 / 27	37%	0.0070 - 0.030	0.0040 - 0.040	0.020 - 0.040	0.012	0.010	0.0081	0.69
Bismuth	2 / 27	7%	0.0060 - 0.20	0.0020 - 0.050	0.010 - 0.10	0.016	0.0050	0.038	2.32
Boron	27 / 27	100%	7.30 - 35.0	0.40 - 3.10	5.00 - 20.3	18.9	19.0	5.84	0.31
Cadmium	23 / 27	85%	0.015 - 0.57	0.0040 - 0.040	0.020 - 0.10	0.10	0.058	0.13	1.26
Calcium	27 / 27	100%	7110 - 35700	0.60 - 3.00	5.00 - 10.2	18158	18300	5803	0.32
Chromium	5 / 27	19%	0.60 - 4.40	0.10 - 1.00	1.00 - 2.00	0.63	0.50	0.78	1.25
Cobalt	27 / 27	100%	0.068 - 3.88	0.0020 - 0.0080	0.020 - 0.040	0.68	0.29	0.87	1.28
Copper	27 / 27	100%	2.23 - 6.69	0.020 - 0.10	0.10 - 0.20	3.83	3.72	1.22	0.32
Iron	27 / 27	100%	26.9 - 367	0.30 - 2.00	2.00 - 4.10	89.7	45.7	80.5	0.90
Lead	27 / 27	100%	0.020 - 0.30	0.020 - 0.040	0.020 - 0.10	0.099	0.090	0.068	0.68
Magnesium	27 / 27	100%	2590 - 5740	0.20 - 2.00	2.00 - 4.10	3932	4010	812	0.21
Manganese	27 / 27	100%	42.7 - 1030	0.040 - 0.20	0.050 - 2.02	208	125	232	1.12
Mercury	20 / 27	74%	0.0070 - 0.21	0.0020 - 0.018	0.011 - 0.055	0.021	0.014	0.039	1.82
Molybdenum	26 / 27	96%	0.030 - 2.28	0.0080 - 0.050	0.050 - 0.10	0.42	0.27	0.51	1.22
Nickel	27 / 27	100%	0.23 - 5.60	0.020 - 0.10	0.20 - 0.40	1.54	1.20	1.22	0.79
Potassium	27 / 27	100%	4760 - 46400	6.90 - 203	100 - 1010	26147	27800	9907	0.38
Selenium	20 / 27	74%	0.20 - 1.40	0.10 - 0.40	1.00 - 2.00	0.39	0.30	0.32	0.83
Silver	9 / 27	33%	0.0060 - 0.43	0.0020 - 0.010	0.020 - 0.020	0.025	0.0050	0.082	3.32
Thallium	16 / 27	59%	0.0030 - 0.36	0.0020 - 0.040	0.020 - 0.040	0.054	0.010	0.10	1.88
Tin	5 / 27	19%	2.30 - 9.90	1.50 - 7.00	9.80 - 20.3	5.38	5.00	3.03	0.56
Vanadium	23 / 27	85%	0.020 - 0.56	0.020 - 0.070	0.20 - 0.40	0.096	0.070	0.11	1.15
Zinc	27 / 27	100%	16.1 - 52.6	0.090 - 0.80	0.50 - 2.00	30.9	31.3	9.29	0.30
Anions and Cations [c]									
Cyanide	12 / 27	44%	0.060 - 2.10	0.040 - 0.71	0.10 - 2.40	0.50	0.25	0.52	1.04
Sodium	27 / 27	100%	53.1 - 184	2.00 - 20.0	10.0 - 41.0	114	108	39.5	0.35

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-27
Fireweed, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2006

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	14 / 14	100%	5.00 - 198	0.50 - 8.00	2.00 - 9.90	49.3	29.9	51.0	1.03
Antimony	11 / 14	79%	0.030 - 0.12	0.020 - 0.041	0.050 - 0.051	0.052	0.040	0.030	0.57
Arsenic	2 / 14	14%	0.080 - 0.15	0.050 - 0.10	0.49 - 1.01	0.042	0.025	0.035	0.82
Barium	14 / 14	100%	13.5 - 60.8	0.020 - 0.20	0.050 - 0.99	36.1	36.8	15.2	0.42
Beryllium	4 / 14	29%	0.0050 - 0.0090	0.0030 - 0.040	0.019 - 0.040	0.0054	0.0020	0.0054	1.01
Bismuth	4 / 14	29%	0.010 - 0.058	0.0030 - 0.020	0.010 - 0.050	0.012	0.0050	0.015	1.29
Boron	14 / 14	100%	3.70 - 28.7	0.10 - 3.00	4.90 - 20.2	14.5	13.6	6.74	0.46
Cadmium	10 / 14	71%	0.0090 - 0.042	0.0040 - 0.040	0.049 - 0.10	0.020	0.019	0.0089	0.45
Calcium	14 / 14	100%	5810 - 15600	0.60 - 3.00	4.90 - 10.1	10147	9465	2953	0.29
Chromium	5 / 13	38%	0.30 - 1.90	0.20 - 1.00	1.00 - 2.00	0.47	0.30	0.49	1.05
Cobalt	14 / 14	100%	0.048 - 0.16	0.0020 - 0.010	0.020 - 0.040	0.095	0.092	0.032	0.34
Copper	14 / 14	100%	3.17 - 8.04	0.020 - 0.060	0.10 - 0.20	4.84	4.82	1.20	0.25
Iron	14 / 14	100%	39.4 - 59.9	0.30 - 2.00	1.90 - 4.10	51.2	51.8	5.97	0.12
Lead	10 / 14	71%	0.020 - 0.21	0.020 - 0.040	0.050 - 0.10	0.051	0.040	0.048	0.95
Magnesium	14 / 14	100%	1950 - 5310	0.20 - 4.10	1.90 - 4.10	3844	3870	811	0.21
Manganese	14 / 14	100%	112 - 331	0.020 - 0.20	0.49 - 1.01	188	181	63.1	0.34
Mercury	14 / 14	100%	0.0080 - 0.12	0.0040 - 0.011	0.015 - 0.021	0.059	0.061	0.037	0.62
Molybdenum	14 / 14	100%	0.019 - 1.25	0.0080 - 0.040	0.049 - 0.10	0.21	0.080	0.33	1.54
Nickel	14 / 14	100%	0.60 - 3.26	0.040 - 0.10	0.19 - 0.40	1.65	1.62	0.77	0.46
Potassium	14 / 14	100%	5650 - 17200	2.40 - 202	194 - 405	10459	10345	3752	0.36
Selenium	0 / 13	0%	NA - NA	0.10 - 0.20	1.00 - 2.00	NA	NA	NA	NA
Silver	3 / 14	21%	0.0030 - 0.0040	0.0020 - 0.010	0.019 - 0.020	0.0025	0.0023	0.00113	0.46
Thallium	6 / 14	43%	0.0050 - 0.011	0.0020 - 0.040	0.019 - 0.040	0.0083	0.0090	0.0045	0.55
Tin	1 / 13	8%	3.70 - 3.70	1.00 - 6.90	4.90 - 20.2	2.62	2.50	0.96	0.37
Vanadium	11 / 14	79%	0.040 - 0.50	0.020 - 0.070	0.19 - 0.40	0.12	0.095	0.12	1.05
Zinc	14 / 14	100%	16.3 - 56.5	0.10 - 0.80	0.50 - 2.00	30.3	28.4	11.2	0.37

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	8 / 8	100%	165 - 1220	13.0 - 65.0	21.0 - 110	558	423	362	0.65
Chloride	8 / 8	100%	584 - 3720	16.0 - 80.0	100 - 500	2091	1880	1074	0.51
Cyanide	3 / 14	21%	0.16 - 1.60	0.10 - 0.32	0.53 - 1.30	0.26	0.15	0.39	1.55
Fluoride	7 / 8	88%	0.37 - 7.80	0.030 - 0.70	2.00 - 5.00	1.51	0.65	2.55	1.69
Sodium	14 / 14	100%	24.4 - 60.1	1.50 - 6.90	9.70 - 20.2	38.7	34.5	10.5	0.27
Sulfate	8 / 8	100%	582 - 5880	46.0 - 450	100 - 1000	2668	2445	1545	0.58

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-28
Green Terrestrial Moss, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	24 / 24	100%	98.3 - 9730	0.50 - 25.0	2.00 - 100	1632	585	2273	1.39
Antimony	21 / 24	88%	0.030 - 0.50	0.020 - 0.040	0.050 - 0.050	0.12	0.065	0.12	1.05
Arsenic	21 / 24	88%	0.080 - 6.20	0.050 - 0.11	0.49 - 0.71	0.50	0.14	1.24	2.49
Barium	24 / 24	100%	8.42 - 142	0.020 - 0.22	0.050 - 2.00	39.4	31.3	31.2	0.79
Beryllium	20 / 24	83%	0.0040 - 1.18	0.0030 - 0.020	0.020 - 0.028	0.089	0.022	0.24	2.67
Bismuth	11 / 24	46%	0.0070 - 0.14	0.0020 - 0.050	0.020 - 0.10	0.021	0.010	0.029	1.39
Boron	15 / 24	63%	0.10 - 7.20	0.10 - 3.00	4.90 - 21.9	3.51	2.50	2.70	0.77
Cadmium	24 / 24	100%	0.031 - 0.59	0.0040 - 0.0070	0.020 - 0.071	0.17	0.13	0.13	0.75
Calcium	24 / 24	100%	928 - 12600	0.60 - 3.00	4.90 - 10.9	4513	3670	2792	0.62
Chromium	12 / 20	60%	0.40 - 14.6	0.10 - 0.80	1.00 - 2.20	1.45	0.50	3.15	2.18
Cobalt	24 / 24	100%	0.081 - 4.86	0.0020 - 0.010	0.020 - 0.028	0.79	0.40	1.04	1.32
Copper	24 / 24	100%	0.78 - 18.7	0.020 - 0.10	0.10 - 0.14	3.96	3.61	3.46	0.87
Iron	24 / 24	100%	71.7 - 9670	0.30 - 2.00	1.90 - 4.40	1738	700	2699	1.55
Lead	24 / 24	100%	0.14 - 6.75	0.020 - 0.030	0.050 - 0.070	1.49	0.83	1.74	1.17
Magnesium	24 / 24	100%	597 - 3090	0.20 - 4.10	1.90 - 4.40	1172	958	557	0.48
Manganese	24 / 24	100%	32.1 - 1800	0.020 - 0.20	0.49 - 2.02	418	330	397	0.95
Mercury	22 / 24	92%	0.017 - 0.16	0.0040 - 0.054	0.0080 - 0.12	0.057	0.047	0.035	0.62
Molybdenum	24 / 24	100%	0.060 - 1.43	0.0080 - 0.050	0.049 - 0.071	0.33	0.19	0.36	1.09
Nickel	24 / 24	100%	0.30 - 244	0.020 - 0.40	0.20 - 2.00	16.6	1.63	51.0	3.08
Potassium	24 / 24	100%	569 - 6040	2.40 - 202	99.0 - 437	3403	3660	1593	0.47
Selenium	4 / 20	20%	0.10 - 0.60	0.10 - 0.40	1.00 - 1.40	0.14	0.10	0.12	0.85
Silver	20 / 24	83%	0.0060 - 0.16	0.0020 - 0.0080	0.020 - 0.022	0.036	0.019	0.041	1.14
Thallium	21 / 24	88%	0.0040 - 0.094	0.0020 - 0.0060	0.020 - 0.028	0.031	0.022	0.027	0.88
Tin	3 / 20	15%	2.40 - 7.10	1.00 - 7.70	4.90 - 21.9	3.30	3.13	1.24	0.38
Vanadium	24 / 24	100%	0.15 - 26.4	0.020 - 0.10	0.20 - 0.28	2.46	0.51	5.63	2.29
Zinc	24 / 24	100%	11.9 - 117	0.090 - 0.90	0.50 - 2.20	37.6	27.8	25.0	0.67

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	9 / 10	90%	7.20 - 46.8	2.60 - 6.50	4.20 - 11.0	18.7	17.0	13.4	0.72
Chloride	10 / 10	100%	21.0 - 992	6.00 - 75.0	40.0 - 500	481	360	374	0.78
Cyanide	13 / 24	54%	0.25 - 4.60	0.040 - 0.71	0.10 - 2.40	0.71	0.30	1.09	1.52
Fluoride	9 / 10	90%	0.37 - 7.40	0.030 - 1.40	2.00 - 10.0	1.62	0.60	2.19	1.35
Sodium	24 / 24	100%	40.1 - 567	1.50 - 20.0	9.70 - 21.9	171	101	143	0.84
Sulfate	10 / 10	100%	50.0 - 1380	18.0 - 225	40.0 - 500	467	215	471	1.01

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-29
Ledge Stone Crop, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	10 / 10	100%	4.20 - 60.3	0.40 - 0.90	2.00 - 3.30	23.7	20.5	18.2	0.77
Antimony	5 / 10	50%	0.030 - 0.27	0.030 - 0.040	0.040 - 0.050	0.070	0.025	0.085	1.22
Arsenic	0 / 10	0%	NA - NA	0.050 - 0.13	0.49 - 0.81	NA	NA	NA	NA
Barium	10 / 10	100%	57.9 - 258	0.020 - 0.20	0.050 - 1.79	151	122	71.3	0.47
Beryllium	2 / 10	20%	0.0060 - 0.011	0.0040 - 0.020	0.020 - 0.033	0.0067	0.0080	0.0039	0.58
Bismuth	2 / 10	20%	0.0030 - 0.024	0.0020 - 0.050	0.010 - 0.10	0.0099	0.0030	0.011	1.07
Boron	10 / 10	100%	13.6 - 18.4	0.40 - 3.00	4.90 - 20.1	16.3	16.1	1.69	0.10
Cadmium	10 / 10	100%	0.045 - 0.25	0.0040 - 0.020	0.020 - 0.081	0.13	0.13	0.063	0.47
Calcium	10 / 10	100%	34300 - 48900	0.50 - 3.00	4.90 - 10.0	38680	37950	4839	0.13
Chromium	0 / 10	0%	NA - NA	0.10 - 1.00	1.00 - 2.00	NA	NA	NA	NA
Cobalt	10 / 10	100%	0.11 - 1.95	0.0020 - 0.0080	0.020 - 0.033	0.66	0.56	0.55	0.83
Copper	10 / 10	100%	2.32 - 4.22	0.020 - 0.10	0.10 - 0.16	3.11	2.91	0.65	0.21
Iron	10 / 10	100%	22.5 - 73.1	0.30 - 2.00	2.00 - 4.00	38.1	33.5	15.4	0.41
Lead	9 / 10	90%	0.060 - 0.32	0.020 - 0.030	0.050 - 0.080	0.11	0.070	0.086	0.80
Magnesium	10 / 10	100%	2670 - 3430	0.20 - 2.00	2.00 - 4.00	3100	3135	235	0.076
Manganese	10 / 10	100%	49.0 - 83.6	0.030 - 0.20	0.90 - 2.00	61.9	59.7	10.7	0.17
Mercury	5 / 10	50%	0.017 - 0.038	0.0040 - 0.036	0.020 - 0.12	0.022	0.019	0.012	0.55
Molybdenum	8 / 10	80%	0.010 - 1.24	0.010 - 0.050	0.050 - 0.081	0.57	0.62	0.51	0.91
Nickel	10 / 10	100%	0.41 - 5.02	0.020 - 0.13	0.20 - 0.33	1.86	1.80	1.25	0.67
Potassium	10 / 10	100%	9140 - 17000	6.90 - 201	98.0 - 402	12764	12100	2366	0.19
Selenium	0 / 10	0%	NA - NA	0.10 - 0.40	1.00 - 1.60	NA	NA	NA	NA
Silver	4 / 10	40%	0.0050 - 0.023	0.0020 - 0.010	0.018 - 0.020	0.0076	0.0050	0.0060	0.79
Thallium	10 / 10	100%	0.036 - 0.32	0.0020 - 0.020	0.020 - 0.033	0.17	0.14	0.11	0.65
Tin	1 / 10	10%	5.60 - 5.60	1.50 - 6.90	9.80 - 20.1	6.01	4.95	2.66	0.44
Vanadium	8 / 10	80%	0.040 - 0.20	0.020 - 0.11	0.20 - 0.33	0.086	0.075	0.054	0.63
Zinc	10 / 10	100%	19.4 - 39.4	0.20 - 0.80	0.50 - 2.00	26.7	25.7	6.60	0.25
Anions and Cations [c]									
Cyanide	8 / 10	80%	0.60 - 5.70	0.25 - 0.73	1.10 - 2.50	2.79	2.20	2.17	0.78
Sodium	10 / 10	100%	23.5 - 135	2.00 - 20.0	9.80 - 20.1	77.7	73.9	32.4	0.42

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-30
Lichens (Species Not Identified), Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	6 / 6	100%	91.6 - 595	0.40 - 50.2	2.00 - 201	249	216	184	0.74
Antimony	5 / 6	83%	0.040 - 0.11	0.030 - 0.040	0.050 - 0.050	0.065	0.060	0.035	0.54
Arsenic	4 / 6	67%	0.10 - 0.34	0.050 - 0.050	0.49 - 0.51	0.14	0.13	0.12	0.86
Barium	6 / 6	100%	13.6 - 26.8	0.020 - 0.030	0.050 - 0.10	19.7	19.9	4.72	0.24
Beryllium	3 / 6	50%	0.0070 - 0.060	0.0060 - 0.020	0.020 - 0.020	0.025	0.010	0.024	0.97
Bismuth	4 / 6	67%	0.024 - 0.059	0.0030 - 0.050	0.010 - 0.10	0.028	0.026	0.018	0.66
Boron	2 / 6	33%	3.00 - 5.60	0.40 - 3.00	5.10 - 20.1	3.01	2.25	1.86	0.62
Cadmium	6 / 6	100%	0.080 - 0.21	0.0040 - 0.020	0.020 - 0.050	0.13	0.12	0.046	0.36
Calcium	6 / 6	100%	1300 - 3140	1.00 - 2.00	5.10 - 10.1	1922	1660	722	0.38
Chromium	3 / 6	50%	0.80 - 1.20	0.20 - 1.00	1.00 - 2.00	0.77	0.65	0.32	0.42
Cobalt	6 / 6	100%	0.076 - 0.33	0.0030 - 0.0040	0.020 - 0.020	0.22	0.21	0.091	0.42
Copper	6 / 6	100%	1.35 - 5.87	0.020 - 0.10	0.10 - 0.10	3.71	3.92	1.93	0.52
Iron	6 / 6	100%	96.4 - 557	0.30 - 0.60	2.00 - 4.00	297	238	210	0.71
Lead	6 / 6	100%	0.43 - 1.47	0.020 - 0.020	0.050 - 0.050	0.80	0.60	0.44	0.56
Magnesium	6 / 6	100%	239 - 800	0.20 - 1.00	2.00 - 4.00	557	620	230	0.41
Manganese	6 / 6	100%	115 - 253	0.040 - 0.070	0.050 - 1.99	176	176	53.9	0.31
Mercury	6 / 6	100%	0.033 - 0.062	0.0020 - 0.0060	0.017 - 0.020	0.045	0.041	0.011	0.24
Molybdenum	4 / 6	67%	0.080 - 0.11	0.020 - 0.050	0.050 - 0.050	0.068	0.085	0.040	0.60
Nickel	6 / 6	100%	0.55 - 3.88	0.020 - 0.10	0.20 - 0.20	2.12	1.99	1.37	0.64
Potassium	6 / 6	100%	1100 - 6950	10.0 - 201	101 - 402	4675	5485	2441	0.52
Selenium	2 / 6	33%	0.10 - 0.20	0.10 - 0.40	1.00 - 1.00	0.12	0.10	0.068	0.59
Silver	5 / 6	83%	0.010 - 0.044	0.0060 - 0.010	0.020 - 0.020	0.019	0.018	0.013	0.70
Thallium	2 / 6	33%	0.010 - 0.025	0.0020 - 0.020	0.020 - 0.020	0.013	0.010	0.0061	0.49
Tin	1 / 6	17%	5.20 - 5.20	1.50 - 5.00	9.90 - 20.1	8.37	9.95	2.51	0.30
Vanadium	6 / 6	100%	0.26 - 0.74	0.020 - 0.040	0.20 - 0.20	0.51	0.52	0.18	0.35
Zinc	6 / 6	100%	15.5 - 38.9	0.20 - 0.70	0.50 - 2.00	29.1	30.1	9.30	0.32
Anions and Cations [c]									
Cyanide	5 / 6	83%	0.10 - 1.22	0.030 - 0.40	0.13 - 1.50	0.40	0.17	0.45	1.13
Sodium	6 / 6	100%	24.4 - 88.0	2.00 - 20.0	10.1 - 40.0	58.0	57.5	21.7	0.37

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-31
Lingonberry, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	21 / 21	100%	47.0 - 190	0.40 - 8.00	2.00 - 10.2	100	93.9	36.7	0.37
Antimony	11 / 21	52%	0.030 - 0.58	0.020 - 0.041	0.050 - 0.051	0.072	0.030	0.12	1.72
Arsenic	0 / 21	0%	NA - NA	0.050 - 0.080	0.49 - 0.51	NA	NA	NA	NA
Barium	21 / 21	100%	27.4 - 119	0.020 - 0.20	0.050 - 1.00	62.9	58.8	22.6	0.36
Beryllium	1 / 21	5%	0.0040 - 0.0040	0.0030 - 0.020	0.020 - 0.020	0.0050	0.0030	0.0037	0.74
Bismuth	4 / 21	19%	0.016 - 0.030	0.0030 - 0.050	0.020 - 0.10	0.015	0.010	0.013	0.91
Boron	19 / 21	90%	9.50 - 15.4	0.10 - 3.10	4.90 - 20.3	11.8	12.7	3.34	0.28
Cadmium	18 / 21	86%	0.0060 - 0.091	0.0040 - 0.020	0.020 - 0.051	0.034	0.028	0.022	0.66
Calcium	21 / 21	100%	30.5 - 7310	0.60 - 20.3	4.90 - 102	4714	4930	1438	0.31
Chromium	1 / 20	5%	0.90 - 0.90	0.10 - 1.00	1.00 - 2.00	0.41	0.35	0.15	0.38
Cobalt	21 / 21	100%	0.022 - 0.14	0.0020 - 0.010	0.020 - 0.020	0.061	0.054	0.030	0.49
Copper	21 / 21	100%	2.13 - 5.07	0.020 - 0.10	0.10 - 0.10	3.34	3.26	0.78	0.23
Iron	21 / 21	100%	11.7 - 97.9	0.30 - 2.00	2.00 - 4.10	31.7	25.4	21.1	0.67
Lead	21 / 21	100%	0.040 - 0.42	0.020 - 0.020	0.050 - 0.050	0.11	0.080	0.086	0.81
Magnesium	21 / 21	100%	18.9 - 1310	0.20 - 7.10	2.00 - 40.7	1083	1160	276	0.25
Manganese	21 / 21	100%	304 - 2120	0.030 - 0.90	0.050 - 20.2	1388	1580	520	0.37
Mercury	18 / 21	86%	0.0080 - 0.048	0.0010 - 0.010	0.0080 - 0.020	0.022	0.022	0.012	0.53
Molybdenum	12 / 21	57%	0.030 - 0.26	0.0080 - 0.050	0.050 - 0.050	0.044	0.030	0.054	1.21
Nickel	21 / 21	100%	0.27 - 3.10	0.020 - 0.090	0.20 - 0.20	0.89	0.54	0.87	0.97
Potassium	21 / 21	100%	20.0 - 6400	2.50 - 203	98.0 - 407	4241	4330	1321	0.31
Selenium	0 / 20	0%	NA - NA	0.10 - 0.40	1.00 - 1.01	NA	NA	NA	NA
Silver	6 / 21	29%	0.0030 - 0.016	0.0020 - 0.010	0.020 - 0.020	0.0051	0.0035	0.0041	0.82
Thallium	14 / 21	67%	0.0020 - 0.035	0.0020 - 0.020	0.020 - 0.020	0.0094	0.0070	0.0087	0.92
Tin	1 / 20	5%	3.40 - 3.40	1.00 - 7.00	5.00 - 20.3	4.16	3.48	2.36	0.57
Vanadium	16 / 21	76%	0.030 - 0.21	0.020 - 0.070	0.20 - 0.20	0.077	0.060	0.056	0.73
Zinc	21 / 21	100%	8.08 - 31.0	0.20 - 0.80	0.49 - 2.00	20.7	21.7	5.37	0.26

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	1 / 2	50%	4.50 - 4.50	2.60 - 6.50	4.20 - 11.0	3.88	3.88	0.88	0.23
Chloride	1 / 2	50%	144 - 144	16.0 - 20.0	100 - 125	76.0	76.0	96.2	1.27
Cyanide	5 / 21	24%	0.30 - 0.90	0.050 - 0.40	0.21 - 1.40	0.25	0.10	0.28	1.12
Fluoride	1 / 2	50%	2.30 - 2.30	0.30 - 0.70	2.50 - 5.00	1.33	1.33	1.38	1.04
Sodium	16 / 21	76%	5.50 - 82.0	1.50 - 20.0	9.80 - 40.0	19.1	16.7	16.3	0.86
Sulfate	2 / 2	100%	87.0 - 807	60.0 - 115	125 - 250	447	447	509	1.14

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-32
Lingonberry, Fruit Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	14 / 14	100%	18.8 - 142	0.40 - 8.00	2.00 - 10.1	36.8	25.0	32.0	0.87
Antimony	6 / 14	43%	0.030 - 0.14	0.020 - 0.040	0.050 - 0.050	0.041	0.015	0.039	0.95
Arsenic	1 / 14	7%	0.080 - 0.080	0.050 - 0.080	0.49 - 0.51	0.036	0.040	0.015	0.40
Barium	14 / 14	100%	4.70 - 11.7	0.030 - 0.10	0.050 - 0.50	8.18	7.97	2.11	0.26
Beryllium	0 / 14	0%	NA - NA	0.0030 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Bismuth	2 / 14	14%	0.0060 - 0.020	0.0020 - 0.020	0.020 - 0.10	0.0063	0.0050	0.0052	0.83
Boron	12 / 14	86%	6.30 - 22.1	0.10 - 3.00	5.00 - 20.3	13.5	15.2	6.05	0.45
Cadmium	7 / 14	50%	0.0070 - 0.025	0.0060 - 0.020	0.049 - 0.051	0.0096	0.0080	0.0073	0.76
Calcium	14 / 14	100%	734 - 18700	0.60 - 3.00	5.00 - 10.2	2256	975	4737	2.10
Chromium	5 / 14	36%	0.40 - 1.20	0.30 - 1.00	1.00 - 2.00	0.50	0.38	0.30	0.59
Cobalt	13 / 14	93%	0.0090 - 0.031	0.0030 - 0.010	0.020 - 0.020	0.018	0.017	0.0072	0.40
Copper	14 / 14	100%	3.16 - 25.5	0.020 - 0.10	0.10 - 0.10	8.92	5.50	6.94	0.78
Iron	14 / 14	100%	8.80 - 35.0	0.30 - 2.00	2.00 - 4.10	18.4	14.0	9.04	0.49
Lead	10 / 14	71%	0.060 - 3.24	0.020 - 0.020	0.050 - 0.050	0.88	0.60	1.03	1.17
Magnesium	14 / 14	100%	331 - 3940	0.20 - 2.00	2.00 - 4.10	719	475	930	1.29
Manganese	14 / 14	100%	63.5 - 394	0.030 - 0.20	0.50 - 2.01	259	290	90.8	0.35
Mercury	3 / 14	21%	0.0080 - 0.017	0.0010 - 0.018	0.013 - 0.060	0.0094	0.0075	0.0049	0.53
Molybdenum	5 / 14	36%	0.036 - 0.17	0.0080 - 0.020	0.049 - 0.050	0.039	0.010	0.048	1.22
Nickel	14 / 14	100%	0.14 - 15.0	0.030 - 0.090	0.20 - 0.20	3.52	1.21	4.28	1.22
Potassium	14 / 14	100%	4810 - 29000	2.50 - 201	200 - 407	7128	5560	6314	0.89
Selenium	0 / 14	0%	NA - NA	0.10 - 0.20	1.00 - 1.00	NA	NA	NA	NA
Silver	6 / 14	43%	0.0020 - 0.010	0.0020 - 0.0070	0.020 - 0.020	0.0048	0.0035	0.0031	0.65
Thallium	5 / 14	36%	0.0020 - 0.013	0.0020 - 0.020	0.020 - 0.020	0.0052	0.0025	0.0043	0.82
Tin	6 / 14	43%	2.90 - 8.30	1.00 - 7.10	5.00 - 20.3	5.15	5.03	2.42	0.47
Vanadium	13 / 14	93%	0.040 - 0.15	0.020 - 0.040	0.20 - 0.20	0.073	0.060	0.040	0.55
Zinc	14 / 14	100%	7.60 - 21.3	0.20 - 0.80	0.49 - 2.00	12.2	10.9	4.25	0.35

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	2 / 2	100%	14.0 - 15.2	2.80 - 6.50	4.60 - 11.0	14.6	14.6	NA	NA
Chloride	1 / 2	50%	20.0 - 20.0	15.0 - 15.0	100 - 100	13.8	13.8	NA	NA
Cyanide	5 / 14	36%	0.40 - 1.30	0.30 - 0.71	0.70 - 2.40	0.52	0.38	0.37	0.72
Fluoride	1 / 2	50%	7.40 - 7.40	1.40 - 1.40	10.0 - 10.0	4.05	4.05	NA	NA
Sodium	14 / 14	100%	14.3 - 78.5	1.50 - 20.0	10.0 - 40.0	46.2	46.0	16.5	0.36
Sulfate	2 / 2	100%	2440 - 2760	45.0 - 90.0	100 - 200	2600	2600	NA	NA

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-33
Mare's Tail, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	13 / 13	100%	19.1 - 2500	0.50 - 10.0	2.00 - 39.8	441	169	690	1.56
Antimony	11 / 13	85%	0.030 - 0.18	0.030 - 0.041	0.050 - 0.051	0.078	0.080	0.049	0.63
Arsenic	12 / 13	92%	0.080 - 160	0.050 - 0.10	0.48 - 1.00	23.5	0.46	53.7	2.28
Barium	13 / 13	100%	9.53 - 83.1	0.020 - 0.060	0.020 - 0.10	29.2	22.3	20.3	0.70
Beryllium	8 / 13	62%	0.0060 - 0.14	0.0040 - 0.040	0.020 - 0.040	0.029	0.010	0.039	1.35
Bismuth	4 / 13	31%	0.0060 - 0.012	0.0020 - 0.0050	0.020 - 0.10	0.0059	0.0025	0.0069	1.17
Boron	12 / 13	92%	8.30 - 19.8	0.40 - 3.00	9.90 - 20.3	13.5	12.8	4.12	0.31
Cadmium	11 / 13	85%	0.044 - 0.16	0.0040 - 0.040	0.020 - 0.10	0.078	0.079	0.039	0.49
Calcium	13 / 13	100%	6120 - 19900	2.00 - 20.2	9.90 - 101	9715	8420	3497	0.36
Chromium	7 / 13	54%	0.50 - 5.20	0.40 - 1.00	2.00 - 2.00	1.22	0.50	1.38	1.14
Cobalt	13 / 13	100%	0.25 - 4.49	0.0030 - 0.0080	0.019 - 0.040	1.46	0.95	1.31	0.90
Copper	13 / 13	100%	1.01 - 24.5	0.020 - 0.10	0.10 - 0.20	4.94	1.92	7.50	1.52
Iron	13 / 13	100%	113 - 77100	0.40 - 6.10	4.00 - 40.3	10538	1720	21656	2.06
Lead	12 / 13	92%	0.050 - 1.13	0.020 - 0.040	0.020 - 0.10	0.27	0.16	0.32	1.17
Magnesium	13 / 13	100%	1480 - 3640	0.20 - 7.10	4.00 - 40.3	2544	2580	574	0.23
Manganese	13 / 13	100%	218 - 5500	0.070 - 0.71	0.99 - 19.9	1182	806	1380	1.17
Mercury	8 / 13	62%	0.0090 - 0.021	0.0040 - 0.035	0.020 - 0.083	0.013	0.013	0.0057	0.44
Molybdenum	12 / 13	92%	0.040 - 5.13	0.020 - 0.040	0.050 - 0.10	0.93	0.30	1.67	1.79
Nickel	13 / 13	100%	0.53 - 3.69	0.030 - 0.090	0.19 - 0.40	1.55	1.37	0.99	0.64
Potassium	13 / 13	100%	8860 - 18500	7.00 - 203	397 - 407	11987	10600	3394	0.28
Selenium	9 / 13	69%	0.20 - 1.40	0.10 - 0.20	1.00 - 2.00	0.41	0.20	0.42	1.04
Silver	3 / 13	23%	0.012 - 0.039	0.0020 - 0.010	0.020 - 0.020	0.0092	0.0035	0.010	1.13
Thallium	9 / 13	69%	0.010 - 0.067	0.0020 - 0.040	0.020 - 0.040	0.028	0.025	0.019	0.66
Tin	1 / 13	8%	6.40 - 6.40	2.00 - 5.10	9.90 - 20.3	6.01	5.05	3.55	0.59
Vanadium	12 / 13	92%	0.33 - 13.5	0.020 - 0.040	0.19 - 0.40	3.01	0.98	4.26	1.41
Zinc	13 / 13	100%	22.3 - 60.1	0.20 - 0.70	0.50 - 2.00	36.4	35.6	10.2	0.28
Anions and Cations [c]									
Cyanide	4 / 13	31%	0.80 - 12.4	0.21 - 1.20	1.10 - 3.80	1.94	0.75	3.32	1.71
Sodium	13 / 13	100%	3750 - 12500	5.00 - 50.4	19.8 - 202	6605	6050	2347	0.36

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-34
Marsh Five-finger, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	21 / 21	100%	3.50 - 2510	0.50 - 50.1	2.00 - 200	354	87.2	578	1.64
Antimony	18 / 21	86%	0.030 - 0.26	0.030 - 0.041	0.049 - 0.051	0.080	0.060	0.060	0.75
Arsenic	19 / 21	90%	0.050 - 29.1	0.050 - 0.10	0.49 - 1.00	2.86	0.50	6.48	2.26
Barium	21 / 21	100%	26.7 - 144	0.020 - 0.060	0.020 - 0.10	67.4	66.9	29.0	0.43
Beryllium	11 / 21	52%	0.0080 - 0.070	0.0040 - 0.040	0.020 - 0.040	0.018	0.010	0.018	1.02
Bismuth	3 / 21	14%	0.018 - 0.043	0.0020 - 0.0050	0.020 - 0.10	0.010	0.0025	0.012	1.23
Boron	21 / 21	100%	12.1 - 41.7	0.40 - 3.00	9.80 - 20.2	21.7	19.4	7.92	0.36
Cadmium	16 / 21	76%	0.0090 - 0.39	0.0040 - 0.040	0.020 - 0.10	0.089	0.040	0.11	1.24
Calcium	21 / 21	100%	4060 - 11800	2.00 - 3.00	9.80 - 10.1	6804	6530	1962	0.29
Chromium	10 / 21	48%	0.60 - 7.40	0.40 - 1.00	2.00 - 2.00	1.10	0.50	1.52	1.38
Cobalt	21 / 21	100%	0.083 - 5.43	0.0030 - 0.0080	0.020 - 0.040	1.01	0.56	1.24	1.23
Copper	21 / 21	100%	0.86 - 8.80	0.020 - 0.10	0.10 - 0.20	3.74	3.40	1.73	0.46
Iron	21 / 21	100%	115 - 9000	0.40 - 2.00	3.90 - 4.10	2232	1450	2377	1.07
Lead	21 / 21	100%	0.020 - 0.98	0.020 - 0.040	0.020 - 0.10	0.25	0.18	0.23	0.91
Magnesium	21 / 21	100%	1600 - 5670	0.20 - 2.00	3.90 - 4.10	3053	2810	1016	0.33
Manganese	21 / 21	100%	131 - 2590	0.070 - 0.70	0.98 - 20.0	642	459	531	0.83
Mercury	20 / 21	95%	0.012 - 0.035	0.0020 - 0.027	0.014 - 0.059	0.022	0.021	0.0069	0.32
Molybdenum	21 / 21	100%	0.070 - 1.84	0.020 - 0.040	0.050 - 0.10	0.58	0.38	0.56	0.96
Nickel	21 / 21	100%	0.38 - 23.7	0.030 - 0.090	0.20 - 0.40	2.97	1.29	5.15	1.74
Potassium	21 / 21	100%	5850 - 20500	7.00 - 202	391 - 406	10714	8480	4320	0.40
Selenium	8 / 21	38%	0.10 - 0.40	0.10 - 0.20	1.00 - 2.00	0.16	0.10	0.12	0.71
Silver	5 / 21	24%	0.0080 - 0.014	0.0020 - 0.010	0.020 - 0.020	0.0062	0.0050	0.0033	0.54
Thallium	14 / 21	67%	0.0050 - 0.13	0.0020 - 0.040	0.020 - 0.040	0.037	0.020	0.040	1.10
Tin	4 / 21	19%	5.40 - 6.40	2.00 - 5.00	9.80 - 20.2	6.28	5.80	3.31	0.53
Vanadium	19 / 21	90%	0.070 - 8.63	0.020 - 0.040	0.20 - 0.40	1.60	0.70	2.10	1.31
Zinc	21 / 21	100%	17.8 - 72.2	0.20 - 0.70	0.50 - 2.00	43.0	45.8	14.9	0.35
Anions and Cations [c]									
Cyanide	4 / 21	19%	0.40 - 1.20	0.090 - 0.63	0.50 - 2.10	0.38	0.16	0.39	1.03
Sodium	21 / 21	100%	135 - 827	4.90 - 20.0	19.6 - 20.3	391	333	208	0.53

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-35
Marsh Labrador Tea, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	5 / 5	100%	14.3 - 36.9	0.40 - 0.90	2.00 - 2.00	23.7	23.1	8.56	0.36
Antimony	2 / 5	40%	0.050 - 0.060	0.030 - 0.040	0.050 - 0.050	0.032	0.020	0.021	0.67
Arsenic	0 / 5	0%	NA - NA	0.050 - 0.060	0.50 - 0.51	NA	NA	NA	NA
Barium	5 / 5	100%	19.6 - 81.5	0.020 - 0.030	0.050 - 0.10	61.1	67.8	25.7	0.42
Beryllium	0 / 5	0%	NA - NA	0.0040 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Bismuth	0 / 5	0%	NA - NA	0.0030 - 0.050	0.010 - 0.10	NA	NA	NA	NA
Boron	5 / 5	100%	11.2 - 14.8	0.40 - 3.00	5.00 - 20.2	13.1	13.0	1.37	0.10
Cadmium	1 / 5	20%	0.0070 - 0.0070	0.0040 - 0.020	0.020 - 0.050	0.011	0.010	0.0086	0.79
Calcium	5 / 5	100%	3490 - 4630	1.00 - 2.00	5.00 - 10.1	4208	4410	484	0.12
Chromium	0 / 5	0%	NA - NA	0.20 - 1.00	1.00 - 2.00	NA	NA	NA	NA
Cobalt	5 / 5	100%	0.020 - 0.062	0.0030 - 0.0040	0.020 - 0.020	0.044	0.047	0.015	0.35
Copper	5 / 5	100%	3.23 - 4.20	0.020 - 0.10	0.10 - 0.10	3.89	3.97	0.39	0.10
Iron	5 / 5	100%	23.0 - 39.5	0.30 - 2.00	2.00 - 4.10	30.3	26.9	7.56	0.25
Lead	5 / 5	100%	0.060 - 0.14	0.020 - 0.020	0.050 - 0.050	0.094	0.080	0.034	0.37
Magnesium	5 / 5	100%	942 - 1260	0.20 - 4.10	2.00 - 4.10	1162	1190	127	0.11
Manganese	5 / 5	100%	879 - 1040	0.040 - 0.10	1.00 - 1.97	963	996	77.5	0.08
Mercury	5 / 5	100%	0.0040 - 0.021	0.0020 - 0.0060	0.017 - 0.020	0.013	0.015	0.0065	0.49
Molybdenum	3 / 5	60%	0.060 - 0.60	0.020 - 0.050	0.050 - 0.050	0.15	0.060	0.25	1.64
Nickel	5 / 5	100%	0.38 - 6.50	0.020 - 0.10	0.20 - 0.20	2.03	0.95	2.57	1.27
Potassium	5 / 5	100%	5160 - 7060	10.0 - 202	100 - 406	5854	5360	843	0.14
Selenium	0 / 5	0%	NA - NA	0.10 - 0.40	1.00 - 1.00	NA	NA	NA	NA
Silver	2 / 5	40%	0.0060 - 0.014	0.0060 - 0.010	0.020 - 0.020	0.0065	0.0050	0.0043	0.66
Thallium	5 / 5	100%	0.088 - 0.60	0.0020 - 0.020	0.020 - 0.020	0.23	0.16	0.21	0.90
Tin	1 / 5	20%	4.70 - 4.70	1.50 - 4.90	9.80 - 20.2	4.75	4.70	3.34	0.70
Vanadium	5 / 5	100%	0.030 - 0.27	0.020 - 0.040	0.20 - 0.20	0.12	0.080	0.095	0.82
Zinc	5 / 5	100%	24.9 - 30.8	0.20 - 0.70	0.50 - 2.00	27.3	26.8	2.40	0.088
Anions and Cations [c]									
Cyanide	2 / 5	40%	0.12 - 0.17	0.060 - 0.20	0.29 - 0.70	0.12	0.10	0.031	0.27
Sodium	4 / 5	80%	13.8 - 41.6	2.00 - 20.0	10.0 - 20.3	21.0	16.7	12.4	0.59

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-36
Narrow Leaf Labrador Tea, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	27 / 27	100%	5.80 - 877	0.40 - 8.00	2.00 - 10.0	92.0	30.9	215	2.34
Antimony	12 / 27	44%	0.040 - 0.18	0.020 - 0.040	0.050 - 0.050	0.036	0.015	0.035	0.97
Arsenic	0 / 27	0%	NA - NA	0.050 - 0.080	0.49 - 0.51	NA	NA	NA	NA
Barium	27 / 27	100%	7.20 - 102	0.020 - 0.20	0.050 - 1.00	52.9	52.8	25.3	0.48
Beryllium	0 / 27	0%	NA - NA	0.0030 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Bismuth	4 / 27	15%	0.0080 - 0.022	0.0020 - 0.050	0.020 - 0.10	0.012	0.010	0.0099	0.85
Boron	25 / 27	93%	4.20 - 18.0	0.10 - 3.00	4.90 - 20.2	11.2	11.0	3.80	0.34
Cadmium	16 / 27	59%	0.0060 - 0.070	0.0040 - 0.020	0.020 - 0.051	0.012	0.0080	0.016	1.36
Calcium	27 / 27	100%	997 - 5290	0.60 - 20.2	4.90 - 101	3950	4170	959	0.24
Chromium	6 / 27	22%	0.30 - 1.00	0.10 - 1.00	1.00 - 2.00	0.45	0.35	0.20	0.44
Cobalt	27 / 27	100%	0.013 - 0.062	0.0020 - 0.010	0.020 - 0.020	0.038	0.035	0.014	0.37
Copper	27 / 27	100%	2.81 - 4.53	0.020 - 0.10	0.10 - 0.10	3.61	3.57	0.52	0.14
Iron	27 / 27	100%	19.7 - 76.6	0.30 - 2.00	2.00 - 4.00	30.7	27.1	12.1	0.39
Lead	27 / 27	100%	0.040 - 0.41	0.020 - 0.020	0.050 - 0.050	0.12	0.090	0.079	0.67
Magnesium	27 / 27	100%	813 - 1360	0.20 - 7.10	2.00 - 40.4	1085	1090	138	0.13
Manganese	27 / 27	100%	344 - 2160	0.020 - 0.90	0.49 - 10.1	1035	1070	397	0.38
Mercury	22 / 27	81%	0.0020 - 0.028	0.0020 - 0.010	0.0070 - 0.027	0.013	0.012	0.0079	0.62
Molybdenum	21 / 27	78%	0.010 - 1.01	0.0080 - 0.050	0.049 - 0.050	0.19	0.058	0.30	1.53
Nickel	26 / 27	96%	0.21 - 3.50	0.020 - 0.090	0.20 - 0.20	0.83	0.53	0.84	1.02
Potassium	27 / 27	100%	3330 - 8710	2.50 - 202	99.0 - 404	5254	5150	1267	0.24
Selenium	0 / 27	0%	NA - NA	0.10 - 0.40	1.00 - 1.02	NA	NA	NA	NA
Silver	9 / 27	33%	0.0030 - 0.029	0.0020 - 0.010	0.020 - 0.020	0.0072	0.0040	0.0063	0.87
Thallium	27 / 27	100%	0.0030 - 0.55	0.0020 - 0.020	0.020 - 0.020	0.25	0.23	0.15	0.60
Tin	7 / 27	26%	2.70 - 8.40	1.00 - 7.00	4.90 - 20.2	4.37	3.50	2.19	0.50
Vanadium	23 / 27	85%	0.030 - 0.45	0.020 - 0.070	0.20 - 0.20	0.091	0.080	0.081	0.89
Zinc	27 / 27	100%	13.9 - 35.9	0.090 - 0.80	0.50 - 2.00	22.7	23.2	4.48	0.20

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	0 / 2	0%	NA - NA	3.80 - 3.80	6.30 - 6.30	NA	NA	NA	NA
Chloride	2 / 2	100%	124 - 142	5.00 - 16.0	34.0 - 100	133	133	12.7	0.096
Cyanide	13 / 27	48%	0.040 - 2.20	0.040 - 0.80	0.10 - 2.60	0.42	0.27	0.55	1.30
Fluoride	0 / 2	0%	NA - NA	0.40 - 0.70	3.40 - 5.00	NA	NA	NA	NA
Sodium	22 / 27	81%	6.30 - 41.7	1.50 - 20.0	9.80 - 40.0	18.4	20.6	8.56	0.47
Sulfate	2 / 2	100%	755 - 1130	46.0 - 150	100 - 340	943	943	265	0.28

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-37
Netleaf Willow, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	8 / 8	100%	12.1 - 68.4	0.40 - 0.90	2.00 - 2.00	31.3	21.6	23.2	0.74
Antimony	4 / 8	50%	0.030 - 0.080	0.030 - 0.040	0.050 - 0.050	0.035	0.025	0.023	0.66
Arsenic	0 / 8	0%	NA - NA	0.050 - 0.080	0.49 - 0.50	NA	NA	NA	NA
Barium	8 / 8	100%	11.0 - 87.5	0.020 - 0.20	0.050 - 1.00	29.0	17.7	27.0	0.93
Beryllium	3 / 8	38%	0.0040 - 0.0050	0.0040 - 0.020	0.020 - 0.020	0.0060	0.0050	0.0035	0.58
Bismuth	1 / 8	13%	0.022 - 0.022	0.0020 - 0.050	0.010 - 0.10	0.012	0.0075	0.011	0.92
Boron	7 / 8	88%	6.70 - 11.7	1.00 - 3.00	5.00 - 20.1	9.19	9.75	1.83	0.20
Cadmium	8 / 8	100%	0.11 - 1.53	0.0040 - 0.020	0.020 - 0.050	0.89	0.81	0.49	0.55
Calcium	8 / 8	100%	6330 - 17800	0.60 - 3.00	5.00 - 10.1	13579	14150	3521	0.26
Chromium	1 / 8	13%	0.50 - 0.50	0.20 - 1.00	1.00 - 2.00	0.39	0.43	0.12	0.31
Cobalt	8 / 8	100%	0.10 - 0.69	0.0020 - 0.0080	0.020 - 0.020	0.38	0.33	0.20	0.53
Copper	8 / 8	100%	2.45 - 4.71	0.020 - 0.10	0.10 - 0.10	3.40	3.41	0.75	0.22
Iron	8 / 8	100%	26.7 - 66.4	0.30 - 2.00	2.00 - 4.10	45.2	45.6	15.5	0.34
Lead	7 / 8	88%	0.030 - 0.67	0.020 - 0.020	0.050 - 0.050	0.13	0.060	0.22	1.68
Magnesium	8 / 8	100%	737 - 4620	0.20 - 4.00	2.00 - 4.10	2702	2420	1315	0.49
Manganese	8 / 8	100%	51.9 - 255	0.040 - 0.20	0.050 - 1.01	194	222	74.4	0.38
Mercury	5 / 8	63%	0.0070 - 0.078	0.0040 - 0.012	0.010 - 0.027	0.017	0.0080	0.025	1.48
Molybdenum	6 / 8	75%	0.030 - 0.63	0.0080 - 0.050	0.050 - 0.050	0.29	0.26	0.29	0.98
Nickel	8 / 8	100%	0.42 - 1.81	0.020 - 0.090	0.20 - 0.20	1.13	1.18	0.47	0.42
Potassium	8 / 8	100%	9260 - 17100	7.00 - 201	100 - 405	11783	11400	2652	0.23
Selenium	1 / 8	13%	0.10 - 0.10	0.10 - 0.40	1.00 - 1.00	0.11	0.10	0.042	0.39
Silver	3 / 8	38%	0.0020 - 0.0060	0.0020 - 0.010	0.020 - 0.020	0.0049	0.0045	0.0025	0.50
Thallium	1 / 8	13%	0.0060 - 0.0060	0.0020 - 0.020	0.020 - 0.020	0.0055	0.0045	0.0040	0.73
Tin	0 / 8	0%	NA - NA	1.50 - 7.00	9.90 - 20.1	NA	NA	NA	NA
Vanadium	6 / 8	75%	0.030 - 0.090	0.020 - 0.070	0.20 - 0.20	0.054	0.050	0.022	0.41
Zinc	8 / 8	100%	27.7 - 172	0.090 - 0.80	0.50 - 2.00	105	122	51.4	0.49
Anions and Cations [c]									
Cyanide	4 / 8	50%	0.39 - 5.79	0.040 - 0.71	0.10 - 2.40	1.68	0.28	2.25	1.34
Sodium	8 / 8	100%	18.9 - 49.4	2.00 - 7.00	10.0 - 20.2	28.2	23.6	10.6	0.38

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-38
Reindeer Lichen, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	45 / 45	100%	86.7 - 1550	0.40 - 8.90	2.00 - 39.8	350	194	332	0.95
Antimony	32 / 45	71%	0.030 - 0.61	0.020 - 0.040	0.050 - 0.050	0.10	0.060	0.13	1.25
Arsenic	41 / 45	91%	0.080 - 0.34	0.050 - 0.10	0.49 - 1.00	0.15	0.12	0.087	0.58
Barium	45 / 45	100%	3.79 - 37.1	0.020 - 0.20	0.050 - 2.00	12.3	10.9	7.44	0.61
Beryllium	21 / 45	47%	0.0030 - 0.019	0.0030 - 0.040	0.020 - 0.040	0.0082	0.010	0.0048	0.58
Bismuth	21 / 45	47%	0.0050 - 0.053	0.0020 - 0.050	0.010 - 0.10	0.017	0.018	0.012	0.71
Boron	19 / 45	42%	0.30 - 3.40	0.10 - 3.00	5.00 - 20.3	2.03	1.50	2.10	1.03
Cadmium	43 / 45	96%	0.019 - 0.15	0.0040 - 0.040	0.020 - 0.10	0.056	0.050	0.032	0.58
Calcium	45 / 45	100%	337 - 3970	0.60 - 3.00	5.00 - 10.1	1179	926	915	0.78
Chromium	28 / 43	65%	0.50 - 4.60	0.10 - 1.00	1.00 - 2.00	1.19	0.90	1.10	0.93
Cobalt	45 / 45	100%	0.053 - 0.62	0.0020 - 0.010	0.020 - 0.040	0.14	0.11	0.11	0.79
Copper	45 / 45	100%	0.82 - 2.26	0.020 - 0.10	0.10 - 0.20	1.32	1.25	0.33	0.25
Iron	45 / 45	100%	93.0 - 2130	0.30 - 2.00	2.00 - 4.10	400	183	441	1.10
Lead	45 / 45	100%	0.23 - 2.37	0.020 - 0.040	0.050 - 0.10	0.80	0.63	0.54	0.67
Magnesium	45 / 45	100%	152 - 527	0.20 - 4.10	2.00 - 4.10	284	264	90.6	0.32
Manganese	45 / 45	100%	20.2 - 388	0.020 - 0.20	0.050 - 2.03	119	92.4	88.5	0.75
Mercury	40 / 45	89%	0.0030 - 0.083	0.0010 - 0.010	0.0050 - 0.020	0.027	0.022	0.021	0.81
Molybdenum	35 / 45	78%	0.030 - 0.52	0.0080 - 0.050	0.049 - 0.10	0.069	0.050	0.081	1.18
Nickel	45 / 45	100%	0.090 - 24.4	0.020 - 0.10	0.20 - 0.40	2.98	0.90	5.15	1.73
Potassium	45 / 45	100%	586 - 2260	2.50 - 203	100 - 406	1062	1010	327	0.31
Selenium	11 / 43	26%	0.10 - 0.30	0.10 - 0.40	1.00 - 2.00	0.12	0.10	0.064	0.53
Silver	39 / 45	87%	0.0060 - 0.12	0.0020 - 0.010	0.020 - 0.020	0.016	0.012	0.018	1.15
Thallium	30 / 45	67%	0.0030 - 0.047	0.0020 - 0.040	0.020 - 0.040	0.015	0.012	0.0089	0.58
Tin	4 / 43	9%	4.20 - 7.40	1.00 - 7.00	5.00 - 20.3	4.37	3.50	2.65	0.61
Vanadium	45 / 45	100%	0.15 - 3.68	0.020 - 0.070	0.20 - 0.40	0.67	0.39	0.75	1.12
Zinc	45 / 45	100%	7.70 - 43.1	0.090 - 0.80	0.49 - 2.00	16.0	14.5	7.05	0.44

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	9 / 12	75%	4.60 - 12.0	2.60 - 6.50	4.20 - 11.0	6.98	7.10	3.12	0.45
Chloride	12 / 12	100%	25.0 - 324	3.00 - 25.0	20.0 - 170	111	74.0	95.7	0.86
Cyanide	17 / 45	38%	0.050 - 2.18	0.030 - 0.63	0.10 - 2.10	0.40	0.15	0.57	1.42
Fluoride	9 / 12	75%	0.31 - 2.30	0.030 - 0.70	2.00 - 5.00	0.76	0.49	0.68	0.90
Sodium	45 / 45	100%	20.0 - 492	1.50 - 20.0	9.90 - 40.0	81.2	58.6	83.6	1.03
Sulfate	12 / 12	100%	36.0 - 194	9.00 - 60.0	20.0 - 125	85.8	67.5	44.8	0.52

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-39
Short-stalk Sedge, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	49 / 49	100%	5.40 - 107	0.40 - 8.10	2.00 - 10.1	25.3	19.8	18.2	0.72
Antimony	30 / 49	61%	0.020 - 0.37	0.020 - 0.040	0.050 - 0.050	0.050	0.030	0.058	1.15
Arsenic	2 / 49	4%	0.060 - 0.070	0.050 - 0.10	0.49 - 0.99	0.033	0.025	0.010	0.31
Barium	49 / 49	100%	3.94 - 39.7	0.020 - 0.20	0.050 - 1.99	18.8	18.9	9.30	0.49
Beryllium	20 / 49	41%	0.0040 - 0.039	0.0030 - 0.040	0.020 - 0.040	0.0083	0.0080	0.0072	0.87
Bismuth	11 / 49	22%	0.0030 - 0.20	0.0020 - 0.050	0.010 - 0.10	0.014	0.0050	0.029	2.13
Boron	44 / 49	90%	4.80 - 15.3	0.10 - 3.00	4.90 - 20.1	7.65	7.00	2.48	0.32
Cadmium	42 / 49	86%	0.0090 - 0.080	0.0040 - 0.040	0.020 - 0.10	0.030	0.025	0.018	0.60
Calcium	49 / 49	100%	1440 - 7900	0.60 - 3.00	4.90 - 10.1	4105	4100	1448	0.35
Chromium	25 / 47	53%	0.30 - 1.30	0.10 - 1.00	1.00 - 2.00	0.55	0.50	0.27	0.49
Cobalt	49 / 49	100%	0.020 - 0.16	0.0020 - 0.010	0.020 - 0.040	0.067	0.053	0.036	0.54
Copper	49 / 49	100%	1.33 - 8.57	0.020 - 0.10	0.10 - 0.20	3.56	3.24	1.43	0.40
Iron	49 / 49	100%	29.3 - 578	0.30 - 2.00	2.00 - 4.10	74.2	59.8	76.7	1.03
Lead	48 / 49	98%	0.030 - 0.76	0.020 - 0.040	0.050 - 0.10	0.17	0.13	0.15	0.86
Magnesium	49 / 49	100%	505 - 1920	0.20 - 3.90	2.00 - 4.10	991	889	360	0.36
Manganese	49 / 49	100%	99.9 - 709	0.020 - 0.20	0.050 - 2.02	317	284	138	0.44
Mercury	38 / 49	78%	0.0040 - 0.052	0.0010 - 0.011	0.0080 - 0.025	0.016	0.014	0.013	0.77
Molybdenum	49 / 49	100%	0.075 - 4.20	0.0080 - 0.050	0.049 - 0.10	1.01	0.72	0.92	0.91
Nickel	49 / 49	100%	0.35 - 5.06	0.020 - 0.10	0.20 - 0.40	2.20	2.03	1.29	0.59
Potassium	49 / 49	100%	6630 - 24200	2.50 - 202	98.0 - 1000	13422	12700	3945	0.29
Selenium	3 / 47	6%	0.10 - 0.10	0.10 - 0.40	1.00 - 2.00	0.10	0.10	0.042	0.43
Silver	35 / 49	71%	0.0030 - 0.072	0.0020 - 0.010	0.020 - 0.020	0.011	0.0080	0.012	1.08
Thallium	10 / 49	20%	0.0020 - 0.020	0.0020 - 0.040	0.020 - 0.040	0.0049	0.0020	0.0049	1.00
Tin	3 / 47	6%	4.80 - 7.40	1.00 - 7.00	4.90 - 20.1	4.66	3.50	2.54	0.55
Vanadium	36 / 49	73%	0.030 - 0.60	0.020 - 0.070	0.20 - 0.40	0.083	0.060	0.090	1.09
Zinc	49 / 49	100%	7.20 - 58.8	0.090 - 0.80	0.50 - 2.00	24.5	23.5	9.48	0.39

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	12 / 12	100%	210 - 637	13.0 - 38.0	21.0 - 63.0	362	316	135	0.37
Chloride	12 / 12	100%	2260 - 5530	16.0 - 80.0	100 - 500	3866	3960	1077	0.28
Cyanide	14 / 49	29%	0.050 - 2.20	0.040 - 0.71	0.10 - 2.40	0.37	0.16	0.40	1.07
Fluoride	9 / 12	75%	0.22 - 3.50	0.030 - 0.70	2.00 - 5.00	1.00	0.46	1.12	1.12
Sodium	47 / 49	96%	8.30 - 1210	1.50 - 20.0	9.8 - 41.0	67.6	28.1	187	2.76
Sulfate	12 / 12	100%	912 - 5800	46.0 - 230	100 - 500	2122	1790	1306	0.62

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-40
Sitka Alder, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	9 / 9	100%	21.7 - 108	0.40 - 8.10	2.00 - 10.1	66.5	70.0	28.5	0.43
Antimony	5 / 9	56%	0.030 - 0.12	0.030 - 0.041	0.050 - 0.051	0.043	0.030	0.036	0.84
Arsenic	1 / 9	11%	0.070 - 0.070	0.050 - 0.10	0.49 - 0.51	0.037	0.030	0.015	0.42
Barium	9 / 9	100%	10.7 - 59.0	0.020 - 0.20	0.050 - 0.99	28.7	26.0	16.1	0.56
Beryllium	5 / 9	56%	0.0070 - 0.018	0.0040 - 0.020	0.020 - 0.020	0.010	0.010	0.0044	0.43
Bismuth	2 / 9	22%	0.0050 - 0.027	0.0030 - 0.050	0.010 - 0.10	0.017	0.010	0.016	0.96
Boron	8 / 9	89%	5.30 - 9.30	0.40 - 3.00	5.00 - 20.3	7.59	7.80	1.57	0.21
Cadmium	4 / 9	44%	0.013 - 0.028	0.0040 - 0.020	0.020 - 0.051	0.015	0.013	0.0093	0.64
Calcium	9 / 9	100%	3000 - 10500	0.60 - 3.00	5.00 - 10.1	6911	7030	2499	0.36
Chromium	2 / 9	22%	0.80 - 2.10	0.20 - 1.00	1.00 - 2.00	0.65	0.50	0.57	0.87
Cobalt	9 / 9	100%	0.11 - 0.67	0.0020 - 0.0080	0.020 - 0.020	0.33	0.33	0.18	0.53
Copper	9 / 9	100%	3.54 - 5.88	0.020 - 0.10	0.10 - 0.10	4.69	4.74	0.74	0.16
Iron	9 / 9	100%	41.0 - 69.4	0.30 - 2.00	2.00 - 4.10	53.4	53.1	9.37	0.18
Lead	8 / 9	89%	0.050 - 0.29	0.020 - 0.020	0.050 - 0.050	0.097	0.080	0.077	0.79
Magnesium	9 / 9	100%	1520 - 2590	0.20 - 4.00	2.00 - 4.10	2040	2140	340	0.17
Manganese	9 / 9	100%	230 - 1500	0.040 - 0.45	0.050 - 4.96	757	732	510	0.67
Mercury	8 / 9	89%	0.0060 - 0.035	0.0020 - 0.0060	0.010 - 0.020	0.015	0.014	0.0093	0.62
Molybdenum	3 / 9	33%	0.020 - 0.080	0.0080 - 0.050	0.049 - 0.050	0.025	0.024	0.022	0.85
Nickel	9 / 9	100%	0.69 - 2.64	0.020 - 0.10	0.20 - 0.20	1.85	2.02	0.79	0.43
Potassium	9 / 9	100%	6420 - 13000	7.10 - 203	101 - 406	9224	8770	2172	0.24
Selenium	0 / 9	0%	NA - NA	0.10 - 0.40	1.00 - 1.00	NA	NA	NA	NA
Silver	1 / 9	11%	0.019 - 0.019	0.0020 - 0.010	0.020 - 0.020	0.0060	0.0035	0.0054	0.89
Thallium	0 / 9	0%	NA - NA	0.0020 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Tin	2 / 9	22%	2.60 - 4.70	1.50 - 6.90	9.80 - 20.3	4.71	3.45	3.22	0.68
Vanadium	7 / 9	78%	0.020 - 0.45	0.020 - 0.070	0.20 - 0.20	0.11	0.080	0.13	1.18
Zinc	9 / 9	100%	24.6 - 36.9	0.20 - 0.80	0.49 - 2.00	29.4	28.1	4.53	0.15
Anions and Cations [c]									
Cyanide	3 / 9	33%	0.30 - 1.20	0.060 - 0.40	0.30 - 1.20	0.31	0.11	0.40	1.27
Sodium	7 / 9	78%	10.1 - 53.3	2.00 - 20.0	10.1 - 20.3	23.9	21.4	15.0	0.63

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-41
Sour Dock, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004, 2005, and 2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	5 / 5	100%	8.10 - 47.1	0.40 - 8.00	2.00 - 9.90	24.0	22.0	14.4	0.60
Antimony	2 / 5	40%	0.040 - 0.060	0.020 - 0.030	0.050 - 0.050	0.029	0.015	0.020	0.70
Arsenic	0 / 5	0%	NA - NA	0.050 - 0.080	0.49 - 0.51	NA	NA	NA	NA
Barium	5 / 5	100%	3.90 - 12.7	0.020 - 0.20	0.050 - 0.99	9.44	11.1	3.46	0.37
Beryllium	0 / 5	0%	NA - NA	0.0030 - 0.020	0.020 - 0.020	NA	NA	NA	NA
Bismuth	0 / 5	0%	NA - NA	0.0040 - 0.050	0.020 - 0.10	NA	NA	NA	NA
Boron	5 / 5	100%	15.2 - 34.6	0.10 - 2.00	5.00 - 19.7	21.2	18.1	7.79	0.37
Cadmium	4 / 5	80%	0.0080 - 0.018	0.0040 - 0.0070	0.020 - 0.050	0.016	0.017	0.0062	0.38
Calcium	5 / 5	100%	5270 - 14900	0.60 - 3.00	5.00 - 10.0	9704	9350	3425	0.35
Chromium	1 / 4	25%	0.40 - 0.40	0.20 - 0.70	1.00 - 2.00	0.40	0.38	0.071	0.18
Cobalt	5 / 5	100%	0.040 - 0.22	0.0020 - 0.010	0.020 - 0.020	0.097	0.070	0.071	0.74
Copper	5 / 5	100%	0.73 - 2.01	0.020 - 0.10	0.10 - 0.10	1.34	1.17	0.58	0.43
Iron	5 / 5	100%	52.0 - 87.2	0.30 - 2.00	2.00 - 4.00	69.9	73.9	13.4	0.19
Lead	5 / 5	100%	0.050 - 0.42	0.020 - 0.020	0.050 - 0.050	0.15	0.11	0.15	0.98
Magnesium	5 / 5	100%	2690 - 6540	0.20 - 2.00	2.00 - 4.00	3996	3540	1518	0.38
Manganese	5 / 5	100%	36.3 - 412	0.030 - 0.20	0.50 - 1.99	163	143	151	0.93
Mercury	3 / 5	60%	0.028 - 0.048	0.0030 - 0.018	0.020 - 0.044	0.027	0.028	0.017	0.63
Molybdenum	4 / 5	80%	0.040 - 0.080	0.0080 - 0.050	0.050 - 0.050	0.055	0.060	0.023	0.41
Nickel	5 / 5	100%	0.28 - 3.48	0.020 - 0.090	0.20 - 0.20	1.15	0.62	1.32	1.15
Potassium	5 / 5	100%	19600 - 29800	7.00 - 199	100 - 998	24040	23500	4601	0.19
Selenium	0 / 4	0%	NA - NA	0.20 - 0.40	1.00 - 1.02	NA	NA	NA	NA
Silver	2 / 5	40%	0.0060 - 0.0070	0.0020 - 0.0080	0.020 - 0.020	0.0055	0.0060	0.0034	0.62
Thallium	0 / 5	0%	NA - NA	0.0020 - 0.0040	0.020 - 0.020	NA	NA	NA	NA
Tin	0 / 4	0%	NA - NA	1.50 - 6.90	9.90 - 19.7	NA	NA	NA	NA
Vanadium	4 / 5	80%	0.050 - 0.16	0.020 - 0.070	0.20 - 0.20	0.097	0.080	0.060	0.62
Zinc	5 / 5	100%	12.0 - 25.1	0.20 - 0.80	0.49 - 2.00	16.2	13.9	5.21	0.32

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	1 / 1	100%	1770 - 1770	65.0 - 65.0	105 - 105	1770	1770	NA	NA
Chloride	1 / 1	100%	16100 - 16100	150 - 150	1000 - 1000	16100	16100	NA	NA
Cyanide	4 / 5	80%	0.70 - 44.8	0.30 - 0.80	0.80 - 2.60	9.91	1.00	19.5	1.97
Fluoride	1 / 1	100%	1.50 - 1.50	1.40 - 1.40	10.0 - 10.0	1.50	1.50	NA	NA
Sodium	5 / 5	100%	301 - 652	1.50 - 20.0	10.0 - 20.0	407	368	140	0.34
Sulfate	1 / 1	100%	1730 - 1730	450 - 450	1000 - 1000	1730	1730	NA	NA

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-42
Sphagnum Moss, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	34 / 34	100%	16.7 - 1520	0.40 - 36.4	1.90 - 81.0	192	105	284	1.48
Antimony	28 / 34	82%	0.040 - 0.15	0.030 - 0.050	0.048 - 0.060	0.060	0.060	0.031	0.51
Arsenic	31 / 34	91%	0.070 - 3.18	0.050 - 0.10	0.48 - 1.01	0.46	0.21	0.66	1.44
Barium	34 / 34	100%	2.91 - 72.7	0.020 - 0.060	0.020 - 0.10	17.4	12.4	15.4	0.89
Beryllium	6 / 34	18%	0.0080 - 0.12	0.0040 - 0.040	0.019 - 0.040	0.013	0.010	0.020	1.52
Bismuth	16 / 34	47%	0.0050 - 0.10	0.0030 - 0.050	0.010 - 0.10	0.015	0.010	0.018	1.17
Boron	10 / 34	29%	0.70 - 5.60	0.40 - 3.70	4.90 - 20.3	2.52	1.50	1.60	0.64
Cadmium	26 / 34	76%	0.010 - 0.17	0.0040 - 0.040	0.019 - 0.10	0.050	0.035	0.046	0.91
Calcium	34 / 34	100%	727 - 12400	1.00 - 2.50	4.90 - 12.5	4072	3855	2634	0.65
Chromium	7 / 34	21%	0.70 - 1.30	0.10 - 1.00	1.00 - 2.50	0.61	0.50	0.27	0.45
Cobalt	34 / 34	100%	0.11 - 5.96	0.0030 - 0.0080	0.019 - 0.041	0.99	0.54	1.31	1.33
Copper	34 / 34	100%	0.60 - 13.1	0.020 - 0.10	0.10 - 0.20	2.24	1.79	2.11	0.94
Iron	34 / 34	100%	92.5 - 54900	0.30 - 2.50	2.00 - 5.00	3864	809	9671	2.50
Lead	34 / 34	100%	0.11 - 0.76	0.020 - 0.040	0.020 - 0.10	0.38	0.33	0.17	0.46
Magnesium	34 / 34	100%	509 - 4400	0.20 - 5.00	2.00 - 5.00	1317	1260	658	0.50
Manganese	34 / 34	100%	65.8 - 2360	0.030 - 0.69	0.050 - 19.7	493	337	445	0.90
Mercury	29 / 34	85%	0.010 - 0.086	0.0030 - 0.037	0.020 - 0.12	0.028	0.025	0.016	0.55
Molybdenum	34 / 34	100%	0.070 - 2.97	0.020 - 0.050	0.050 - 0.10	0.82	0.45	0.83	1.01
Nickel	34 / 34	100%	0.16 - 3.37	0.020 - 0.11	0.19 - 0.41	0.80	0.68	0.59	0.73
Potassium	34 / 34	100%	1370 - 7830	10.0 - 207	98.0 - 499	4398	4160	1578	0.36
Selenium	9 / 34	26%	0.10 - 1.20	0.10 - 0.40	1.00 - 2.00	0.18	0.10	0.21	1.17
Silver	11 / 34	32%	0.0060 - 0.038	0.0060 - 0.010	0.019 - 0.025	0.0078	0.0050	0.0079	1.01
Thallium	23 / 34	68%	0.0030 - 0.079	0.0020 - 0.040	0.019 - 0.040	0.024	0.020	0.018	0.76
Tin	7 / 34	21%	3.30 - 7.10	1.50 - 5.20	9.70 - 20.3	6.47	5.23	3.21	0.50
Vanadium	33 / 34	97%	0.10 - 11.6	0.020 - 0.040	0.19 - 0.41	0.91	0.45	1.98	2.19
Zinc	34 / 34	100%	7.20 - 53.1	0.19 - 0.70	0.48 - 2.00	22.0	19.7	8.51	0.39
Anions and Cations [c]									
Cyanide	13 / 34	38%	0.10 - 10.1	0.070 - 1.50	0.35 - 4.90	1.26	0.53	1.98	1.57
Sodium	34 / 34	100%	185 - 1450	2.00 - 21.0	9.80 - 40.0	516	446	285	0.55

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-43
Stair Step Moss, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	15 / 15	100%	49.4 - 645	0.40 - 5.10	2.00 - 20.1	248	176	190	0.77
Antimony	11 / 15	73%	0.040 - 0.18	0.030 - 0.040	0.050 - 0.051	0.068	0.070	0.046	0.67
Arsenic	14 / 15	93%	0.070 - 1.01	0.050 - 0.060	0.50 - 0.51	0.19	0.13	0.23	1.26
Barium	15 / 15	100%	26.3 - 68.2	0.020 - 0.030	0.050 - 0.10	44.0	41.0	13.4	0.30
Beryllium	5 / 15	33%	0.0090 - 0.025	0.0040 - 0.020	0.020 - 0.020	0.012	0.010	0.0059	0.49
Bismuth	9 / 15	60%	0.0080 - 0.055	0.0030 - 0.050	0.010 - 0.10	0.025	0.025	0.015	0.59
Boron	10 / 15	67%	2.60 - 9.90	0.40 - 3.10	4.90 - 20.2	4.30	4.80	2.22	0.52
Cadmium	15 / 15	100%	0.10 - 0.70	0.0040 - 0.020	0.020 - 0.051	0.20	0.17	0.15	0.72
Calcium	15 / 15	100%	69.7 - 6300	1.00 - 2.00	4.90 - 10.2	3564	3510	1384	0.39
Chromium	6 / 15	40%	0.80 - 3.30	0.10 - 1.00	1.00 - 2.00	1.02	0.50	0.85	0.84
Cobalt	15 / 15	100%	0.073 - 1.52	0.0030 - 0.0040	0.020 - 0.020	0.34	0.22	0.36	1.06
Copper	15 / 15	100%	3.06 - 19.2	0.020 - 0.10	0.10 - 0.10	5.18	3.93	3.96	0.76
Iron	15 / 15	100%	51.0 - 754	0.30 - 2.00	2.00 - 4.10	304	170	235	0.77
Lead	15 / 15	100%	0.42 - 1.24	0.020 - 0.020	0.050 - 0.050	0.78	0.73	0.21	0.27
Magnesium	15 / 15	100%	49.6 - 1710	0.20 - 4.10	2.00 - 4.10	1029	996	390	0.38
Manganese	15 / 15	100%	3.14 - 1720	0.040 - 0.71	0.050 - 20.2	935	929	441	0.47
Mercury	15 / 15	100%	0.041 - 0.12	0.0020 - 0.0060	0.017 - 0.021	0.069	0.066	0.019	0.27
Molybdenum	15 / 15	100%	0.050 - 1.11	0.020 - 0.050	0.050 - 0.050	0.30	0.10	0.38	1.27
Nickel	15 / 15	100%	0.55 - 4.36	0.020 - 0.090	0.20 - 0.20	1.31	1.12	0.96	0.73
Potassium	14 / 15	93%	2470 - 8990	10.0 - 202	99.0 - 407	3683	3520	1809	0.49
Selenium	4 / 15	27%	0.10 - 0.90	0.10 - 0.40	1.00 - 1.00	0.18	0.10	0.20	1.12
Silver	10 / 15	67%	0.0090 - 0.071	0.0060 - 0.010	0.020 - 0.020	0.019	0.013	0.018	0.96
Thallium	13 / 15	87%	0.012 - 0.13	0.0020 - 0.020	0.020 - 0.020	0.033	0.019	0.031	0.96
Tin	1 / 15	7%	5.90 - 5.90	1.50 - 5.10	9.80 - 20.2	4.78	4.95	3.11	0.65
Vanadium	15 / 15	100%	0.22 - 0.93	0.020 - 0.040	0.20 - 0.20	0.40	0.34	0.18	0.46
Zinc	15 / 15	100%	2.20 - 122	0.20 - 0.70	0.50 - 2.00	49.8	46.2	28.4	0.57
Anions and Cations [c]									
Cyanide	8 / 15	53%	0.13 - 3.30	0.050 - 0.40	0.21 - 1.70	0.71	0.20	0.96	1.35
Sodium	15 / 15	100%	48.7 - 153	2.00 - 20.0	9.90 - 40.0	75.7	76.1	24.5	0.32

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-44
Water Horsetail, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	6 / 6	100%	90.2 - 691	0.50 - 5.00	2.00 - 10.1	225	142	232	1.03
Antimony	5 / 6	83%	0.040 - 0.11	0.030 - 0.040	0.049 - 0.050	0.054	0.050	0.028	0.51
Arsenic	6 / 6	100%	0.24 - 167	0.050 - 0.10	0.49 - 0.99	30.0	1.07	67.2	2.24
Barium	6 / 6	100%	14.6 - 32.7	0.020 - 0.060	0.050 - 0.10	22.7	22.6	8.06	0.35
Beryllium	2 / 6	33%	0.0080 - 0.024	0.0040 - 0.040	0.020 - 0.040	0.011	0.0090	0.0088	0.78
Bismuth	0 / 6	0%	NA - NA	0.0030 - 0.0050	0.050 - 0.10	NA	NA	NA	NA
Boron	6 / 6	100%	6.40 - 14.3	0.40 - 3.00	9.90 - 19.8	11.8	12.8	2.96	0.25
Cadmium	5 / 6	83%	0.030 - 0.14	0.0040 - 0.040	0.049 - 0.10	0.090	0.10	0.052	0.58
Calcium	6 / 6	100%	10400 - 19100	2.00 - 19.8	9.90 - 98.8	14783	14900	3666	0.25
Chromium	4 / 6	67%	1.00 - 8.80	0.70 - 1.00	2.00 - 2.00	2.27	1.00	3.24	1.43
Cobalt	6 / 6	100%	0.48 - 2.71	0.0030 - 0.0080	0.020 - 0.040	1.17	0.92	0.82	0.70
Copper	6 / 6	100%	1.07 - 4.90	0.020 - 0.10	0.10 - 0.20	2.72	2.36	1.47	0.54
Iron	6 / 6	100%	672 - 14200	0.40 - 5.90	3.90 - 39.5	3513	1455	5279	1.50
Lead	6 / 6	100%	0.070 - 0.49	0.020 - 0.040	0.050 - 0.10	0.21	0.13	0.17	0.82
Magnesium	6 / 6	100%	1610 - 2820	0.20 - 6.90	3.90 - 39.5	2435	2595	482	0.20
Manganese	6 / 6	100%	293 - 3360	0.070 - 0.69	0.99 - 9.88	1162	630	1164	1.00
Mercury	6 / 6	100%	0.0090 - 0.018	0.0040 - 0.010	0.017 - 0.032	0.012	0.011	0.0033	0.28
Molybdenum	6 / 6	100%	1.14 - 12.2	0.020 - 0.040	0.050 - 0.10	3.87	2.41	4.16	1.08
Nickel	6 / 6	100%	0.47 - 5.85	0.030 - 0.090	0.20 - 0.40	2.12	1.55	1.89	0.89
Potassium	6 / 6	100%	11100 - 28900	197 - 201	394 - 402	20417	21350	7453	0.37
Selenium	6 / 6	100%	0.30 - 0.80	0.10 - 0.20	1.00 - 2.00	0.48	0.40	0.21	0.44
Silver	3 / 6	50%	0.0070 - 0.013	0.0060 - 0.010	0.020 - 0.020	0.0073	0.0060	0.0039	0.53
Thallium	5 / 6	83%	0.011 - 0.17	0.0020 - 0.040	0.020 - 0.040	0.053	0.034	0.059	1.10
Tin	2 / 6	33%	5.70 - 6.10	3.00 - 5.00	9.90 - 19.8	5.92	5.90	3.55	0.60
Vanadium	6 / 6	100%	0.43 - 3.73	0.020 - 0.040	0.20 - 0.40	1.82	1.69	1.30	0.72
Zinc	6 / 6	100%	21.2 - 41.2	0.20 - 0.70	0.50 - 2.00	29.7	28.9	6.51	0.22
Anions and Cations [c]									
Cyanide	1 / 6	17%	3.90 - 3.90	0.30 - 0.60	1.00 - 1.90	0.82	0.20	1.51	1.85
Sodium	6 / 6	100%	417 - 1810	4.90 - 20.0	19.7 - 20.0	867	624	558	0.64

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.1-45
Whiteworm Lichen, Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2006-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	15 / 15	100%	22.4 - 228	0.40 - 4.90	2.00 - 9.90	77.6	43.3	70.7	0.91
Antimony	10 / 15	67%	0.040 - 0.12	0.030 - 0.040	0.050 - 0.050	0.062	0.050	0.042	0.68
Arsenic	8 / 15	53%	0.050 - 0.17	0.050 - 0.10	0.49 - 1.00	0.058	0.050	0.041	0.70
Barium	15 / 15	100%	3.64 - 52.4	0.020 - 0.060	0.050 - 0.10	9.65	6.78	12.0	1.24
Beryllium	1 / 15	7%	0.0070 - 0.0070	0.0060 - 0.040	0.020 - 0.040	0.0091	0.010	0.0042	0.46
Bismuth	7 / 15	47%	0.0060 - 0.10	0.0030 - 0.050	0.010 - 0.10	0.022	0.021	0.024	1.10
Boron	5 / 15	33%	1.50 - 4.00	0.40 - 3.00	5.00 - 20.2	2.19	1.50	1.61	0.74
Cadmium	15 / 15	100%	0.040 - 0.20	0.0040 - 0.040	0.020 - 0.10	0.089	0.070	0.047	0.53
Calcium	15 / 15	100%	1800 - 8920	1.00 - 2.00	5.00 - 10.1	3103	2430	1940	0.63
Chromium	2 / 15	13%	1.20 - 1.20	0.10 - 1.00	1.00 - 2.00	0.55	0.50	0.27	0.49
Cobalt	15 / 15	100%	0.041 - 0.42	0.0030 - 0.0080	0.020 - 0.040	0.11	0.063	0.10	0.97
Copper	15 / 15	100%	0.86 - 3.61	0.020 - 0.10	0.10 - 0.20	1.52	1.36	0.62	0.41
Iron	15 / 15	100%	24.3 - 273	0.30 - 0.60	2.00 - 4.10	86.5	58.2	70.4	0.81
Lead	15 / 15	100%	0.42 - 1.00	0.020 - 0.040	0.050 - 0.10	0.60	0.57	0.16	0.27
Magnesium	15 / 15	100%	176 - 1510	0.20 - 1.00	2.00 - 4.10	365	297	320	0.88
Manganese	15 / 15	100%	21.1 - 574	0.040 - 0.070	0.99 - 2.01	118	66.9	140	1.19
Mercury	15 / 15	100%	0.023 - 0.10	0.0020 - 0.015	0.012 - 0.049	0.053	0.050	0.020	0.38
Molybdenum	12 / 15	80%	0.050 - 0.53	0.020 - 0.050	0.050 - 0.10	0.13	0.10	0.13	1.01
Nickel	15 / 15	100%	0.18 - 3.90	0.020 - 0.060	0.200 - 0.40	1.17	0.76	1.19	1.02
Potassium	15 / 15	100%	2250 - 4540	10.0 - 202	100 - 405	2775	2670	536	0.19
Selenium	3 / 15	20%	0.20 - 0.30	0.10 - 0.40	1.00 - 2.00	0.14	0.10	0.078	0.56
Silver	7 / 15	47%	0.0060 - 0.040	0.0060 - 0.010	0.020 - 0.020	0.013	0.0050	0.012	0.96
Thallium	10 / 15	67%	0.0020 - 0.031	0.0020 - 0.040	0.020 - 0.040	0.013	0.010	0.0089	0.68
Tin	2 / 15	13%	5.30 - 5.60	1.50 - 5.00	10.0 - 20.2	5.95	5.10	3.29	0.55
Vanadium	15 / 15	100%	0.060 - 0.45	0.020 - 0.040	0.20 - 0.40	0.19	0.12	0.14	0.73
Zinc	15 / 15	100%	28.4 - 46.7	0.20 - 0.70	0.50 - 2.00	36.4	35.8	5.78	0.16
Anions and Cations [c]									
Cyanide	6 / 15	40%	0.080 - 0.66	0.030 - 0.48	0.14 - 1.60	0.17	0.10	0.19	1.08
Sodium	15 / 15	100%	36.7 - 255	2.00 - 20.0	10.0 - 40.0	92.9	73.7	59.0	0.63

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.1-46
Willow (Species Not Identified), Vegetative Tissue Data Summary and Descriptive Statistics, Mine Study Area, 2004-2005

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	11 / 11	100%	3.30 - 423	0.50 - 4.00	2.00 - 5.00	67.7	15.3	129	1.90
Antimony	9 / 11	82%	0.030 - 0.090	0.020 - 0.030	0.050 - 0.050	0.050	0.050	0.023	0.45
Arsenic	1 / 11	9%	0.080 - 0.080	0.050 - 0.080	0.49 - 0.50	0.033	0.025	0.017	0.51
Barium	11 / 11	100%	1.80 - 49.7	0.030 - 0.10	0.050 - 0.50	11.6	10.4	13.2	1.13
Beryllium	5 / 11	45%	0.0030 - 0.052	0.0030 - 0.0040	0.019 - 0.020	0.0077	0.0020	0.015	1.93
Bismuth	3 / 11	27%	0.010 - 0.010	0.0020 - 0.010	0.050 - 0.050	0.010	0.0050	0.0077	0.77
Boron	9 / 11	82%	9.50 - 17.0	0.10 - 2.00	4.90 - 20.0	12.0	10.8	2.67	0.22
Cadmium	11 / 11	100%	0.040 - 0.79	0.0040 - 0.010	0.050 - 0.050	0.39	0.35	0.24	0.61
Calcium	11 / 11	100%	2340 - 10200	0.60 - 1.50	4.90 - 10.0	6110	6420	1874	0.31
Chromium	4 / 11	36%	0.30 - 0.40	0.20 - 0.70	1.00 - 2.00	0.23	0.30	0.12	0.52
Cobalt	11 / 11	100%	0.30 - 2.56	0.0020 - 0.010	0.020 - 0.020	1.35	1.12	0.87	0.65
Copper	11 / 11	100%	2.02 - 4.96	0.020 - 0.040	0.10 - 0.10	3.24	2.98	0.82	0.25
Iron	11 / 11	100%	27.8 - 132	0.30 - 0.80	1.90 - 4.00	51.4	45.7	29.3	0.57
Lead	9 / 11	82%	0.040 - 0.10	0.020 - 0.020	0.050 - 0.050	0.064	0.070	0.024	0.38
Magnesium	11 / 11	100%	860 - 2850	0.20 - 1.00	1.90 - 4.00	1549	1340	651	0.42
Manganese	11 / 11	100%	68.5 - 1100	0.020 - 0.090	0.49 - 1.00	496	346	378	0.76
Mercury	9 / 11	82%	0.024 - 0.043	0.0040 - 0.010	0.0080 - 0.020	0.029	0.034	0.014	0.50
Molybdenum	10 / 11	91%	0.016 - 0.51	0.0080 - 0.0080	0.049 - 0.050	0.24	0.18	0.21	0.89
Nickel	11 / 11	100%	0.25 - 4.88	0.040 - 0.080	0.19 - 0.20	2.17	2.14	1.29	0.59
Potassium	11 / 11	100%	3420 - 13200	2.40 - 100	194 - 400	7166	7300	2955	0.41
Selenium	0 / 11	0%	NA - NA	0.10 - 0.20	1.00 - 1.00	NA	NA	NA	NA
Silver	3 / 11	27%	0.010 - 0.014	0.0020 - 0.0030	0.019 - 0.020	0.0044	0.0015	0.0052	1.17
Thallium	9 / 11	82%	0.0020 - 0.027	0.0020 - 0.0040	0.019 - 0.020	0.0071	0.0050	0.0073	1.03
Tin	0 / 11	0%	NA - NA	1.00 - 7.00	4.90 - 20.0	NA	NA	NA	NA
Vanadium	9 / 11	82%	0.080 - 0.17	0.030 - 0.070	0.19 - 0.20	0.099	0.090	0.042	0.42
Zinc	11 / 11	100%	16.9 - 155	0.090 - 0.20	0.50 - 1.00	74.7	50.2	55.0	0.74

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations [c]									
Ammonia (as nitrogen)	9 / 9	100%	8.10 - 53.0	0.80 - 1.60	1.40 - 2.80	21.2	15.8	14.1	0.67
Chloride	9 / 9	100%	698 - 1250	40.0 - 40.0	240 - 240	982	957	169	0.17
Cyanide	1 / 11	9%	0.060 - 0.060	0.040 - 0.11	0.10 - 0.36	0.052	0.055	0.011	0.21
Fluoride	9 / 9	100%	1.30 - 2.50	0.30 - 0.30	2.40 - 2.40	1.79	1.70	0.42	0.24
Sodium	11 / 11	100%	11.2 - 172	1.50 - 7.00	9.70 - 20.0	61.0	57.7	42.2	0.69
Sulfate	9 / 9	100%	175 - 3160	110 - 110	240 - 240	1180	798	1051	0.89

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

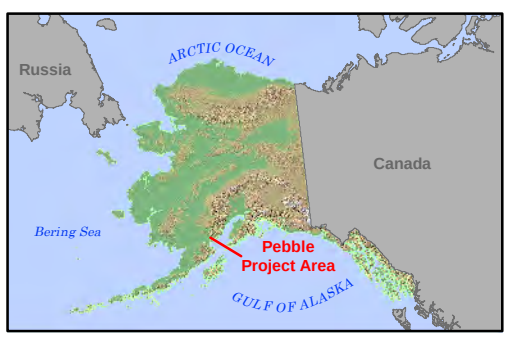
NA = not applicable; analyte not detected in any samples.

FIGURES

155°24'0"W 155°18'0"W 155°12'0"W

59°57'0"N 59°54'0"N 59°51'0"N 59°48'0"N

BLKLK1
BLKLK2
BLACK
236221
BL
BL
SEC04
236271
236272
236273
SEC27
236351
236352
236353
LILLY
SEC28
235281
235271
TPS4
235361
BWL
WIGGLY
WIGGLY5
335051
335021
336011
336012
336013
Koktuli River
TPS3
335081
TPS1
SEC03
335032
SEC03
335031
335011
336041
336042
336043
NK100B
NK100B
NK100C
NK100C
WIGGLY4
TPS2
SEC22
335091
335092
335093
335131
335133
SEC12
SEC12
335132
UT138
335141
335143
335142
SEC13
SEC13
335171
335172
335173
335161
335162
335163
WIGGLY2
NK119A
NK119A
336131
336132
336133
SEC17
335174
335175
335176
UT100E
UT100E
335133
335144
335134
335135
335245
335145
335242
UT146A
335235
335246
UT138A
UT138A
336212
SEC21
336211
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SK100G
SK100G
SK100G
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FPL
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SEC06
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TPS7
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SK100F
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SP1505
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SEC23
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435222
SK100C
SK100C
Koktuli River
SP2205
UT100C
UT100C
SEC26
SEC26
435302
SEC30
435301
SEC30
UT119B
SP1905
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SP1205
SK100B1
SP1705
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SEC36
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436362
SEC32
SEC32
SEC32
SP1805
SEC34
435341
435342
UT100B
UT100B
535052
SEC03
SEC03
Upper Talarik Creek
SEC2
SEC2
SEC05
535051
CHIQ
BEARLAKE2
BEARLAKE3
BEARLAKE1



Miles 0 1 2 3

Kilometers 0 1 2 3

N

Scale 1:80,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Legend

- Collection Locations
- Sec36 Aquatic Vegetation and Sediment Collection Locations
- Sec36 Sediment Collection Locations
- Sec36 Soil Collection Locations
- Sec36 Soil/Vegetation Collection Locations
- Sec36 Fish Tissue Collection Locations
- General Deposit Location

THE pebble PARTNERSHIP

Figure 10.1-1
Trace Elements Study,
Sampling Locations for Soil,
Vegetation, Sediment, and Fish,
Mine Study Area, 2004-2008

RDI_SLR_TraceElements_Fig10_1-1_2004-2008_11X17P_D03.mxd	Date: May 19, 2011
Version: 3	Author: MRA - LS

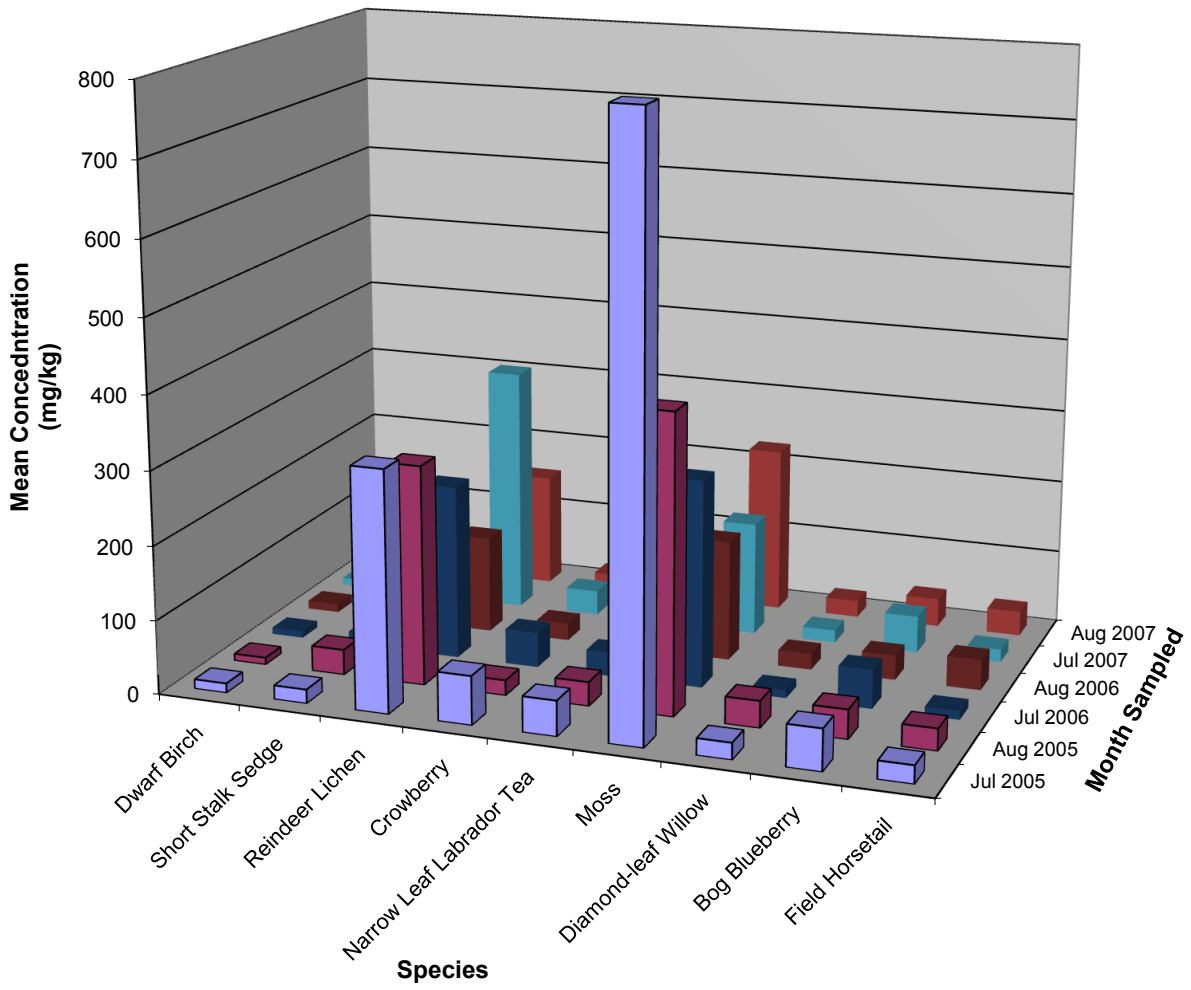


FIGURE 10.1-2
Mean Aluminum Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

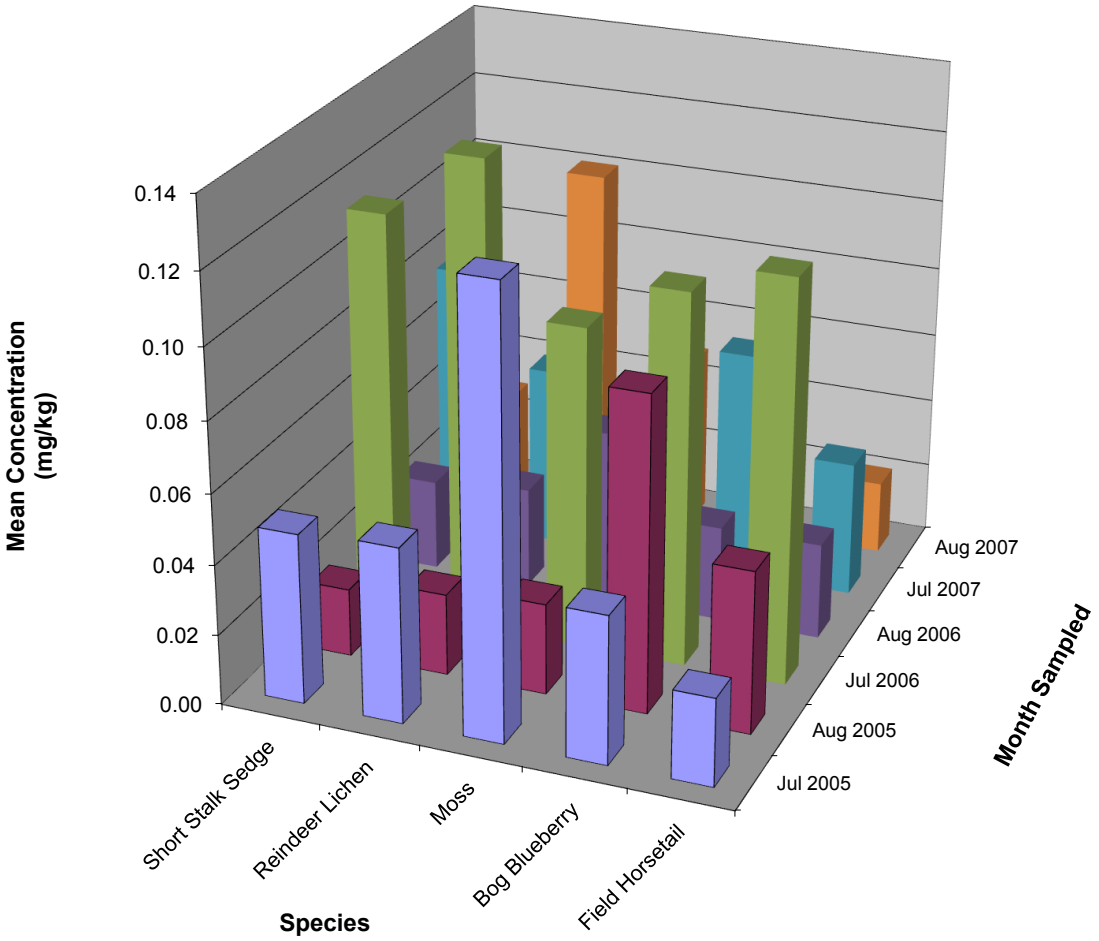


FIGURE 10.1-3
Mean Antimony Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

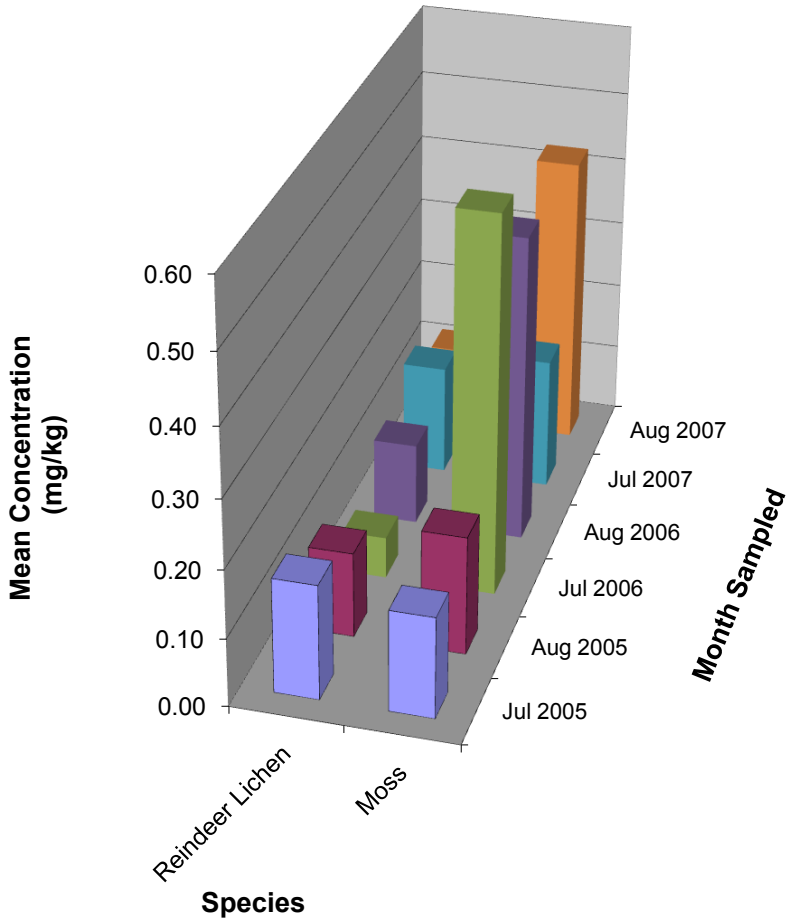


FIGURE 10.1-4
Mean Arsenic Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

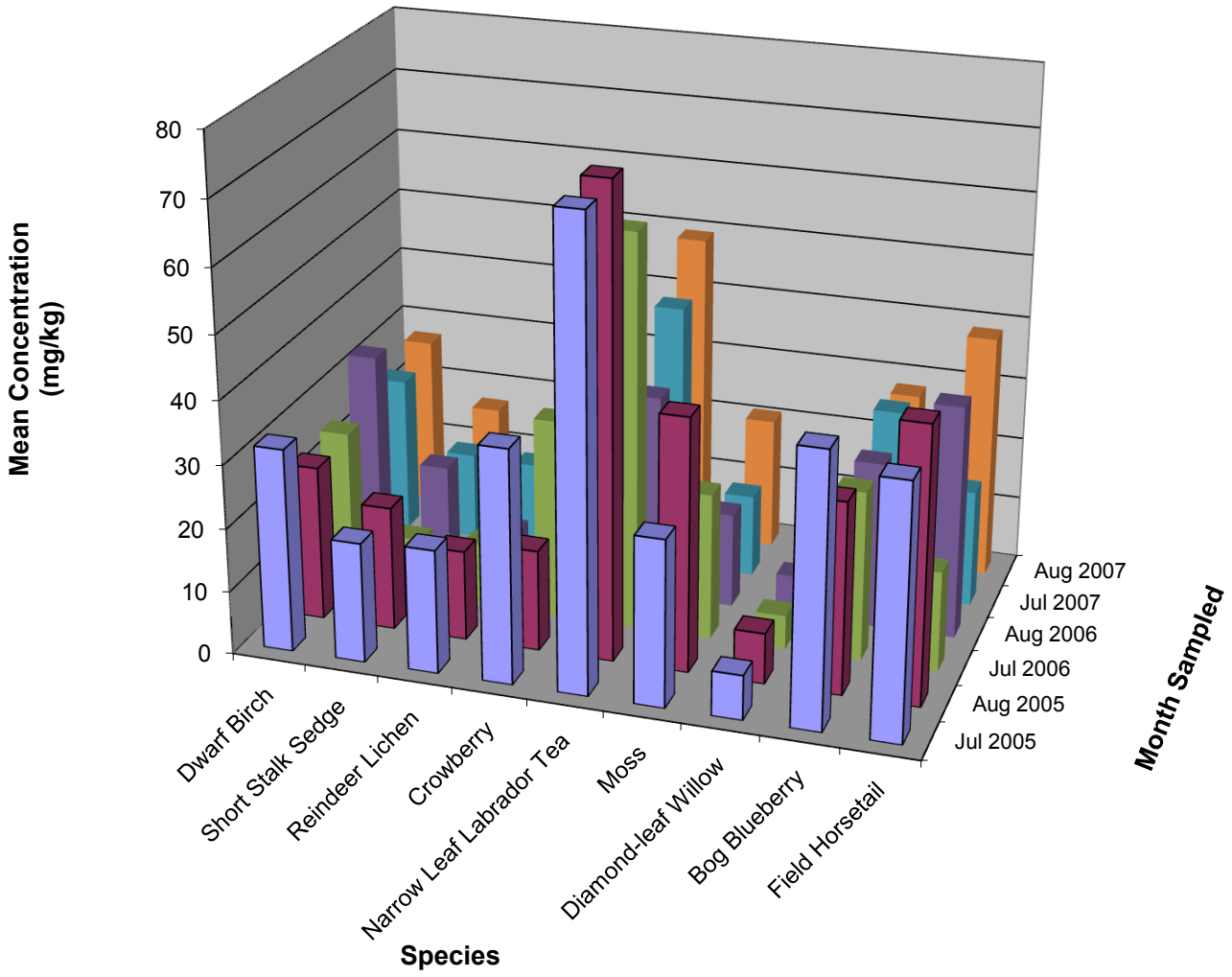


FIGURE 10.1-5
Mean Barium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

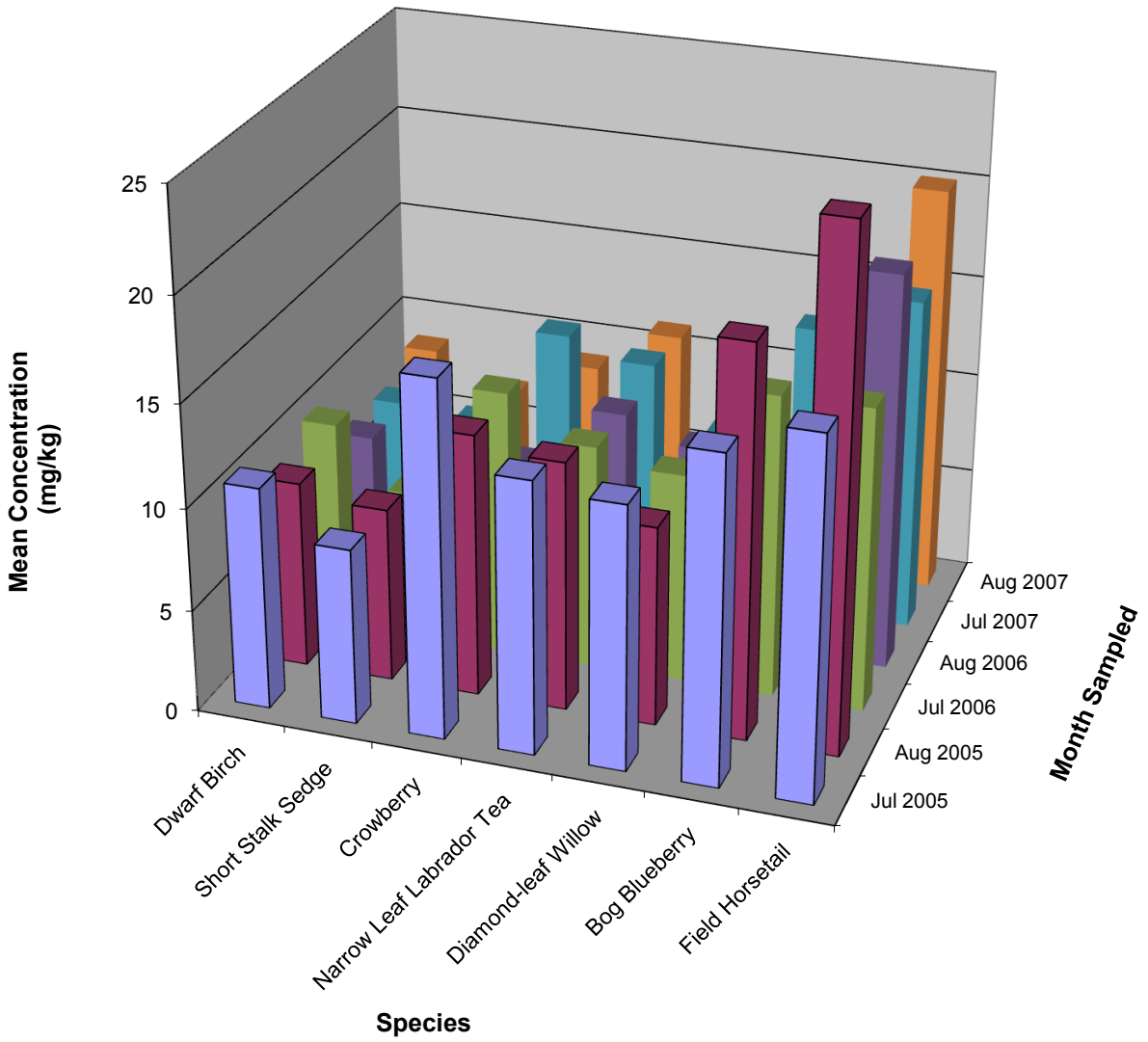


FIGURE 10.1-6
Mean Boron Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

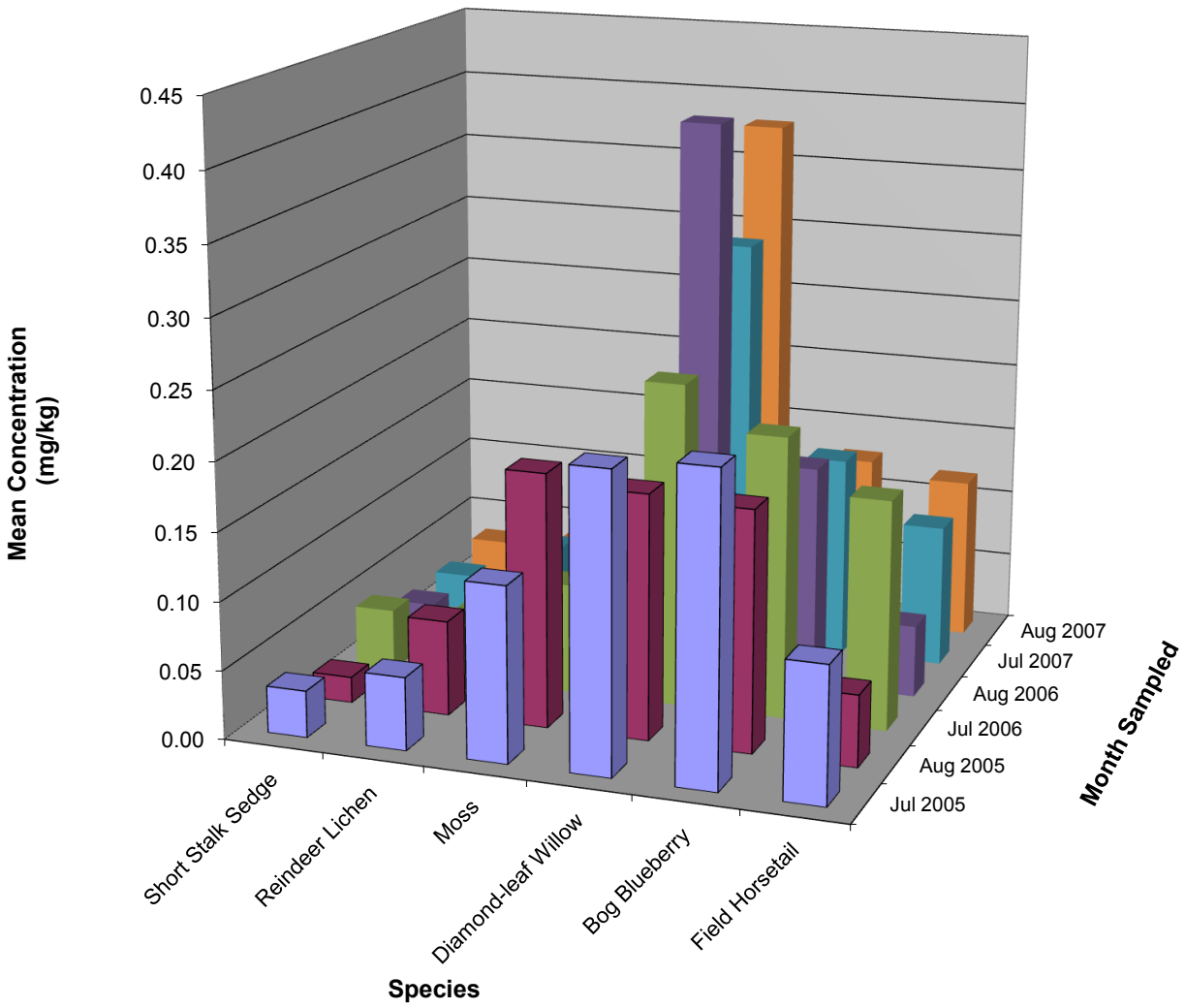


FIGURE 10.1-7
Mean Cadmium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

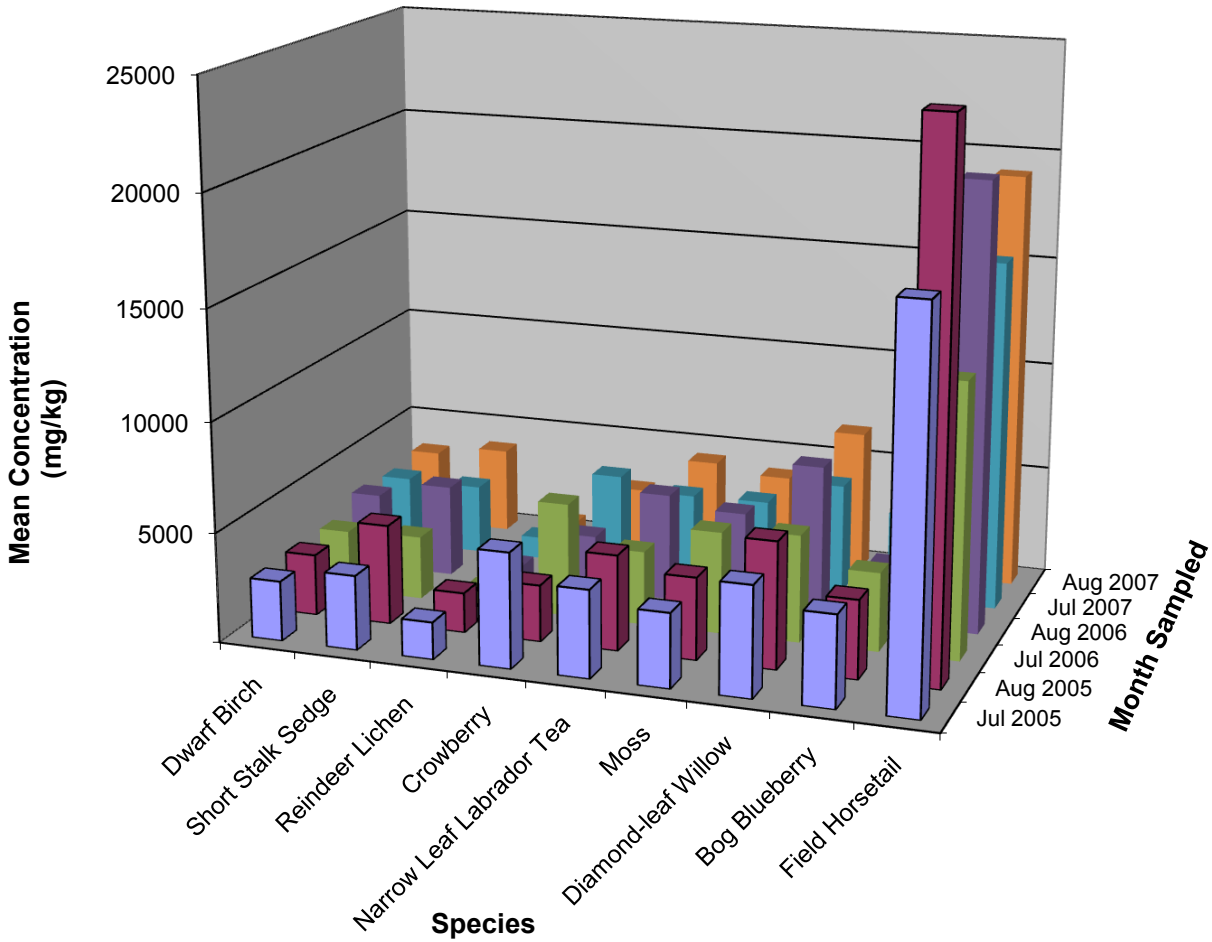


FIGURE 10.1-8
Mean Calcium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

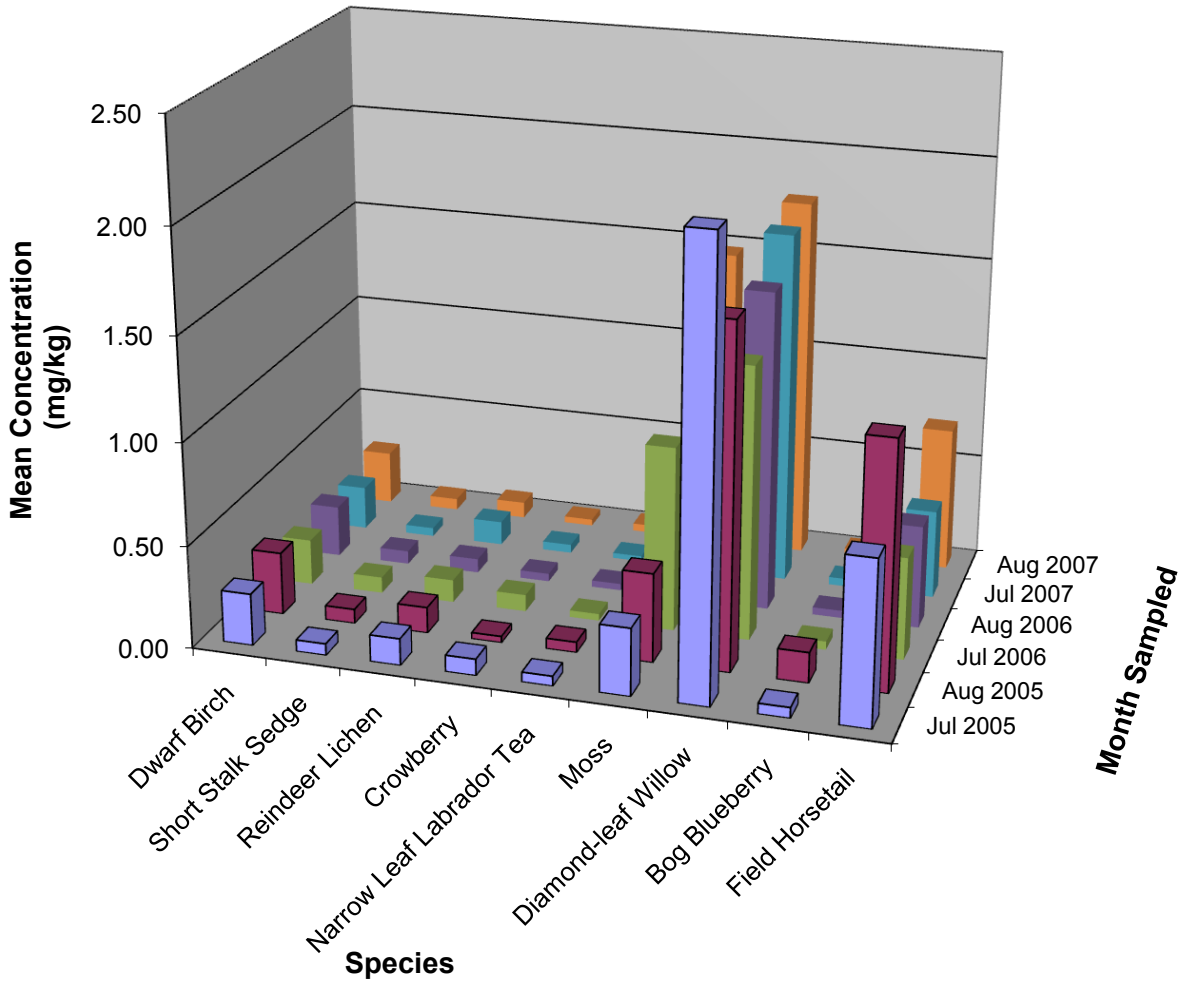


FIGURE 10.1-9
Mean Cobalt Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

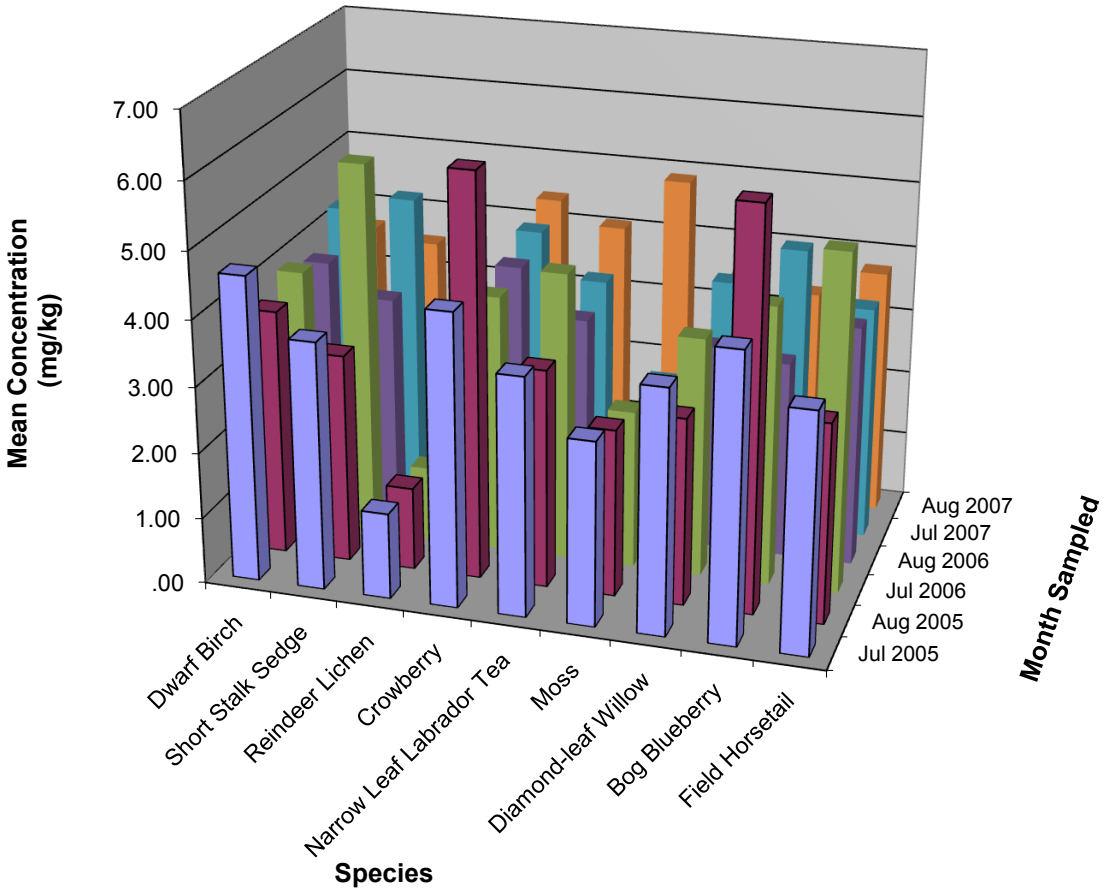


FIGURE 10.1-10
Mean Copper Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

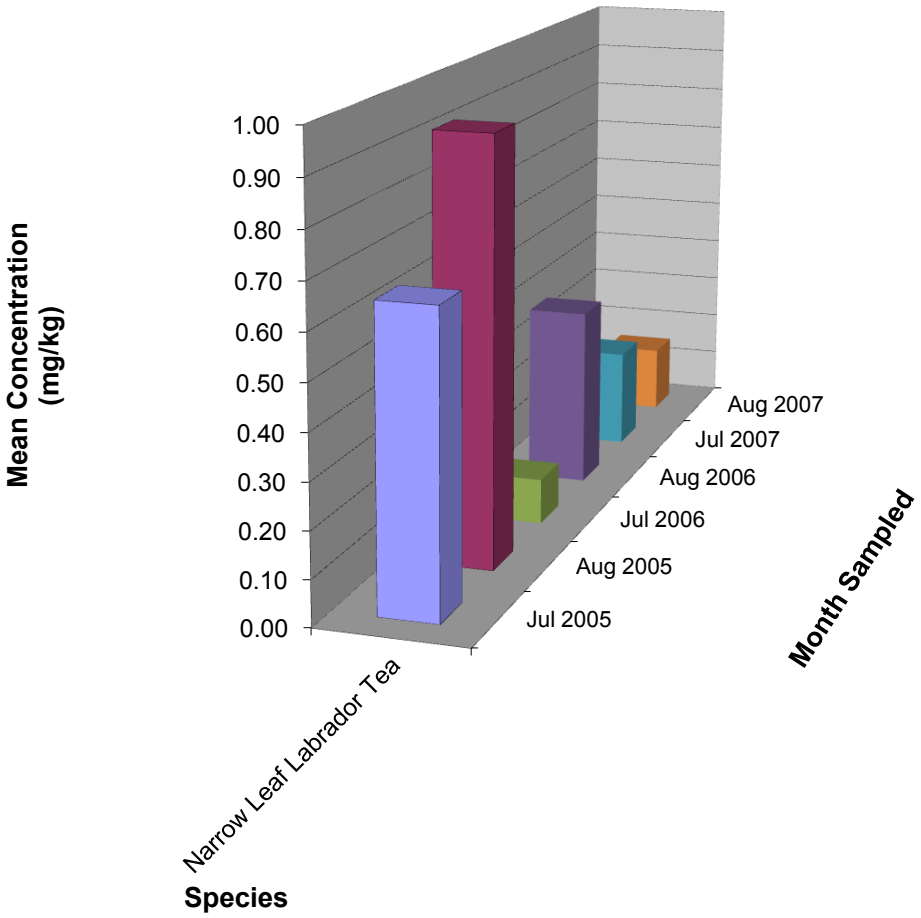


FIGURE 10.1-11
Mean Cyanide Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

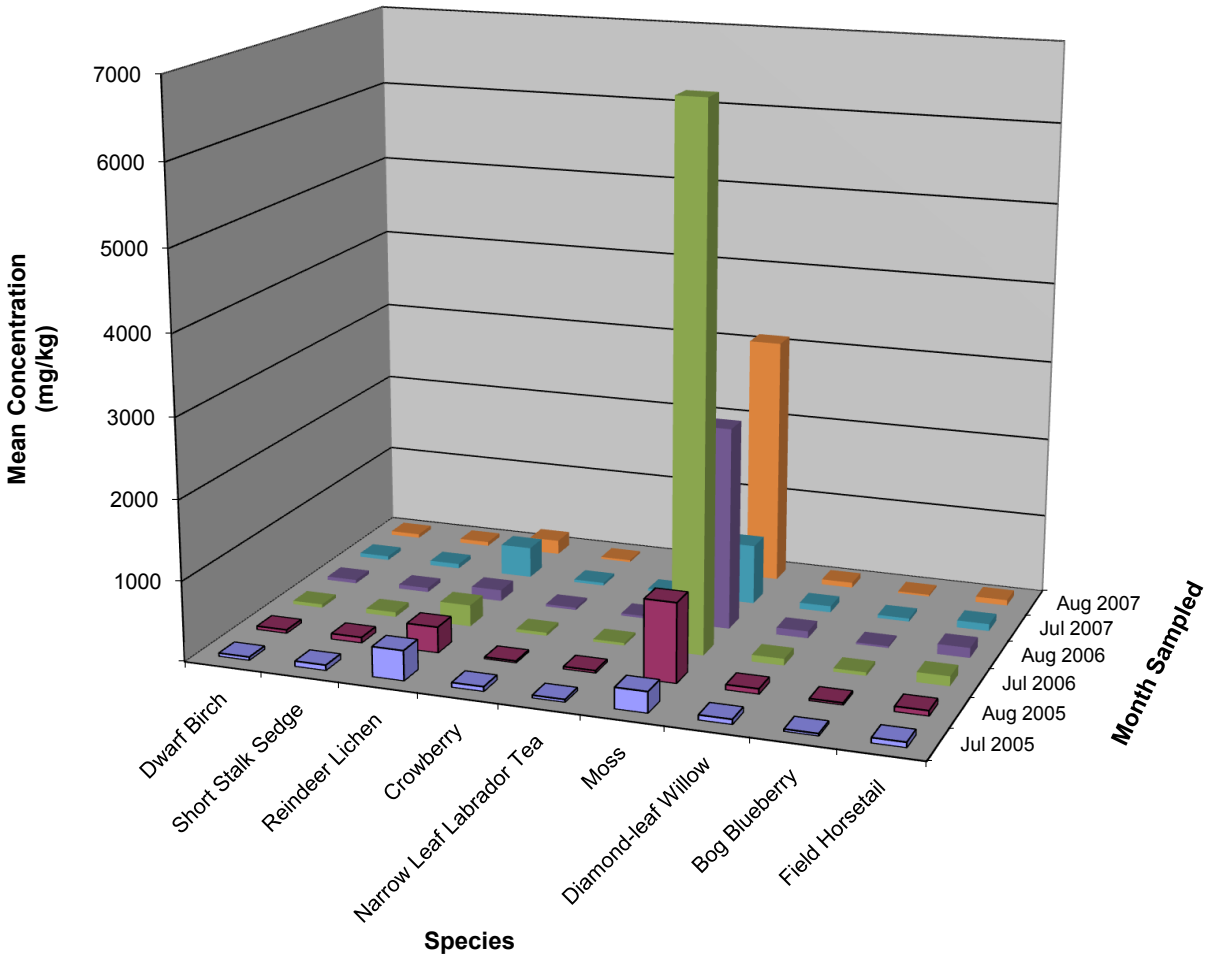


FIGURE 10.1-12
Mean Iron Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

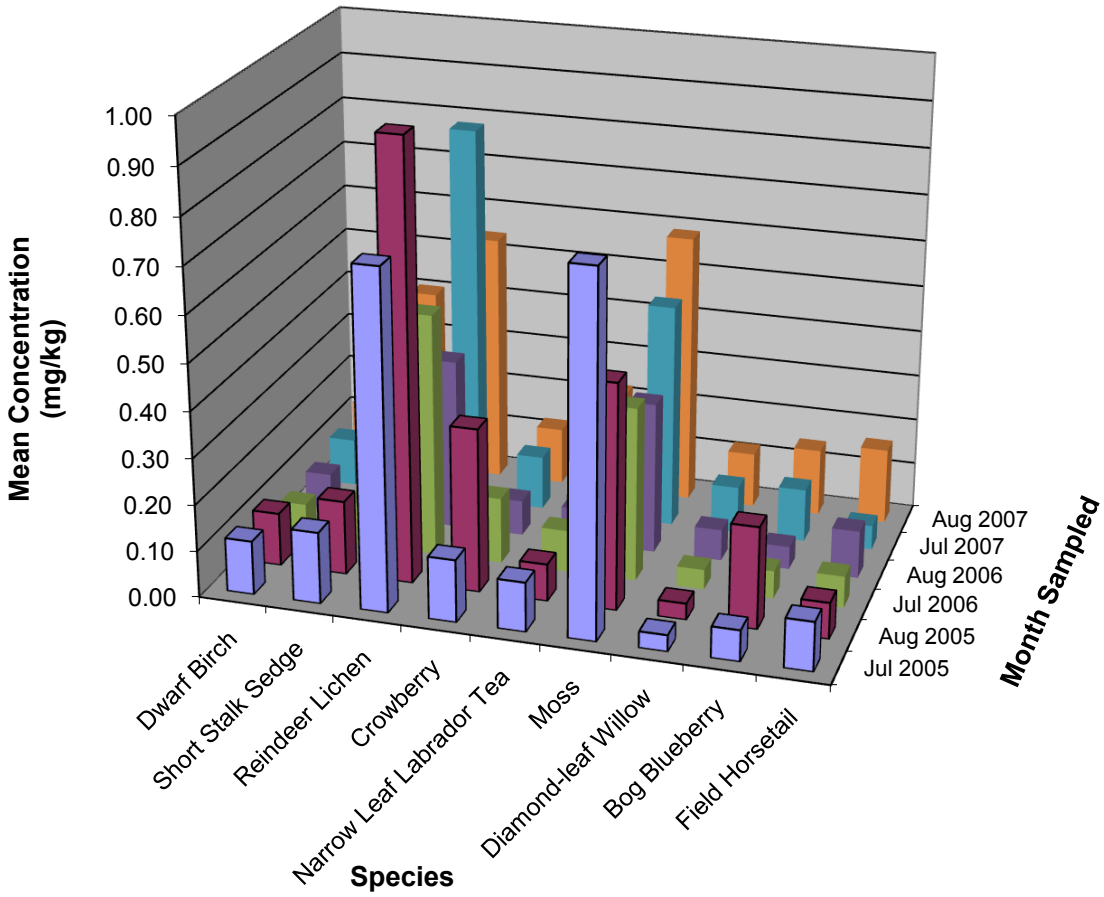


FIGURE 10.1-13
Mean Lead Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

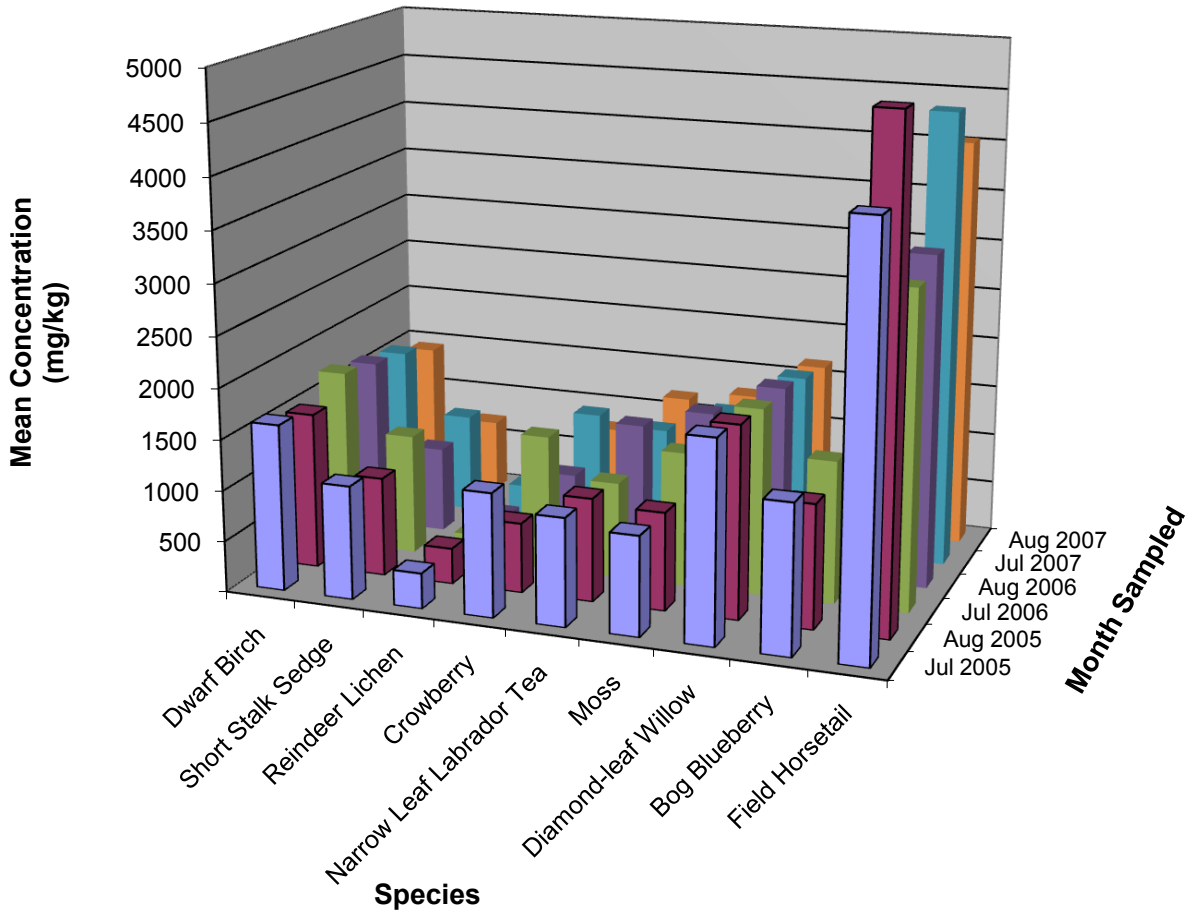


FIGURE 10.1-14
Mean Magnesium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

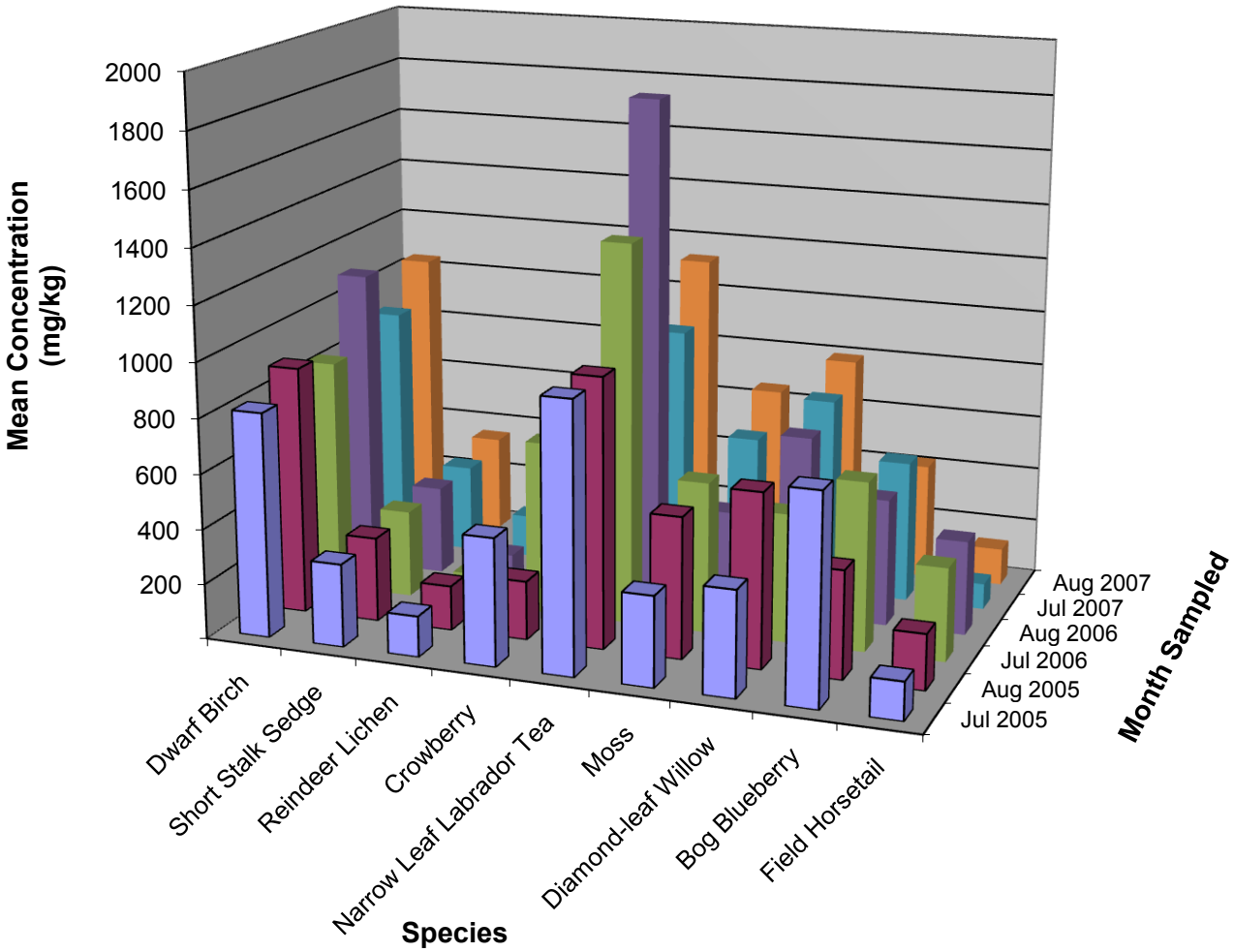


FIGURE 10.1-15
Mean Manganese Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

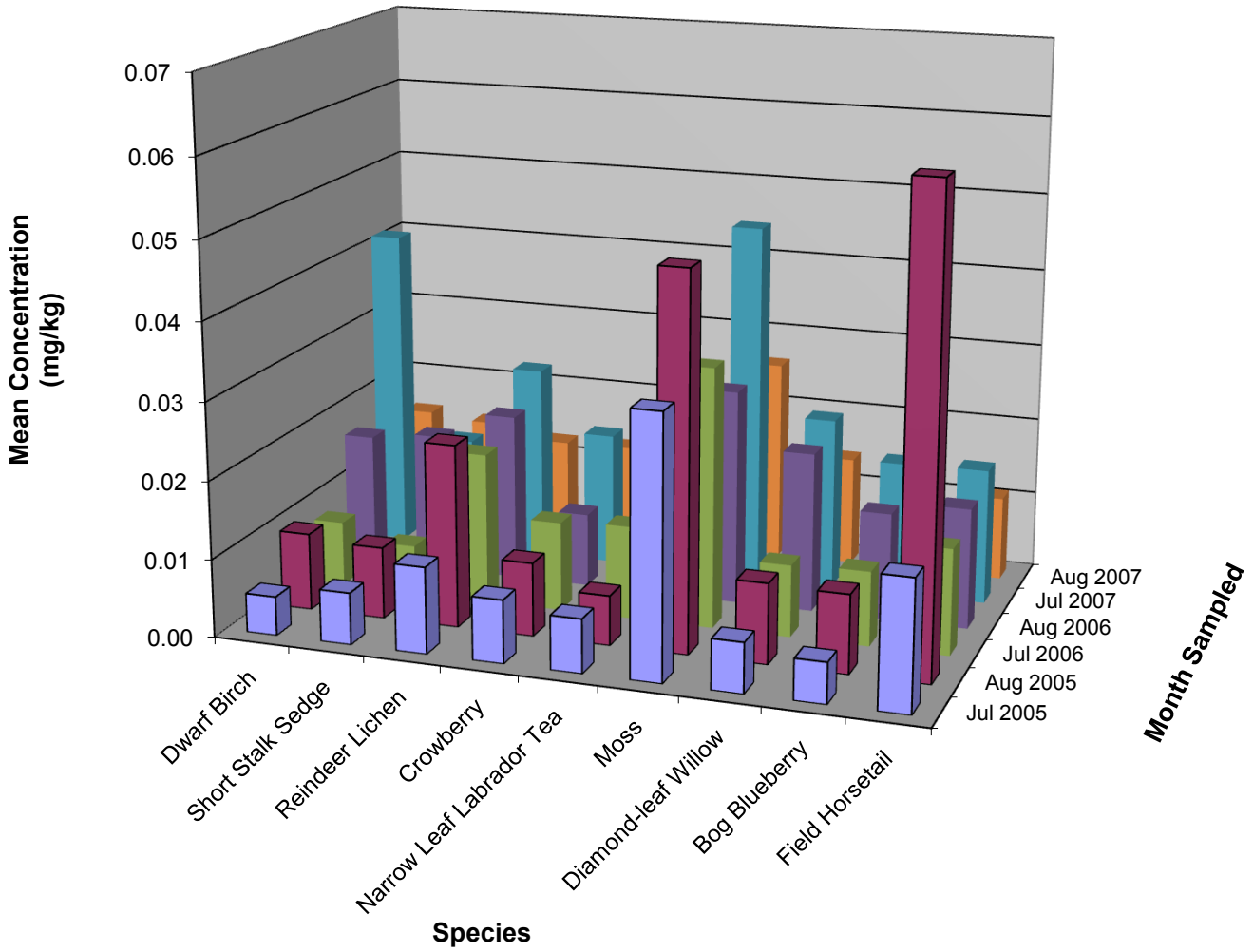


FIGURE 10.1-16
Mean Mercury Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

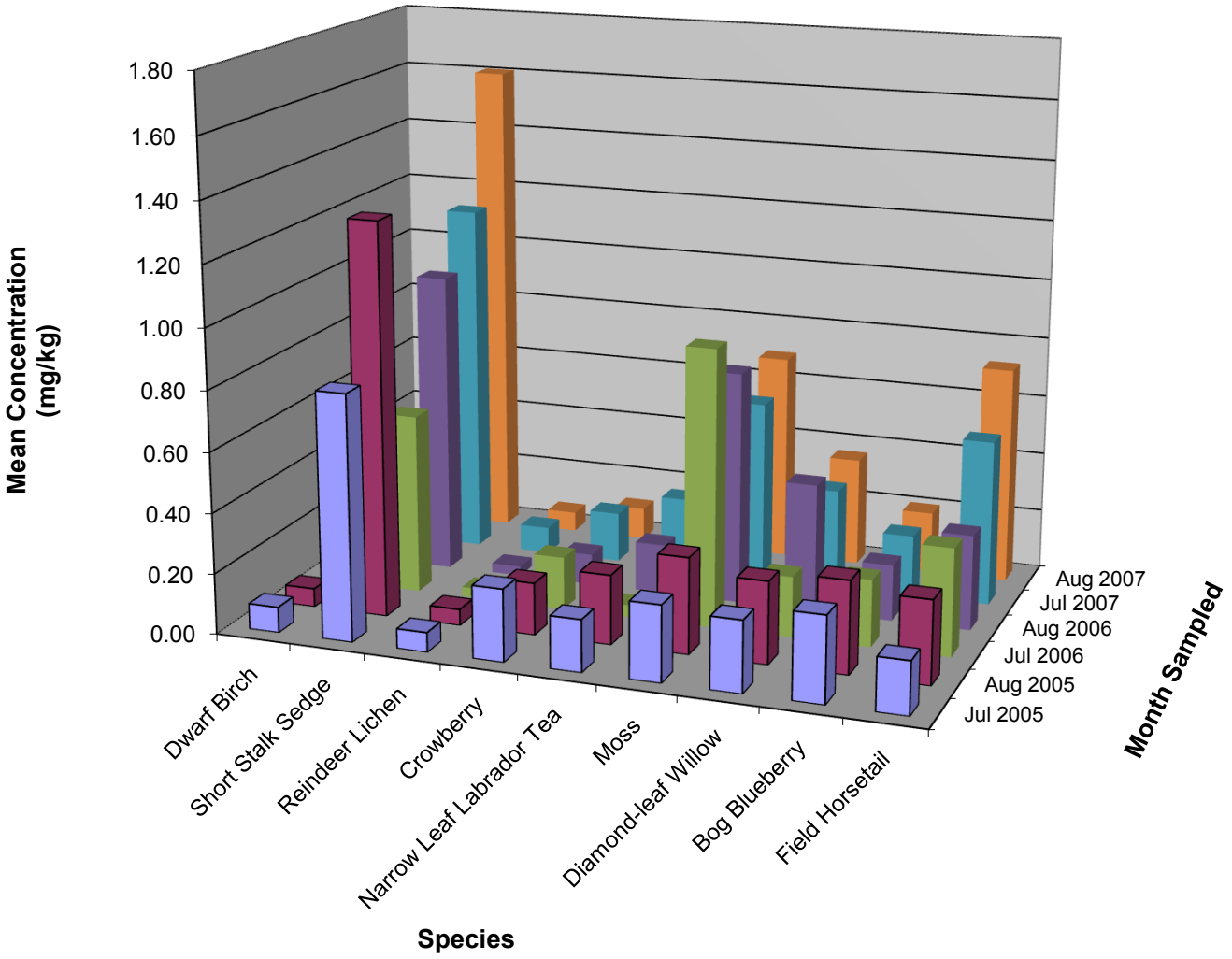


FIGURE 10.1-17
Mean Molybdenum Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

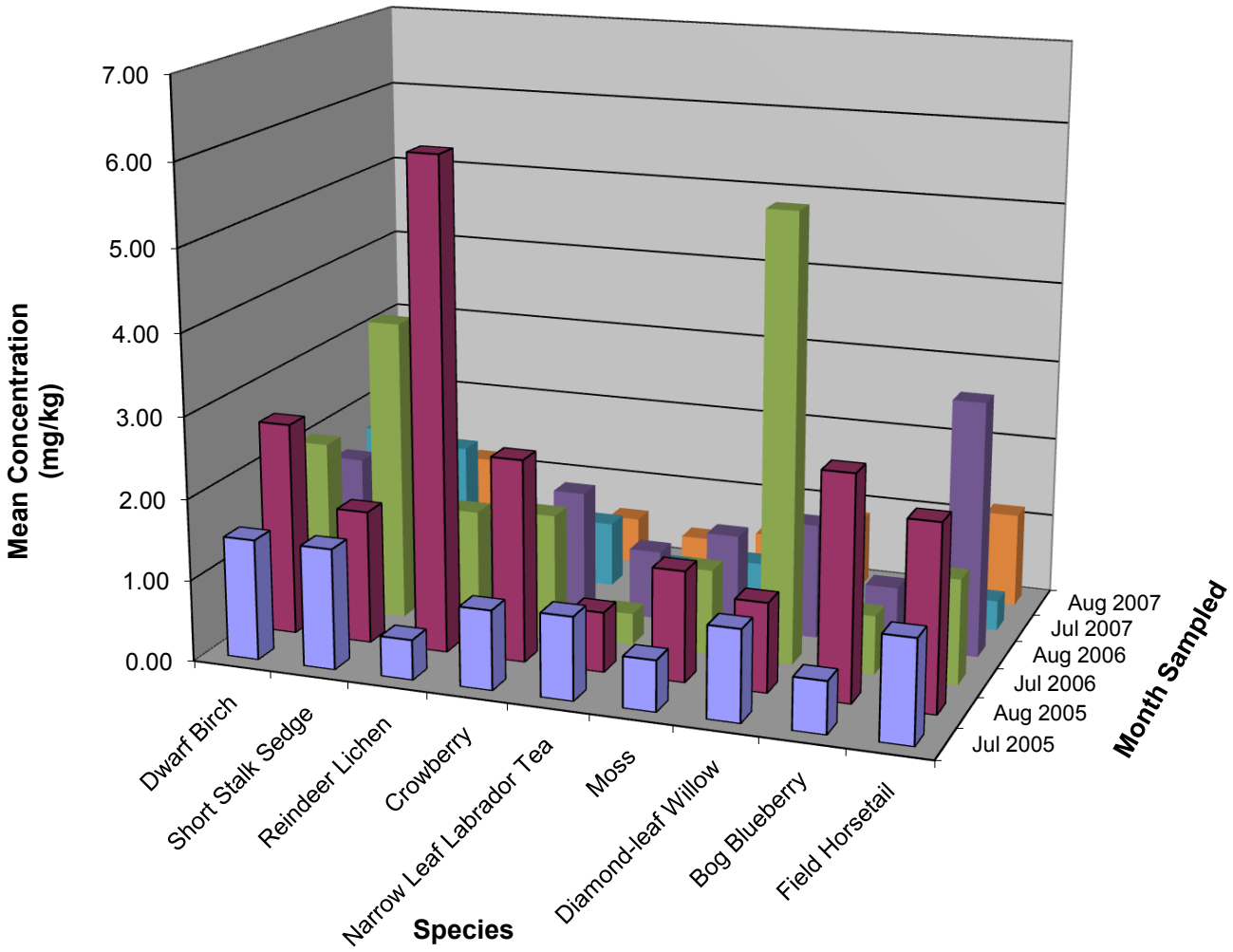


FIGURE 10.1-18
Mean Nickel Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

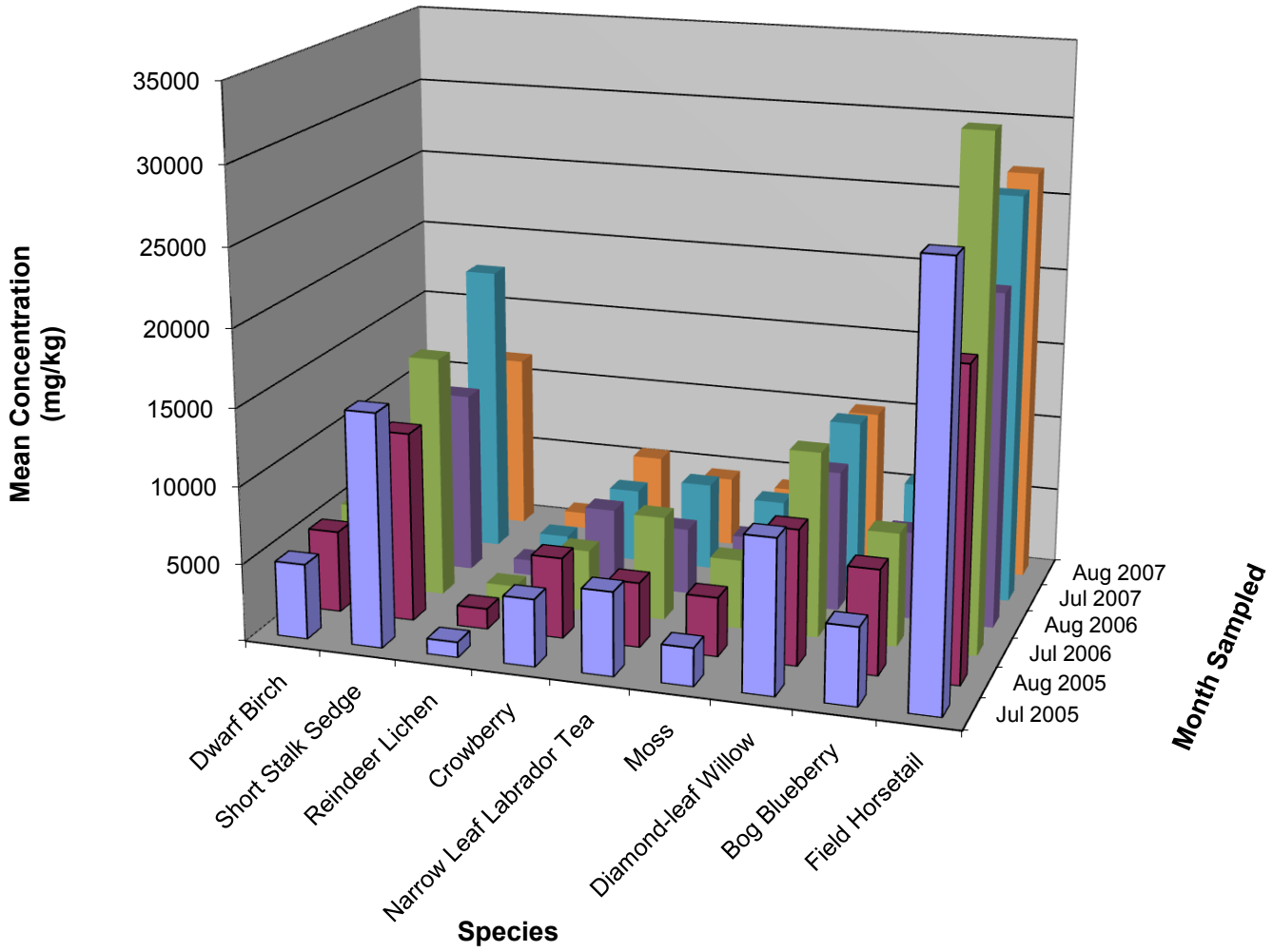


FIGURE 10.1-19
Mean Potassium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

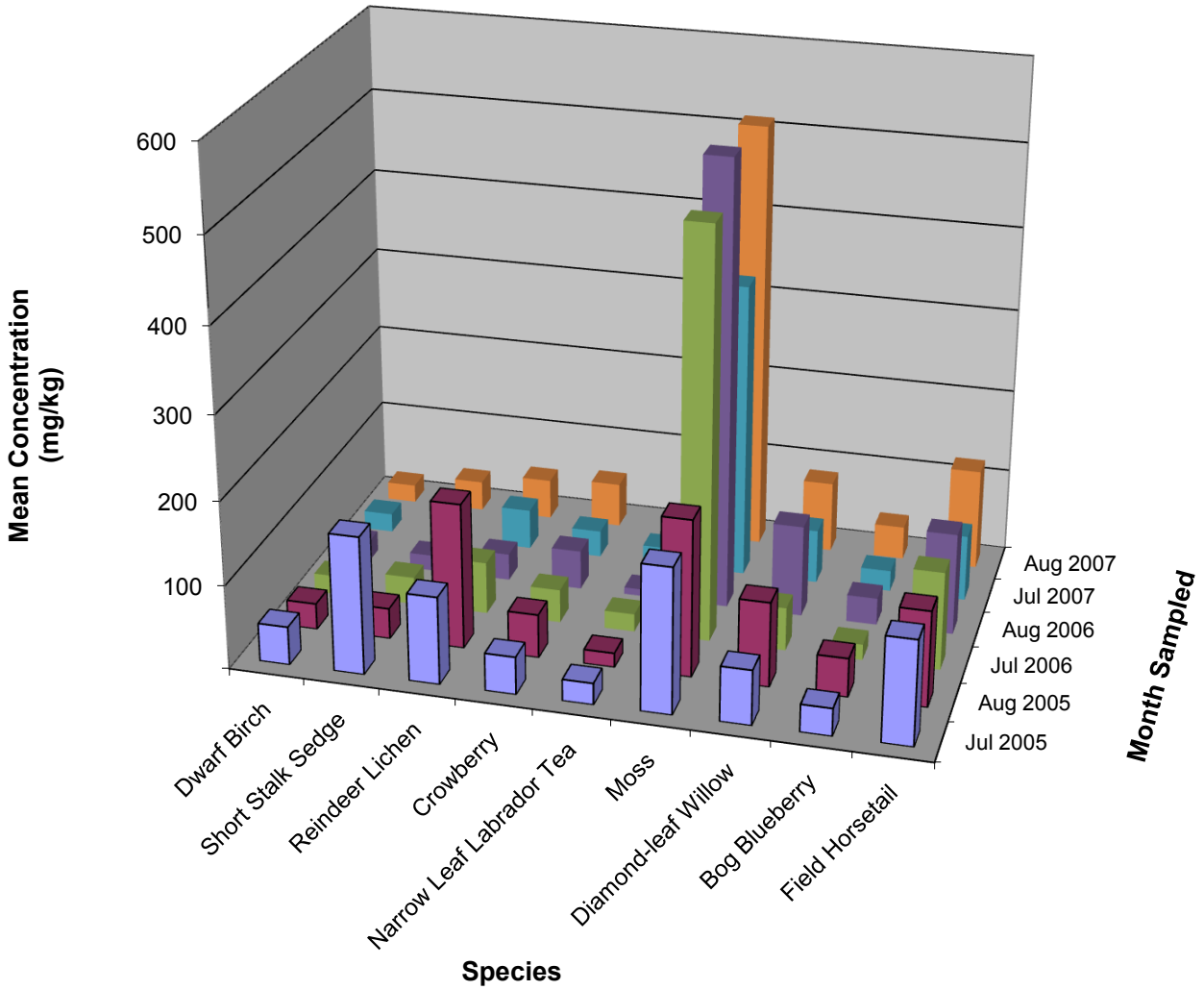


FIGURE 10.1-20
Mean Sodium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

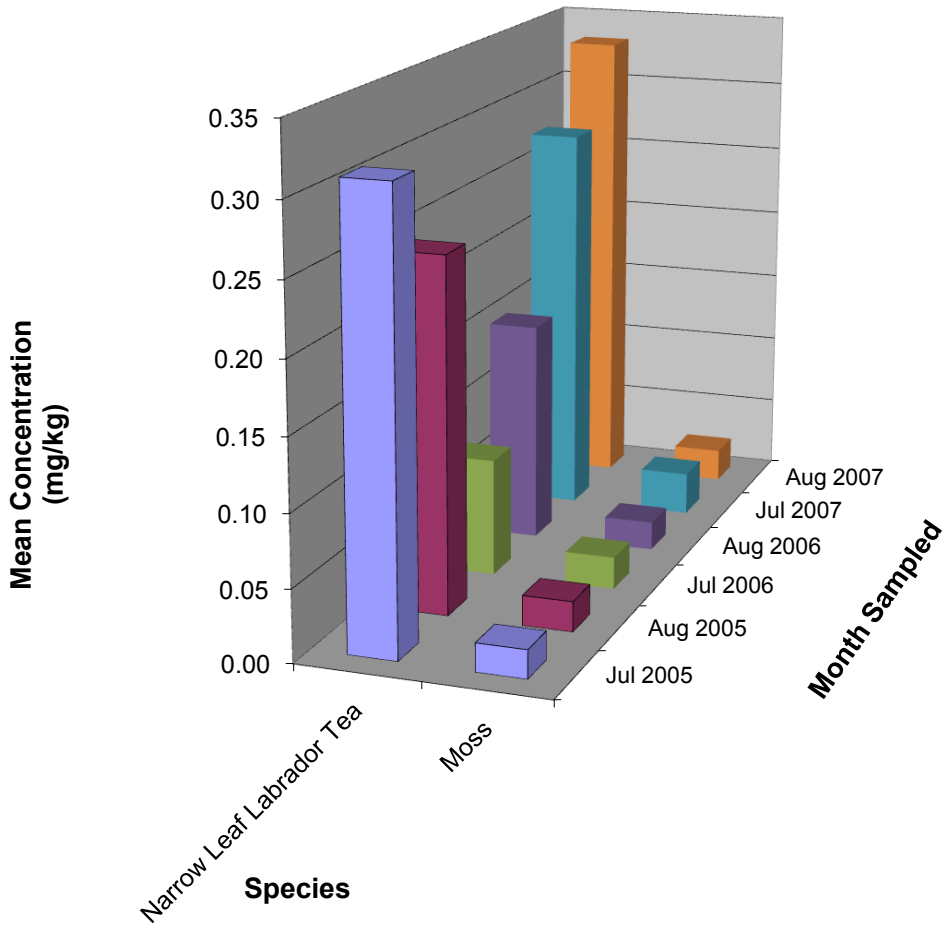


FIGURE 10.1-21
Mean Thallium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

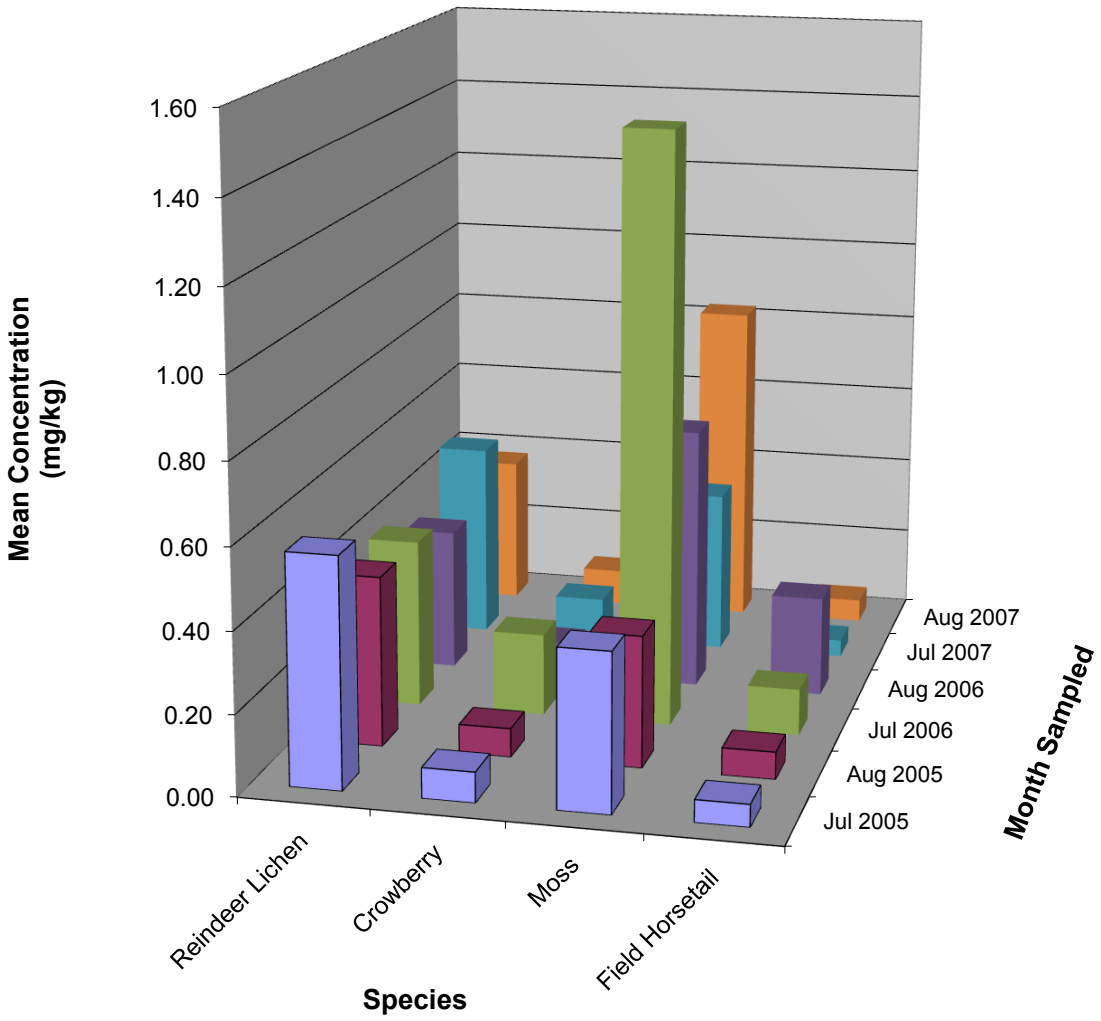


FIGURE 10.1-22
Mean Vanadium Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

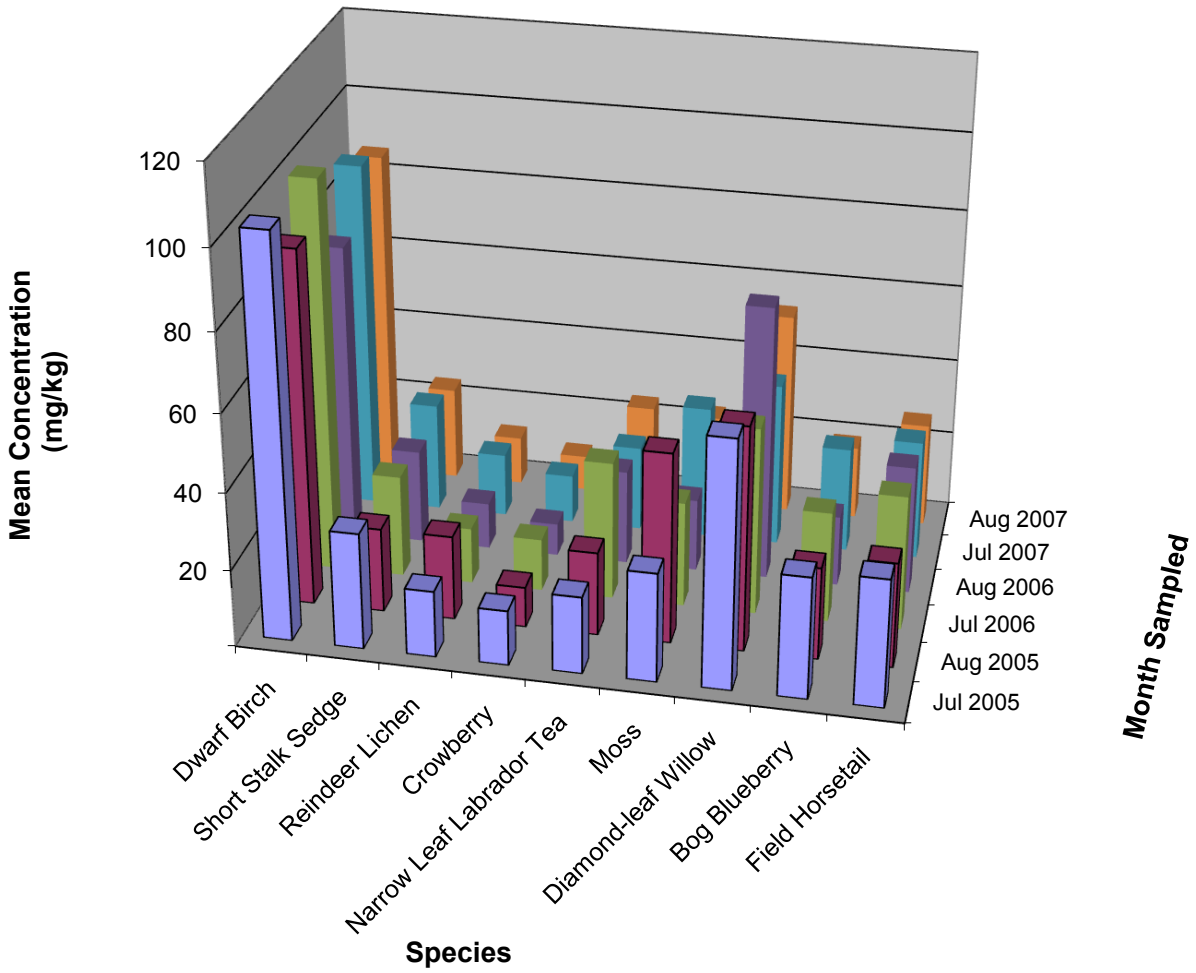


FIGURE 10.1-23
Mean Zinc Concentrations in Vegetative Tissue Samples, Mine Study Area, 2005-2007

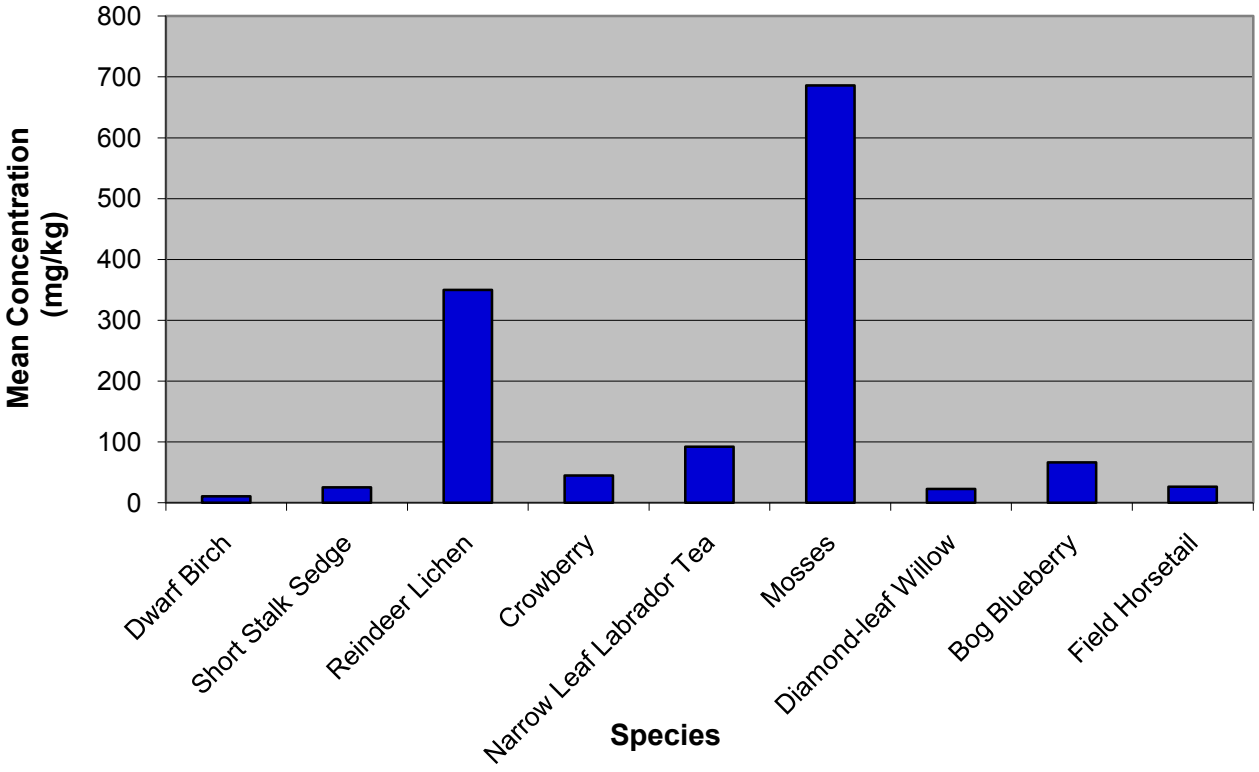


FIGURE 10.1-24
Mean Aluminum Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

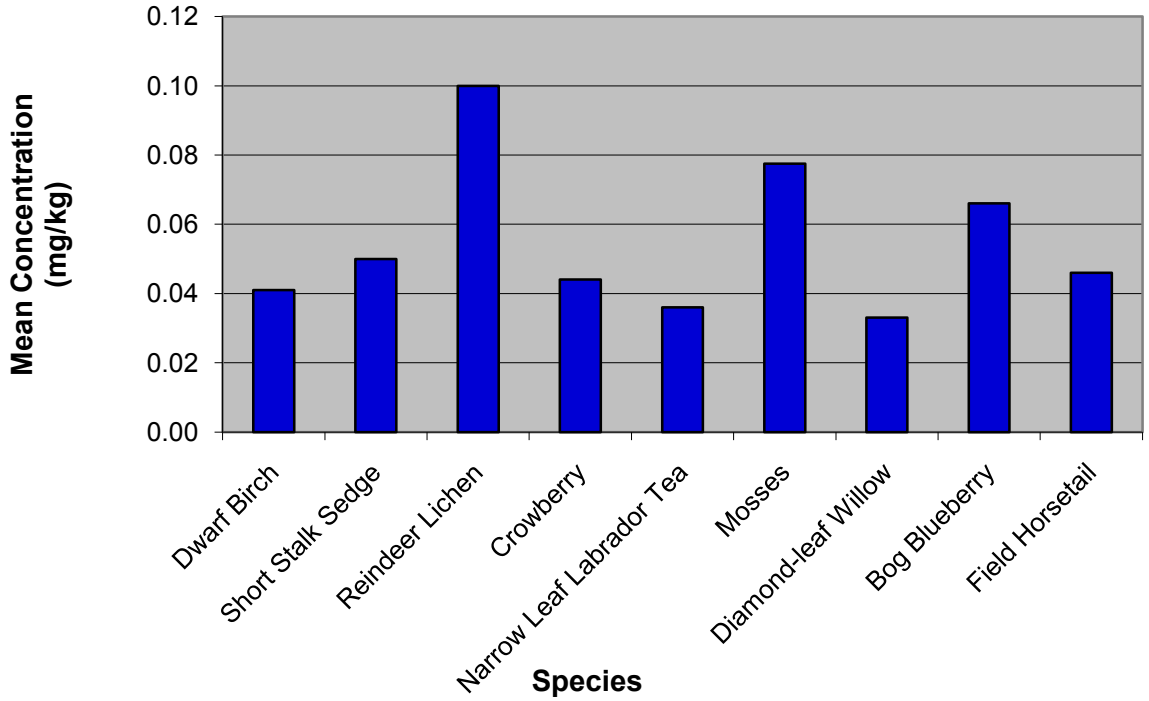


FIGURE 10.1-25
Mean Antimony Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

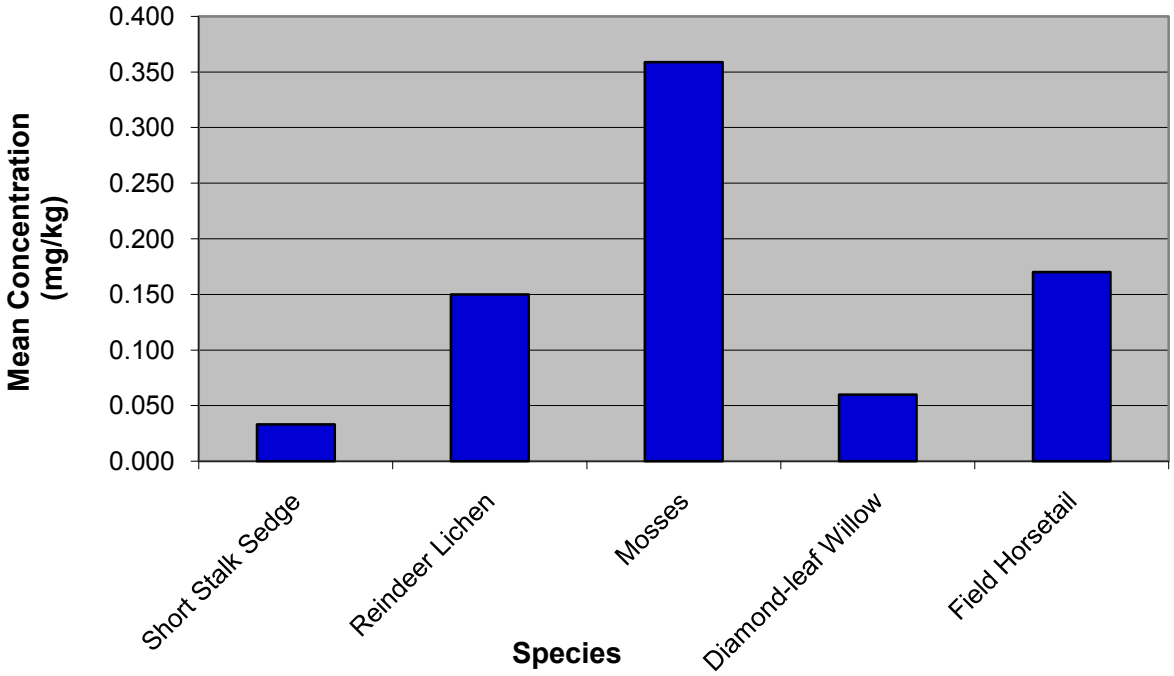


FIGURE 10.1-26
Mean Arsenic Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

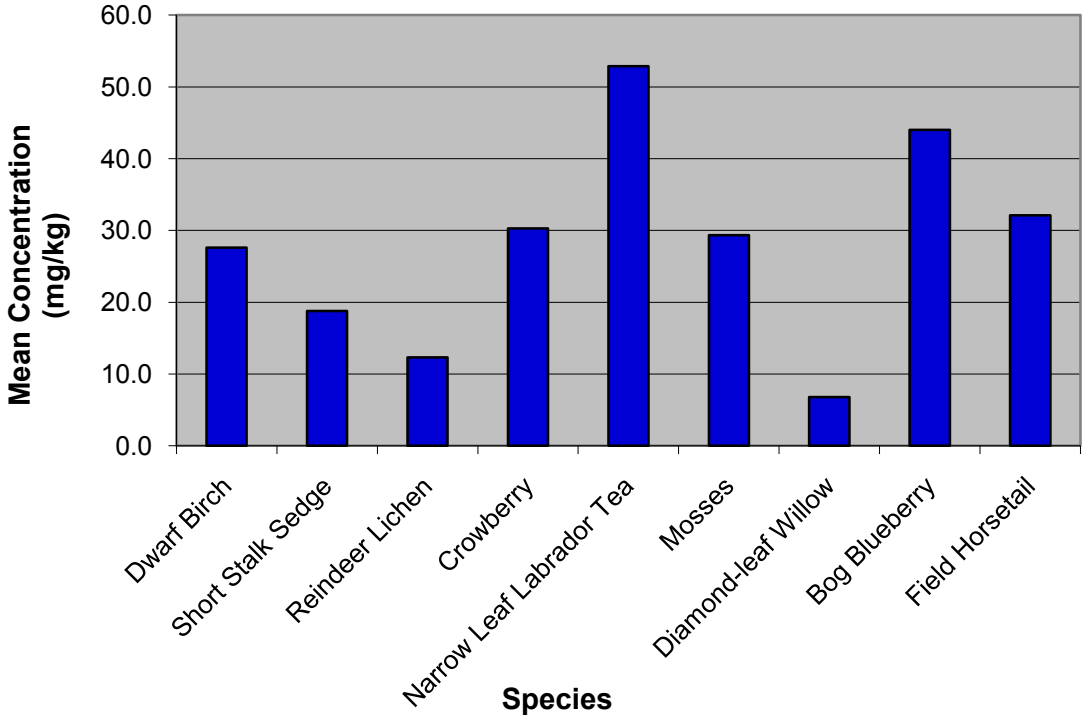


FIGURE 10.1-27
Mean Barium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

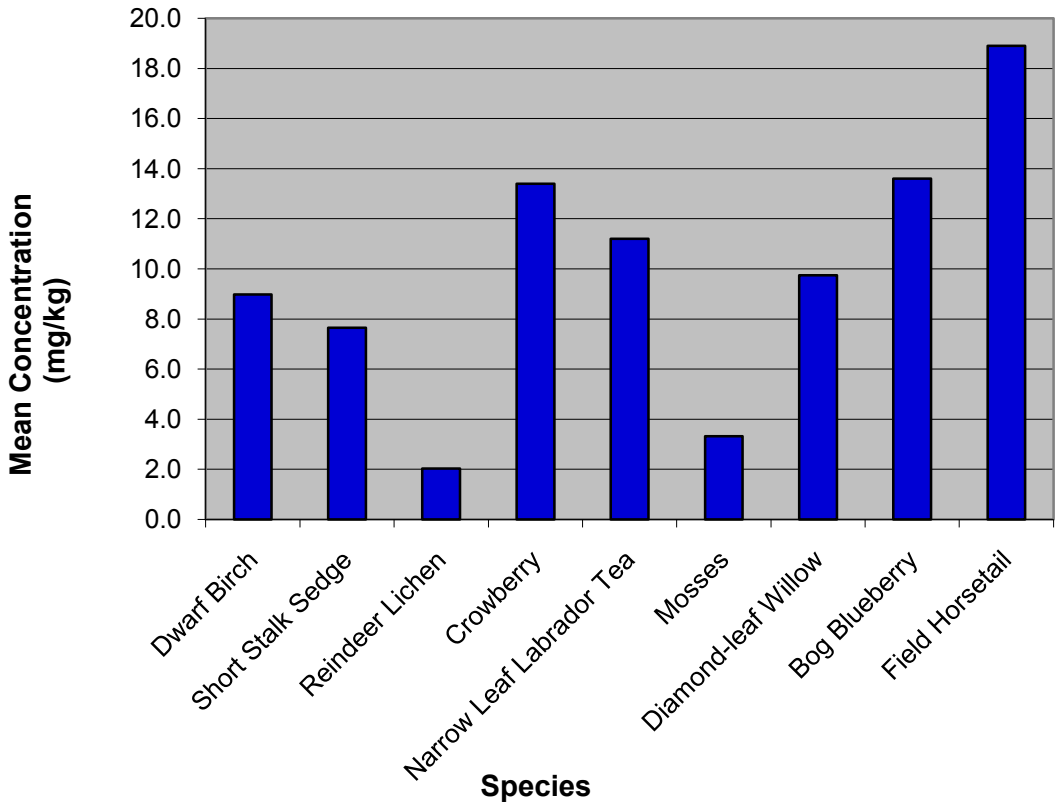


FIGURE 10.1-28
Mean Boron Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

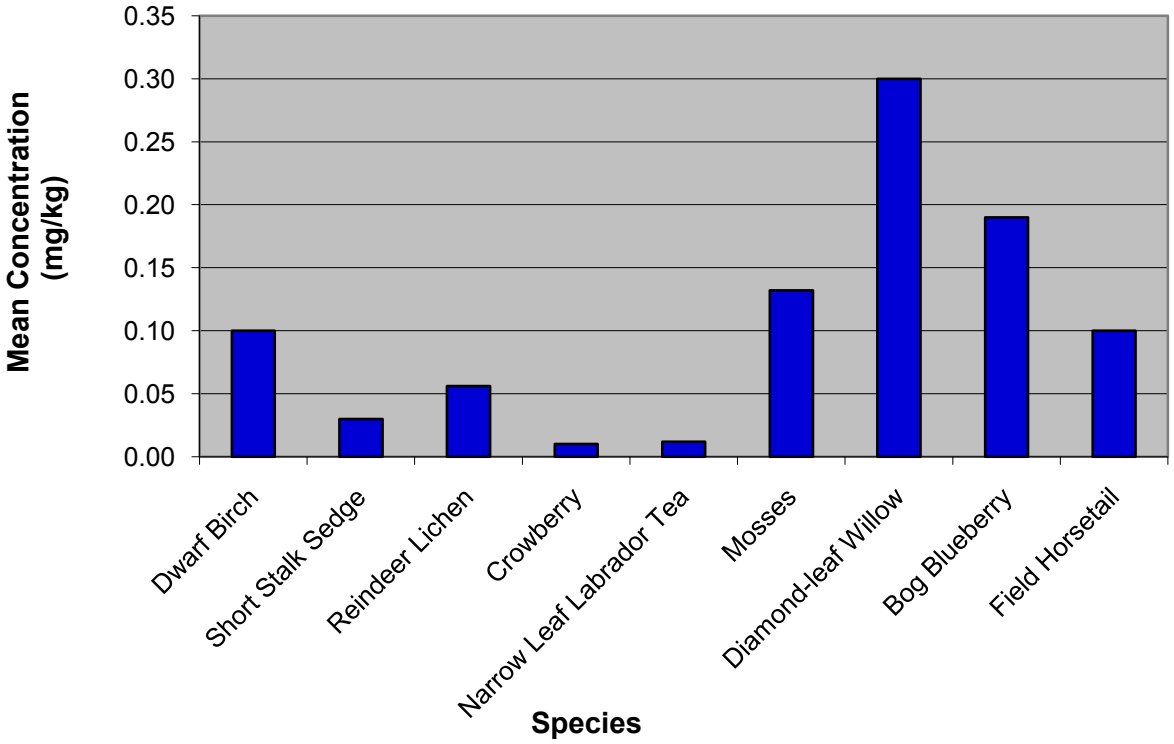


FIGURE 10.1-29
Mean Cadmium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

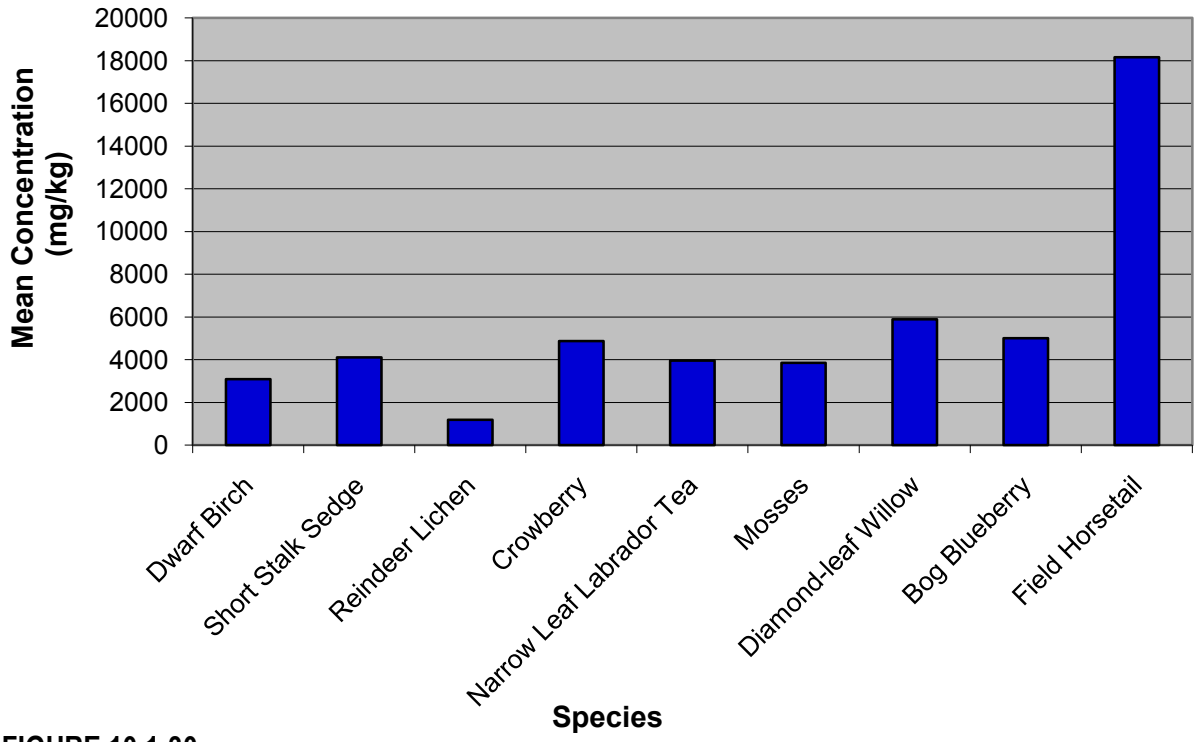


FIGURE 10.1-30
Mean Calcium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

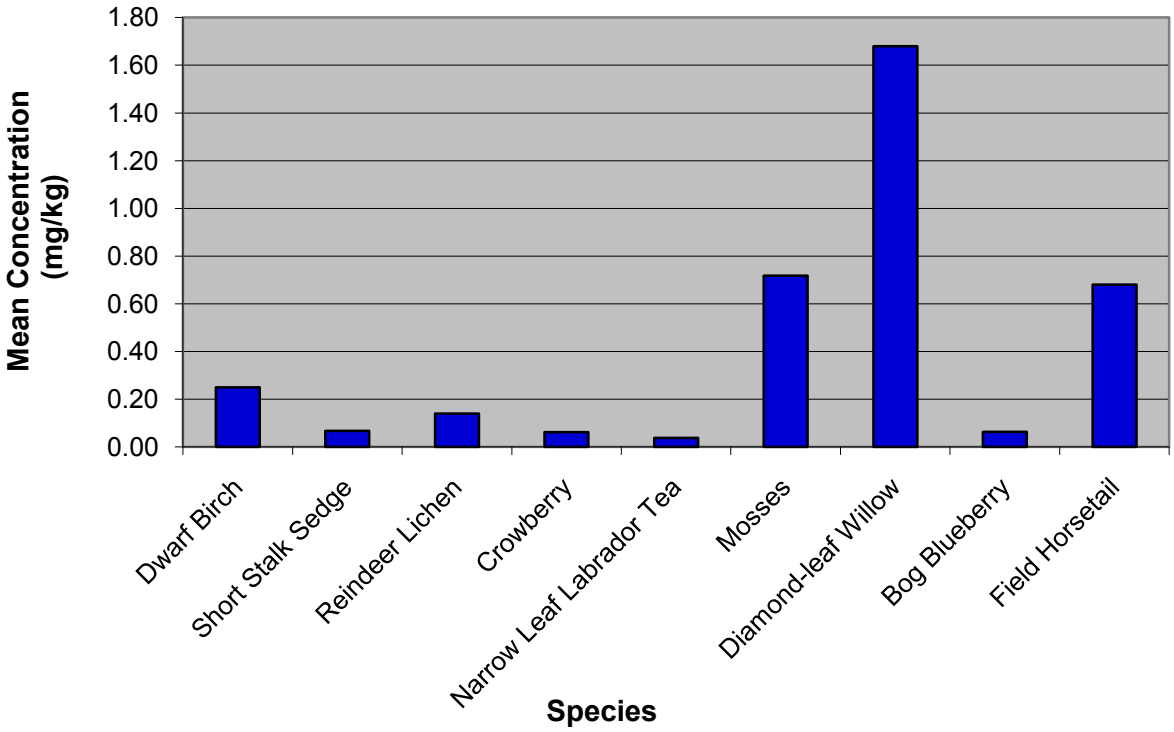


FIGURE 10.1-31
Mean Cobalt Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

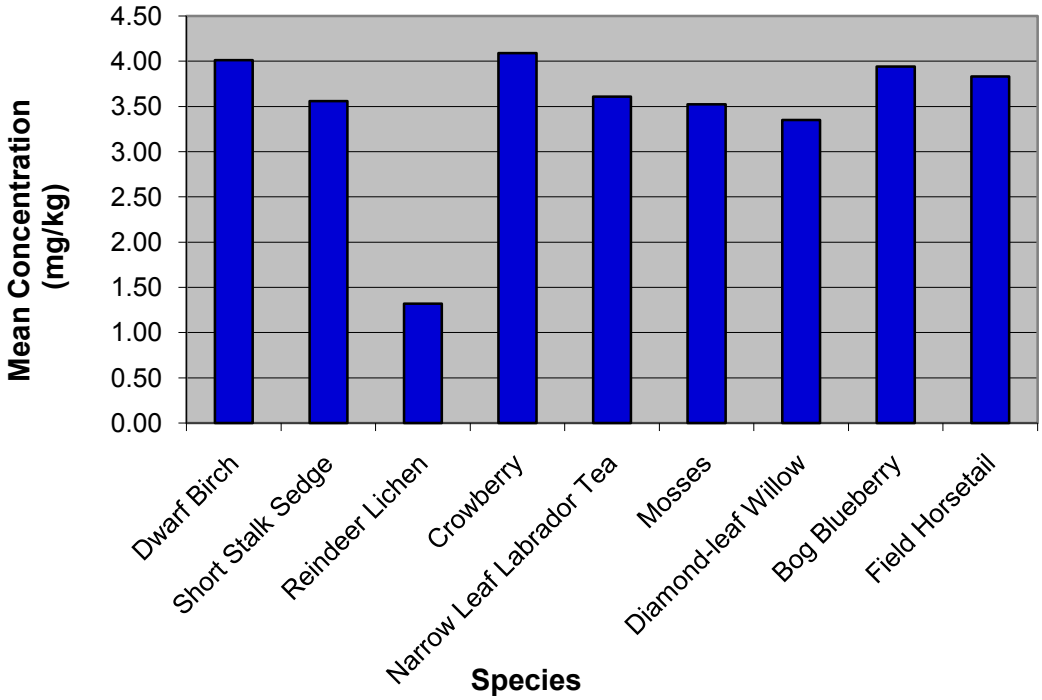


FIGURE 10.1-32
Mean Copper Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

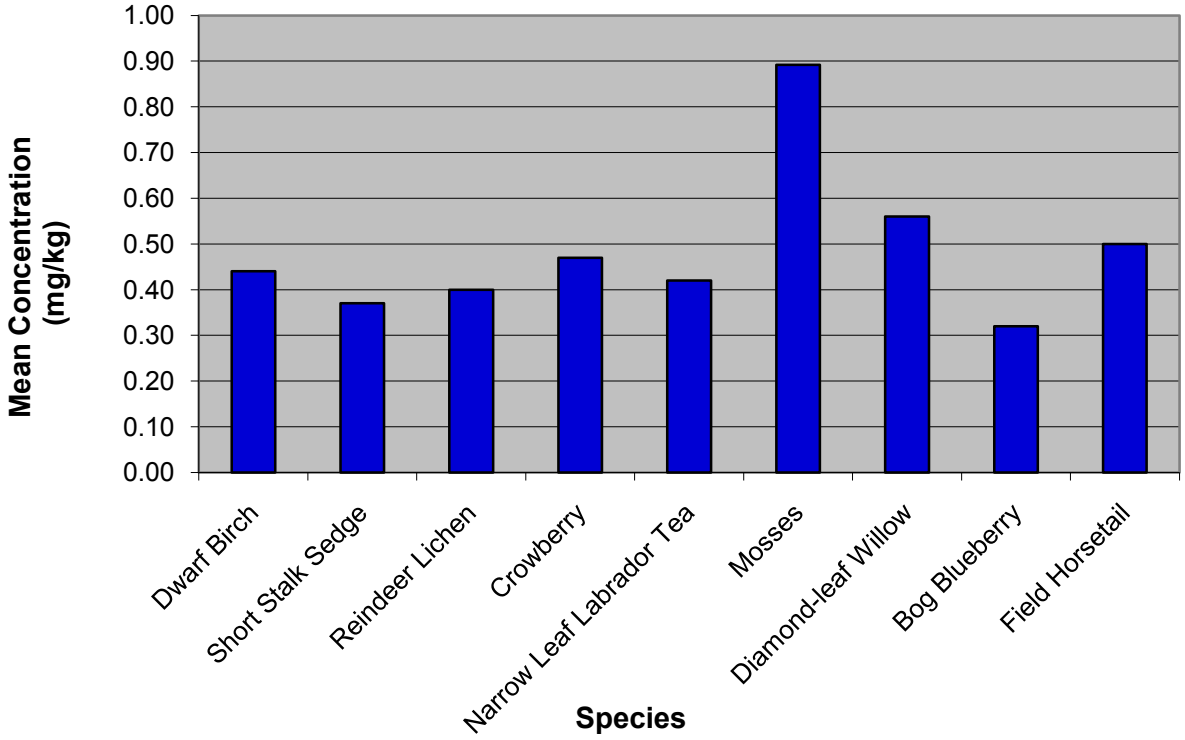


FIGURE 10.1-33
Mean Cyanide Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

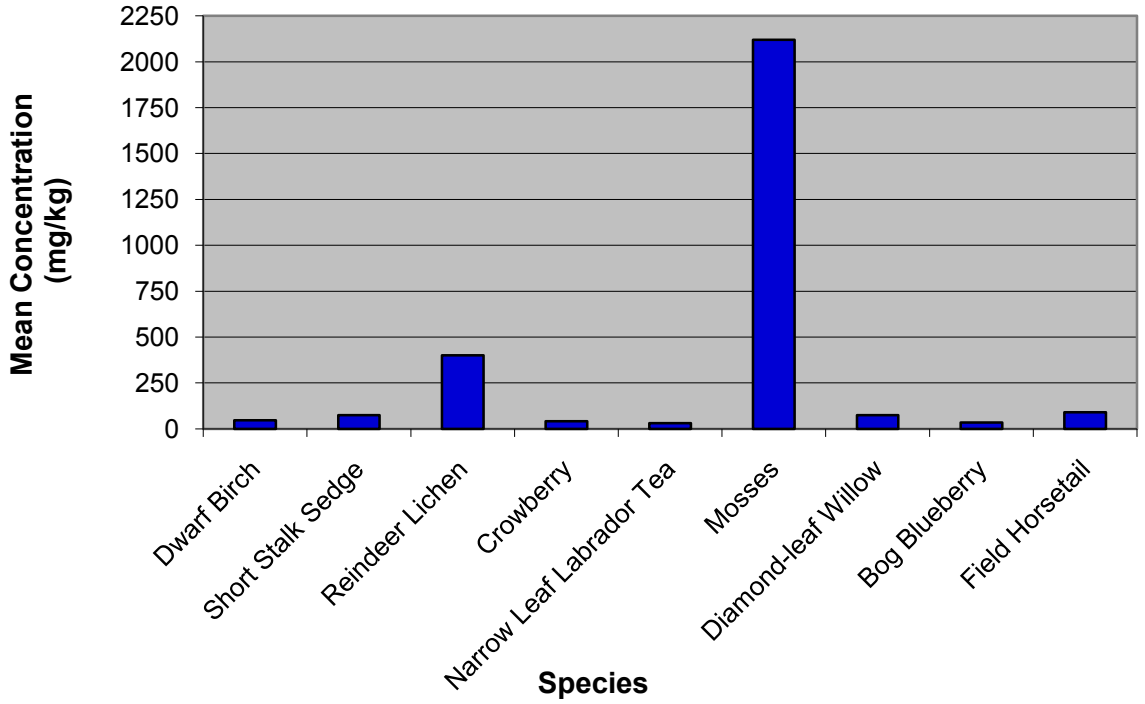


FIGURE 10.1-34
Mean Iron Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

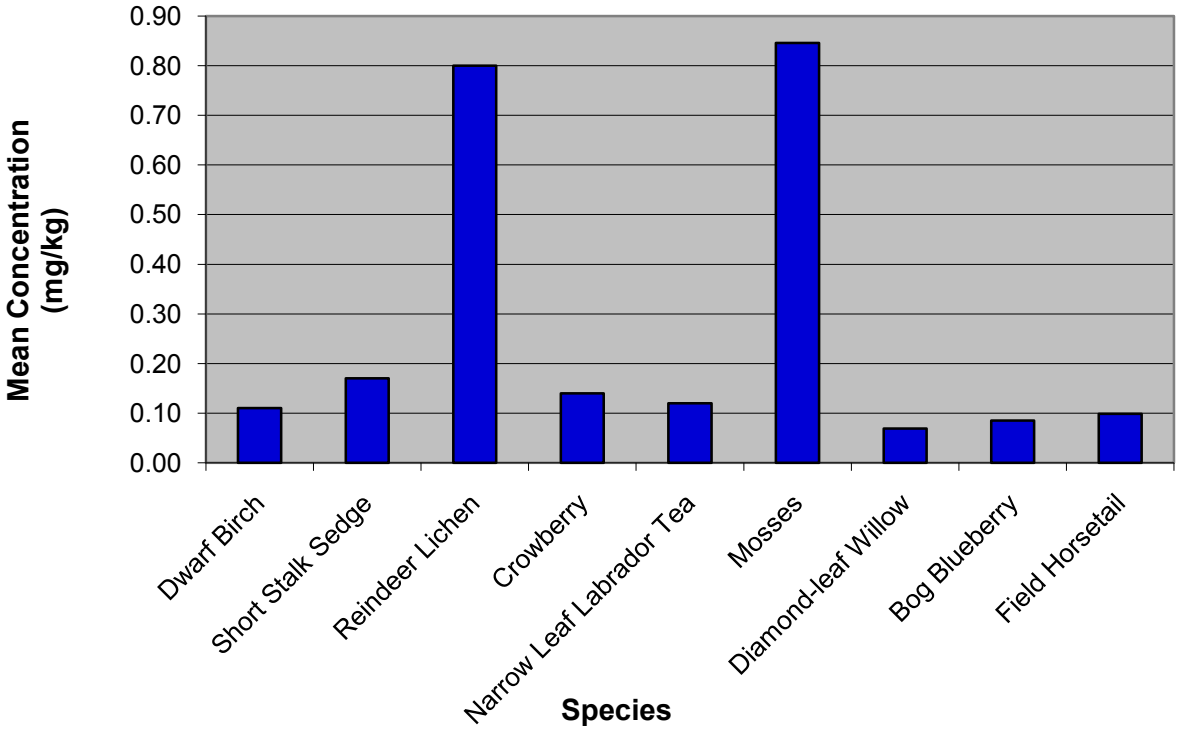


FIGURE 10.1-35
Mean Lead Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

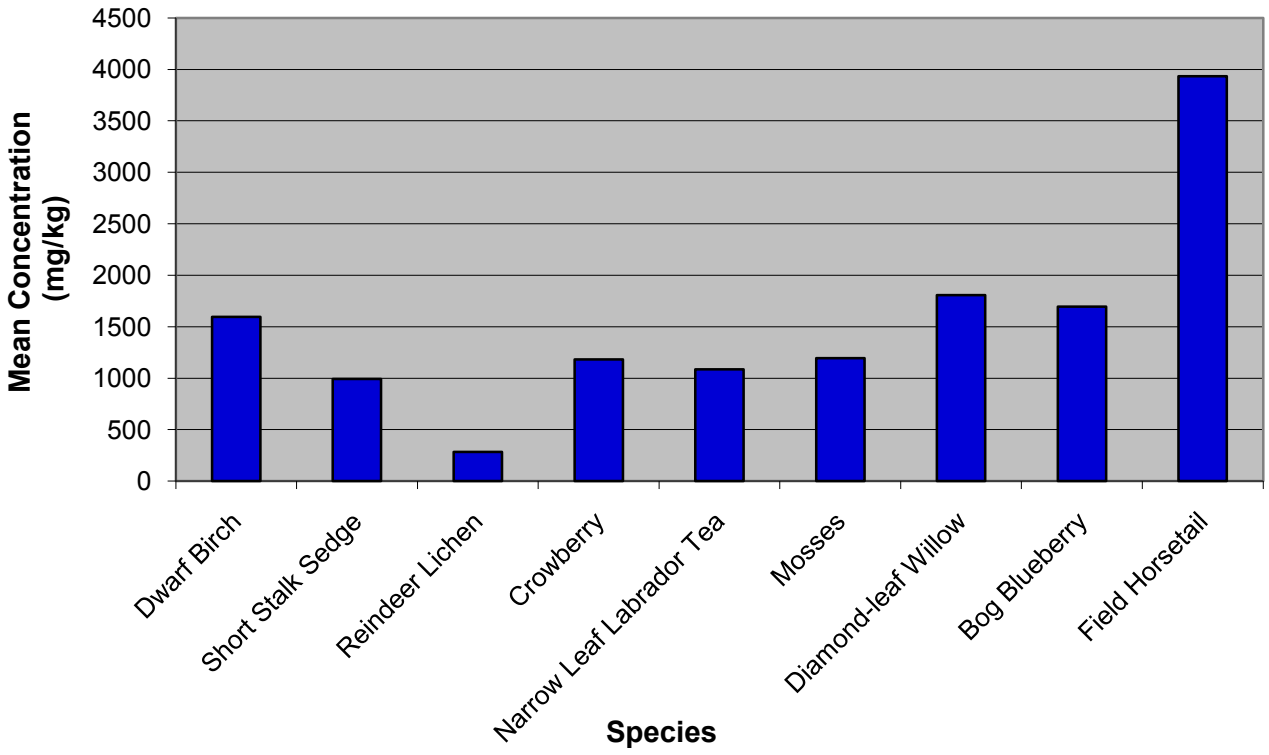


FIGURE 10.1-36
Mean Magnesium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

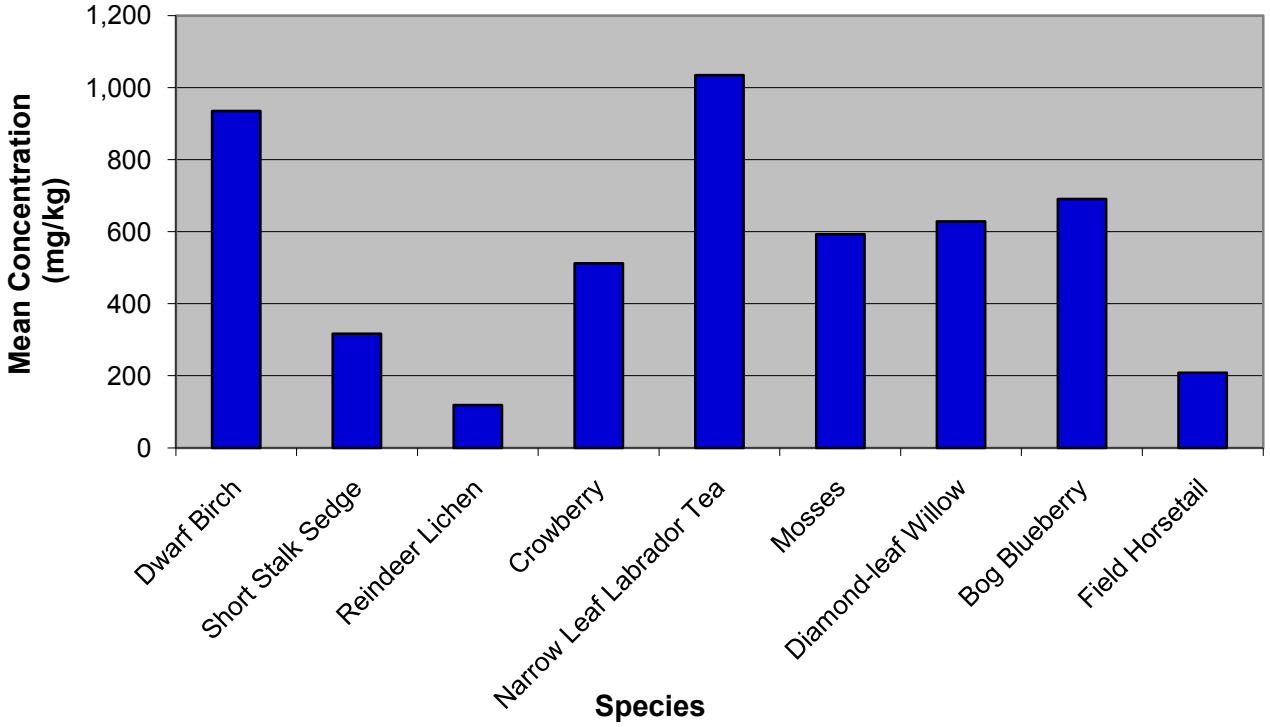


FIGURE 10.1-37
Mean Manganese Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

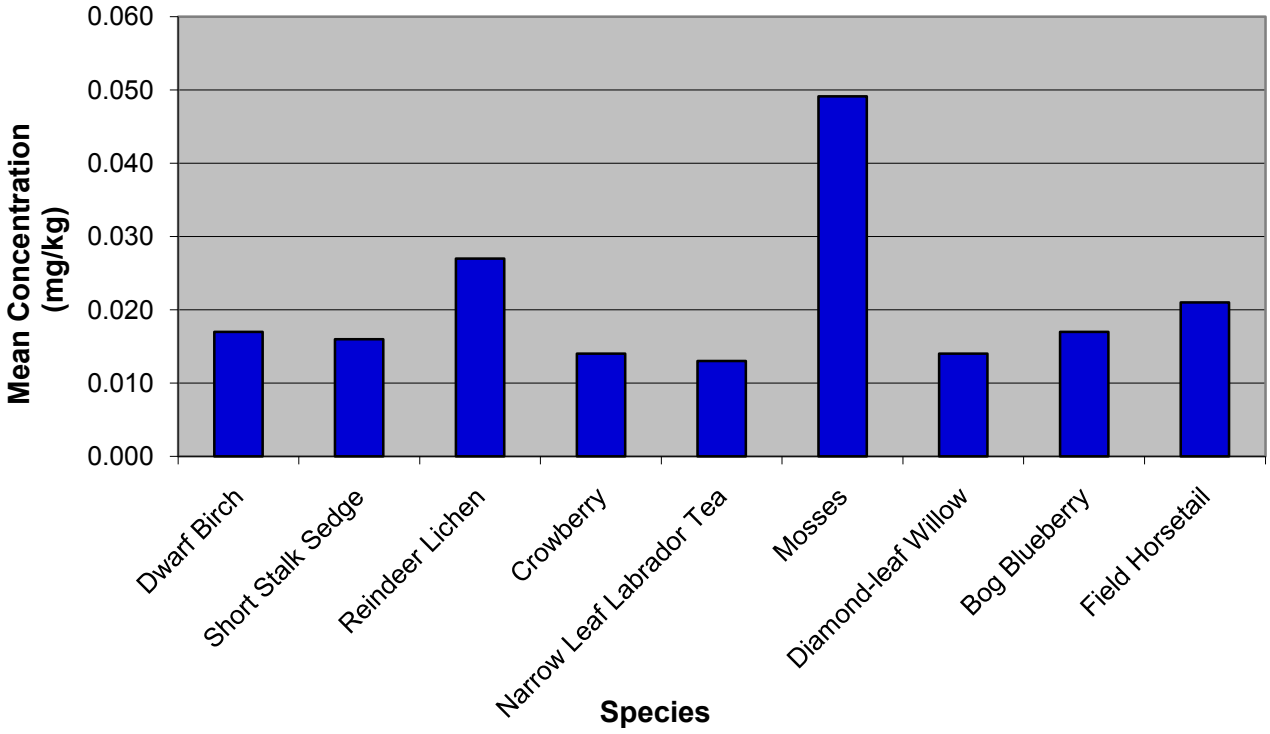


FIGURE 10.1-38
Mean Mercury Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

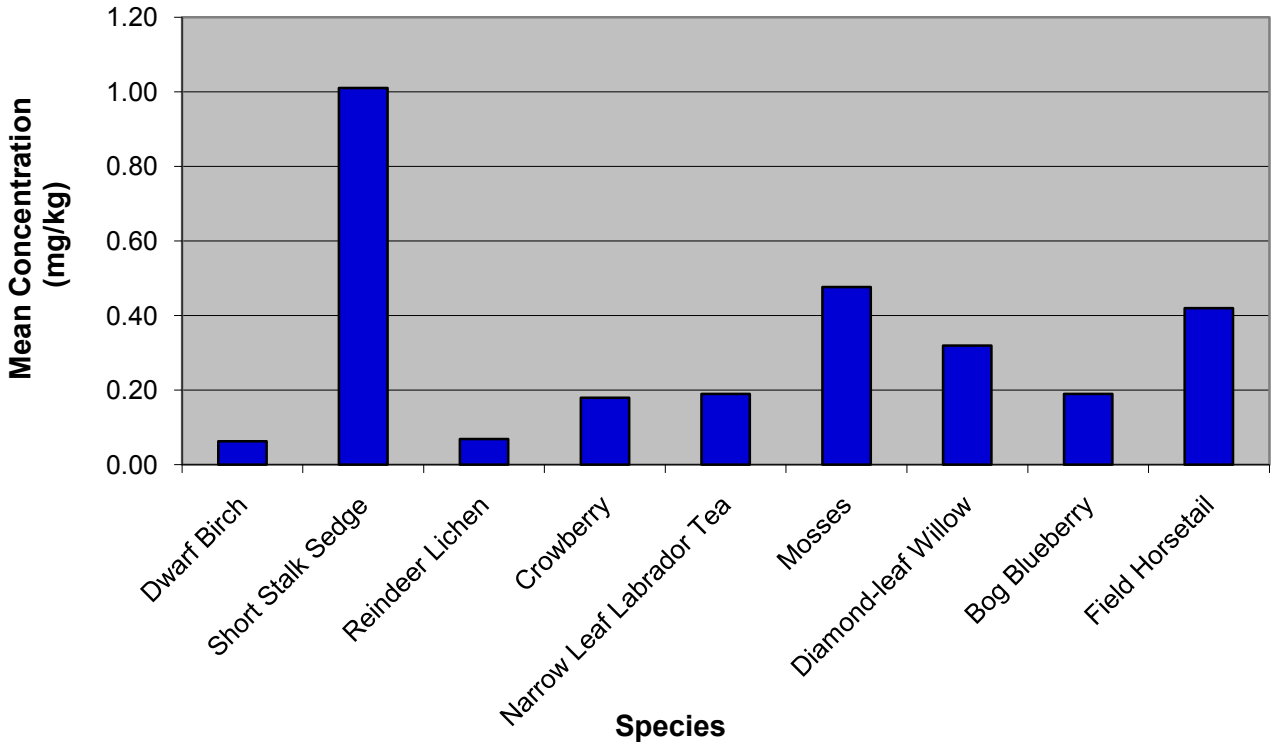


FIGURE 10.1-39
Mean Molybdenum Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

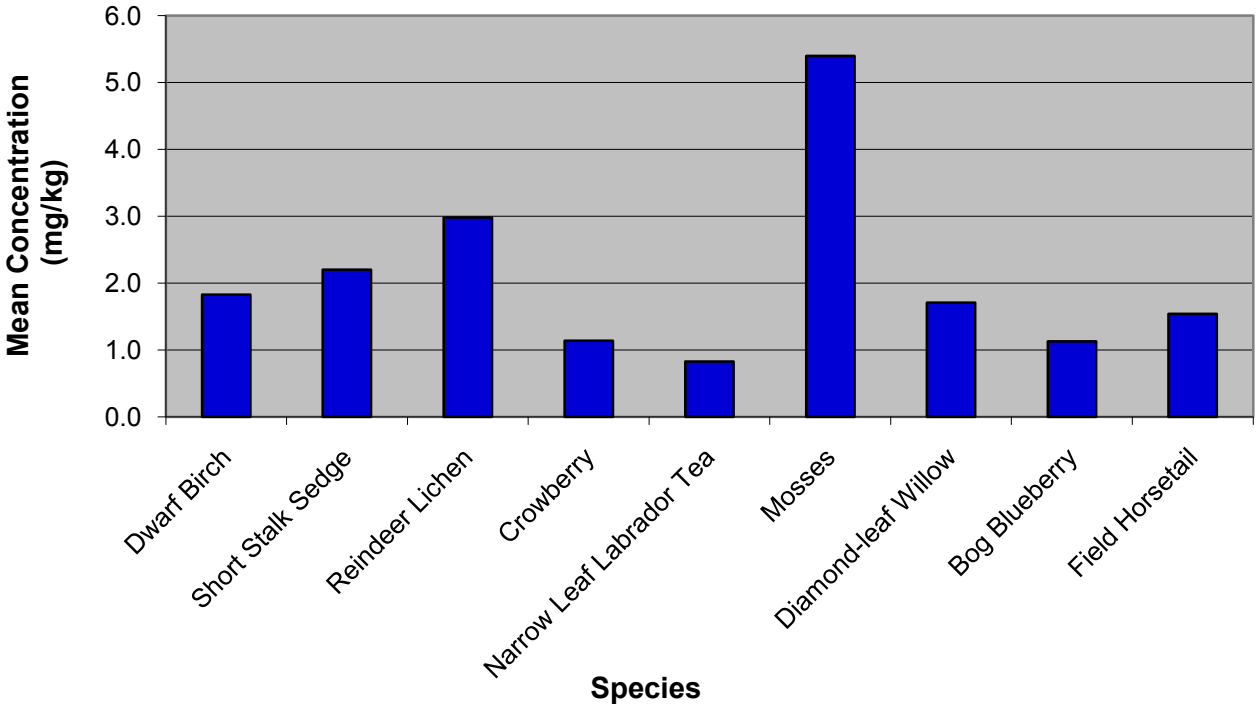


FIGURE 10.1-40
Mean Nickel Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

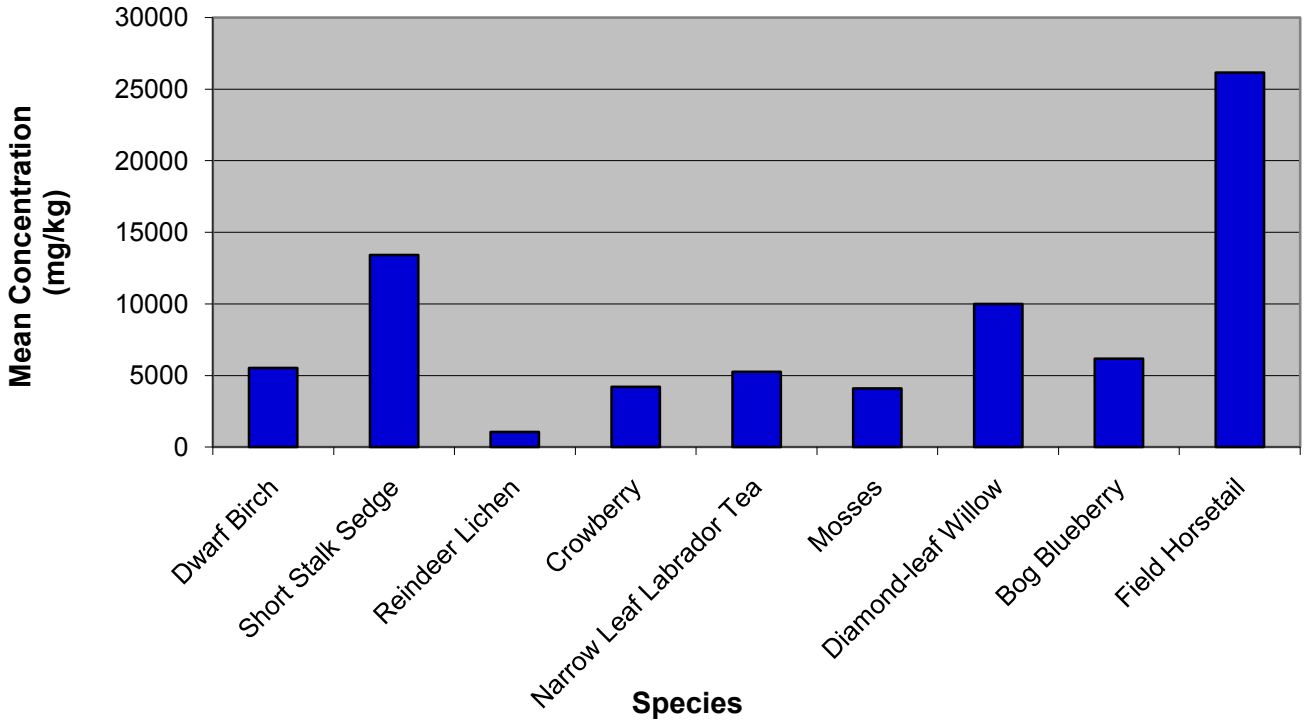


FIGURE 10.1-41
Mean Potassium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

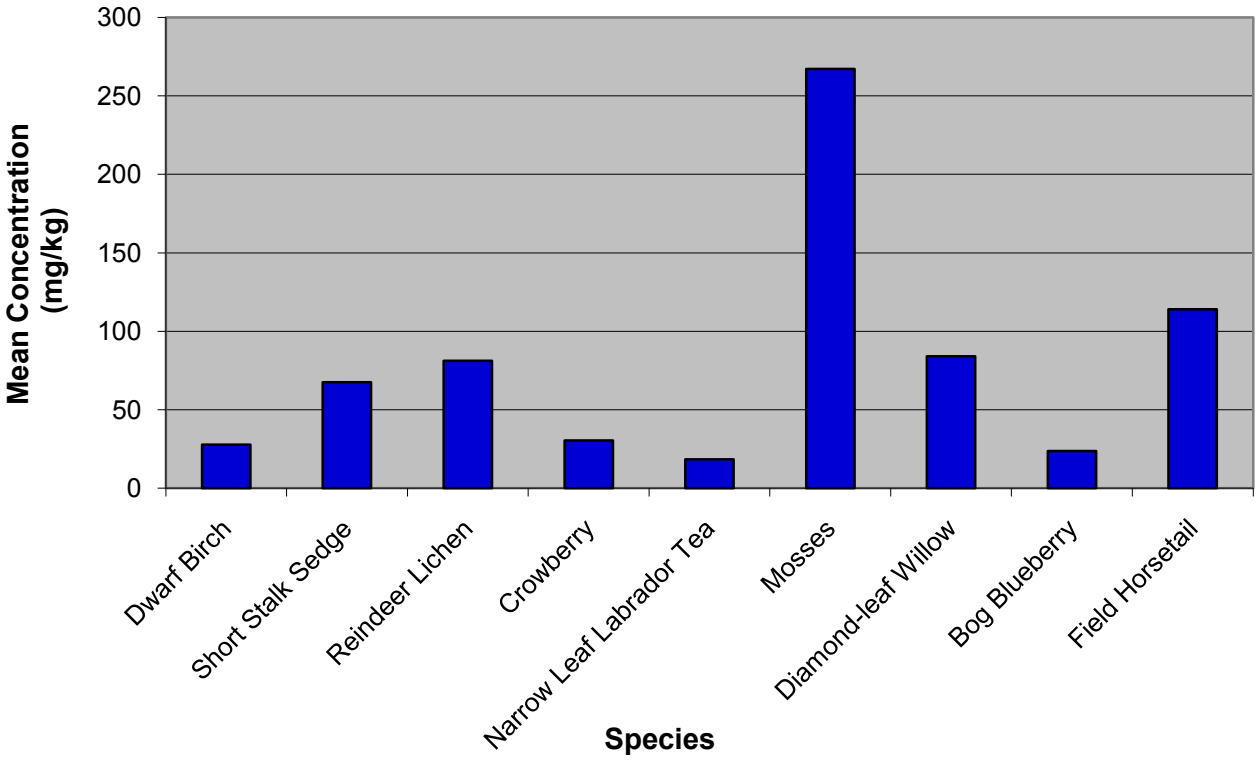


FIGURE 10.1-42
Mean Sodium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

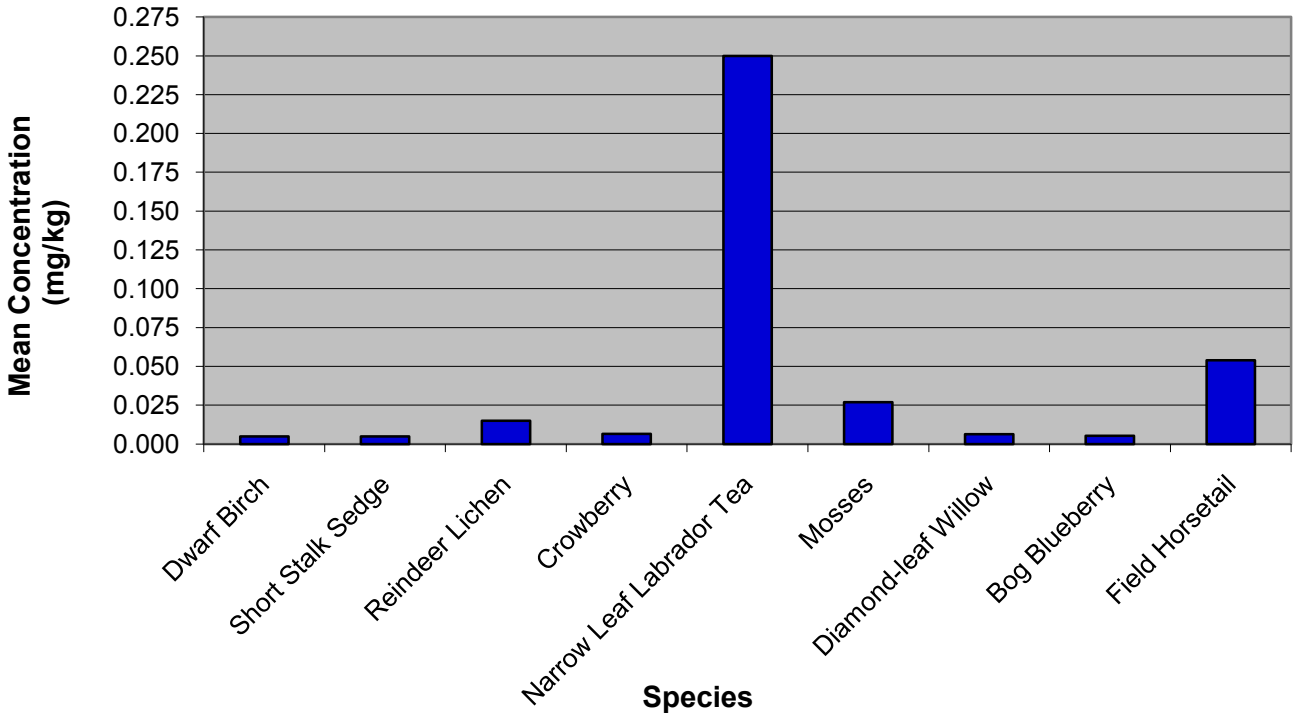


FIGURE 10.1-43
Mean Thallium in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

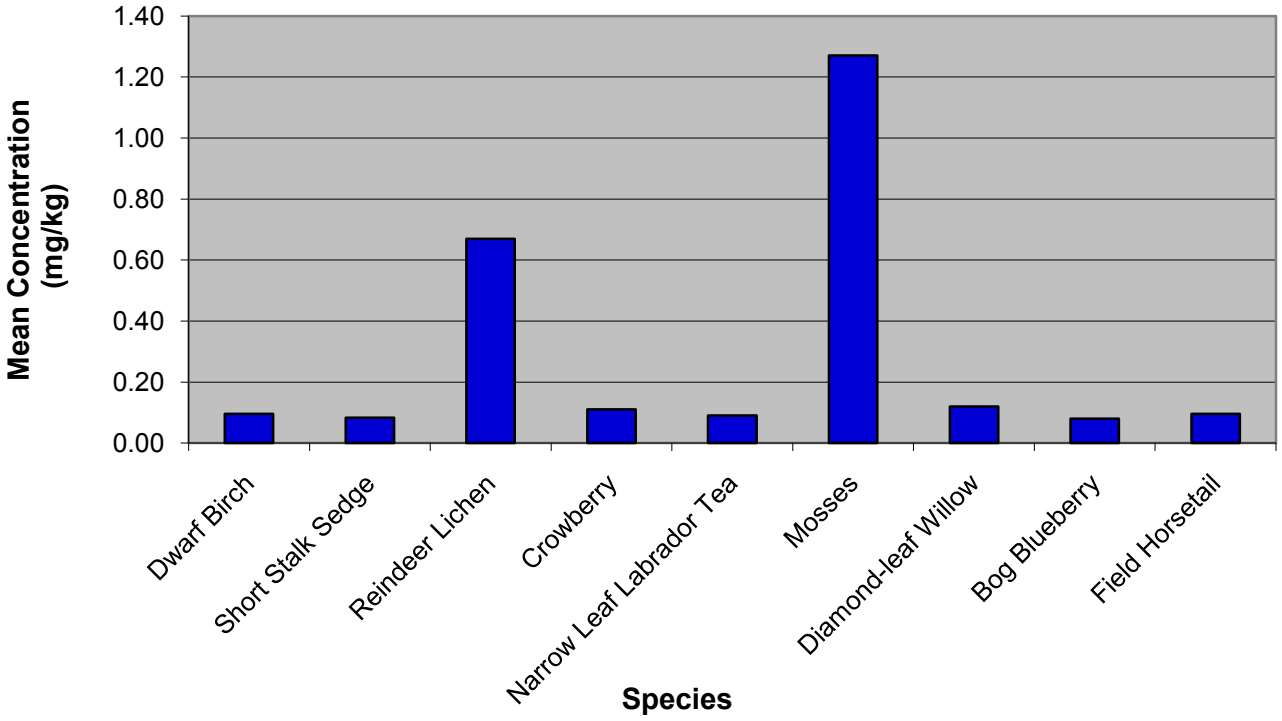


FIGURE 10.1-44
Mean Vanadium Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

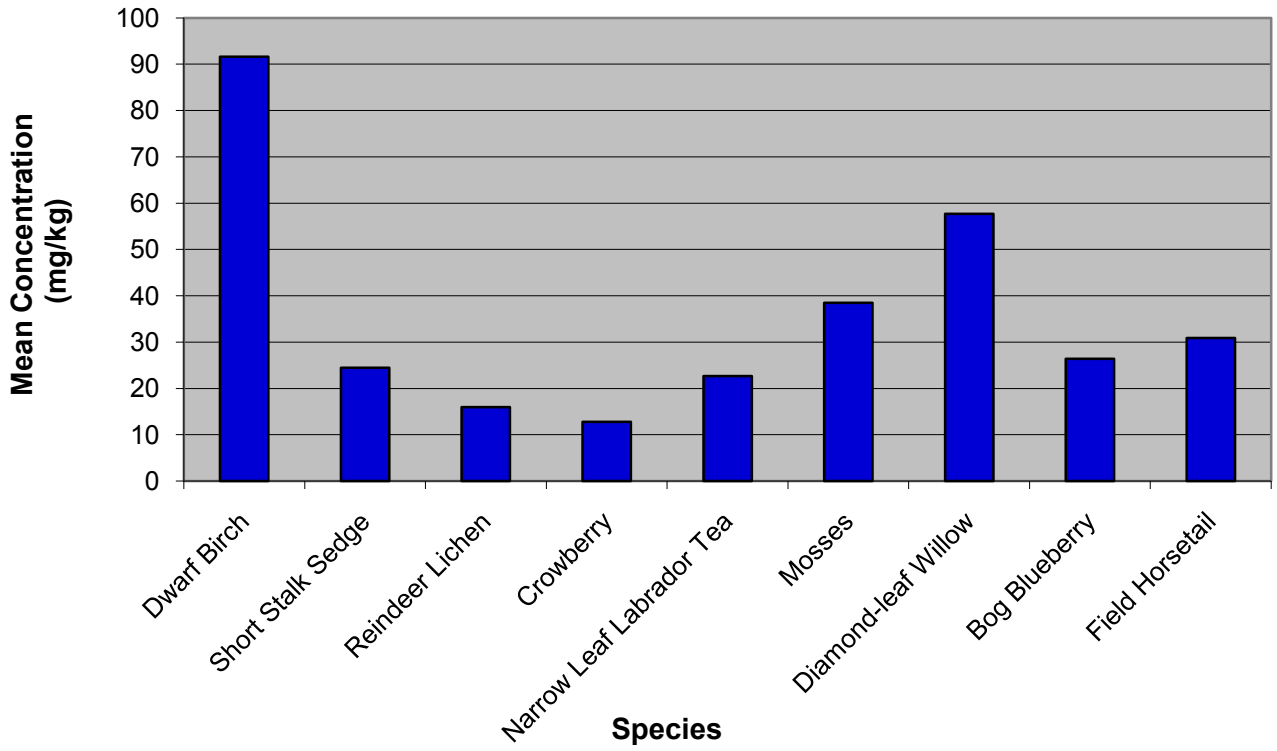


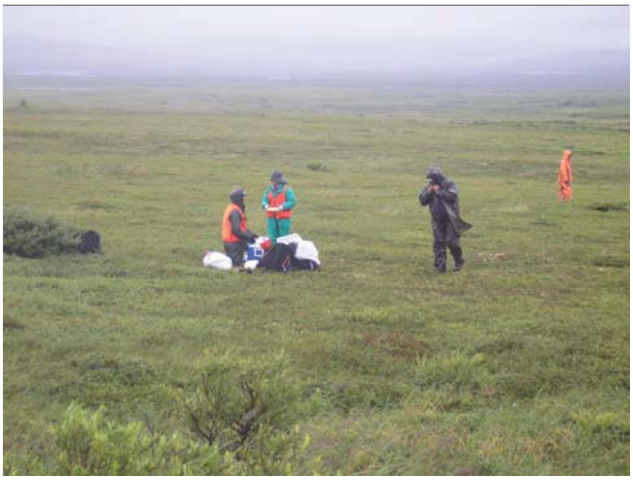
FIGURE 10.1-45
Mean Zinc Concentrations in Vegetative Tissue Samples, All Sampling Events, Mine Study Area, 2005-2007

APPENDICES

APPENDIX 10.1A

Photographic Log, Soil and Vegetation Sampling, Mine Study Area

Appendix 10.1A
PHOTOGRAPHIC LOG



July 2005, Sample Site #235271



July 2005, Sample Site #235281 (neighboring site #235282 sampled in August)



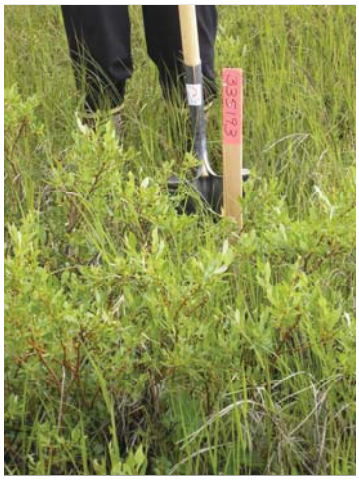
July 2005, Sample Site #235361



July 2005, Sample Site #335131 (neighboring site #335132 not shown)

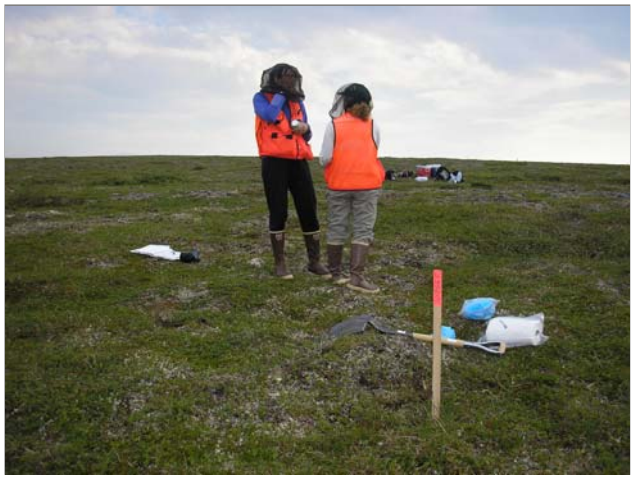


July 2005, Sample Site #335174 (neighboring site #335175, #335176 not shown)



July 2005, Sample Site #335193

Appendix 10.1-A
PHOTOGRAPHIC LOG



July, 2005 Sample Site #335201



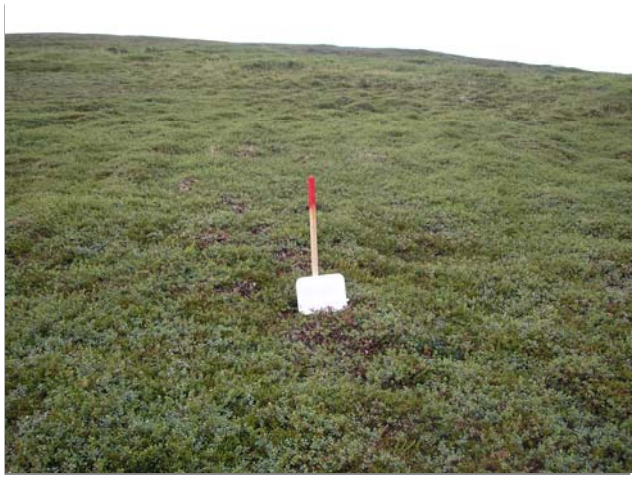
July, 2005 Sample Site #335231
(neighboring site #335232 not shown)



July, 2005 Sample Site #335261



July, 2005 Sample Site #335282
(neighboring sites #335281, #335283 and #335284 not shown)



July, 2005 Sample Site #335301
(neighboring site #335302 not shown)



July, 2005 Sample Site #335311

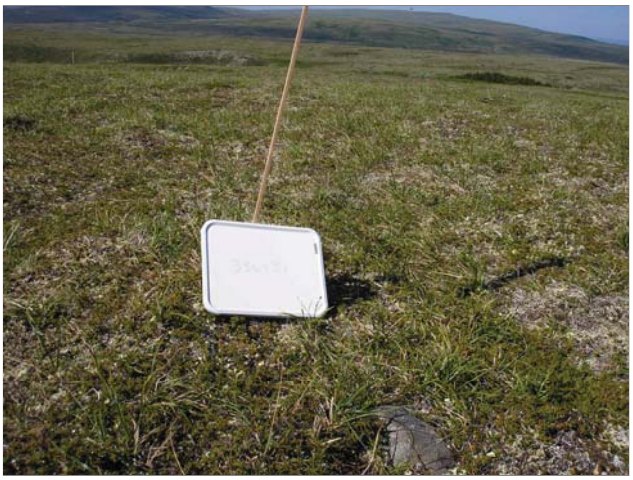
Appendix 10.1A
PHOTOGRAPHIC LOG



July 2005, Sample Site #335321
(neighboring site #335322 not shown)



July 2005, Sample Sites #336011, #336012, and #336013



July 2005, Sample Site #336131
(neighboring sites #336132 and #336133 not shown)



July 2005, Sample Site #336231

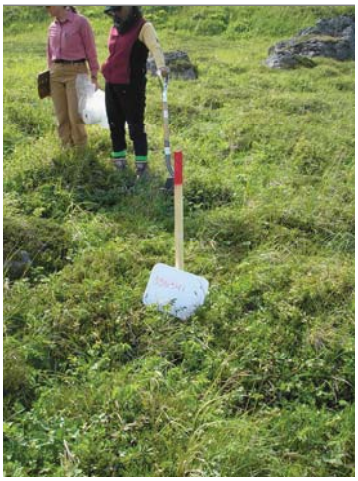


July 2005, Sample Site #336241
(neighborning site #336242 not shown)



July 2005, Sample Site #336261

Appendix 10.1A
PHOTOGRAPHIC LOG



July 2005, Sample Site #336341
(neighboring site #336342 not shown)



July 2005, Sample Site #336361
(neighboring site #336362)



July 2005, Sample Sites #435061 and
#435062



July 2005, Sample Site #435161
(neighboring site #435162 not shown)



August 2005, Sample Site #435221 (neighboring
sites #435222 and #435223 not shown)



July 2005, Sample Site staked #435431 but
renamed #435341

Appendix 10.1A
PHOTOGRAPHIC LOG



July 2005, Sample Site #435342



July 2005, Sample Site #436221
(neighboring sites #436222 and #436223 not shown)



July 2005, Sample Site #535052
(neighboring site #535051 not shown)

Appendix 10.1A
PHOTOGRAPHIC LOG



July 2006, Sample Site #235281



July 2006, Sample Site #235281



July 2006, Sample Site #335081



July 2006, Sample Site #335081



July 2006, Sample Site #335131



July 2006, Sample Site #335131

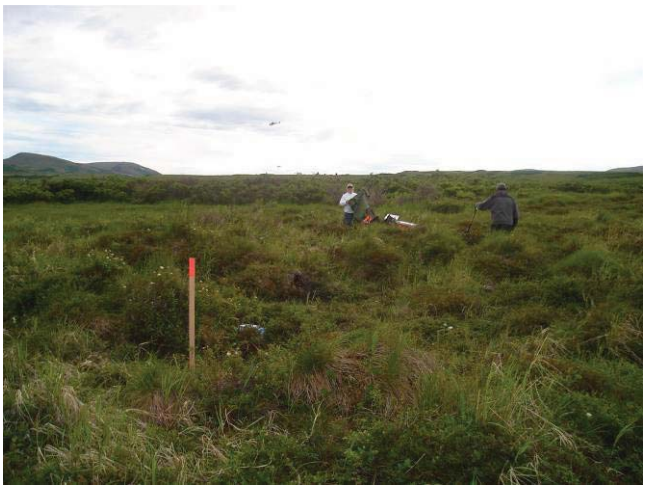
Appendix 10.1A
PHOTOGRAPHIC LOG



July 2006, Sample Site #336012



July 2006, Sample Site #336012



July 2006, Sample Site #335223



July 2006, Sample Site #335141



July 2006, Soil at Sample Site #335141



July 2006, Soil at Sample Site #335142

Appendix 10.1A
PHOTOGRAPHIC LOG



July 2006, lichen, reindeer lichen and flat lichen



July 2007, Sample Site #335234A



July 2007, Sample Site #335234B



July 2006, Sample Site #335141A



July 2007, Sample Site #335141C



July 2007, Sample Site #335141B

Appendix 10.1A
PHOTOGRAPHIC LOG



July 2007, Sample Site #335143B



July 2007, Sample Site #335143C



July 2007, Sample Site #335143C



July 2007, Sample Site #335143D



July 2007, Sample Site #335142A

Appendix 10.1A
PHOTOGRAPHIC LOG



July 2007, Sample Site #335142B



July 2007, Sample Site #335142C



July 2007, Sample Site #335233B



July 2007, Sample Site #335233C

Appendix 10.1A
PHOTOGRAPHIC LOG



July 2007, Sample Site #435301B



July 2007, Sample Site #4353012C



August 2007, Sample Site #335135



August 2007, Sample Site #335141



August 2007, Sample Site #335144

Appendix 10.1A
PHOTOGRAPHIC LOG



August 2007, Sample Site #335145



August 2007, Sample Site #335233



August 2007, Sample Site #335234



August 2007, Sample Site #335241A



August 2007, Sample Site #335241B

Appendix 10.1A
PHOTOGRAPHIC LOG



August 2007, Sample Site #335242A



August 2007, Sample Site #335242B



August 2007, Sample Site #335243A

APPENDIX 10.1B

Soil Sample Results Summary, Mine Study Area, 2004-2007

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
235271																		
Sample Date	**Sample ID**																	
07/12/05	0705235271SL001				**0.226**	**0.730**	2.4	0.25	225	19900	0.365	11.1	73	0.325	**0.174**	**6.87**	0.481	830
07/11/06	0706235271SL001				**0.678**	**0.915**	2.14	0.10	149	5840	**0.0776**	5.04	29.5	**0.0648**	**0.123**	**0.278**	**0.311**	490
07/18/07	0707235271SL001		4.8	1.5	**1.50**	**0.250**	**6.0**	**0.15**	**0.25**	3390	**0.50**	24.2	150	0.730	**4.0**	**15**	0.48	1810
	Mean	NA	4.8	1	0.8	0.63	3.5	0.17	125	19900	0.314	13.4	80	0.373	1.43	7.4	0.424	1000
	Median	NA	4.8	1.5	0.678	0.73	2.4	0.15	149	19900	0.365	11.1	73	0.325	0.174	6.87	0.48	830
	St. Deviation	NA	NA	NA	0.65	0.34	2.2	0.08	114	14000	0.216	9.8	60	0.335	2.22	7.4	0.098	700
	# of values	0	1	1	3	3	3	3	3	3	3	3	3	3	3	3.000	3	3
	Minimum	NA	4.8	1.5	0.226	0.25	2.14	0.1	0.25	5840	0.0776	5.04	29.5	0.0648	0.123	0.278	0.311	490
	Maximum	NA	4.8	1.5	1.5	0.915	6	0.25	225	33900	0.5	24.2	150	0.73	4	15	0.481	1810
	% of values undetected				67%	100%		33%	33%						33%	67%		
	of values between MDL and MRL				1		1				2			1	2	1	1	
235281																		
	Sample Date																	
07/12/05	0705235281SL001				**0.729**	**0.222**	7.03	0.11	123	25700	0.318	10.4	59.5	0.669	**0.173**	**2.21**	**0.273**	1590
07/11/06	0706235281SL001				**0.212**	**0.212**	2.27	0.17	178	13300	0.159	7.69	54.4	0.358	**0.127**	1.58	**0.177**	1120
	Mean	NA	NA	NA	0.47	0.217	4.65	0.14	151	19500	0.239	9	57	0.514	0.15	1.89	0.225	1360
	Median	NA	NA	NA	0.47	0.217	4.65	0.14	151	19500	0.239	9	57	0.514	0.15	1.89	0.225	1360
	St. Deviation	NA	NA	NA	0.366	0.007	3.37	0.04	39	8800	0.112	1.9	3.6	0.22	0.033	0.44	0.068	330
	# of values	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	NA	NA	NA	0.212	0.212	2.27	0.11	123	13300	0.159	7.69	54.4	0.358	0.127	1.58	0.177	1120
	Maximum	NA	NA	NA	0.729	0.222	7.03	0.17	178	25700	0.318	10.4	59.5	0.669	0.173	2.21	0.273	1590
	% of values undetected				50%	100%										50%		
	of values between MDL and MRL				1										2		2	
235361																		
	Sample Date																	
07/12/05	0705235361SL001	42.5			3.22	**0.36**	3.34	0.18	718	25500	**0.0971**	**2.18**	166	0.545	**0.0695**	**3.48**	**0.0695**	4760
07/18/07	0707235361SL001	48.3	5.2	5.0	**5.0**	**1.5**	**5.0**	**0.25**	**0.25**	44000	**0.1**	4.0	258	0.69	**4**	**15**	**0.20**	6260
	Mean	45.4	5.2	5	4.1	0.93	4.2	0.22	360	35000	0.1	3.1	212	0.62	2	9.2	0.13	5510
	Median	45.4	5.2	5	4.1	0.93	4.2	0.22	360	35000	0.1	3.1	212	0.62	2	9.2	0.13	5510
	St. Deviation	4.1	NA	NA	1.3	0.81	1.2	0.05	510	13000	0	1.3	65	0.1	2.8	8.1	0.09	1060
	# of values	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	42.5	5.2	5.0	3.22	0.36	3.34	0.18	0.25	25500	0.0971	2.18	166	0.545	0.0695	3.48	0.0695	4760
	Maximum	48.3	5.2	5.0	5.0	1.5	5.0	0.25	718	44000	0.1	4	258	0.69	4	15	0.2	6260
	% of values undetected				50%	100%	50%	50%	50%		50%				100%	100%	50%	
	of values between MDL and MRL										1	1					1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
235271																			
Sample Date	**Sample ID**																		
07/12/05	0705235271SL001	16.9	5.35	12.5	24400	18.9	3430	437	0.0839	**0.922**	7.48	603	**0.106**	**0.0624**	143	0.126	**0.705**	63.5	104
07/11/06	0706235271SL001	8.59	1.77	6.74	7070	10.1	806	174	**0.0614**	**0.758**	2.44	457	3.70	**0.133**	**83.3**	**0.0136**	**0.880**	31.3	40.4
07/18/07	0707235271SL001	26.9	9.75	20.6	19100	30.10	4500	630	**0.025**	**0.5**	15.2	800	0.84	0.13	200	**2.5**	**5**	**5.0**	176
	Mean	17.5	5.62	13.3	16900	19.7	2910	414	0.0568	0.727	8.4	620	1.5	0.108	142	0.88	2.2	33.3	107
	Median	16.9	5.35	12.5	19100	18.9	3430	437	0.0614	0.758	7.48	603	0.84	0.13	143	0.126	0.88	31.3	104
	St. Deviation	9.2	4	7	8900	10	1900	229	0.0297	0.213	6.4	172	1.9	0.04	58	1.4	2.4	29.3	68
	# of values	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Minimum	8.59	1.77	6.74	7070	10.1	806	174	0.025	0.5	2.44	457	0.106	0.0624	83.3	0.0136	0.705	5.0	40.4
	Maximum	26.9	9.75	20.6	24400	30.1	4500	630	0.0839	0.922	15.2	800	3.7	0.133	200	2.5	5	63.5	176
	% of values undetected								33%	33%			33%			33%	100%	33%	
	of values between MDL and MRL								1	2				2	1	1			
235281																			
	Sample Date																		
07/12/05	0705235281SL001	21.3	7.91	15.7	23600	10.7	4210	550	0.0605	**0.881**	12.2	581	**0.28**	**0.0221**	253	0.123	**0.710**	67.6	46.5
07/11/06	0706235281SL001	15.0	6.38	14.4	13800	9.37	2800	296	0.0815	**0.775**	9.10	433	3.83	**0.0605**	140	0.119	**0.665**	39.8	39.5
	Mean	18	7.15	15.1	18700	10	3500	420	0.071	0.828	11	507	2.1	0.0413	200	0.121	0.69	53.7	43
	Median	18	7.15	15.1	18700	10	3500	420	0.071	0.828	11	507	2.1	0.0413	200	0.121	0.69	53.7	43
	St. Deviation	4	1.08	0.9	6900	0.9	1000	180	0.0148	0.075	2	105	2.5	0.0272	80	0.003	0.03	19.7	4.9
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	15	6.38	14.4	13800	9.37	2800	296	0.0605	0.775	9.1	433	0.28	0.0221	140	0.119	0.665	39.8	39.5
	Maximum	21.3	7.91	15.7	23600	10.7	4210	550	0.0815	0.881	12.2	581	3.83	0.0605	253	0.123	0.71	67.6	46.5
	% of values undetected													50%			100%		
	of values between MDL and MRL									2			1	1					
235361																			
	Sample Date																		
07/12/05	0705235361SL001	53.1	13.6	14.5	25700	4.39	5600	1110	**0.0551**	**0.348**	20.4	454	**1.1**	**0.0348**	399	0.228	**1.12**	84.1	48
07/18/07	0707235361SL001	87.5	23.1	27.2	43500	6.69	8170	2120	**0.035**	**0.5**	53.8	520	1.37	**0.08**	790	**2.5**	**5.0**	**5.0**	64
	Mean	70.3	18.4	20.9	34600	5.54	6900	1620	0.045	0.42	37.1	490	1.2	0.057	590	1.4	3.1	45	56
	Median	70.3	18.4	20.9	34600	5.54	6900	1620	0.045	0.42	37.1	490	1.2	0.057	590	1.4	3.1	45	56
	St. Deviation	24.3	6.7	9	12600	1.63	1800	710	0.014	0.11	23.6	50	0.2	0.032	280	1.6	2.7	56	11
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	53.1	13.6	14.5	25700	4.39	5600	1110	0.035	0.348	20.4	454	1.1	0.0348	399	0.228	1.12	5.0	48
	Maximum	87.5	23.1	27.2	43500	6.69	8170	2120	0.0551	0.5	53.8	520	1.37	0.08	790	2.5	5	84.1	64
	% of values undetected								50%	100%				50%		50%	100%	50%	
	of values between MDL and MRL								1				1	1					

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
236271																		
	Sample Date																	
07/12/05	0705236271SL001	63.3			1.58	**0.243**	**0.625**	0.14	302	10600	0.262	8.07	51.1	0.323	**0.096**	**2.36**	**0.0472**	1260
Mean		63.3	NA	NA	1.58	0.243	0.625	0.14	302	10600	0.262	8.07	51.1	0.323	0.096	2.36	0.0472	1260
Median		63.3	NA	NA	1.58	0.243	0.625	0.14	302	10600	0.262	8.07	51.1	0.323	0.096	2.36	0.0472	1260
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		63.3	NA	NA	1.58	0.243	0.625	0.14	302	10600	0.262	8.07	51.1	0.323	0.096	2.36	0.0472	1260
Maximum		63.3	NA	NA	1.58	0.243	0.625	0.14	302	10600	0.262	8.07	51.1	0.323	0.096	2.36	0.0472	1260
% of values undetected						100%										100%	100%	
of values between MDL and MRL							1								1			
236272																		
	Sample Date																	
07/12/05	0705236272SL001	83			**0.44**	**0.185**	**0.185**	0.062	55	14600	0.227	13.5	94	0.518	**0.0812**	**4.61**	0.344	1800
Mean		83	NA	NA	0.44	0.185	0.185	0.062	55	14600	0.227	13.5	94	0.518	0.0812	4.61	0.344	1800
Median		83	NA	NA	0.44	0.185	0.185	0.062	55	14600	0.227	13.5	94	0.518	0.0812	4.61	0.344	1800
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		83	NA	NA	0.44	0.185	0.185	0.062	55	14600	0.227	13.5	94	0.518	0.0812	4.61	0.344	1800
Maximum		83	NA	NA	0.44	0.185	0.185	0.062	55	14600	0.227	13.5	94	0.518	0.0812	4.61	0.344	1800
% of values undetected						100%	100%											
of values between MDL and MRL					1										1	1		
236273																		
	Sample Date																	
07/12/05	0705236273SL001	73.6			**0.811**	**0.206**	3.24	0.11	151	17200	0.203	9.7	34.4	0.333	**0.115**	**5**	**0.041**	869
Mean		73.6	NA	NA	0.811	0.206	3.24	0.11	151	17200	0.203	9.7	34.4	0.333	0.115	5	0.041	869
Median		73.6	NA	NA	0.811	0.206	3.24	0.11	151	17200	0.203	9.7	34.4	0.333	0.115	5	0.041	869
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		73.6	NA	NA	0.811	0.206	3.24	0.11	151	17200	0.203	9.7	34.4	0.333	0.115	5	0.041	869
Maximum		73.6	NA	NA	0.811	0.206	3.24	0.11	151	17200	0.203	9.7	34.4	0.333	0.115	5	0.041	869
% of values undetected						100%											100%	
of values between MDL and MRL					1										1	1		

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
236271																			
	Sample Date																		
07/12/05	0705236271SL001	13	3.66	11.8	16300	6.82	3670	195	**0.0474**	**0.531**	6.21	780	0.958	**0.0236**	232	0.0695	**0.76**	36.6	38.8
	Mean	13	3.66	11.8	16300	6.82	3670	195	0.0474	0.531	6.21	780	0.958	0.0236	232	0.0695	0.76	36.6	38.8
	Median	13	3.66	11.8	16300	6.82	3670	195	0.0474	0.531	6.21	780	0.958	0.0236	232	0.0695	0.76	36.6	38.8
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	13	3.66	11.8	16300	6.82	3670	195	0.0474	0.531	6.21	780	0.958	0.0236	232	0.0695	0.76	36.6	38.8
	Maximum	13	3.66	11.8	16300	6.82	3670	195	0.0474	0.531	6.21	780	0.958	0.0236	232	0.0695	0.76	36.6	38.8
	% of values undetected													100%			100%		
	of values between MDL and MRL								1	1									
236272																			
	Sample Date																		
07/12/05	0705236272SL001	15.1	7.65	26	23100	10.7	3740	690	**0.0386**	**0.591**	10.3	1010	0.709	**0.0183**	193	0.0828	1.32	61.5	69.8
	Mean	15.1	7.65	26	23100	10.7	3740	690	0.0386	0.591	10.3	1010	0.709	0.0183	193	0.0828	1.32	61.5	69.8
	Median	15.1	7.65	26	23100	10.7	3740	690	0.0386	0.591	10.3	1010	0.709	0.0183	193	0.0828	1.32	61.5	69.8
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	15.1	7.65	26	23100	10.7	3740	690	0.0386	0.591	10.3	1010	0.709	0.0183	193	0.0828	1.32	61.5	69.8
	Maximum	15.1	7.65	26	23100	10.7	3740	690	0.0386	0.591	10.3	1010	0.709	0.0183	193	0.0828	1.32	61.5	69.8
	% of values undetected													100%					
	of values between MDL and MRL								1	1									
236273																			
	Sample Date																		
07/12/05	0705236273SL001	15.7	4.86	13.6	21000	7.68	3540	326	**0.053**	**0.603**	8.15	654	1.19	**0.0203**	204	0.0789	**0.655**	50.3	41
	Mean	15.7	4.86	13.6	21000	7.68	3540	326	0.053	0.603	8.15	654	1.19	0.0203	204	0.0789	0.655	50.3	41
	Median	15.7	4.86	13.6	21000	7.68	3540	326	0.053	0.603	8.15	654	1.19	0.0203	204	0.0789	0.655	50.3	41
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	15.7	4.86	13.6	21000	7.68	3540	326	0.053	0.603	8.15	654	1.19	0.0203	204	0.0789	0.655	50.3	41
	Maximum	15.7	4.86	13.6	21000	7.68	3540	326	0.053	0.603	8.15	654	1.19	0.0203	204	0.0789	0.655	50.3	41
	% of values undetected													100%			100%		
	of values between MDL and MRL								1	1									

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
236351																		
	Sample Date																	
07/11/05	0705236351SL001	50.9			6.04	**0.301**	3.96	0.13	293	8220	**0.182**	2.73	30	0.219	**0.0605**	**3.02**	**0.0605**	588
	Mean	50.9	NA	NA	6.04	0.301	3.96	0.13	293	8220	0.182	2.73	30	0.219	0.0605	3.02	0.0605	588
	Median	50.9	NA	NA	6.04	0.301	3.96	0.13	293	8220	0.182	2.73	30	0.219	0.0605	3.02	0.0605	588
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	50.9	NA	NA	6.04	0.301	3.96	0.13	293	8220	0.182	2.73	30	0.219	0.0605	3.02	0.0605	588
	Maximum	50.9	NA	NA	6.04	0.301	3.96	0.13	293	8220	0.182	2.73	30	0.219	0.0605	3.02	0.0605	588
	% of values undetected					100%									100%	100%	100%	
	of values between MDL and MRL										1							
236352																		
	Sample Date																	
07/11/05	0705236352SL001	61.5			**0.248**	**0.248**	**0.248**	0.15	245	2480	**0.0618**	**1.44**	23	**0.0704**	**0.0490**	**2.445**	**0.0490**	887
07/12/06	0706236352SL001	27.5			**1.38**	**0.565**	**1.24**	0.095	651	3080	**0.120**	6.46	25.3	**0.155**	**0.112**	**0.55**	1.59	1650
	Mean	44.5	NA	NA	0.81	0.406	0.74	0.12	448	2780	0.09	3.95	24	0.113	0.08	1.5	0.82	1270
	Median	44.5	NA	NA	0.81	0.406	0.74	0.12	448	2780	0.09	3.95	24	0.113	0.08	1.5	0.82	1270
	St. Deviation	24	NA	NA	0.8	0.225	0.7	0.04	287	420	0.04	3.55	2	0.06	0.044	1.34	1.09	540
	# of values	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	27.5	NA	NA	0.248	0.248	0.248	0.095	245	2480	0.0618	1.44	23	0.0704	0.0490	0.55	0.0490	887
	Maximum	61.5	NA	NA	1.38	0.565	1.24	0.15	651	3080	0.12	6.46	25.3	0.155	0.112	2.445	1.59	1650
	% of values undetected				50%	100%	50%								100%	100%	50%	
	of values between MDL and MRL				1		1				2	1		2				
236353																		
	Sample Date																	
07/11/05	0705236353SL001	37.8			**1.63**	**0.407**	**1.5**	0.080	468	3150	**0.145**	**1.4**	20.1	**0.129**	**0.082**	**4.09**	**0.082**	2370
07/12/06	0706236353SL001	73.6		1.02	1.40	4.38	**1.23**	**0.014**	17.8	16200	0.301	2.45	258	0.583	**0.0417**	2.07	0.655	3420
07/19/07	0707236353SL001	67.2	4.7	1.3	**1.50**	**0.250**	**5.0**	**0.20**	**0.25**	21700	**0.40**	12.9	45.2	0.63	**10**	**5**	0.480	1820
	Mean	59.5	4.7	1.2	1.5	1.68	2.6	0.1	162	13700	0.282	5.6	108	0.447	3	3.72	0.41	2540
	Median	67.2	4.7	1.16	1.5	0.407	1.5	0.08	17.8	16200	0.301	2.45	45.2	0.583	0.082	4.09	0.48	2370
	St. Deviation	19.1	NA	0.2	0.1	2.34	2.1	0.09	265	9500	0.129	6.4	131	0.277	6	1.5	0.29	810
	# of values	3	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Minimum	37.8	4.7	1.02	1.4	0.25	1.23	0.014	0.25	3150	0.145	1.4	20.1	0.129	0.0417	2.07	0.082	1820
	Maximum	73.6	4.7	1.3	1.63	4.38	5.0	0.20	468	21700	0.40	12.9	258	0.63	10	5	0.655	3420
	% of values undetected				33%	67%		67%	33%						100%	67%	33%	
	of values between MDL and MRL				1		3				2	1		1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
236351																			
Sample Date																			
07/11/05	0705236351SL001	7.83	1.42	6.33	12200	6.35	377	101	0.0885	**0.607**	1.72	1010	1.39	**0.0302**	**182**	0.101	**0.975**	37.7	30.2
Mean		7.83	1.42	6.33	12200	6.35	377	101	0.0885	0.607	1.72	1010	1.39	0.0302	182	0.101	0.975	37.7	30.2
Median		7.83	1.42	6.33	12200	6.35	377	101	0.0885	0.607	1.72	1010	1.39	0.0302	182	0.101	0.975	37.7	30.2
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		7.83	1.42	6.33	12200	6.35	377	101	0.0885	0.607	1.72	1010	1.39	0.0302	182	0.101	0.975	37.7	30.2
Maximum		7.83	1.42	6.33	12200	6.35	377	101	0.0885	0.607	1.72	1010	1.39	0.0302	182	0.101	0.975	37.7	30.2
% of values undetected														100%			100%		
of values between MDL and MRL										1					1				
236352																			
Sample Date																			
07/11/05	0705236352SL001	2.37	**0.445**	3.19	2550	2.45	223	23.6	0.0961	**0.492**	0.738	376	0.821	**0.0245**	**85.1**	0.0359	**0.79**	5.44	14.2
07/12/06	0706236352SL001	2.70	**0.810**	8.22	3410	6.17	548	51.5	0.232	**0.555**	1.45	1290	10.5	**0.0555**	**136**	0.117	**1.80**	**5.13**	81.0
Mean		2.5	0.63	5.71	2980	4.31	386	37.6	0.164	0.524	1.09	830	5.7	0.04	111	0.076	1.29	5.29	48
Median		2.5	0.63	5.71	2980	4.31	386	37.6	0.164	0.524	1.09	830	5.7	0.04	111	0.076	1.29	5.29	48
St. Deviation		0.2	0.26	3.56	610	2.63	230	19.7	0.096	0.045	0.5	650	6.8	0.022	36	0.057	0.71	0.22	47
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		2.37	0.445	3.19	2550	2.45	223	23.6	0.0961	0.492	0.738	376	0.821	0.0245	85.1	0.0359	0.79	5.13	14.2
Maximum		2.7	0.810	8.22	3410	6.17	548	51.5	0.232	0.555	1.45	1290	10.5	0.0555	136	0.117	1.795	5.44	81
% of values undetected										50%				100%			100%		
of values between MDL and MRL			2							1					2			1	
236353																			
Sample Date																			
07/11/05	0705236353SL001	3.44	**0.638**	3.57	2890	2.74	671	35.5	0.141	**0.864**	0.953	800	**1.12**	**0.0409**	**135**	**0.0173**	**1.32**	**6.35**	71.9
07/12/06	0706236353SL001	40.1	11.7	26.6	17200	12.4	4290	222	0.131	**0.208**	16.4	699	1.57	**0.0603**	258	0.0907	1.67	60.7	82.6
07/19/07	0707236353SL001	20.40	4.82	13.0	10300	11.90	2660	360	**0.025**	1.2	9.9	930	1.01	0.10	380	**0.025**	**5**	25.8	67
Mean		21.3	5.7	14.4	10100	9	2540	206	0.099	0.76	9.1	810	1.23	0.067	258	0.0443	2.66	31	73.8
Median		20.4	4.82	13	10300	11.9	2660	222	0.131	0.864	9.9	800	1.12	0.0603	258	0.025	1.67	25.8	71.9
St. Deviation		18.3	5.6	11.6	7200	5.4	1810	163	0.064	0.5	7.8	120	0.3	0.03	123	0.0403	2.03	27.5	8
# of values		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		3.44	0.638	3.57	2890	2.74	671	35.5	0.025	0.208	0.953	699	1.01	0.0409	135	0.0173	1.32	6.35	67
Maximum		40.1	11.7	26.6	17200	12.4	4290	360	0.141	1.2	16.4	930	1.57	0.1	380	0.0907	5	60.7	82.6
% of values undetected									33%	33%				33%		33%	67%		
of values between MDL and MRL			1							1			1	1	1	1		1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335011																		
Sample Date																		
07/15/06	0706335011SL001	19.9			8.14	**0.78**	6.33	**0.049**	798	12100	**0.076**	7.46	20.6	**0.292**	**0.153**	**0.765**	**0.153**	550
07/18/07	0707335011SL001	73.5	5.3	1.1	**5**	**1.5**	**5**	**0.15**	**0.25**	50700	**0.2**	6.0	152	0.75	**4**	**15**	**0.23**	2430
Mean		46.7	5.3	1.1	6.6	1.1	5.7	0.1	400	31400	0.14	6.7	86	0.52	2.1	8	0.191	1500
Median		46.7	5.3	1.1	6.6	1.1	5.7	0.1	400	31400	0.14	6.7	86	0.52	2.1	8	0.191	1500
St. Deviation		37.9	NA	NA	2.2	0.5	0.9	0.07	560	27300	0.09	1	93	0.32	2.7	10	0.055	1300
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		19.9	5.3	1.1	5	0.78	5	0.049	0.25	12100	0.076	6	20.6	0.292	0.153	0.765	0.153	550
Maximum		73.5	5.3	1.1	8.14	1.5	6.33	0.15	798	50700	0.2	7.46	152	0.75	4	15	0.23	2430
% of values undetected					50%	100%	50%	50%	50%		50%				100%	100%	50%	
of values between MDL and MRL								1			1			1			1	
335021																		
Sample Date																		
07/12/05	0705335021SL001	18.3			9	**3.2**	22.8	0.16	1340	6670	**0.506**	**3.65**	235	**0.245**	**0.165**	**8.25**	**0.165**	10400
08/09/05	0805335021SL001	36.3		6.5	3.51	**1.28**	19.4	0.12	747	6620	**0.0427**	**0.4265**	81.6	**0.249**	**0.0855**	3.42	**0.406**	6770
07/12/06	0706335021SL001	20.6			**2.52**	**2.71**	9.79	0.12	1330	16800	**0.311**	12.3	225	0.477	**0.144**	**3.16**	**0.642**	13600
Mean		25.1	NA	6.5	5.01	2.40	17.3	0.13	1140	10000	0.287	5.5	181	0.324	0.131	4.94	0.404	10300
Median		20.6	NA	6.5	3.51	2.71	19.4	0.12	1330	6670	0.311	3.65	225	0.249	0.1435	3.42	0.406	10400
St. Deviation		9.8	NA	NA	3.49	1	6.7	0.02	340	5900	0.233	6.1	86	0.133	0.041	2.87	0.239	3400
# of values		3	0	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		18.3	NA	6.5	2.52	1.28	9.79	0.12	747	6620	0.0427	0.4265	81.6	0.245	0.0855	3.16	0.165	6770
Maximum		36.3	NA	6.5	9	3.2	22.8	0.16	1340	16800	0.506	12.3	235	0.477	0.165	8.25	0.642	13600
% of values undetected											33%	33%			100%	33%	33%	
of values between MDL and MRL					1	3					2	1		2		1	2	
335031																		
Sample Date																		
07/12/05	0705335031SL001	59.5			**0.610**	**0.249**	1.73	0.18	220	10800	**0.0845**	**1.48**	23.3	**0.138**	**0.0505**	**2.525**	**0.0505**	583
07/12/05	0705335031SS001	79.5			**0.558**	**0.437**	2.94	0.09	59.4	28200	0.241	8.36	159	0.738	**0.0815**	**4.84**	1.31	3620
Mean		69.5	NA	NA	0.58	0.343	2.34	0.14	140	19500	0.163	4.92	91	0.438	0.066	3.68	0.68	2100
Median		69.5	NA	NA	0.58	0.343	2.34	0.14	140	19500	0.163	4.92	91	0.438	0.066	3.68	0.68	2100
St. Deviation		14.1	NA	NA	0.04	0.133	0.86	0.06	110	12300	0.111	4.86	96	0.424	0.0219	1.64	0.89	2150
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		59.5	NA	NA	0.558	0.249	1.73	0.09	59.4	10800	0.0845	1.48	23.3	0.138	0.0505	2.525	0.0505	583
Maximum		79.5	NA	NA	0.610	0.437	2.94	0.18	220	28200	0.241	8.36	159	0.738	0.0815	4.84	1.31	3620
% of values undetected						50%									50%	50%	50%	
of values between MDL and MRL					2	1					1	1		1	1	1		

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335011																			
	Sample Date																		
07/15/06	0706335011SL001	2.58	**1.24**	4.83	7170	2.32	**82.9**	11.0	**0.135**	**0.76**	1.46	**76**	4.10	**0.076**	**76**	**0.0153**	**0.76**	28.5	19.7
07/18/07	0707335011SL001	27.80	19.20	16.1	34000	8.66	7160	2180	**0.19**	**0.50**	20.4	660	0.76	**0.040**	310	**2.5**	**10**	**5.0**	103
	Mean	15.2	10.2	10.5	21000	5.49	3620	1100	0.16	0.63	10.9	370	2.4	0.058	190	1.26	5	17	61
	Median	15.2	10.2	10.5	21000	5.49	3620	1100	0.16	0.63	10.9	370	2.4	0.058	190	1.26	5	17	61
	St. Deviation	17.8	12.7	8	19000	4.48	5000	1500	0.04	0.18	13.4	410	2.4	0.025	170	1.76	7	17	59
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	2.58	1.24	4.83	7170	2.32	82.9	11	0.135	0.5	1.46	76	0.76	0.04	76	0.0153	0.76	5.0	19.7
	Maximum	27.8	19.2	16.1	34000	8.66	7160	2180	0.19	0.76	20.4	660	4.1	0.076	310	2.5	10	28.5	103
	% of values undetected									100%		50%		50%	50%	100%	100%	50%	
	of values between MDL and MRL		1				1		2					1					
335021																			
	Sample Date																		
07/12/05	0705335021SL001	5.62	17.3	16.9	9270	2.09	1440	6560	0.336	**0.825**	7.74	**458**	3.06	**0.0825**	**165**	0.21	**2.66**	**8.85**	33.8
08/09/05	0805335021SL001	4.74	3.56	16.3	2980	1.54	946	184	0.311	**0.427**	4.19	**240**	**0.69**	**0.109**	**42.7**	0.0746	**0.427**	**5.06**	6.12
07/12/06	0706335021SL001	30.1	10.7	27.5	33000	9.37	5050	1040	0.251	**1.75**	17.3	1090	10.9	**0.182**	**293**	0.190	**2.31**	71.1	63.7
	Mean	13.5	10.5	20.2	15100	4.33	2480	2590	0.299	1	9.7	600	4.9	0.125	167	0.16	1.8	28.3	34.5
	Median	5.62	10.7	16.9	9270	2.09	1440	1040	0.311	0.825	7.74	458	3.06	0.109	165	0.19	2.31	8.85	33.8
	St. Deviation	14.4	6.9	6.3	15800	4.37	2240	3460	0.044	0.68	6.8	440	5.3	0.052	125	0.07	1.2	37.1	28.8
	# of values	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Minimum	4.74	3.56	16.3	2980	1.54	946	184	0.251	0.427	4.19	240	0.69	0.0825	42.7	0.0746	0.427	5.06	6.12
	Maximum	30.1	17.3	27.5	33000	9.37	5050	6560	0.336	1.75	17.3	1090	10.9	0.182	293	0.21	2.66	71.1	63.7
	% of values undetected									67%			33%	33%	33%		100%		
	of values between MDL and MRL									1		2		2	2			2	
335031																			
	Sample Date																		
07/12/05	0705335031SL001	7.67	1.1	5.75	6140	3.38	673	39.3	**0.0521**	**0.253**	1.84	198	0.826	**0.0253**	230	0.0326	**0.815**	21.9	10.1
07/12/05	0705335031SS001	40.5	10.9	24.9	33000	7.71	6000	427	**0.0424**	**0.734**	12.6	765	0.68	**0.0619**	310	0.115	1.71	91.7	70.2
	Mean	24.1	6	15.3	20000	5.55	3300	233	0.0473	0.493	7.2	482	0.75	0.0436	270	0.074	1.26	56.8	40.2
	Median	24.1	6	15.3	20000	5.55	3300	233	0.0473	0.493	7.2	482	0.75	0.0436	270	0.074	1.26	56.8	40.2
	St. Deviation	23.2	7	13.5	19000	3.06	3800	274	0.0069	0.34	7.6	401	0.1	0.0259	60	0.058	0.63	49.4	42.5
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	7.67	1.1	5.75	6140	3.38	673	39.3	0.0424	0.253	1.84	198	0.68	0.0253	230	0.0326	0.815	21.9	10.1
	Maximum	40.5	10.9	24.9	33000	7.71	6000	427	0.0521	0.734	12.6	765	0.826	0.0619	310	0.115	1.71	91.7	70.2
	% of values undetected									50%				50%			50%		
	of values between MDL and MRL								2	1				1					

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335032																		
Sample Date																		
07/12/05	0705335032SL001	74.3			**0.445**	**0.203**	1.43	0.15	75.5	26500	0.228	8.81	111	0.672	**0.0887**	**4.46**	0.642	1850
Mean		74.3	NA	NA	0.445	0.203	1.43	0.15	75.5	26500	0.228	8.81	111	0.672	0.0887	4.46	0.642	1850
Median		74.3	NA	NA	0.445	0.203	1.43	0.15	75.5	26500	0.228	8.81	111	0.672	0.0887	4.46	0.642	1850
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		74.3	NA	NA	0.445	0.203	1.43	0.15	75.5	26500	0.228	8.81	111	0.672	0.0887	4.46	0.642	1850
Maximum		74.3	NA	NA	0.445	0.203	1.43	0.15	75.5	26500	0.228	8.81	111	0.672	0.0887	4.46	0.642	1850
% of values undetected						100%												
of values between MDL and MRL					1										1	1		
335081																		
Sample Date																		
07/15/06	0706335081SL001	50.2			5.02	**0.309**	11.8	0.12	592	14600	**0.0698**	**1.03**	14.8	**0.0862**	**0.175**	**0.942**	**0.0605**	273
07/19/07	0707335081SL001	42.9	4.4	7.9	**5**	**1.5**	**5**	**0.3**	**0.25**	22000	**0.100**	1.8	24.2	**0.14**	**10**	**5.0**	**0.09**	820
Mean		46.6	4.4	7.9	5	0.9	8	0.21	300	18000	0.08	1.4	19.5	0.11	5	3	0.075	550
Median		46.6	4.4	7.9	5	0.9	8	0.21	300	18000	0.08	1.4	19.5	0.11	5	3	0.075	550
St. Deviation		5.2	NA	NA	0	0.84	5	0.13	420	5000	0.02	0.5	6.6	0.04	7	2.9	0.021	390
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		42.9	4.4	7.9	5	0.309	5	0.12	0.25	14600	0.0698	1.03	14.8	0.0862	0.175	0.942	0.0605	273
Maximum		50.2	4.4	7.9	5.02	1.5	11.8	0.3	592	22000	0.100	1.8	24.2	0.14	10	5	0.09	820
% of values undetected					50%	100%	50%	50%	50%		50%				50%	50%	50%	
of values between MDL and MRL			1					1			1	1		2	1	1	1	
335091																		
Sample Date																		
07/12/05	0705335091SL001	60.5			**0.838**	**0.250**	**1.51**	0.26	230	26700	0.212	8.61	27.5	0.354	**0.186**	**2.52**	0.437	646
Mean		60.5	NA	NA	0.838	0.250	1.51	0.26	230	26700	0.212	8.61	27.5	0.354	0.186	2.52	0.437	646
Median		60.5	NA	NA	0.838	0.250	1.51	0.26	230	26700	0.212	8.61	27.5	0.354	0.186	2.52	0.437	646
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		60.5	NA	NA	0.838	0.250	1.51	0.26	230	26700	0.212	8.61	27.5	0.354	0.186	2.52	0.437	646
Maximum		60.5	NA	NA	0.838	0.250	1.51	0.26	230	26700	0.212	8.61	27.5	0.354	0.186	2.52	0.437	646
% of values undetected						100%										100%		
of values between MDL and MRL					1		1								1			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335032																			
Sample Date																			
07/12/05	0705335032SL001	33	10.5	20.4	30400	8.62	4950	529	**0.0456**	**0.753**	11	649	0.713	**0.0202**	218	0.116	1.61	90.6	59.2
Mean		33	10.5	20.4	30400	8.62	4950	529	0.0456	0.753	11	649	0.713	0.0202	218	0.116	1.61	90.6	59.2
Median		33	10.5	20.4	30400	8.62	4950	529	0.0456	0.753	11	649	0.713	0.0202	218	0.116	1.61	90.6	59.2
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		33	10.5	20.4	30400	8.62	4950	529	0.0456	0.753	11	649	0.713	0.0202	218	0.116	1.61	90.6	59.2
Maximum		33	10.5	20.4	30400	8.62	4950	529	0.0456	0.753	11	649	0.713	0.0202	218	0.116	1.61	90.6	59.2
% of values undetected														100%					
of values between MDL and MRL									1	1									
335081																			
Sample Date																			
07/15/06	0706335081SL001	6.51	**0.766**	8.46	3800	5.43	738	28.7	**0.0456**	**0.303**	2.00	**168**	2.22	**0.0303**	**118**	0.105	**0.98**	21.7	12.3
07/19/07	0707335081SL001	18.60	**0.50**	7.4	588	7.17	450	19.4	**0.26**	**0.50**	2.8	300	3.02	**0.08**	300	**0.025**	**5.0**	**2.5**	7
Mean		12.6	0.63	7.9	2200	6.3	590	24.1	0.15	0.4	2.4	230	2.62	0.055	210	0.07	3	12	10
Median		12.6	0.63	7.9	2200	6.3	590	24.1	0.15	0.4	2.4	230	2.62	0.055	210	0.07	3	12	10
St. Deviation		8.5	0.19	0.7	2300	1.23	200	6.6	0.15	0.14	0.6	90	0.57	0.035	130	0.06	2.8	14	4
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		6.51	0.50	7.4	588	5.43	450	19.4	0.0456	0.303	2	168	2.22	0.0303	118	0.025	0.98	2.5	7
Maximum		18.6	0.766	8.46	3800	7.17	738	28.7	0.26	0.50	2.8	300	3.02	0.08	300	0.105	5.0	21.7	12.3
% of values undetected			50%							100%				50%		50%	100%	50%	
of values between MDL and MRL			1						2			1		1	1				
335091																			
Sample Date																			
07/12/05	0705335091SL001	14.6	3.57	13.5	25200	9.17	1870	199	0.0695	**0.924**	4.7	458	2.29	**0.02515**	174	0.113	**0.81**	69.5	36.2
Mean		14.6	3.57	13.5	25200	9.17	1870	199	0.0695	0.924	4.7	458	2.29	0.0252	174	0.113	0.81	69.5	36.2
Median		14.6	3.57	13.5	25200	9.17	1870	199	0.0695	0.924	4.7	458	2.29	0.0252	174	0.113	0.81	69.5	36.2
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		14.6	3.57	13.5	25200	9.17	1870	199	0.0695	0.924	4.7	458	2.29	0.0252	174	0.113	0.81	69.5	36.2
Maximum		14.6	3.57	13.5	25200	9.17	1870	199	0.0695	0.924	4.7	458	2.29	0.0252	174	0.113	0.81	69.5	36.2
% of values undetected														100%			100%		
of values between MDL and MRL										1									

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335092																		
Sample Date																		
07/12/05	0705335092SL001	86.9			**0.398**	**0.177**	1.26	**0.014**	23.3	18000	0.274	11	130	0.503	**0.0939**	**3.92**	0.779	3200
Mean		86.9	NA	NA	0.398	0.177	1.26	0.014	23.3	18000	0.274	11	130	0.503	0.0939	3.92	0.779	3200
Median		86.9	NA	NA	0.398	0.177	1.26	0.014	23.3	18000	0.274	11	130	0.503	0.0939	3.92	0.779	3200
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		86.9	NA	NA	0.398	0.177	1.26	0.014	23.3	18000	0.274	11	130	0.503	0.0939	3.92	0.779	3200
Maximum		86.9	NA	NA	0.398	0.177	1.26	0.014	23.3	18000	0.274	11	130	0.503	0.0939	3.92	0.779	3200
% of values undetected						100%		100%										
of values between MDL and MRL					1										1	1		
335093																		
Sample Date																		
07/12/05	0705335093SL001	61.2			**0.904**	**0.251**	**0.823**	0.19	200	6230	0.211	7.3	29.8	**0.111**	**0.28**	**2.43**	0.364	448
Mean		61.2	NA	NA	0.904	0.251	0.823	0.19	200	6230	0.211	7.3	29.8	0.111	0.28	2.43	0.364	448
Median		61.2	NA	NA	0.904	0.251	0.823	0.19	200	6230	0.211	7.3	29.8	0.111	0.28	2.43	0.364	448
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		61.2	NA	NA	0.904	0.251	0.823	0.19	200	6230	0.211	7.3	29.8	0.111	0.28	2.43	0.364	448
Maximum		61.2	NA	NA	0.904	0.251	0.823	0.19	200	6230	0.211	7.3	29.8	0.111	0.28	2.43	0.364	448
% of values undetected						100%										100%		
of values between MDL and MRL					1		1							1	1			
335101																		
Sample Date																		
07/15/06	0706335101SL001	82.0			**0.189**	**0.414**	**0.719**	**0.042**	46.0	23400	0.124	8.15	131	0.543	**0.109**	3.82	**0.202**	1650
07/20/07	0707335101SL001	81.5	5.2	1.0	**1.5**	**0.25**	**5.0**	**0.15**	**0.25**	23200	**0.4**	12.3	135	0.57	**10**	**5.0**	**0.17**	2270
Mean		82	5.2	1	0.8	0.33	2.9	0.1	23	23300	0.26	10.2	133	0.56	5	4.4	0.19	1960
Median		82	5.2	1	0.8	0.33	2.9	0.1	23	23300	0.26	10.2	133	0.56	5	4.4	0.19	1960
St. Deviation		0	NA	NA	0.9	0.12	3	0.08	32	100	0.2	2.9	3	0.02	7	0.8	0.02	440
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		81.5	5.2	1	0.189	0.25	0.719	0.042	0.25	23200	0.124	8.15	131	0.543	0.109	3.82	0.17	1650
Maximum		82	5.2	1	1.5	0.414	5.0	0.15	46	23400	0.4	12.3	135	0.57	10	5.0	0.202	2270
% of values undetected					100%	50%		50%	50%						50%	50%		
of values between MDL and MRL						1	2	1			1				1		2	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335092																			
	Sample Date																		
07/12/05	0705335092SL001	25.9	9.43	21.6	25600	10.8	5590	657	**0.0445**	**0.505**	12.3	1010	**0.342**	**0.0449**	259	0.105	1.32	74.9	69.7
	Mean	25.9	9.43	21.6	25600	10.8	5590	657	0.0445	0.505	12.3	1010	0.342	0.0449	259	0.105	1.32	74.9	69.7
	Median	25.9	9.43	21.6	25600	10.8	5590	657	0.0445	0.505	12.3	1010	0.342	0.0449	259	0.105	1.32	74.9	69.7
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	25.9	9.43	21.6	25600	10.8	5590	657	0.0445	0.505	12.3	1010	0.342	0.0449	259	0.105	1.32	74.9	69.7
	Maximum	25.9	9.43	21.6	25600	10.8	5590	657	0.0445	0.505	12.3	1010	0.342	0.0449	259	0.105	1.32	74.9	69.7
	% of values undetected																		
	of values between MDL and MRL								1	1			1	1					
335093																			
	Sample Date																		
07/12/05	0705335093SL001	11.2	2.53	10	13900	7.62	918	151	0.0692	**1.26**	2.93	597	1.02	**0.0243**	162	0.124	1.69	74.9	26.4
	Mean	11.2	2.53	10	13900	7.62	918	151	0.0692	1.26	2.93	597	1.02	0.0243	162	0.124	1.69	74.9	26.4
	Median	11.2	2.53	10	13900	7.62	918	151	0.0692	1.26	2.93	597	1.02	0.0243	162	0.124	1.69	74.9	26.4
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	11.2	2.53	10	13900	7.62	918	151	0.0692	1.26	2.93	597	1.02	0.0243	162	0.124	1.69	74.9	26.4
	Maximum	11.2	2.53	10	13900	7.62	918	151	0.0692	1.26	2.93	597	1.02	0.0243	162	0.124	1.69	74.9	26.4
	% of values undetected													100%					
	of values between MDL and MRL									1									
335101																			
	Sample Date																		
07/15/06	0706335101SL001	20.0	10.0	69.4	30700	6.59	4760	571	0.0554	**0.972**	13.9	576	0.778	**0.101**	131	0.0838	**0.61**	47.2	51.8
07/20/07	0707335101SL001	30.4	11.00	77.0	23800	9.67	5170	770	**0.08**	2.11	15.7	1170	0.72	**0.07**	300	**0.025**	**5.0**	75.0	58
	Mean	25	11	73	27300	8.13	4970	670	0.068	1.5	14.8	870	0.75	0.09	220	0.054	2.8	61	55
	Median	25	11	73	27300	8.13	4970	670	0.068	1.5	14.8	870	0.75	0.09	220	0.054	2.8	61	55
	St. Deviation	7	1	5	4900	2.18	290	140	0.017	0.8	1.3	420	0.04	0.02	120	0.042	3.1	20	4
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	20	10	69.4	23800	6.59	4760	571	0.0554	0.972	13.9	576	0.72	0.07	131	0.025	0.61	47.2	51.8
	Maximum	30.4	11	77	30700	9.67	5170	770	0.08	2.11	15.7	1170	0.778	0.101	300	0.0838	5.0	75	58
	% of values undetected															50%	100%		
	of values between MDL and MRL								1	1				2					

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335131																		
Sample Date																		
07/11/05	0705335131SL001	13.3			**1.15**	**1.15**	45.1	0.47	1460	4170	**0.115**	10.9	101	**0.301**	**0.231**	**11.5**	**0.78**	3760
07/13/06	0706335131SL001	13.5			**4.16**	**1.15**	13.2	0.063	850	3090	**0.258**	**5.98**	61.9	**0.112**	**0.223**	**1.13**	**0.223**	5610
Mean		13.4	NA	NA	2.65	1.15	29.2	0.27	1200	3630	0.187	8.4	81	0.206	0.227	6.3	0.5	4690
Median		13.4	NA	NA	2.65	1.15	29.2	0.27	1200	3630	0.187	8.4	81	0.206	0.227	6.3	0.5	4690
St. Deviation		0.1	NA	NA	2.13	0	22.6	0.29	400	760	0.101	3.5	28	0.134	0.005	7.3	0.39	1310
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		13.3	NA	NA	1.15	1.15	13.2	0.063	850	3090	0.115	5.98	61.9	0.112	0.223	1.13	0.223	3760
Maximum		13.5	NA	NA	4.16	1.15	45.1	0.47	1460	4170	0.258	10.9	101	0.301	0.231	11.5	0.78	5610
% of values undetected					50%	100%					50%			50%	100%	100%	50%	
of values between MDL and MRL					1						1	1		1			1	
335132																		
Sample Date																		
07/11/05	0705335132SL001	18.5			6.58	**1.69**	7.74	0.071	479	2190	**0.081**	**3.17**	58.3	**0.081**	**0.162**	**8.1**	**0.162**	4870
07/14/06	0706335132SL001	49.4			**1.50**	**0.314**	8.63	0.11	196	21600	**0.0669**	2.48	117	0.287	**0.062**	4.87	**0.286**	1670
Mean		34	NA	NA	4	1	8.19	0.09	338	11900	0.074	2.83	88	0.18	0.11	6.5	0.224	3270
Median		34	NA	NA	4	1	8.19	0.09	338	11900	0.074	2.83	88	0.18	0.11	6.5	0.224	3270
St. Deviation		21.8	NA	NA	3.6	0.97	0.63	0.03	200	13700	0.01	0.49	42	0.15	0.07	2.3	0.088	2260
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		18.5	NA	NA	1.5	0.314	7.74	0.071	196	2190	0.0669	2.48	58.3	0.081	0.062	4.87	0.162	1670
Maximum		49.4	NA	NA	6.58	1.69	8.63	0.11	479	21600	0.081	3.17	117	0.287	0.162	8.1	0.286	4870
% of values undetected						50%					50%			50%	100%	50%	50%	
of values between MDL and MRL					1	1					1	1					1	
335134																		
Sample Date																		
07/17/07	0707335134SL001	57.0	5.4	6.4	**15**	**2.5**	**15**	**0.2**	**2.5**	30500	**0.2**	3.8	226	0.68	**3.5**	**15**	0.78	6100
Mean		57	5.4	6.4	15	2.5	15	0.2	2.5	30500	0.2	3.8	226	0.68	3.5	15	0.78	6100
Median		57	5.4	6.4	15	2.5	15	0.2	2.5	30500	0.2	3.8	226	0.68	3.5	15	0.78	6100
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		57	5.4	6.4	15	2.5	15	0.2	2.5	30500	0.2	3.8	226	0.68	3.5	15	0.78	6100
Maximum		57	5.4	6.4	15	2.5	15	0.2	2.5	30500	0.2	3.8	226	0.68	3.5	15	0.78	6100
% of values undetected					100%	100%	100%	100%							100%	100%		
of values between MDL and MRL									1		1							

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335131																			
Sample Date																			
07/11/05	0705335131SL001	5.43	**1.61**	11.8	29800	**0.231**	**74.1**	10.3	**0.172**	**1.15**	2.97	**115**	**3.27**	**0.115**	**115**	**0.0576**	**3.72**	29.1	7.68
07/13/06	0706335131SL001	**1.55**	**3.12**	8.26	23900	3.86	395	2440	**0.162**	**1.12**	5.32	**112**	3.79	**0.112**	**112**	**0.0565**	**3.60**	**9.41**	11.0
Mean		3.49	2.37	10	26900	2.05	235	1230	0.167	1.13	4.15	113	3.53	0.113	113	0.0571	3.66	19.3	9
Median		3.49	2.37	10	26900	2.05	235	1230	0.167	1.13	4.15	113	3.53	0.113	113	0.0571	3.66	19.3	9
St. Deviation		2.74	1.07	2.5	4200	2.57	227	1720	0.007	0.02	1.66	2	0.37	0.002	2	0.0008	0.08	13.9	2
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		1.55	1.61	8.26	23900	0.231	74.1	10.3	0.162	1.12	2.97	112	3.27	0.112	112	0.0565	3.6	9.41	7.68
Maximum		5.43	3.12	11.8	29800	3.86	395	2440	0.172	1.15	5.32	115	3.79	0.115	115	0.0576	3.72	29.1	11
% of values undetected						50%				100%		100%		100%	100%		100%		
of values between MDL and MRL		1	2				1		2				1			2		1	
335132																			
Sample Date																			
07/11/05	0705335132SL001	2.35	**2.19**	**1.57**	6770	**0.659**	798	14.1	**0.122**	**0.81**	2.84	**81**	**1**	**0.081**	**165**	**0.0379**	**2.61**	**5.79**	10.2
07/14/06	0706335132SL001	10.0	11.2	8.43	39600	4.73	3370	1070	0.14	**0.311**	7.89	399	1.41	**0.0311**	**127**	0.0871	**1.01**	54.8	57.3
Mean		6	6.7	5	23200	2.69	2080	540	0.13	0.56	5.37	240	1.2	0.056	146	0.0625	1.81	30.3	33.8
Median		6	6.7	5	23200	2.69	2080	540	0.13	0.56	5.37	240	1.2	0.056	146	0.0625	1.81	30.3	33.8
St. Deviation		5	6.4	4.85	23200	2.88	1820	750	0.01	0.35	3.57	220	0.3	0.035	27	0.0348	1.13	34.7	33.3
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		2.35	2.19	1.57	6770	0.659	798	14.1	0.122	0.311	2.84	81	1	0.0311	127	0.0379	1.01	5.79	10.2
Maximum		10	11.2	8.43	39600	4.73	3370	1070	0.14	0.81	7.89	399	1.41	0.081	165	0.0871	2.61	54.8	57.3
% of values undetected				50%						100%		50%		100%			100%		
of values between MDL and MRL			1			1			1				1		2	1		1	
335134																			
Sample Date																			
07/17/07	0707335134SL001	51.2	8.39	32.3	14800	9.65	4020	130	**0.03**	**0.50**	19.6	380	1.42	0.15	1030	**2.5**	**5.0**	**5.0**	68
Mean		51.2	8.39	32.3	14800	9.65	4020	130	0.03	0.50	19.6	380	1.42	0.15	1030	2.5	5.0	5.0	68
Median		51.2	8.39	32.3	14800	9.65	4020	130	0.03	0.50	19.6	380	1.42	0.15	1030	2.5	5.0	5.0	68
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		51.2	8.39	32.3	14800	9.65	4020	130	0.03	0.50	19.6	380	1.42	0.15	1030	2.5	5.0	5.0	68
Maximum		51.2	8.39	32.3	14800	9.65	4020	130	0.03	0.50	19.6	380	1.42	0.15	1030	2.5	5.0	5.0	68
% of values undetected									100%	100%						100%	100%	100%	
of values between MDL and MRL																			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335135																		
	Sample Date																	
07/19/07	0707335135SL001	15.5	5.3	3.6	3	**0.25**	25	**1**	**1.9**	2290	**0.2**	3.4	56.7	**0.08**	**10**	**1.5**	**0.17**	6380
Mean		15.5	5.3	3.6	3	0.25	25	1	1.9	2290	0.2	3.4	56.7	0.08	10	1.5	0.17	6380
Median		15.5	5.3	3.6	3	0.25	25	1	1.9	2290	0.2	3.4	56.7	0.08	10	1.5	0.17	6380
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		15.5	5.3	3.6	3	0.25	25	1	1.9	2290	0.2	3.4	56.7	0.08	10	1.5	0.17	6380
Maximum		15.5	5.3	3.6	3	0.25	25	1	1.9	2290	0.2	3.4	56.7	0.08	10	1.5	0.17	6380
% of values undetected						100%		100%							100%	100%		
of values between MDL and MRL					1				1		1			1			1	
335141																		
	Sample Date																	
07/11/06	0706335141SL001	75.9			**0.204**	**0.204**	**0.762**	**0.057**	109	12200	0.130	8.04	128	0.366	**0.0392**	3.30	**0.247**	3180
07/16/07	0707335141SL001	66.5	4.9	1.4	**1.5**	**0.25**	**4**	**0.15**	**1.5**	27500	**0.3**	10.8	137	0.60	**4**	**15**	0.42	3370
Mean		71.2	4.9	1.4	0.85	0.227	2.4	0.1	60	19900	0.22	9.4	133	0.48	2	9	0.33	3280
Median		71.2	4.9	1.4	0.85	0.227	2.4	0.1	60	19900	0.22	9.4	133	0.48	2	9	0.33	3280
St. Deviation		6.6	NA	NA	0.92	0.033	2.3	0.07	80	10800	0.12	2	6	0.17	2.8	8	0.12	130
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		66.5	4.9	1.4	0.204	0.204	0.762	0.057	1.5	12200	0.13	8.04	128	0.366	0.0392	3.3	0.247	3180
Maximum		75.9	4.9	1.4	1.5	0.25	4	0.15	109	27500	0.3	10.8	137	0.6	4	15	0.42	3370
% of values undetected					100%	100%		50%	50%						100%	50%		
of values between MDL and MRL							2	1			1						1	
335142																		
	Sample Date																	
07/11/06	0706335142SL001	66.2			**0.785**	**0.755**	5.81	0.14	96.6	22000	**0.0734**	5.57	70.5	0.400	**0.0448**	2.18	**0.108**	1780
07/16/07	0707335142SL001	79.1	5.3	1.7	**1.5**	**0.25**	**5.0**	**0.15**	**0.25**	41100	**0.2**	9.1	87.80	0.71	**1.5**	**15**	**0.24**	4000
Mean		72.7	5.3	1.7	1.1	0.5	5.4	0.15	48	32000	0.14	7.3	79.2	0.56	0.8	9	0.17	2900
Median		72.7	5.3	1.7	1.1	0.5	5.4	0.15	48	32000	0.14	7.3	79.2	0.56	0.8	9	0.17	2900
St. Deviation		9.1	NA	NA	0.5	0.36	0.6	0.01	68	14000	0.09	2.5	12.2	0.22	1	9	0.09	1600
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		66.2	5.3	1.7	0.785	0.25	5.0	0.14	0.25	22000	0.0734	5.57	70.5	0.4	0.0448	2.18	0.108	1780
Maximum		79.1	5.3	1.7	1.5	0.755	5.81	0.15	96.6	41100	0.2	9.1	87.8	0.71	1.5	15	0.24	4000
% of values undetected					50%	100%	50%	50%	50%						100%	50%		
of values between MDL and MRL					1						2						2	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335135																			
Sample Date																			
07/19/07	0707335135SL001	4.00	2.80	7.7	16700	1.65	500	1900	**0.10**	**0.50**	5.2	130	0.77	**0.03**	130	**0.025**	**5.0**	17.5	6
Mean		4	2.8	7.7	16700	1.65	500	1900	0.1	0.5	5.2	130	0.77	0.03	130	0.025	5.0	17.5	6
Median		4	2.8	7.7	16700	1.65	500	1900	0.1	0.5	5.2	130	0.77	0.03	130	0.025	5.0	17.5	6
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		4	2.8	7.7	16700	1.65	500	1900	0.10	0.50	5.2	130	0.77	0.03	130	0.025	5.0	17.5	6
Maximum		4	2.8	7.7	16700	1.65	500	1900	0.10	0.50	5.2	130	0.77	0.03	130	0.025	5.0	17.5	6
% of values undetected									100%	100%						100%	100%		
of values between MDL and MRL												1		1	1				
335141																			
Sample Date																			
07/11/06	0706335141SL001	28.9	14.4	14.2	23000	7.88	5340	379	**0.0408**	**0.576**	15.6	496	2.04	**0.0508**	160	0.0345	1.40	50.0	66.2
07/16/07	0707335141SL001	37.30	17.50	15.8	30100	9.49	5760	850	**0.11**	1.9	15.6	780	0.35	0.12	330	**5.0**	**5.0**	**5.0**	86
Mean		33.1	16	15	27000	8.69	5550	610	0.08	1.2	15.6	640	1.2	0.09	250	2.5	3.2	28	76
Median		33.1	16	15	27000	8.69	5550	610	0.08	1.2	15.6	640	1.2	0.09	250	2.5	3.2	28	76
St. Deviation		5.9	2.2	1.1	5000	1.14	300	330	0.05	0.9	0	200	1.2	0.05	120	3.5	2.5	32	14
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		28.9	14.4	14.2	23000	7.88	5340	379	0.0408	0.576	15.6	496	0.35	0.0508	160	0.0345	1.4	5.0	66.2
Maximum		37.3	17.5	15.8	30100	9.49	5760	850	0.11	1.9	15.6	780	2.04	0.12	330	5.0	5.0	50	86
% of values undetected																	50%	50%	
of values between MDL and MRL									2	1				1		1			
335142																			
Sample Date																			
07/11/06	0706335142SL001	16.1	8.34	9.66	29400	5.57	3550	340	0.0656	**0.224**	9.76	351	0.767	**0.0645**	170	0.0294	**0.725**	49.6	35.4
07/16/07	0707335142SL001	52.30	24.20	24.0	18100	8.42	9930	1070	**0.12**	1.2	29.2	690	0.91	**0.06**	270	**2.5**	**10**	**5.0**	93
Mean		34.2	16.3	17	23800	7	6740	700	0.09	0.7	19.5	520	0.84	0.062	220	1.3	5	27	64
Median		34.2	16.3	17	23800	7	6740	700	0.09	0.7	19.5	520	0.84	0.062	220	1.3	5	27	64
St. Deviation		25.6	11.2	10	8000	2.02	4510	500	0.04	0.7	13.7	240	0.1	0.003	70	1.7	7	32	41
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		16.1	8.34	9.66	18100	5.57	3550	340	0.0656	0.224	9.76	351	0.767	0.06	170	0.0294	0.725	5.0	35.4
Maximum		52.3	24.2	24	29400	8.42	9930	1070	0.12	1.2	29.2	690	0.91	0.0645	270	2.5	10	49.6	93
% of values undetected										50%						50%	100%	50%	
of values between MDL and MRL									1					2					

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335143																		
Sample Date																		
07/12/06	0706335143SL001	60.8			**1.15**	2.63	3.11	0.070	296	9070	**0.135**	7.39	231	0.329	**0.108**	**1.19**	0.465	6650
07/16/07	0707335143SL001	59.9	5.8	6.3	**15**	**2.5**	**15**	**0.2**	**1.0**	27500	**0.40**	13.5	255	0.64	**4.0**	**15**	0.58	8200
Mean		60.4	5.8	6.3	8	2.6	9	0.14	150	18300	0.27	10.4	243	0.48	2.1	8	0.52	7400
Median		60.4	5.8	6.3	8	2.6	9	0.14	150	18300	0.27	10.4	243	0.48	2.1	8	0.52	7400
St. Deviation		0.6	NA	NA	10	0.1	8	0.09	210	13000	0.19	4.3	17	0.22	2.8	10	0.08	1100
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		59.9	5.8	6.3	1.15	2.5	3.11	0.07	1	9070	0.135	7.39	231	0.329	0.108	1.19	0.465	6650
Maximum		60.8	5.8	6.3	15	2.63	15	0.2	296	27500	0.40	13.5	255	0.64	4.0	15	0.58	8200
% of values undetected					50%	50%	50%	50%							50%	50%		
of values between MDL and MRL					1				1		2				1	1		
335144																		
Sample Date																		
07/14/06	0706335144SL001	28.3		52.3	**3.07**	**0.545**	17.3	0.11	837	2290	**0.053**	**0.53**	24.6	**0.053**	**0.106**	**0.535**	**0.106**	617
07/17/07	0707335144SL001	70.3	4.5	2.8	**5.0**	**1.5**	**5.0**	**0.20**	**0.25**	16400	**0.1**	17.1	78.1	**0.24**	**4.5**	**15**	**0.27**	3320
Mean		49.3	4.5	28	4	1	11	0.16	420	9300	0.08	9	51.4	0.15	2.3	8	0.19	1970
Median		49.3	4.5	28	4	1	11	0.16	420	9300	0.08	9	51.4	0.15	2.3	8	0.19	1970
St. Deviation		29.7	NA	35	1.4	0.7	9	0.06	590	10000	0.03	12	37.8	0.13	3.1	10	0.12	1910
# of values		2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		28.3	4.5	2.8	3.07	0.545	5.0	0.11	0.25	2290	0.053	0.53	24.6	0.053	0.106	0.535	0.106	617
Maximum		70.3	4.5	52.3	5.0	1.5	17.3	0.20	837	16400	0.1	17.1	78.1	0.24	4.5	15	0.27	3320
% of values undetected					50%	100%	50%	50%	50%		100%	50%		50%	100%	100%	50%	
of values between MDL and MRL					1									1			1	
335145																		
Sample Date																		
07/14/06	0706335145SL001	15.7			7.81	**0.985**	**2.29**	**0.054**	631	2480	**0.0975**	**3.86**	33.4	**0.199**	**0.196**	**0.96**	**0.196**	2260
07/18/07	0707335145SL001	5.7	4.7	2.0	**5.0**	**0.25**	26	**2.0**	**0.25**	1820	**0.30**	4.5	45.60	**0.025**	**4.0**	**1.5**	**0.08**	4220
Mean		11	4.7	2	6.4	0.62	14	1	320	2150	0.2	4.2	39.5	0.11	2.1	1.2	0.14	3240
Median		11	4.7	2	6.4	0.62	14	1	320	2150	0.2	4.2	39.5	0.11	2.1	1.2	0.14	3240
St. Deviation		7	NA	NA	2	0.52	17	1.4	450	470	0.14	0.5	8.6	0.12	2.7	0.4	0.08	1390
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		5.7	4.7	2	5.0	0.25	2.29	0.054	0.25	1820	0.0975	3.86	33.4	0.025	0.196	0.96	0.08	2260
Maximum		15.7	4.7	2	7.81	0.985	26	2.0	631	2480	0.30	4.5	45.6	0.199	4.0	1.5	0.196	4220
% of values undetected						100%		50%	50%		50%			50%	100%	100%	50%	
of values between MDL and MRL					1		1	1			1	1		1			1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335143																			
	Sample Date																		
07/12/06	0706335143SL001	26.0	7.43	21.9	7230	8.68	3410	147	**0.0612**	8.63	12.6	474	4.15	**0.0247**	280	0.0870	**0.80**	37.1	45.3
07/16/07	0707335143SL001	41.90	8.84	28.3	7550	12.2	3870	190	**0.10**	11.5	17.8	840	1.76	0.16	590	**2.5**	**5.0**	**5.0**	57
	Mean	34	8.14	25.1	7390	10.4	3640	170	0.08	10.1	15.2	660	2.96	0.09	440	1.3	2.9	21	51
	Median	34	8.14	25.1	7390	10.4	3640	170	0.08	10.1	15.2	660	2.96	0.09	440	1.3	2.9	21	51
	St. Deviation	11	1	4.5	230	2.5	330	30	0.03	2	3.7	260	1.69	0.1	220	1.7	3	23	8
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	26	7.43	21.9	7230	8.68	3410	147	0.0612	8.63	12.6	474	1.76	0.0247	280	0.087	0.8	5.0	45.3
	Maximum	41.9	8.84	28.3	7550	12.2	3870	190	0.10	11.5	17.8	840	4.15	0.16	590	2.5	5.0	37.1	57
	% of values undetected													50%		50%	100%	50%	
	of values between MDL and MRL								2										
335144																			
	Sample Date																		
07/14/06	0706335144SL001	**1.27**	**0.662**	5.72	3970	**0.670**	164	17.0	**0.11**	**0.53**	1.35	**53**	**1.40**	**0.053**	**53**	**0.0236**	**1.71**	**1.61**	8.47
07/17/07	0707335144SL001	33.10	11.8	33.0	34600	7.67	7860	460	**0.12**	**0.50**	21.0	340	0.62	**0.05**	460	**2.5**	**10**	**5.0**	49
	Mean	17.2	6.2	19	19300	4.2	4010	240	0.12	0.52	11	200	1	0.052	260	1.3	6	3.3	29
	Median	17.2	6.2	19	19300	4.2	4010	240	0.12	0.52	11	200	1	0.052	260	1.3	6	3.3	29
	St. Deviation	22.5	7.9	19	21700	4.9	5440	310	0.01	0.02	14	200	0.6	0.002	290	1.8	6	2.4	29
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	1.27	0.662	5.72	3970	0.67	164	17	0.11	0.50	1.35	53	0.62	0.05	53	0.0236	1.71	1.61	8.47
	Maximum	33.1	11.8	33	34600	7.67	7860	460	0.12	0.53	21	340	1.4	0.053	460	2.5	10	5.0	49
	% of values undetected									100%		50%		50%	50%	50%	100%	100%	
	of values between MDL and MRL	1	1			1			2				1	1		1			
335145																			
	Sample Date																		
07/14/06	0706335145SL001	**0.378**	**1.82**	4.12	6440	1.50	665	38.6	**0.126**	**2.59**	1.87	**97.5**	**1.80**	**0.0975**	**97.5**	**0.0196**	**3.15**	**2.96**	16.3
07/18/07	0707335145SL001	**0.25**	2.87	5.9	6090	1.68	1020	91.7	**0.40**	1.7	3.0	**150**	0.68	**0.015**	290	**0.25**	**5.0**	**0.5**	15
	Mean	0.31	2.35	5	6270	1.6	840	65.2	0.26	2.1	2.4	120	1.2	0.056	190	0.135	4.1	1.7	16
	Median	0.31	2.35	5	6270	1.6	840	65.2	0.26	2.1	2.4	120	1.2	0.056	190	0.135	4.1	1.7	16
	St. Deviation	0.09	0.74	1.3	250	0.1	250	37.5	0.19	0.6	0.8	40	0.8	0.058	140	0.163	1.3	1.7	1
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	0.25	1.82	4.12	6090	1.5	665	38.6	0.126	1.7	1.87	97.5	0.68	0.015	97.5	0.0196	3.15	0.5	15
	Maximum	0.378	2.87	5.9	6440	1.68	1020	91.7	0.40	2.59	3	150	1.8	0.0975	290	0.25	5.0	2.96	16.3
	% of values undetected	100%										50%		100%	50%	100%	100%	100%	
	of values between MDL and MRL		1						2	1		1	1						

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335161																		
Sample Date																		
07/12/05	0705335161SL001	46.5		2.7	**1.43**	**0.326**	**1.49**	0.21	356	17200	0.233	6.71	126	0.359	**0.201**	**6.6**	**0.186**	1730
Mean		46.5	NA	2.7	1.43	0.326	1.49	0.21	356	17200	0.233	6.71	126	0.359	0.201	6.6	0.186	1730
Median		46.5	NA	2.7	1.43	0.326	1.49	0.21	356	17200	0.233	6.71	126	0.359	0.201	6.6	0.186	1730
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		46.5	NA	2.7	1.43	0.326	1.49	0.21	356	17200	0.233	6.71	126	0.359	0.201	6.6	0.186	1730
Maximum		46.5	NA	2.7	1.43	0.326	1.49	0.21	356	17200	0.233	6.71	126	0.359	0.201	6.6	0.186	1730
% of values undetected						100%												
of values between MDL and MRL					1		1								1	1	1	
335162																		
Sample Date																		
07/12/05	0705335162SL001	80.9		0.63	**0.428**	**0.595**	**0.464**	0.06	27.6	26900	0.347	16.2	206	0.741	0.441	**6.74**	0.846	4230
07/12/05	0705335162SS001	86.2			**0.502**	**0.388**	**0.177**	**0.04**	**8.41**	14600	0.435	17.5	164	0.583	0.41	**4.47**	1.05	4700
Mean		83.6	NA	0.63	0.465	0.492	0.32	0.05	18	20800	0.391	16.9	185	0.662	0.43	5.61	0.95	4500
Median		83.6	NA	0.63	0.465	0.492	0.32	0.05	18	20800	0.391	16.9	185	0.662	0.43	5.61	0.95	4500
St. Deviation		3.7	NA	NA	0.052	0.146	0.203	0.014	13.6	8700	0.062	0.9	30	0.112	0.02	1.61	0.14	300
# of values		2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		80.9	NA	0.63	0.428	0.388	0.177	0.04	8.41	14600	0.347	16.2	164	0.583	0.41	4.47	0.846	4230
Maximum		86.2	NA	0.63	0.502	0.595	0.464	0.06	27.6	26900	0.435	17.5	206	0.741	0.441	6.74	1.05	4700
% of values undetected						50%	50%											
of values between MDL and MRL					2	1	1	1	1							2		
335163																		
Sample Date																		
07/12/05	0705335163SL001	81.2			**0.185**	**0.185**	**0.644**	0.1	73.3	26200	0.235	7.87	148	0.538	**0.0887**	**6.47**	0.557	3550
07/12/05	0705335163SS001	81.7			**0.190**	**0.190**	**0.94**	0.07	71.5	29400	0.281	9.79	196	0.668	**0.136**	**6.59**	0.43	3010
Mean		81.5	NA	NA	0.187	0.187	0.79	0.09	72.4	27800	0.258	8.83	172	0.603	0.112	6.53	0.49	3280
Median		81.5	NA	NA	0.187	0.187	0.79	0.09	72.4	27800	0.258	8.83	172	0.603	0.112	6.53	0.49	3280
St. Deviation		0.4	NA	NA	0.003	0.003	0.21	0.02	1.3	2300	0.033	1.36	34	0.092	0.033	0.08	0.09	380
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		81.2	NA	NA	0.185	0.185	0.644	0.07	71.5	26200	0.235	7.87	148	0.538	0.0887	6.47	0.43	3010
Maximum		81.7	NA	NA	0.190	0.190	0.94	0.1	73.3	29400	0.281	9.79	196	0.668	0.136	6.59	0.557	3550
% of values undetected					100%	100%												
of values between MDL and MRL							2								2	2		

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335161																			
Sample Date																			
07/12/05	0705335161SL001	22.7	8.09	18.9	20600	7.02	4340	414	0.137	**1.1**	13.9	1220	**0.155**	**0.0863**	293	0.161	**1.43**	67	59.4
Mean		22.7	8.09	18.9	20600	7.02	4340	414	0.137	1.1	13.9	1220	0.155	0.0863	293	0.161	1.43	67	59.4
Median		22.7	8.09	18.9	20600	7.02	4340	414	0.137	1.1	13.9	1220	0.155	0.0863	293	0.161	1.43	67	59.4
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		22.7	8.09	18.9	20600	7.02	4340	414	0.137	1.1	13.9	1220	0.155	0.0863	293	0.161	1.43	67	59.4
Maximum		22.7	8.09	18.9	20600	7.02	4340	414	0.137	1.1	13.9	1220	0.155	0.0863	293	0.161	1.43	67	59.4
% of values undetected													100%						
of values between MDL and MRL										1				1			1		
335162																			
Sample Date																			
07/12/05	0705335162SL001	38.6	15.6	58.2	37100	10.4	5330	692	0.0629	2.49	17.8	1300	**0.092**	**0.0844**	298	0.331	1.28	98.5	85.8
07/12/05	0705335162SS001	31.2	13.4	92.2	24400	9.78	3940	370	0.0461	5.92	15.2	1400	**0.086**	0.169	299	0.214	1.29	90.3	83.8
Mean		34.9	14.5	75.2	30800	10.1	4640	530	0.0545	4.21	16.5	1400	0.089	0.127	299	0.273	1.29	94.4	84.8
Median		34.9	14.5	75.2	30800	10.1	4640	530	0.0545	4.21	16.5	1400	0.089	0.127	299	0.273	1.29	94.4	84.8
St. Deviation		5.2	1.6	24	9000	0.4	980	230	0.0119	2.43	1.8	100	0.004	0.06	1	0.083	0.01	5.8	1.4
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		31.2	13.4	58.2	24400	9.78	3940	370	0.0461	2.49	15.2	1300	0.086	0.0844	298	0.214	1.28	90.3	83.8
Maximum		38.6	15.6	92.2	37100	10.4	5330	692	0.0629	5.92	17.8	1400	0.092	0.169	299	0.331	1.29	98.5	85.8
% of values undetected													100%						
of values between MDL and MRL														1					
335163																			
Sample Date																			
07/12/05	0705335163SL001	38.3	13.4	28.1	39900	7.54	6150	548	0.0723	**0.778**	19.5	945	**0.0915**	**0.0189**	338	0.108	**1.17**	89.3	71.6
07/12/05	0705335163SS001	32	12	29.7	34700	8.39	4970	510	**0.0434**	1.35	17.1	932	**0.0915**	**0.0384**	270	0.119	**1.09**	83.8	67.9
Mean		35	13	28.9	37300	7.97	5560	530	0.0579	1.06	18.3	939	0.0915	0.0287	300	0.114	1.13	86.6	69.8
Median		35	13	28.9	37300	7.97	5560	530	0.0579	1.06	18.3	939	0.0915	0.0287	300	0.114	1.13	86.6	69.8
St. Deviation		4	1	1.1	3700	0.6	830	30	0.0204	0.4	1.7	9	0	0.0138	50	0.008	0.06	3.9	2.6
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		32	12	28.1	34700	7.54	4970	510	0.0434	0.778	17.1	932	0.0915	0.0189	270	0.108	1.09	83.8	67.9
Maximum		38.3	13.4	29.7	39900	8.39	6150	548	0.0723	1.35	19.5	945	0.0915	0.0384	338	0.119	1.17	89.3	71.6
% of values undetected													100%	50%					
of values between MDL and MRL									1	1				1			2		

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335171																		
	Sample Date																	
07/12/05	0705335171SL001	33.9			3.17	**0.451**	3.84	0.28	995	34100	0.384	10.6	102	0.643	**0.368**	**4.525**	**0.22**	1330
	Mean	33.9	NA	NA	3.17	0.451	3.84	0.28	995	34100	0.384	10.6	102	0.643	0.368	4.525	0.22	1330
	Median	33.9	NA	NA	3.17	0.451	3.84	0.28	995	34100	0.384	10.6	102	0.643	0.368	4.525	0.22	1330
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	33.9	NA	NA	3.17	0.451	3.84	0.28	995	34100	0.384	10.6	102	0.643	0.368	4.525	0.22	1330
	Maximum	33.9	NA	NA	3.17	0.451	3.84	0.28	995	34100	0.384	10.6	102	0.643	0.368	4.525	0.22	1330
	% of values undetected					100%										100%		
	of values between MDL and MRL														1		1	
335172																		
	Sample Date																	
07/12/05	0705335172SL001	74.4			**0.436**	**0.205**	**0.582**	0.19	142	20800	0.401	14.4	115	0.5	**0.25**	**4.74**	**0.157**	1450
	Mean	74.4	NA	NA	0.436	0.205	0.582	0.19	142	20800	0.401	14.4	115	0.5	0.25	4.74	0.157	1450
	Median	74.4	NA	NA	0.436	0.205	0.582	0.19	142	20800	0.401	14.4	115	0.5	0.25	4.74	0.157	1450
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	74.4	NA	NA	0.436	0.205	0.582	0.19	142	20800	0.401	14.4	115	0.5	0.25	4.74	0.157	1450
	Maximum	74.4	NA	NA	0.436	0.205	0.582	0.19	142	20800	0.401	14.4	115	0.5	0.25	4.74	0.157	1450
	% of values undetected					100%												
	of values between MDL and MRL				1		1								1	1	1	
335173																		
	Sample Date																	
07/12/05	0705335173SL001	51.1			**1.28**	**0.297**	5.91	0.25	382	29500	0.246	10.8	116	0.481	**0.263**	**2.98**	**0.212**	1370
	Mean	51.1	NA	NA	1.28	0.297	5.91	0.25	382	29500	0.246	10.8	116	0.481	0.263	2.98	0.212	1370
	Median	51.1	NA	NA	1.28	0.297	5.91	0.25	382	29500	0.246	10.8	116	0.481	0.263	2.98	0.212	1370
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	51.1	NA	NA	1.28	0.297	5.91	0.25	382	29500	0.246	10.8	116	0.481	0.263	2.98	0.212	1370
	Maximum	51.1	NA	NA	1.28	0.297	5.91	0.25	382	29500	0.246	10.8	116	0.481	0.263	2.98	0.212	1370
	% of values undetected					100%										100%		
	of values between MDL and MRL				1										1		1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335171																			
	Sample Date																		
07/12/05	0705335171SL001	38.3	7.16	46.5	30100	10.1	5980	269	0.174	**1.5**	16.5	1360	**0.64**	**0.0453**	**285**	0.24	**1.8**	106	54.8
	Mean	38.3	7.16	46.5	30100	10.1	5980	269	0.174	1.5	16.5	1360	0.64	0.0453	285	0.24	1.8	106	54.8
	Median	38.3	7.16	46.5	30100	10.1	5980	269	0.174	1.5	16.5	1360	0.64	0.0453	285	0.24	1.8	106	54.8
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	38.3	7.16	46.5	30100	10.1	5980	269	0.174	1.5	16.5	1360	0.64	0.0453	285	0.24	1.8	106	54.8
	Maximum	38.3	7.16	46.5	30100	10.1	5980	269	0.174	1.5	16.5	1360	0.64	0.0453	285	0.24	1.8	106	54.8
	% of values undetected													100%					
	of values between MDL and MRL									1			1		1		1		
335172																			
	Sample Date																		
07/12/05	0705335172SL001	38.7	12.4	42.7	21700	8.09	3380	528	**0.0455**	**1.26**	17.8	1500	**0.304**	**0.0204**	253	0.19	**1.24**	94.9	58.5
	Mean	38.7	12.4	42.7	21700	8.09	3380	528	0.0455	1.26	17.8	1500	0.304	0.0204	253	0.19	1.24	94.9	58.5
	Median	38.7	12.4	42.7	21700	8.09	3380	528	0.0455	1.26	17.8	1500	0.304	0.0204	253	0.19	1.24	94.9	58.5
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	38.7	12.4	42.7	21700	8.09	3380	528	0.0455	1.26	17.8	1500	0.304	0.0204	253	0.19	1.24	94.9	58.5
	Maximum	38.7	12.4	42.7	21700	8.09	3380	528	0.0455	1.26	17.8	1500	0.304	0.0204	253	0.19	1.24	94.9	58.5
	% of values undetected													100%					
	of values between MDL and MRL								1	1			1				1		
335173																			
	Sample Date																		
07/12/05	0705335173SL001	30.2	6.58	45.9	24900	8.22	5180	169	**0.0717**	**1.43**	14.8	1370	1.02	**0.0298**	296	0.21	**1.26**	83.7	42.9
	Mean	30.2	6.58	45.9	24900	8.22	5180	169	0.0717	1.43	14.8	1370	1.02	0.0298	296	0.21	1.26	83.7	42.9
	Median	30.2	6.58	45.9	24900	8.22	5180	169	0.0717	1.43	14.8	1370	1.02	0.0298	296	0.21	1.26	83.7	42.9
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	30.2	6.58	45.9	24900	8.22	5180	169	0.0717	1.43	14.8	1370	1.02	0.0298	296	0.21	1.26	83.7	42.9
	Maximum	30.2	6.58	45.9	24900	8.22	5180	169	0.0717	1.43	14.8	1370	1.02	0.0298	296	0.21	1.26	83.7	42.9
	% of values undetected													100%					
	of values between MDL and MRL								1	1							1		

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335174																		
	Sample Date																	
07/13/05	0705335174SL001	76.8			**0.415**	**0.195**	**0.554**	0.076	78	13700	0.2	11.3	63.3	0.49	**0.103**	**1.93**	0.349	1340
	Mean	76.8	NA	NA	0.415	0.195	0.554	0.076	78	13700	0.2	11.3	63.3	0.49	0.103	1.93	0.349	1340
	Median	76.8	NA	NA	0.415	0.195	0.554	0.076	78	13700	0.2	11.3	63.3	0.49	0.103	1.93	0.349	1340
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	76.8	NA	NA	0.415	0.195	0.554	0.076	78	13700	0.2	11.3	63.3	0.49	0.103	1.93	0.349	1340
	Maximum	76.8	NA	NA	0.415	0.195	0.554	0.076	78	13700	0.2	11.3	63.3	0.49	0.103	1.93	0.349	1340
	% of values undetected					100%										100%		
	of values between MDL and MRL				1		1								1			
335175																		
	Sample Date																	
07/13/05	0705335175SL001	40.5			**0.38**	**0.38**	**1.38**	0.11	362	10100	0.352	12.4	51.6	0.28	**0.2**	**3.66**	0.572	705
	Mean	40.5	NA	NA	0.38	0.38	1.38	0.11	362	10100	0.352	12.4	51.6	0.28	0.2	3.66	0.572	705
	Median	40.5	NA	NA	0.38	0.38	1.38	0.11	362	10100	0.352	12.4	51.6	0.28	0.2	3.66	0.572	705
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	40.5	NA	NA	0.38	0.38	1.38	0.11	362	10100	0.352	12.4	51.6	0.28	0.2	3.66	0.572	705
	Maximum	40.5	NA	NA	0.38	0.38	1.38	0.11	362	10100	0.352	12.4	51.6	0.28	0.2	3.66	0.572	705
	% of values undetected				100%	100%										100%		
	of values between MDL and MRL						1								1			
335176																		
	Sample Date																	
07/13/05	0705335176SL001	69.7			**0.525**	**0.22**	**1.33**	**0.015**	179	25500	0.269	13.4	72.1	0.509	**0.156**	**2.14**	**0.257**	899
	Mean	69.7	NA	NA	0.525	0.22	1.33	0.015	179	25500	0.269	13.4	72.1	0.509	0.156	2.14	0.257	899
	Median	69.7	NA	NA	0.525	0.22	1.33	0.015	179	25500	0.269	13.4	72.1	0.509	0.156	2.14	0.257	899
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	69.7	NA	NA	0.525	0.22	1.33	0.015	179	25500	0.269	13.4	72.1	0.509	0.156	2.14	0.257	899
	Maximum	69.7	NA	NA	0.525	0.22	1.33	0.015	179	25500	0.269	13.4	72.1	0.509	0.156	2.14	0.257	899
	% of values undetected					100%		100%								100%		
	of values between MDL and MRL				1		1								1		1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335174																			
Sample Date																			
07/13/05	0705335174SL001	12.2	6.72	14.2	18800	8.38	4450	513	0.0936	**0.492**	9.16	629	0.975	**0.0193**	124	0.0834	**0.62**	42.8	44.9
Mean		12.2	6.72	14.2	18800	8.38	4450	513	0.0936	0.492	9.16	629	0.975	0.0193	124	0.0834	0.62	42.8	44.9
Median		12.2	6.72	14.2	18800	8.38	4450	513	0.0936	0.492	9.16	629	0.975	0.0193	124	0.0834	0.62	42.8	44.9
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		12.2	6.72	14.2	18800	8.38	4450	513	0.0936	0.492	9.16	629	0.975	0.0193	124	0.0834	0.62	42.8	44.9
Maximum		12.2	6.72	14.2	18800	8.38	4450	513	0.0936	0.492	9.16	629	0.975	0.0193	124	0.0834	0.62	42.8	44.9
% of values undetected														100%			100%		
of values between MDL and MRL										1									
335175																			
Sample Date																			
07/13/05	0705335175SL001	14.9	4.05	16.7	15300	10.7	2340	211	0.101	**0.958**	6	838	4.39	**0.122**	**199**	0.156	**1.18**	60.8	44.8
Mean		14.9	4.05	16.7	15300	10.7	2340	211	0.101	0.958	6	838	4.39	0.122	199	0.156	1.18	60.8	44.8
Median		14.9	4.05	16.7	15300	10.7	2340	211	0.101	0.958	6	838	4.39	0.122	199	0.156	1.18	60.8	44.8
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		14.9	4.05	16.7	15300	10.7	2340	211	0.101	0.958	6	838	4.39	0.122	199	0.156	1.18	60.8	44.8
Maximum		14.9	4.05	16.7	15300	10.7	2340	211	0.101	0.958	6	838	4.39	0.122	199	0.156	1.18	60.8	44.8
% of values undetected																	100%		
of values between MDL and MRL										1				1	1				
335176																			
Sample Date																			
07/13/05	0705335176SL001	19.1	8.33	37.2	29800	9.19	3950	451	0.079	1.48	8.58	701	2.42	**0.0595**	**129**	0.145	**0.69**	69.2	45.9
Mean		19.1	8.33	37.2	29800	9.19	3950	451	0.079	1.48	8.58	701	2.42	0.0595	129	0.145	0.69	69.2	45.9
Median		19.1	8.33	37.2	29800	9.19	3950	451	0.079	1.48	8.58	701	2.42	0.0595	129	0.145	0.69	69.2	45.9
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		19.1	8.33	37.2	29800	9.19	3950	451	0.079	1.48	8.58	701	2.42	0.0595	129	0.145	0.69	69.2	45.9
Maximum		19.1	8.33	37.2	29800	9.19	3950	451	0.079	1.48	8.58	701	2.42	0.0595	129	0.145	0.69	69.2	45.9
% of values undetected																	100%		
of values between MDL and MRL														1	1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335191																		
Sample Date																		
07/13/05	0705335191SL001	75			**0.497**	**0.198**	2.31	0.1	90.3	21800	0.187	9.42	48.8	0.391	**0.159**	**2.035**	**0.169**	638
07/14/06	0706335191SL001	75.2			**0.206**	**0.206**	3.51	0.14	146	20400	**0.115**	8.02	50.0	0.242	**0.103**	2.85	**0.140**	559
Mean		75	NA	NA	0.352	0.202	2.91	0.12	118	21100	0.151	8.72	49	0.317	0.131	2.44	0.15	599
Median		75	NA	NA	0.352	0.202	2.91	0.12	118	21100	0.151	8.72	49	0.317	0.131	2.44	0.15	599
St. Deviation		0	NA	NA	0.206	0.006	0.85	0.03	39	1000	0.051	0.99	1	0.105	0.04	0.58	0.02	56
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		75	NA	NA	0.206	0.198	2.31	0.1	90.3	20400	0.115	8.02	48.8	0.242	0.103	2.035	0.14	559
Maximum		75.2	NA	NA	0.497	0.206	3.51	0.14	146	21800	0.187	9.42	50	0.391	0.159	2.85	0.169	638
% of values undetected					50%	100%										50%		
of values between MDL and MRL					1						1				2		2	
335192																		
Sample Date																		
07/13/05	0705335192SL001	64.9			1.58	**0.76**	3.49	0.16	156	25100	0.223	9.87	52.3	0.384	**0.174**	**2.385**	**0.185**	801
Mean		64.9	NA	NA	1.58	0.76	3.49	0.16	156	25100	0.223	9.87	52.3	0.384	0.174	2.385	0.185	801
Median		64.9	NA	NA	1.58	0.76	3.49	0.16	156	25100	0.223	9.87	52.3	0.384	0.174	2.385	0.185	801
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		64.9	NA	NA	1.58	0.76	3.49	0.16	156	25100	0.223	9.87	52.3	0.384	0.174	2.385	0.185	801
Maximum		64.9	NA	NA	1.58	0.76	3.49	0.16	156	25100	0.223	9.87	52.3	0.384	0.174	2.385	0.185	801
% of values undetected						100%										100%		
of values between MDL and MRL															1		1	
335193																		
Sample Date																		
07/13/05	0705335193SL001	11.7			**7.17**	**2.64**	43	0.11	773	1790	**0.130**	54.6	52.4	**0.130**	**0.259**	**13.0**	**0.259**	4380
07/12/06	0706335193SL001	13.4			18.4	**1.16**	10.5	0.12	568	2560	**0.113**	39.8	66.6	**0.113**	**0.226**	**1.11**	**0.226**	6720
Mean		12.6	NA	NA	12.8	1.9	27	0.12	671	2180	0.121	47.2	59.5	0.121	0.242	7	0.242	5550
Median		12.6	NA	NA	12.8	1.9	27	0.12	671	2180	0.121	47.2	59.5	0.121	0.242	7	0.242	5550
St. Deviation		1.2	NA	NA	7.9	1.05	23	0.01	145	540	0.012	10.5	10	0.012	0.023	8.4	0.023	1650
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		11.7	NA	NA	7.17	1.16	10.5	0.11	568	1790	0.113	39.8	52.4	0.113	0.226	1.11	0.226	4380
Maximum		13.4	NA	NA	18.4	2.64	43	0.12	773	2560	0.130	54.6	66.6	0.130	0.259	13.0	0.259	6720
% of values undetected						50%					100%			100%	100%	100%	100%	
of values between MDL and MRL					1	1												

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335191																			
Sample Date																			
07/13/05	0705335191SL001	13.2	5.59	25.7	20800	6.47	2930	312	0.0598	**1.16**	7.23	496	1.7	**0.0204**	**104**	0.104	**0.655**	46.6	35
07/14/06	0706335191SL001	9.74	5.78	19.4	19900	6.76	2400	274	**0.0398**	**0.830**	7.42	522	0.981	**0.0199**	**83.7**	0.0839	**0.64**	34.8	32.0
Mean		11.5	5.69	22.6	20400	6.62	2700	293	0.0498	1	7.33	509	1.3	0.0201	94	0.094	0.65	40.7	34
Median		11.5	5.69	22.6	20400	6.62	2700	293	0.0498	1	7.33	509	1.3	0.0201	94	0.094	0.65	40.7	34
St. Deviation		2.4	0.13	4.5	600	0.21	400	27	0.0141	0.2	0.13	18	0.5	0.0003	14	0.014	0.01	8.3	2
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		9.74	5.59	19.4	19900	6.47	2400	274	0.0398	0.83	7.23	496	0.981	0.0199	83.7	0.0839	0.64	34.8	32
Maximum		13.2	5.78	25.7	20800	6.76	2930	312	0.0598	1.16	7.42	522	1.7	0.0204	104	0.104	0.655	46.6	35
% of values undetected														100%			100%		
of values between MDL and MRL									1	2					2				
335192																			
Sample Date																			
07/13/05	0705335192SL001	16.2	6.75	32.2	21000	6.56	3340	285	0.0769	**1.31**	8.87	548	3.56	**0.0239**	**136**	0.118	**0.77**	55.6	38
Mean		16.2	6.75	32.2	21000	6.56	3340	285	0.0769	1.31	8.87	548	3.56	0.0239	136	0.118	0.77	55.6	38
Median		16.2	6.75	32.2	21000	6.56	3340	285	0.0769	1.31	8.87	548	3.56	0.0239	136	0.118	0.77	55.6	38
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		16.2	6.75	32.2	21000	6.56	3340	285	0.0769	1.31	8.87	548	3.56	0.0239	136	0.118	0.77	55.6	38
Maximum		16.2	6.75	32.2	21000	6.56	3340	285	0.0769	1.31	8.87	548	3.56	0.0239	136	0.118	0.77	55.6	38
% of values undetected														100%			100%		
of values between MDL and MRL										1					1				
335193																			
Sample Date																			
07/13/05	0705335193SL001	**3.24**	12.3	**4.83**	43800	3.66	1570	154	**0.329**	**1.30**	1.73	2430	11	**0.130**	**569**	**0.0688**	**4.17**	46.3	35.8
07/12/06	0706335193SL001	7.48	5.95	6.99	21200	5.33	1500	137	**0.109**	**1.13**	4.06	**719**	22.9	**0.113**	**251**	**0.0226**	**3.65**	**12.4**	23.5
Mean		5.36	9.1	5.91	32500	4.5	1500	146	0.219	1.21	2.9	1570	17	0.121	410	0.0457	3.91	29.4	29.7
Median		5.36	9.1	5.91	32500	4.5	1500	146	0.219	1.21	2.9	1570	17	0.121	410	0.0457	3.91	29.4	29.7
St. Deviation		3	4.5	1.53	16000	1.18	0	12	0.156	0.12	1.65	1210	8	0.012	225	0.0327	0.37	24	8.7
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		3.24	5.95	4.83	21200	3.66	1500	137	0.109	1.13	1.73	719	11	0.113	251	0.0226	3.65	12.4	23.5
Maximum		7.48	12.3	6.99	43800	5.33	1570	154	0.329	1.30	4.06	2430	22.9	0.130	569	0.0688	4.17	46.3	35.8
% of values undetected										100%				100%		50%	100%		
of values between MDL and MRL		1		1					2			1			2	1		1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335201																		
	Sample Date																	
07/13/05	0705335201SL001	37.9			**1.61**	**0.403**	2.76	0.3	579	19100	0.254	14.9	57.2	0.293	**0.307**	**3.92**	**0.171**	464
Mean		37.9	NA	NA	1.61	0.403	2.76	0.3	579	19100	0.254	14.9	57.2	0.293	0.307	3.92	0.171	464
Median		37.9	NA	NA	1.61	0.403	2.76	0.3	579	19100	0.254	14.9	57.2	0.293	0.307	3.92	0.171	464
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		37.9	NA	NA	1.61	0.403	2.76	0.3	579	19100	0.254	14.9	57.2	0.293	0.307	3.92	0.171	464
Maximum		37.9	NA	NA	1.61	0.403	2.76	0.3	579	19100	0.254	14.9	57.2	0.293	0.307	3.92	0.171	464
% of values undetected						100%										100%		
of values between MDL and MRL					1										1		1	
335231																		
	Sample Date																	
07/13/05	0705335231SL001	10.8			13.5	**1.41**	25.3	0.068	1220	1710	**0.138**	20.2	43.5	**0.138**	**0.276**	**13.8**	**0.276**	7370
Mean		10.8	NA	NA	13.5	1.41	25.3	0.068	1220	1710	0.138	20.2	43.5	0.138	0.276	13.8	0.276	7370
Median		10.8	NA	NA	13.5	1.41	25.3	0.068	1220	1710	0.138	20.2	43.5	0.138	0.276	13.8	0.276	7370
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		10.8	NA	NA	13.5	1.41	25.3	0.068	1220	1710	0.138	20.2	43.5	0.138	0.276	13.8	0.276	7370
Maximum		10.8	NA	NA	13.5	1.41	25.3	0.068	1220	1710	0.138	20.2	43.5	0.138	0.276	13.8	0.276	7370
% of values undetected						100%					100%			100%	100%	100%	100%	
of values between MDL and MRL																		
335232																		
	Sample Date																	
07/13/05	0705335232SL001	11.8			14.1	**1.31**	52.6	**0.052**	668	1950	**0.127**	12.9	61	**0.127**	**0.254**	**12.7**	**0.254**	9870
Mean		11.8	NA	NA	14.1	1.31	52.6	0.052	668	1950	0.127	12.9	61	0.127	0.254	12.7	0.254	9870
Median		11.8	NA	NA	14.1	1.31	52.6	0.052	668	1950	0.127	12.9	61	0.127	0.254	12.7	0.254	9870
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		11.8	NA	NA	14.1	1.31	52.6	0.052	668	1950	0.127	12.9	61	0.127	0.254	12.7	0.254	9870
Maximum		11.8	NA	NA	14.1	1.31	52.6	0.052	668	1950	0.127	12.9	61	0.127	0.254	12.7	0.254	9870
% of values undetected						100%					100%			100%	100%	100%	100%	
of values between MDL and MRL								1										

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335201																			
Sample Date																			
07/13/05	0705335201SL001	18.6	2.29	86.4	25700	4.51	2500	57.2	0.198	5.45	6.49	1320	5.4	0.468	180	0.195	**1.27**	64.9	16
Mean		18.6	2.29	86.4	25700	4.51	2500	57.2	0.198	5.45	6.49	1320	5.4	0.468	180	0.195	1.27	64.9	16
Median		18.6	2.29	86.4	25700	4.51	2500	57.2	0.198	5.45	6.49	1320	5.4	0.468	180	0.195	1.27	64.9	16
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		18.6	2.29	86.4	25700	4.51	2500	57.2	0.198	5.45	6.49	1320	5.4	0.468	180	0.195	1.27	64.9	16
Maximum		18.6	2.29	86.4	25700	4.51	2500	57.2	0.198	5.45	6.49	1320	5.4	0.468	180	0.195	1.265	64.9	16
% of values undetected																	1.00		
of values between MDL and MRL															1				
335231																			
Sample Date																			
07/13/05	0705335231SL001	3.6	**1.34**	**5.29**	21100	2.26	864	127	**0.252**	**1.38**	**1.16**	**335**	15.9	**0.138**	**138**	0.184	**4.45**	**13.2**	15.4
Mean		3.6	1.34	5.29	21100	2.26	864	127	0.252	1.38	1.16	335	15.9	0.138	138	0.184	4.45	13.2	15.4
Median		3.6	1.34	5.29	21100	2.26	864	127	0.252	1.38	1.16	335	15.9	0.138	138	0.184	4.45	13.2	15.4
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		3.6	1.34	5.29	21100	2.26	864	127	0.252	1.38	1.16	335	15.9	0.138	138	0.184	4.45	13.2	15.4
Maximum		3.6	1.34	5.29	21100	2.26	864	127	0.252	1.38	1.16	335	15.9	0.138	138	0.184	4.45	13.2	15.4
% of values undetected										100%				100%	100%		100%		
of values between MDL and MRL			1	1					1		1	1						1	
335232																			
Sample Date																			
07/13/05	0705335232SL001	**2.84**	**2.52**	5.64	31600	2.07	892	246	**0.219**	**1.27**	**1.28**	**127**	18.4	**0.127**	**126.5**	0.19	**4.09**	**15.7**	12.7
Mean		2.84	2.52	5.64	31600	2.07	892	246	0.219	1.27	1.28	127	18.4	0.127	126.5	0.19	4.09	15.7	12.7
Median		2.84	2.52	5.64	31600	2.07	892	246	0.219	1.27	1.28	127	18.4	0.127	126.5	0.19	4.09	15.7	12.7
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		2.84	2.52	5.64	31600	2.07	892	246	0.219	1.27	1.28	127	18.4	0.127	126.5	0.19	4.09	15.7	12.7
Maximum		2.84	2.52	5.64	31600	2.07	892	246	0.219	1.27	1.28	127	18.4	0.127	126.5	0.19	4.09	15.7	12.7
% of values undetected										100%		100%		100%	100%		100%		
of values between MDL and MRL		1	1						1		1							1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335233																		
Sample Date																		
07/11/06	0706335233SL001	57.8			**0.985**	**0.268**	9.70	0.070	258	22200	**0.130**	13.0	248	0.625	**0.111**	4.03	**0.209**	2270
07/20/07	0707335233SL001	61.6	4.8	1.6	**1.5**	**0.250**	**9.0**	**0.2**	**0.25**	48000	**0.4**	14.2	270	0.99	**10**	**25**	**0.220**	3580
Mean		59.7	4.8	1.6	1.2	0.26	9.4	0.14	130	35000	0.27	14	260	0.81	5	15	0.21	2930
Median		59.7	4.8	1.6	1.2	0.26	9.4	0.14	130	35000	0.27	14	260	0.81	5	15	0.21	2930
St. Deviation		2.7	NA	NA	0.4	0.01	0.5	0.09	180	18000	0.19	1	20	0.26	7	15	0.01	930
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		57.8	4.8	1.6	0.985	0.25	9.0	0.07	0.25	22200	0.13	13	248	0.625	0.111	4.03	0.209	2270
Maximum		61.6	4.8	1.6	1.5	0.268	9.7	0.2	258	48000	0.4	14.2	270	0.99	10	25	0.22	3580
% of values undetected					50%	100%		50%	50%						50%	50%		
of values between MDL and MRL					1		1				2				1		2	
335234																		
Sample Date																		
07/12/06	0706335234SL001	38.0			**0.409**	**0.409**	2.74	0.094	321	4770	**0.114**	3.87	32.5	**0.247**	**0.078**	**1.47**	**0.422**	1460
07/20/07	0707335234SL001	73.7	5.1	0.7	**5.0**	**4.0**	**5.0**	**0.15**	11.3	37800	**0.8**	3.6	270	1.14	**10**	**25**	0.73	4700
Mean		56	5.1	0.7	2.7	2.2	3.9	0.12	166	21300	0.46	3.7	150	0.69	5	13	0.58	3100
Median		56	5.1	0.7	2.7	2.2	3.9	0.12	166	21300	0.46	3.7	150	0.69	5	13	0.58	3100
St. Deviation		25	NA	NA	3.2	2.5	1.6	0.04	219	23400	0.49	0.2	170	0.63	7	17	0.22	2300
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		38	5.1	0.7	0.409	0.409	2.74	0.094	11.3	4770	0.114	3.6	32.5	0.247	0.078	1.47	0.422	1460
Maximum		73.7	5.1	0.7	5.0	4.0	5.0	0.15	321	37800	0.8	3.87	270	1.14	10	25	0.73	4700
% of values undetected					100%	50%	50%	50%							100%	50%		
of values between MDL and MRL						1					2			1		1	1	
335235																		
Sample Date																		
07/12/06	0706335235SL001	74.8			1.72	**0.615**	2.74	0.059	86.2	18600	0.262	9.52	234	0.545	**0.0814**	3.56	**0.249**	3350
07/17/07	0707335235SL001	74.0	4.9	1.0	**15**	**2.5**	**15**	**0.15**	4.4	35800	**0.5**	17.0	224	1.05	**20**	**15**	0.33	4490
Mean		74	4.9	1	8	1.6	9	0.1	45	27200	0.38	13	229	0.8	10	9	0.29	3920
Median		74	4.9	1	8	1.6	9	0.1	45	27200	0.38	13	229	0.8	10	9	0.29	3920
St. Deviation		1	NA	NA	9	1.3	9	0.06	58	12200	0.17	5	7	0.36	14	8	0.06	810
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		74	4.9	1	1.72	0.615	2.74	0.059	4.4	18600	0.262	9.52	224	0.545	0.0814	3.56	0.249	3350
Maximum		74.8	4.9	1	15	2.5	15	0.15	86.2	35800	0.5	17	234	1.05	20	15	0.33	4490
% of values undetected					50%	50%	50%	50%							50%	50%		
of values between MDL and MRL						1					1				1		1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335233																			
	Sample Date																		
07/11/06	0706335233SL001	39.3	16.0	41.2	29700	12.2	5540	293	0.108	**1.40**	18.9	490	4.17	**0.0714**	254	0.178	**0.84**	65.0	69.4
07/20/07	0707335233SL001	54.0	16.9	46.3	19300	14.60	6810	310	**0.09**	1.70	25.2	970	1.84	0.10	660	**0.17**	**10**	**10**	73
	Mean	47	16	43.8	24500	13.4	6180	300	0.1	1.6	22.1	730	3.01	0.09	460	0.17	5	38	71
	Median	47	16	43.8	24500	13.4	6180	300	0.1	1.6	22.1	730	3.01	0.09	460	0.17	5	38	71
	St. Deviation	10	1	3.6	7400	1.7	900	10	0.01	0.2	4.5	340	1.65	0.02	290	0.01	6	39	3
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	39.3	16	41.2	19300	12.2	5540	293	0.09	1.40	18.9	490	1.84	0.0714	254	0.17	0.84	10	69.4
	Maximum	54	16.9	46.3	29700	14.6	6810	310	0.108	1.70	25.2	970	4.17	0.1	660	0.178	10	65	73
	% of values undetected																100%	50%	
	of values between MDL and MRL								1	1				1		1			
335234																			
	Sample Date																		
07/12/06	0706335234SL001	4.19	**1.02**	6.15	7570	7.70	500	138	0.174	**0.979**	1.97	1580	6.26	**0.0824**	**180**	0.102	**1.26**	9.66	44.6
07/20/07	0707335234SL001	53.7	14.6	30.0	23400	15.10	7230	**280**	**0.08**	**0.50**	23.2	1620	0.50	0.13	540	**0.025**	**5**	**10**	97
	Mean	28.9	7.8	18	15500	11	3900	210	0.13	0.74	12.6	1600	3.4	0.11	360	0.06	3.1	10	71
	Median	28.9	7.8	18	15500	11	3900	210	0.13	0.74	12.6	1600	3.4	0.11	360	0.06	3.1	10	71
	St. Deviation	35	9.6	17	11200	5	4800	100	0.07	0.34	15	30	4.1	0.03	250	0.05	2.6	0	37
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	4.19	1.02	6.15	7570	7.7	500	138	0.08	0.50	1.97	1580	0.5	0.0824	180	0.025	1.26	9.66	44.6
	Maximum	53.7	14.6	30	23400	15.1	7230	280	0.174	0.979	23.2	1620	6.26	0.13	540	0.102	5	10	97
	% of values undetected									50%						50%	100%	50%	
	of values between MDL and MRL		1					1	1	1				1	1				
335235																			
	Sample Date																		
07/12/06	0706335235SL001	37.6	17.8	26.6	29100	11.8	4750	731	0.138	**0.564**	22.5	494	1.92	**0.0488**	138	0.0566	1.56	65.1	83.0
07/17/07	0707335235SL001	45.6	18.3	28.0	36600	13.7	6140	900	**0.14**	**0.50**	23.9	1450	0.72	**0.09**	360	**2.5**	**5.0**	**5.0**	75
	Mean	41.6	18.1	27	32900	12.8	5450	820	0.14	0.53	23.2	970	1.3	0.069	250	1.3	3.3	35	79
	Median	41.6	18.1	27	32900	12.8	5450	820	0.14	0.53	23.2	970	1.3	0.069	250	1.3	3.3	35	79
	St. Deviation	5.7	0.4	1	5300	1.3	980	120	0	0.05	1	680	0.8	0.029	160	1.7	2.4	42	6
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	37.6	17.8	26.6	29100	11.8	4750	731	0.138	0.50	22.5	494	0.72	0.0488	138	0.0566	1.56	5	75
	Maximum	45.6	18.3	28	36600	13.7	6140	900	0.14	0.564	23.9	1450	1.92	0.09	360	2.5	5.0	65.1	83
	% of values undetected									50%						50%	50%	50%	
	of values between MDL and MRL								1	1				2					

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335241																		
Sample Date																		
07/12/06	0706335241SL001	62.7			**0.247**	**0.795**	2.85	0.35	211	12300	0.160	13.5	70.6	0.206	**0.117**	2.01	**0.153**	880
07/19/07	0707335241SL001	55.1	4.5	0.8	**5.0**	**1.5**	**5.0**	**0.25**	**0.25**	2410	**0.4**	18.5	94.10	0.32	**10**	**5.0**	**0.16**	2830
Mean		58.9	4.5	0.8	2.6	1.1	3.9	0.3	110	18200	0.28	16	82.4	0.26	5	3.5	0.16	1900
Median		58.9	4.5	0.8	2.6	1.1	3.9	0.3	110	18200	0.28	16	82.4	0.26	5	3.5	0.16	1900
St. Deviation		5.4	NA	NA	3.4	0.5	1.5	0.07	150	8300	0.17	3.5	16.6	0.08	7	2.1	0	1400
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		55.1	4.5	0.8	0.247	0.795	2.85	0.25	0.25	12300	0.16	13.5	70.6	0.206	0.117	2.01	0.153	880
Maximum		62.7	4.5	0.8	5.0	1.5	5.0	0.35	211	24100	0.4	18.5	94.1	0.32	10	5.0	0.16	2830
% of values undetected					100%	100%	50%	50%	50%						50%	50%		
of values between MDL and MRL											1				1		2	
335242																		
Sample Date																		
07/13/06	0706335242SL001	56.6			**1.27**	**0.565**	6.55	0.22	351	19200	0.256	12.3	210	0.566	**0.118**	5.72	**0.210**	4300
07/19/07	0707335242SL001	72.6	4.9	1.9	**5.0**	**1.5**	**5.0**	**0.15**	**2.9**	25900	**0.5**	16.0	232	0.82	**10**	**25**	0.34	8540
Mean		64.6	4.9	1.9	3.1	1	5.8	0.19	180	22600	0.38	14	220	0.69	5	15	0.28	6400
Median		64.6	4.9	1.9	3.1	1	5.8	0.19	180	22600	0.38	14	220	0.69	5	15	0.28	6400
St. Deviation		11.3	NA	NA	2.6	0.7	1.1	0.05	250	4700	0.17	3	20	0.18	7	14	0.09	3000
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		56.6	4.9	1.9	1.27	0.565	5.0	0.15	2.9	19200	0.256	12.3	210	0.566	0.118	5.72	0.21	4300
Maximum		72.6	4.9	1.9	5.0	1.5	6.55	0.22	351	25900	0.5	16	232	0.82	10	25	0.34	8540
% of values undetected					50%	50%	50%	50%							50%	50%		
of values between MDL and MRL					1	1			1		1				1		1	
335243																		
Sample Date																		
07/13/06	0706335243SL001	71.0			**0.218**	**0.535**	2.55	0.14	113	5900	**0.0665**	1.73	52.8	**0.119**	**0.0435**	**0.535**	**0.0882**	1370
07/19/07	0707335243SL001	63.4	5.0	1.6	**5.0**	**1.5**	**5.0**	**0.4**	**0.25**	17000	**0.3**	7.8	84.80	0.34	**10**	**5.0**	**0.16**	3210
Mean		67.2	5.0	1.6	2.6	1.0	3.8	0.27	60	11000	0.18	4.8	68.8	0.23	5	2.8	0.12	2290
Median		67.2	5.0	1.6	2.6	1.0	3.8	0.27	60	11000	0.18	4.8	68.8	0.23	5	2.8	0.12	2290
St. Deviation		5.4	NA	NA	3.4	0.7	1.7	0.18	80	8000	0.17	4.3	22.6	0.16	7	3.2	0.05	1300
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		63.4	5.0	1.6	0.218	0.535	2.55	0.14	0.25	5900	0.0665	1.73	52.8	0.119	0.0435	0.535	0.0882	1370
Maximum		71	5.0	1.6	5.0	1.5	5.0	0.4	113	17000	0.3	7.8	84.8	0.34	10	5.0	0.16	3210
% of values undetected					100%	50%	50%		50%						100%	50%		
of values between MDL and MRL						1		1			2			1		1	2	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335241																			
Sample Date																			
07/12/06	0706335241SL001	21.7	7.06	18.6	19000	9.45	3230	338	0.119	**1.16**	9.06	318	3.83	**0.0598**	**131**	**0.0282**	**0.775**	53.7	44.1
07/19/07	0707335241SL001	33.4	10.2	22.2	37200	10.6	5750	660	**0.26**	1.7	13.4	780	0.96	**0.07**	420	**0.025**	**5.0**	127	62
Mean		27.6	8.6	20.4	28000	10	4490	500	0.19	1.4	11.2	550	2.4	0.065	280	0.027	2.9	90	53
Median		27.6	8.6	20.4	28000	10	4490	500	0.19	1.4	11.2	550	2.4	0.065	280	0.027	2.9	90	53
St. Deviation		8.3	2.2	2.5	13000	0.8	1780	230	0.1	0.4	3.1	330	2	0.007	200	0.002	3	52	13
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		21.7	7.06	18.6	19000	9.45	3230	338	0.119	1.16	9.06	318	0.96	0.0598	131	0.025	0.775	53.7	44.1
Maximum		33.4	10.2	22.2	37200	10.6	5750	660	0.26	1.7	13.4	780	3.83	0.07	420	0.0282	5.0	127	62
% of values undetected																50%	100%		
of values between MDL and MRL									1	1				2	1	1			
335242																			
Sample Date																			
07/13/06	0706335242SL001	25.0	17.4	19.4	56400	10.1	4690	1300	0.222	**0.687**	17.1	673	1.10	**0.104**	234	0.0825	**0.85**	72.5	57.4
07/19/07	0707335242SL001	52.8	23.6	25.7	27600	13.3	6620	1640	**0.12**	**0.50**	23.8	1270	0.55	**0.09**	880	**0.025**	**10**	**10**	81
Mean		39	20.5	22.6	42000	11.7	5660	1500	0.17	0.59	20.5	970	0.8	0.1	560	0.054	5.0	41	69
Median		39	20.5	22.6	42000	11.7	5660	1500	0.17	0.59	20.5	970	0.8	0.1	560	0.054	5.0	41	69
St. Deviation		20	4.4	4.5	20400	2.3	1360	200	0.07	0.13	4.7	420	0.4	0.01	460	0.041	6	44	17
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		25	17.4	19.4	27600	10.1	4690	1300	0.12	0.50	17.1	673	0.55	0.09	234	0.025	0.85	10	57.4
Maximum		52.8	23.6	25.7	56400	13.3	6620	1640	0.222	0.687	23.8	1270	1.1	0.104	880	0.0825	10	72.5	81
% of values undetected										50%						50%	100%	50%	
of values between MDL and MRL									1	1				2					
335243																			
Sample Date																			
07/13/06	0706335243SL001	4.06	2.48	4.41	6810	2.64	1210	93.1	**0.045**	**0.2175**	3.07	267	**0.699**	**0.0218**	**73.6**	0.0478	**0.70**	16.2	16.3
07/19/07	0707335243SL001	15.6	7.25	14.1	21800	6.98	3440	470	**0.22**	**0.50**	10.1	720	0.70	**0.04**	220	**0.025**	**5.0**	84.9	56
Mean		9.8	4.87	9.3	14300	4.81	2330	280	0.13	0.36	6.6	490	0.7	0.031	150	0.036	2.9	50.6	36
Median		9.8	4.87	9.3	14300	4.81	2330	280	0.13	0.36	6.6	490	0.7	0.031	150	0.036	2.9	50.6	36
St. Deviation		8.2	3.37	6.9	10600	3.07	1580	270	0.12	0.2	5	320	0	0.013	100	0.016	3	48.6	28
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		4.06	2.48	4.41	6810	2.64	1210	93.1	0.045	0.2175	3.07	267	0.699	0.0218	73.6	0.025	0.7	16.2	16.3
Maximum		15.6	7.25	14.1	21800	6.98	3440	470	0.22	0.50	10.1	720	0.7	0.04	220	0.0478	5.0	84.9	56
% of values undetected										100%				50%		50%	100%		
of values between MDL and MRL									2				1	1	1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335244																		
Sample Date																		
07/13/06	0706335244SL001	23.6		44.2	**0.655**	**0.655**	12.6	0.27	1770	6780	**0.261**	56.6	62.5	**0.0645**	**0.129**	**2.14**	**0.129**	2580
07/18/07	0707335244SL001	26.9	4.4	8.0	**5**	**1.5**	**20**	**0.45**	**0.25**	9980	**0.4**	64.6	109	0.37	**4**	**15**	0.40	5140
Mean		25.3	4.4	26.1	2.8	1.1	16	0.36	900	8380	0.33	60.6	86	0.22	2.1	9	0.26	3860
Median		25.3	4.4	26.1	2.8	1.1	16	0.36	900	8380	0.33	60.6	86	0.22	2.1	9	0.26	3860
St. Deviation		2.3	NA	25.6	3.1	0.6	5	0.13	1300	2260	0.1	5.7	33	0.22	2.7	9	0.19	1810
# of values		2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		23.6	4.4	8	0.655	0.655	12.6	0.27	0.25	6780	0.261	56.6	62.5	0.0645	0.129	2.14	0.129	2580
Maximum		26.9	4.4	44.2	5	1.5	20	0.45	1770	9980	0.4	64.6	109	0.37	4	15	0.4	5140
% of values undetected					100%	100%		50%	50%					50%	100%	50%	50%	
of values between MDL and MRL							1				2					1		
335245																		
Sample Date																		
07/13/06	0706335245SL001	37.2			**1.75**	2.82	13.6	0.068	695	22800	**0.174**	7.45	153	0.555	**0.0795**	**2.17**	**0.266**	7040
07/18/07	0707335245SL001	51.8	5.7	2.2	**1.5**	**0.25**	**6.0**	**0.25**	**0.25**	29900	**0.3**	14.5	174	0.66	**4**	**15**	**0.24**	6130
Mean		44.5	5.7	2.2	1.6	1.5	10	0.16	350	26400	0.24	11	164	0.61	2	9	0.25	6590
Median		44.5	5.7	2.2	1.6	1.5	10	0.16	350	26400	0.24	11	164	0.61	2	9	0.25	6590
St. Deviation		10.3	NA	NA	0.2	1.8	5	0.13	490	5000	0.09	5	15	0.07	2.8	9	0.02	640
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		37.2	5.7	2.2	1.5	0.25	6.0	0.068	0.25	22800	0.174	7.45	153	0.555	0.0795	2.17	0.24	6130
Maximum		51.8	5.7	2.2	1.75	2.82	13.6	0.25	695	29900	0.3	14.5	174	0.66	4	15	0.266	7040
% of values undetected					50%	50%		50%	50%						100%	50%		
of values between MDL and MRL					1		1				2					1	2	
335246																		
Sample Date																		
07/13/06	0706335246SL001	53.2			**0.291**	**0.639**	**1.37**	**0.048**	246	21200	**0.157**	7.00	126	0.461	**0.0585**	2.69	**0.178**	3180
07/18/07	0707335246SL001	58.0	5.6	2.1	**1.5**	**0.25**	14	**0.2**	**0.5**	36200	**0.5**	21.1	234	0.88	**4**	**15**	**0.26**	5840
Mean		56	5.6	2.1	0.9	0.44	8	0.12	120	28700	0.33	14	180	0.67	2	9	0.22	4510
Median		56	5.6	2.1	0.9	0.44	8	0.12	120	28700	0.33	14	180	0.67	2	9	0.22	4510
St. Deviation		3	NA	NA	0.9	0.28	9	0.11	170	10600	0.24	10	76	0.3	2.8	9	0.06	1880
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		53.2	5.6	2.1	0.291	0.25	1.37	0.048	0.5	21200	0.157	7	126	0.461	0.0585	2.69	0.178	3180
Maximum		58	5.6	2.1	1.5	0.639	14	0.2	246	36200	0.5	21.1	234	0.88	4	15	0.26	5840
% of values undetected					100%	50%		50%							100%	50%		
of values between MDL and MRL						1	1	1	1		2						2	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335244																			
Sample Date																			
07/13/06	0706335244SL001	3.08	5.80	18.4	5390	4.92	322	85.1	0.187	5.95	3.90	**219**	3.54	**0.0645**	**64.5**	**0.0129**	**2.085**	126	9.02
07/18/07	0707335244SL001	11.20	5.85	27.3	2450	4.32	440	170	**0.4**	8.4	7.5	**190**	2.89	0.12	**110**	**2.5**	**5**	**5**	8
Mean		7.1	5.8	22.9	3920	4.62	380	130	0.29	7.2	5.7	200	3.22	0.09	90	1.3	3.5	70	8.5
Median		7.1	5.8	22.9	3920	4.62	380	130	0.29	7.2	5.7	200	3.22	0.09	90	1.3	3.5	70	8.5
St. Deviation		5.7	0	6.3	2080	0.42	80	60	0.15	1.7	2.5	20	0.46	0.04	30	1.8	2.1	90	0.7
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		3.08	5.8	18.4	2450	4.32	322	85.1	0.187	5.95	3.9	190	2.89	0.0645	64.5	0.0129	2.085	5	8
Maximum		11.2	5.85	27.3	5390	4.92	440	170	0.4	8.4	7.5	219	3.54	0.12	110	2.5	5	126	9.02
% of values undetected														50%	50%	100%	100%	50%	
of values between MDL and MRL									1			2			1				
335245																			
Sample Date																			
07/13/06	0706335245SL001	26.8	10.5	20.5	25700	9.15	5000	191	0.438	**2.15**	15.1	300	2.20	**0.115**	305	0.109	**1.29**	83.5	52.8
07/18/07	0707335245SL001	40.50	11.70	29.8	24300	10.10	5410	390	**0.1**	1.9	22.2	490	2.06	0.13	510	**2.5**	**5**	**5**	54
Mean		33.7	11.1	25.2	25000	9.6	5200	290	0.27	2	18.7	400	2.1	0.12	410	1.3	3.1	44	53
Median		33.7	11.1	25.2	25000	9.6	5200	290	0.27	2	18.7	400	2.1	0.12	410	1.3	3.1	44	53
St. Deviation		9.7	0.8	6.6	1000	0.7	300	140	0.24	0.2	5	130	0.1	0.01	140	1.7	2.6	56	1
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		26.8	10.5	20.5	24300	9.15	5000	191	0.1	1.9	15.1	300	2.06	0.115	305	0.109	1.29	5	52.8
Maximum		40.5	11.7	29.8	25700	10.1	5410	390	0.438	2.15	22.2	490	2.2	0.13	510	2.5	5	83.5	54
% of values undetected																50%	100%	50%	
of values between MDL and MRL									1	1				1					
335246																			
Sample Date																			
07/13/06	0706335246SL001	24.2	10.2	16.8	29600	7.56	4400	271	0.174	**1.09**	13.6	312	1.34	**0.0782**	240	0.0528	**0.94**	65.7	52.7
07/18/07	0707335246SL001	58.20	16.30	35.9	24300	12.90	6520	570	**0.24**	2.2	27.8	800	1.73	0.12	790	**2.5**	**5**	**5**	77
Mean		41.2	13.3	26.4	27000	10.2	5500	420	0.21	1.6	20.7	560	1.54	0.1	520	1.3	3	35	65
Median		41.2	13.3	26.4	27000	10.2	5500	420	0.21	1.6	20.7	560	1.54	0.1	520	1.3	3	35	65
St. Deviation		24	4.3	13.5	3700	3.8	1500	210	0.05	0.8	10	350	0.28	0.03	390	1.7	2.9	43	17
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		24.2	10.2	16.8	24300	7.56	4400	271	0.174	1.09	13.6	312	1.34	0.0782	240	0.0528	0.94	5	52.7
Maximum		58.2	16.3	35.9	29600	12.9	6520	570	0.24	2.2	27.8	800	1.73	0.12	790	2.5	5	65.7	77
% of values undetected																50%	100%	50%	
of values between MDL and MRL									1	1				1					

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335261																		
	Sample Date																	
07/14/05	0705335261SL001	35			**0.433**	**0.433**	**0.433**	0.11	769	3360	**0.0994**	3.72	17.8	**0.043**	**0.086**	**4.3**	**0.086**	1220
	Mean	35	NA	NA	0.433	0.433	0.433	0.11	769	3360	0.0994	3.72	17.8	0.043	0.086	4.3	0.086	1220
	Median	35	NA	NA	0.433	0.433	0.433	0.11	769	3360	0.0994	3.72	17.8	0.043	0.086	4.3	0.086	1220
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	35	NA	NA	0.433	0.433	0.433	0.11	769	3360	0.0994	3.72	17.8	0.043	0.086	4.3	0.086	1220
	Maximum	35	NA	NA	0.433	0.433	0.433	0.11	769	3360	0.0994	3.72	17.8	0.043	0.086	4.3	0.086	1220
	% of values undetected				100%	100%	100%							100%	100%	100%	100%	
	of values between MDL and MRL										1							
335281																		
	Sample Date																	
07/13/05	0705335281SL001	71.7			**0.797**	**0.210**	**0.527**	0.18	183	20000	0.22	14.9	68.4	0.396	**0.117**	**2.14**	**0.259**	1340
	Mean	71.7	NA	NA	0.797	0.210	0.527	0.18	183	20000	0.22	14.9	68.4	0.396	0.117	2.14	0.259	1340
	Median	71.7	NA	NA	0.797	0.210	0.527	0.18	183	20000	0.22	14.9	68.4	0.396	0.117	2.14	0.259	1340
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	71.7	NA	NA	0.797	0.210	0.527	0.18	183	20000	0.22	14.9	68.4	0.396	0.117	2.14	0.259	1340
	Maximum	71.7	NA	NA	0.797	0.210	0.527	0.18	183	20000	0.22	14.9	68.4	0.396	0.117	2.14	0.259	1340
	% of values undetected					100%										100%		
	of values between MDL and MRL				1		1								1		1	
335282																		
	Sample Date																	
07/13/05	0705335282SL001	8.4			13.1	**1.84**	49	**0.029**	433	932	**0.182**	**8.41**	34.3	**0.182**	**0.364**	**18.2**	**0.364**	2280
08/08/05	0805335282SL001	19.3			7.2	**0.79**	16.8	**0.029**	686	1450	**0.0765**	**0.765**	19.4	**0.0765**	**0.153**	**2.47**	**0.153**	902
	Mean	14	NA	NA	10	1.31	33	0.029	560	1190	0.129	4.59	26.9	0.129	0.259	10.3	0.259	1590
	Median	14	NA	NA	10	1.31	33	0.029	560	1190	0.129	4.59	26.9	0.129	0.259	10.3	0.259	1590
	St. Deviation	8	NA	NA	4	0.74	23	0	179	370	0.075	5.41	10.5	0.075	0.149	11.1	0.149	970
	# of values	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	8.4	NA	NA	7.2	0.79	16.8	0.029	433	932	0.0765	0.765	19.4	0.0765	0.153	2.47	0.153	902
	Maximum	19.3	NA	NA	13.1	1.84	49	0.029	686	1450	0.182	8.41	34.3	0.182	0.364	18.2	0.364	2280
	% of values undetected					100%		50%			100%	50%		100%	100%	100%	100%	
	of values between MDL and MRL							1				1						

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335261																			
	Sample Date																		
07/14/05	0705335261SL001	3.58	**0.861**	4.23	4930	3.36	480	77	0.41	**0.43**	0.957	580	5.06	**0.043**	**133**	0.0755	**0.43**	9.15	23.9
	Mean	3.58	0.861	4.23	4930	3.36	480	77	0.41	0.43	0.957	580	5.06	0.043	133	0.0755	0.43	9.15	23.9
	Median	3.58	0.861	4.23	4930	3.36	480	77	0.41	0.43	0.957	580	5.06	0.043	133	0.0755	0.43	9.15	23.9
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	3.58	0.861	4.23	4930	3.36	480	77	0.41	0.43	0.957	580	5.06	0.043	133	0.0755	0.43	9.15	23.9
	Maximum	3.58	0.861	4.23	4930	3.36	480	77	0.41	0.43	0.957	580	5.06	0.043	133	0.0755	0.43	9.15	23.9
	% of values undetected									100%				100%			100%		
	of values between MDL and MRL		1												1				
335281																			
	Sample Date																		
07/13/05	0705335281SL001	19.9	9.16	69.5	29700	8.36	5880	570	**0.0442**	1.8	10.9	627	2.98	**0.108**	197	0.14	**0.69**	62.5	49.3
	Mean	19.9	9.16	69.5	29700	8.36	5880	570	0.0442	1.8	10.9	627	2.98	0.108	197	0.14	0.69	62.5	49.3
	Median	19.9	9.16	69.5	29700	8.36	5880	570	0.0442	1.8	10.9	627	2.98	0.108	197	0.14	0.69	62.5	49.3
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	19.9	9.16	69.5	29700	8.36	5880	570	0.0442	1.8	10.9	627	2.98	0.108	197	0.14	0.69	62.5	49.3
	Maximum	19.9	9.16	69.5	29700	8.36	5880	570	0.0442	1.8	10.9	627	2.98	0.108	197	0.14	0.69	62.5	49.3
	% of values undetected																100%		
	of values between MDL and MRL								1					1					
335282																			
	Sample Date																		
07/13/05	0705335282SL001	**2.73**	**0.88**	**7.01**	13900	**1.2**	357	52.8	**0.15**	**1.82**	**0.364**	**182**	20.2	**0.182**	**182**	**0.15**	**5.85**	**5.5**	21
08/08/05	0805335282SL001	**0.985**	**0.370**	10.7	8720	1.04	160	20.3	**0.141**	**3.67**	**0.719**	**216**	**1.23**	**0.0765**	**76.5**	0.18	**0.765**	**2.32**	7.75
	Mean	1.86	0.625	8.9	11300	1.1	260	36.6	0.15	2.75	0.542	199	10.7	0.129	129	0.17	3.31	3.91	14
	Median	1.86	0.625	8.9	11300	1.1	260	36.6	0.15	2.75	0.542	199	10.7	0.129	129	0.17	3.31	3.91	14
	St. Deviation	1.23	0.361	2.6	3700	0.1	140	23	0.01	1.31	0.251	24	13.4	0.075	75	0.02	3.6	2.25	9
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	0.985	0.370	7.01	8720	1.04	160	20.3	0.141	1.82	0.364	182	1.23	0.0765	76.5	0.15	0.765	2.32	7.75
	Maximum	2.73	0.88	10.7	13900	1.2	357	52.8	0.15	3.67	0.719	216	20.2	0.182	182	0.18	5.85	5.5	21
	% of values undetected	50%	100%							50%	50%	50%	50%	100%	100%		100%	100%	
	of values between MDL and MRL	1		1		1			2	1	1	1				1			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335283																		
Sample Date																		
07/13/05	0705335283SL001	77.5		1.9	**0.498**	**0.198**	**0.639**	0.12	91	18400	0.237	9.75	33.7	0.368	**0.174**	**1.98**	**0.113**	877
Mean		77.5	NA	1.9	0.498	0.198	0.639	0.12	91	18400	0.237	9.75	33.7	0.368	0.174	1.98	0.113	877
Median		77.5	NA	1.9	0.498	0.198	0.639	0.12	91	18400	0.237	9.75	33.7	0.368	0.174	1.98	0.113	877
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		77.5	NA	1.9	0.498	0.198	0.639	0.12	91	18400	0.237	9.75	33.7	0.368	0.174	1.98	0.113	877
Maximum		77.5	NA	1.9	0.498	0.198	0.639	0.12	91	18400	0.237	9.75	33.7	0.368	0.174	1.98	0.113	877
% of values undetected						100%										100%		
of values between MDL and MRL					1		1								1		1	
335284																		
Sample Date																		
07/13/05	0705335284SL001	23.1			9.06	**1.62**	185	0.052	1160	11100	**0.212**	8.2	45.8	**0.413**	**0.133**	**6.65**	**0.133**	3170
Mean		23.1	NA	NA	9.06	1.62	185	0.052	1160	11100	0.212	8.2	45.8	0.413	0.133	6.65	0.133	3170
Median		23.1	NA	NA	9.06	1.62	185	0.052	1160	11100	0.212	8.2	45.8	0.413	0.133	6.65	0.133	3170
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		23.1	NA	NA	9.06	1.62	185	0.052	1160	11100	0.212	8.2	45.8	0.413	0.133	6.65	0.133	3170
Maximum		23.1	NA	NA	9.06	1.62	185	0.052	1160	11100	0.212	8.2	45.8	0.413	0.133	6.65	0.133	3170
% of values undetected															100%	100%	100%	
of values between MDL and MRL						1					1			1				
335301																		
Sample Date																		
07/13/05	0705335301SL001	35.6			**0.419**	**0.419**	2.97	0.11	902	5880	**0.123**	3.32	34.7	**0.0923**	**0.175**	**4.20**	**0.084**	823
Mean		35.6	NA	NA	0.419	0.419	2.97	0.11	902	5880	0.123	3.32	34.7	0.0923	0.175	4.20	0.084	823
Median		35.6	NA	NA	0.419	0.419	2.97	0.11	902	5880	0.123	3.32	34.7	0.0923	0.175	4.20	0.084	823
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		35.6	NA	NA	0.419	0.419	2.97	0.11	902	5880	0.123	3.32	34.7	0.0923	0.175	4.20	0.084	823
Maximum		35.6	NA	NA	0.419	0.419	2.97	0.11	902	5880	0.123	3.32	34.7	0.0923	0.175	4.20	0.084	823
% of values undetected					100%	100%										100%	100%	
of values between MDL and MRL											1			1	1			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335283																			
	Sample Date																		
07/13/05	0705335283SL001	13.5	6.64	40.1	21600	6.77	3320	300	**0.0436**	1.92	7.84	617	3	**0.0198**	145	0.0751	**0.64**	50.4	43.1
	Mean	13.5	6.64	40.1	21600	6.77	3320	300	0.0436	1.92	7.84	617	3	0.0198	145	0.0751	0.64	50.4	43.1
	Median	13.5	6.64	40.1	21600	6.77	3320	300	0.0436	1.92	7.84	617	3	0.0198	145	0.0751	0.64	50.4	43.1
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	13.5	6.64	40.1	21600	6.77	3320	300	0.0436	1.92	7.84	617	3	0.0198	145	0.0751	0.64	50.4	43.1
	Maximum	13.5	6.64	40.1	21600	6.77	3320	300	0.0436	1.92	7.84	617	3	0.0198	145	0.0751	0.64	50.4	43.1
	% of values undetected													100%			100%		
	of values between MDL and MRL								1										
335284																			
	Sample Date																		
07/13/05	0705335284SL001	8.85	2.26	32.8	14300	4.55	1290	118	**0.0260**	**1.59**	5.24	**317**	7.77	**0.0665**	**254**	0.161	**2.15**	24.3	14.1
	Mean	8.85	2.26	32.8	14300	4.55	1290	118	0.0260	1.59	5.24	317	7.77	0.0665	254	0.161	2.15	24.3	14.1
	Median	8.85	2.26	32.8	14300	4.55	1290	118	0.0260	1.59	5.24	317	7.77	0.0665	254	0.161	2.15	24.3	14.1
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	8.85	2.26	32.8	14300	4.55	1290	118	0.0260	1.59	5.24	317	7.77	0.0665	254	0.161	2.15	24.3	14.1
	Maximum	8.85	2.26	32.8	14300	4.55	1290	118	0.0260	1.59	5.24	317	7.77	0.0665	254	0.161	2.15	24.3	14.1
	% of values undetected								100%					100%			100%		
	of values between MDL and MRL									1		1			1				
335301																			
	Sample Date																		
07/13/05	0705335301SL001	5.49	2.33	9.37	10700	4.69	389	31.3	0.12	**0.919**	2.56	409	5.02	**0.0420**	**120**	0.128	**1.36**	29.6	14.1
	Mean	5.49	2.33	9.37	10700	4.69	389	31.3	0.12	0.919	2.56	409	5.02	0.0420	120	0.128	1.36	29.6	14.1
	Median	5.49	2.33	9.37	10700	4.69	389	31.3	0.12	0.919	2.56	409	5.02	0.0420	120	0.128	1.36	29.6	14.1
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	5.49	2.33	9.37	10700	4.69	389	31.3	0.12	0.919	2.56	409	5.02	0.0420	120	0.128	1.36	29.6	14.1
	Maximum	5.49	2.33	9.37	10700	4.69	389	31.3	0.12	0.919	2.56	409	5.02	0.0420	120	0.128	1.36	29.6	14.1
	% of values undetected													100%			100%		
	of values between MDL and MRL									1					1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335302																		
Sample Date																		
07/13/05	0705335302SL001	48.8			**0.701**	**1**	8.13	0.14	514	21400	0.209	14.7	73	0.503	**0.233**	**0.308**	**0.338**	1770
Mean		48.8	NA	NA	0.701	1	8.13	0.14	514	21400	0.209	14.7	73	0.503	0.233	0.308	0.338	1770
Median		48.8	NA	NA	0.701	1	8.13	0.14	514	21400	0.209	14.7	73	0.503	0.233	0.308	0.338	1770
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		48.8	NA	NA	0.701	1	8.13	0.14	514	21400	0.209	14.7	73	0.503	0.233	0.308	0.338	1770
Maximum		48.8	NA	NA	0.701	1	8.13	0.14	514	21400	0.209	14.7	73	0.503	0.233	0.308	0.338	1770
% of values undetected						100%										100%		
of values between MDL and MRL					1										1		1	
335311																		
Sample Date																		
07/14/05	0705335311SL001	40.3			**0.377**	**0.377**	**0.377**	0.1	638	16300	0.365	9.7	53	**0.196**	**0.242**	**3.79**	**0.0755**	1180
Mean		40.3	NA	NA	0.377	0.377	0.377	0.1	638	16300	0.365	9.7	53	0.196	0.242	3.79	0.0755	1180
Median		40.3	NA	NA	0.377	0.377	0.377	0.1	638	16300	0.365	9.7	53	0.196	0.242	3.79	0.0755	1180
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		40.3	NA	NA	0.377	0.377	0.377	0.1	638	16300	0.365	9.7	53	0.196	0.242	3.79	0.0755	1180
Maximum		40.3	NA	NA	0.377	0.377	0.377	0.1	638	16300	0.365	9.7	53	0.196	0.242	3.79	0.0755	1180
% of values undetected					100%	100%	100%									100%	100%	
of values between MDL and MRL														1	1			
335321																		
Sample Date																		
07/14/05	0705335321SL001	45.8			**0.714**	**0.336**	**0.336**	0.17	355	3160	**0.139**	4.38	18.8	**0.069**	**0.065**	**3.26**	**0.176**	334
Mean		45.8	NA	NA	0.714	0.336	0.336	0.17	355	3160	0.139	4.38	18.8	0.069	0.065	3.26	0.176	334
Median		45.8	NA	NA	0.714	0.336	0.336	0.17	355	3160	0.139	4.38	18.8	0.069	0.065	3.26	0.176	334
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		45.8	NA	NA	0.714	0.336	0.336	0.17	355	3160	0.139	4.38	18.8	0.069	0.065	3.26	0.176	334
Maximum		45.8	NA	NA	0.714	0.336	0.336	0.17	355	3160	0.139	4.38	18.8	0.069	0.065	3.26	0.176	334
% of values undetected						100%	100%								100%	100%		
of values between MDL and MRL					1						1			1			1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335302																			
Sample Date																			
07/13/05	0705335302SL001	31.7	4.88	76.4	16100	11.5	5520	131	0.193	2.44	17.1	605	4.06	**0.0837**	220	0.157	**0.99**	71.2	102
Mean		31.7	4.88	76.4	16100	11.5	5520	131	0.193	2.44	17.1	605	4.06	0.0837	220	0.157	0.99	71.2	102
Median		31.7	4.88	76.4	16100	11.5	5520	131	0.193	2.44	17.1	605	4.06	0.0837	220	0.157	0.99	71.2	102
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		31.7	4.88	76.4	16100	11.5	5520	131	0.193	2.44	17.1	605	4.06	0.0837	220	0.157	0.99	71.2	102
Maximum		31.7	4.88	76.4	16100	11.5	5520	131	0.193	2.44	17.1	605	4.06	0.0837	220	0.157	0.99	71.2	102
% of values undetected																	100%		
of values between MDL and MRL														1					
335311																			
Sample Date																			
07/14/05	0705335311SL001	7.03	3.04	33.8	14100	8.58	1670	144	0.268	**2.33**	4.54	442	4.46	**0.0379**	**134**	0.214	**1.22**	35.6	28.8
Mean		7.03	3.04	33.8	14100	8.58	1670	144	0.268	2.33	4.54	442	4.46	0.0379	134	0.214	1.22	35.6	28.8
Median		7.03	3.04	33.8	14100	8.58	1670	144	0.268	2.33	4.54	442	4.46	0.0379	134	0.214	1.22	35.6	28.8
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		7.03	3.04	33.8	14100	8.58	1670	144	0.268	2.33	4.54	442	4.46	0.0379	134	0.214	1.22	35.6	28.8
Maximum		7.03	3.04	33.8	14100	8.58	1670	144	0.268	2.33	4.54	442	4.46	0.0379	134	0.214	1.22	35.6	28.8
% of values undetected														100%			100%		
of values between MDL and MRL										1					1				
335321																			
Sample Date																			
07/14/05	0705335321SL001	5.06	1.5	25.1	8750	13.6	306	33.3	0.228	**1.23**	1.18	356	3.44	**0.0874**	**134**	0.0804	**1.05**	22.4	14.1
Mean		5.06	1.5	25.1	8750	13.6	306	33.3	0.228	1.23	1.18	356	3.44	0.0874	134	0.0804	1.05	22.4	14.1
Median		5.06	1.5	25.1	8750	13.6	306	33.3	0.228	1.23	1.18	356	3.44	0.0874	134	0.0804	1.05	22.4	14.1
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		5.06	1.5	25.1	8750	13.6	306	33.3	0.228	1.23	1.18	356	3.44	0.0874	134	0.0804	1.05	22.4	14.1
Maximum		5.06	1.5	25.1	8750	13.6	306	33.3	0.228	1.23	1.18	356	3.44	0.0874	134	0.0804	1.05	22.4	14.1
% of values undetected																	100%		
of values between MDL and MRL										1				1	1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335322																		
	Sample Date																	
07/14/05	0705335322SL001	57.7			**0.955**	**0.85**	**1.62**	0.15	275	25000	0.333	15	60.2	0.452	0.379	**2.64**	**0.053**	660
	Mean	57.7	NA	NA	0.955	0.85	1.62	0.15	275	25000	0.333	15	60.2	0.452	0.379	2.64	0.053	660
	Median	57.7	NA	NA	0.955	0.85	1.62	0.15	275	25000	0.333	15	60.2	0.452	0.379	2.64	0.053	660
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	57.7	NA	NA	0.955	0.85	1.62	0.15	275	25000	0.333	15	60.2	0.452	0.379	2.64	0.053	660
	Maximum	57.7	NA	NA	0.955	0.85	1.62	0.15	275	25000	0.333	15	60.2	0.452	0.379	2.64	0.053	660
	% of values undetected					100%										100%	100%	
	of values between MDL and MRL				1		1											
336011																		
	Sample Date																	
07/12/05	0705336011SL001	27.2			4.54	**0.555**	8.51	0.21	965	8790	**0.158**	**1.22**	99.7	0.786	**0.113**	**5.6**	0.81	2990
07/19/07	0707336011SL001	36.2	4.5	6.5	**1.5**	**0.25**	**5**	**0.35**	**0.25**	25000	**0.2**	6.8	117	0.55	**10**	**5**	0.32	2130
	Mean	31.7	4.5	6.5	3	0.4	6.8	0.28	480	17000	0.18	4	108	0.67	5	5.3	0.57	2560
	Median	31.7	4.5	6.5	3	0.4	6.8	0.28	480	17000	0.18	4	108	0.67	5	5.3	0.57	2560
	St. Deviation	6.4	NA	NA	2.1	0.22	2.5	0.1	680	11000	0.03	3.9	12	0.17	7	0.4	0.35	610
	# of values	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	27.2	4.5	6.5	1.5	0.25	5	0.21	0.25	8790	0.158	1.22	99.7	0.55	0.113	5	0.32	2130
	Maximum	36.2	4.5	6.5	4.54	0.555	8.51	0.35	965	25000	0.2	6.8	117	0.786	10	5.6	0.81	2990
	% of values undetected				50%	100%		50%	50%						100%	100%		
	of values between MDL and MRL						1				2	1						
336012																		
	Sample Date																	
07/12/05	0705336012SL001	49.4			**1.04**	**0.305**	**0.305**	0.15	256	11900	0.257	9.8	70.4	0.276	**0.264**	**3.1**	**0.197**	795
07/12/06	0706336012SL001	71.2			**0.218**	**0.218**	1.49	0.12	109	21800	0.141	14.2	97.4	0.564	**0.137**	1.53	0.308	756
	Mean	60.3	NA	NA	0.63	0.261	0.9	0.14	183	16900	0.199	12	83.9	0.42	0.201	2.3	0.253	776
	Median	60.3	NA	NA	0.63	0.261	0.9	0.14	183	16900	0.199	12	83.9	0.42	0.201	2.3	0.253	776
	St. Deviation	15.4	NA	NA	0.58	0.062	0.84	0.02	104	7000	0.082	3	19.1	0.204	0.09	1.1	0.078	28
	# of values	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	49.4	NA	NA	0.218	0.218	0.305	0.12	109	11900	0.141	9.8	70.4	0.276	0.137	1.53	0.197	756
	Maximum	71.2	NA	NA	1.04	0.305	1.49	0.15	256	21800	0.257	14.2	97.4	0.564	0.264	3.1	0.308	795
	% of values undetected				50%	100%	50%									50%		
	of values between MDL and MRL				1										2		1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
335322																			
Sample Date																			
07/14/05	0705335322SL001	31	8.09	173	43000	27.5	8470	358	0.222	7.31	15.6	1710	5.72	0.17	167	0.227	**0.85**	90.2	45.1
Mean		31	8.09	173	43000	27.5	8470	358	0.222	7.31	15.6	1710	5.72	0.17	167	0.227	0.85	90.2	45.1
Median		31	8.09	173	43000	27.5	8470	358	0.222	7.31	15.6	1710	5.72	0.17	167	0.227	0.85	90.2	45.1
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		31	8.09	173	43000	27.5	8470	358	0.222	7.31	15.6	1710	5.72	0.17	167	0.227	0.85	90.2	45.1
Maximum		31	8.09	173	43000	27.5	8470	358	0.222	7.31	15.6	1710	5.72	0.17	167	0.227	0.85	90.2	45.1
% of values undetected																	100%		
of values between MDL and MRL															1				
336011																			
Sample Date																			
07/12/05	0705336011SL001	6.44	2.29	13.9	10800	6.71	895	41.9	0.203	**1.58**	4.79	826	**0.272**	1.14	264	0.14	**1.66**	20.1	20.7
07/19/07	0707336011SL001	15.80	3.45	20.6	5680	11.7	2490	120	**0.20**	**0.50**	8.6	1270	1.15	0.30	300	**0.06**	**5.0**	**2.5**	41
Mean		11.1	2.87	17.3	8200	9.2	1690	80	0.2	1	6.7	1050	0.71	0.7	280	0.1	3.3	11	31
Median		11.1	2.87	17.3	8200	9.2	1690	80	0.2	1	6.7	1050	0.71	0.7	280	0.1	3.3	11	31
St. Deviation		6.6	0.82	4.7	3600	3.5	1130	60	0	0.8	2.7	310	0.62	0.6	30	0.06	2.4	12	14
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		6.44	2.29	13.9	5680	6.71	895	41.9	0.203	0.50	4.79	826	0.272	0.3	264	0.06	1.66	2.5	20.7
Maximum		15.8	3.45	20.6	10800	11.7	2490	120	0.203	1.58	8.6	1270	1.15	1.14	300	0.14	5.0	20.1	41
% of values undetected										50%			50%				50%	50%	
of values between MDL and MRL									1	1					1	1	1		
336012																			
Sample Date																			
07/12/05	0705336012SL001	16.1	4.59	15.3	15300	11.3	2220	270	0.0971	**1.09**	6.73	1170	**0.15**	0.237	282	0.171	**1.92**	67.5	57.9
07/12/06	0706336012SL001	15.3	7.82	17.7	25000	14.0	3380	449	**0.0474**	**0.620**	11.2	928	2.78	**0.121**	194	0.100	1.49	41.2	59.6
Mean		15.7	6.21	16.5	20000	13	2800	360	0.0723	0.9	9	1050	1.5	0.179	238	0.14	1.71	54.4	58.8
Median		15.7	6.21	16.5	20000	13	2800	360	0.0723	0.9	9	1050	1.5	0.179	238	0.14	1.71	54.4	58.8
St. Deviation		0.6	2.28	1.7	7000	2	820	130	0.0351	0.3	3.2	170	1.9	0.082	62	0.05	0.3	18.6	1.2
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		15.3	4.59	15.3	15300	11.3	2220	270	0.0474	0.62	6.73	928	0.15	0.121	194	0.1	1.49	41.2	57.9
Maximum		16.1	7.82	17.7	25000	14	3380	449	0.0971	1.09	11.2	1170	2.78	0.237	282	0.171	1.92	67.5	59.6
% of values undetected													50%						
of values between MDL and MRL									1	2				1			1		

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
336013																		
Sample Date																		
07/12/05	0705336013SL001	74.9			**0.56**	**0.202**	**0.521**	0.089	79.1	23800	0.347	13.6	114	1.19	**0.203**	**5.28**	3.06	1020
07/12/06	0706336013SL001	77.1			**0.492**	**0.201**	2.91	**0.037**	51.6	16900	**0.0792**	9.91	82.0	0.501	**0.0913**	2.10	0.475	521
Mean		76	NA	NA	0.53	0.201	1.72	0.063	65.4	20400	0.213	11.8	100	0.85	0.147	3.7	1.77	770
Median		76	NA	NA	0.53	0.201	1.72	0.063	65.4	20400	0.213	11.8	100	0.85	0.147	3.7	1.77	770
St. Deviation		1.6	NA	NA	0.05	0.001	1.69	0.037	19.4	4900	0.189	2.6	20	0.49	0.079	2.2	1.83	350
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		74.9	NA	NA	0.492	0.201	0.521	0.037	51.6	16900	0.0792	9.91	82	0.501	0.0913	2.1	0.475	521
Maximum		77.1	NA	NA	0.56	0.202	2.91	0.089	79.1	23800	0.347	13.6	114	1.19	0.203	5.28	3.06	1020
% of values undetected						100%												
of values between MDL and MRL					2		1	1			1				2	1		
336041																		
Sample Date																		
07/11/05	0705336041SL001	36.2			**2.27**	**2.08**	13.9	0.32	961	26600	0.437	31.9	102	0.727	**0.0855**	**4.27**	**0.256**	7230
07/11/05	0705336041SS001	63.6			**0.241**	**0.667**	**0.241**	0.1	196	13800	0.221	26.5	66.1	0.439	**0.0996**	**2.38**	**0.145**	2930
Mean		49.9	NA	NA	1.26	1.37	7.1	0.21	579	20200	0.329	29.2	84	0.583	0.0926	3.32	0.201	5080
Median		49.9	NA	NA	1.26	1.37	7.1	0.21	579	20200	0.329	29.2	84	0.583	0.0926	3.32	0.201	5080
St. Deviation		19.4	NA	NA	1.44	1	9.7	0.16	541	9100	0.153	3.8	25	0.204	0.01	1.34	0.078	3040
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		36.2	NA	NA	0.241	0.667	0.241	0.1	196	13800	0.221	26.5	66.1	0.439	0.0855	2.38	0.145	2930
Maximum		63.6	NA	NA	2.27	2.08	13.9	0.32	961	26600	0.437	31.9	102	0.727	0.0996	4.27	0.256	7230
% of values undetected					50%		50%								50%	100%		
of values between MDL and MRL					1	2									1		2	
336042																		
Sample Date																		
07/11/05	0705336042SL001	36.2			5.13	**2.47**	9.99	0.27	1280	27000	0.478	33.3	99.9	0.855	**0.0825**	**4.12**	**0.221**	7510
07/11/06	0706336042SL001	35.1			**2.19**	**2.62**	12.4	0.41	776	18500	0.395	26.3	96.9	0.643	**0.0845**	**2.28**	**0.0845**	7370
Mean		35.7	NA	NA	3.66	2.55	11.2	0.34	1030	23000	0.437	29.8	98.4	0.749	0.0835	3.2	0.153	7440
Median		35.7	NA	NA	3.66	2.55	11.2	0.34	1030	23000	0.437	29.8	98.4	0.749	0.0835	3.2	0.153	7440
St. Deviation		0.8	NA	NA	2.08	0.11	1.7	0.1	360	6000	0.059	4.9	2.1	0.15	0.0014	1.3	0.097	100
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		35.1	NA	NA	2.19	2.47	9.99	0.27	776	18500	0.395	26.3	96.9	0.643	0.0825	2.28	0.0845	7370
Maximum		36.2	NA	NA	5.13	2.62	12.4	0.41	1280	27000	0.478	33.3	99.9	0.855	0.0845	4.12	0.221	7510
% of values undetected															100%	50%	50%	
of values between MDL and MRL					1	2										1	1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
336013																			
	Sample Date																		
07/12/05	0705336013SL001	27.2	8.72	18.5	24900	19.9	5540	566	**0.0437**	**0.64**	12.5	2520	**0.456**	**0.0421**	415	0.326	1.89	67	75.8
07/12/06	0706336013SL001	13.8	7.04	13.4	18400	12.6	2790	450	**0.029**	**0.421**	10.2	1080	2.36	**0.0531**	201	0.0958	1.74	30.5	48.6
	Mean	20.5	7.88	16	21700	16.3	4170	510	0.036	0.53	11.4	1800	1.41	0.0476	308	0.211	1.82	49	62.2
	Median	20.5	7.88	16	21700	16.3	4170	510	0.036	0.53	11.4	1800	1.41	0.0476	308	0.211	1.82	49	62.2
	St. Deviation	9.5	1.19	3.6	4600	5.2	1940	80	0.01	0.15	1.6	1020	1.35	0.0078	151	0.163	0.11	26	19.2
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	13.8	7.04	13.4	18400	12.6	2790	450	0.029	0.421	10.2	1080	0.456	0.0421	201	0.0958	1.74	30.5	48.6
	Maximum	27.2	8.72	18.5	24900	19.9	5540	566	0.0437	0.64	12.5	2520	2.36	0.0531	415	0.326	1.89	67	75.8
	% of values undetected																		
	of values between MDL and MRL								2	2			1	2					
336041																			
	Sample Date																		
07/11/05	0705336041SL001	29.2	6.26	61.6	24200	8.51	3450	208	**0.0684**	2.81	13.1	971	**0.889**	**0.0427**	364	0.198	2.9	51.2	35.2
07/11/05	0705336041SS001	19	7.33	14	18300	6.2	2740	527	**0.0293**	2.03	8.21	755	**0.115**	**0.0238**	267	0.101	**0.992**	44.9	32.5
	Mean	24	6.8	38	21300	7.4	3100	368	0.0489	2.42	10.7	863	0.502	0.0332	316	0.15	1.9	48.1	33.9
	Median	24	6.8	38	21300	7.4	3100	368	0.0489	2.42	10.7	863	0.502	0.0332	316	0.15	1.9	48.1	33.9
	St. Deviation	7	0.76	34	4200	1.6	500	226	0.0276	0.55	3.5	153	0.547	0.0134	69	0.069	1.3	4.5	1.9
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	19	6.26	14	18300	6.2	2740	208	0.0293	2.03	8.21	755	0.115	0.0238	267	0.101	0.992	44.9	32.5
	Maximum	29.2	7.33	61.6	24200	8.51	3450	527	0.0684	2.81	13.1	971	0.889	0.0427	364	0.198	2.9	51.2	35.2
	% of values undetected												50%	100%					
	of values between MDL and MRL								2				1				1		
336042																			
	Sample Date																		
07/11/05	0705336042SL001	38.7	4.14	18.6	23300	7.9	3480	113	**0.0543**	**1.9**	16.6	988	**0.988**	**0.0412**	316	0.162	**1.22**	43.8	33
07/11/06	0706336042SL001	31.2	3.29	14.8	17800	8.15	3020	79.2	**0.0561**	**1.59**	14.5	602	2.93	**0.101**	**194**	0.119	**1.37**	28.8	25.9
	Mean	35	3.72	16.7	20600	8	3250	96	0.0552	1.73	15.6	795	1.96	0.071	255	0.141	1.29	36.3	29
	Median	35	3.72	16.7	20600	8	3250	96	0.0552	1.73	15.6	795	1.96	0.071	255	0.141	1.29	36.3	29
	St. Deviation	5.3	0.6	2.7	3900	0.2	330	24	0.0013	0.2	1.5	273	1.37	0.042	86	0.03	0.1	10.6	5
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	31.2	3.29	14.8	17800	7.9	3020	79.2	0.0543	1.59	14.5	602	0.988	0.0412	194	0.119	1.22	28.8	25.9
	Maximum	38.7	4.14	18.6	23300	8.15	3480	113	0.0561	1.9	16.6	988	2.93	0.101	316	0.162	1.37	43.8	33
	% of values undetected													50%			50%		
	of values between MDL and MRL								2	2			1	1	1		1		

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
336043																		
Sample Date																		
07/11/05	0705336043SL001	54.9			**0.692**	**0.275**	2.77	0.32	315	18600	0.231	7.1	52.7	0.304	**0.193**	**2.77**	**0.157**	1750
07/11/06	0706336043SL001	74.2			**0.430**	**0.209**	5.31	**0.052**	83.3	16300	**0.102**	4.14	57.9	0.201	**0.0412**	1.60	**0.0981**	926
Mean		64.6	NA	NA	0.56	0.242	4.04	0.19	199	17500	0.167	5.6	55.3	0.253	0.117	2.2	0.128	1340
Median		64.6	NA	NA	0.56	0.242	4.04	0.19	199	17500	0.167	5.6	55.3	0.253	0.117	2.2	0.128	1340
St. Deviation		13.6	NA	NA	0.19	0.047	1.8	0.19	164	1600	0.091	2.1	3.7	0.073	0.107	0.8	0.042	580
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		54.9	NA	NA	0.43	0.209	2.77	0.052	83.3	16300	0.102	4.14	52.7	0.201	0.0412	1.6	0.0981	926
Maximum		74.2	NA	NA	0.692	0.275	5.31	0.32	315	18600	0.231	7.1	57.9	0.304	0.193	2.77	0.157	1750
% of values undetected						100%									50%	50%		
of values between MDL and MRL					2			1			1				1		2	
336131																		
Sample Date																		
07/11/05	0705336131SL001	76.8		1.1	**0.199**	**0.199**	**0.41**	0.073	51.5	14400	0.267	14.1	81.9	0.546	**0.124**	**1.995**	0.278	1430
07/19/07	0707336131SL001	41.1	4.3	6.4	**1.5**	**0.25**	**6.0**	**0.30**	**0.25**	10300	**0.3**	5.9	52.60	**0.13**	**10**	**5.0**	**0.22**	800
Mean		59	4.3	3.8	0.85	0.224	3.2	0.19	26	12400	0.28	10	67.3	0.34	5	3.5	0.25	1100
Median		59	4.3	3.8	0.85	0.224	3.2	0.19	26	12400	0.28	10	67.3	0.34	5	3.5	0.25	1100
St. Deviation		25.2	NA	3.7	0.92	0.036	4	0.16	36	2900	0.02	6	20.7	0.29	7	2.1	0.04	400
# of values		2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		41.1	4.3	1.1	0.199	0.199	0.41	0.073	0.25	10300	0.267	5.9	52.6	0.13	0.124	1.995	0.22	800
Maximum		76.8	4.3	6.4	1.5	0.25	6.0	0.30	51.5	14400	0.3	14.1	81.9	0.546	10	5.0	0.278	1430
% of values undetected					100%	100%		50%	50%						50%	100%		
of values between MDL and MRL							2				1			1	1		1	
336132																		
Sample Date																		
07/11/05	0705336132SL001	22.8			**2.74**	**0.675**	5.44	**0.045**	1850	16500	**0.136**	**0.66**	33.1	**0.168**	**0.132**	**6.6**	**0.132**	778
07/13/06	0706336132SL001	29.9			**2.01**	**0.520**	5.41	0.10	1010	8700	**0.051**	**0.51**	32.1	**0.154**	**0.253**	**1.04**	**0.102**	222
Mean		26.4	NA	NA	2.38	0.6	5.43	0.07	1430	13000	0.09	0.59	32.6	0.161	0.193	3.8	0.117	500
Median		26.4	NA	NA	2.38	0.6	5.43	0.07	1430	13000	0.09	0.59	32.6	0.161	0.193	3.8	0.117	500
St. Deviation		5	NA	NA	0.52	0.11	0.02	0.04	590	6000	0.06	0.11	0.7	0.01	0.086	3.9	0.021	393
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		22.8	NA	NA	2.01	0.520	5.41	0.045	1010	8700	0.051	0.51	32.1	0.154	0.132	1.04	0.102	222
Maximum		29.9	NA	NA	2.74	0.675	5.44	0.1	1850	16500	0.136	0.66	33.1	0.168	0.253	6.6	0.132	778
% of values undetected						100%					50%	100%			50%	50%	100%	
of values between MDL and MRL					2			1			1			2	1	1		

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
336043																			
Sample Date																			
07/11/05	0705336043SL001	18.7	5.36	15.3	16800	8.81	3310	294	0.102	**1.1**	7.26	586	1.46	**0.0277**	276	0.155	**1.36**	76.1	38.1
07/11/06	0706336043SL001	9.82	5.78	11.0	14400	5.94	2160	287	**0.0485**	**0.206**	6.86	268	1.01	**0.0602**	**103**	0.0554	**0.665**	40.0	30.5
Mean		14.3	5.57	13	15600	7.38	2740	291	0.075	0.7	7.06	427	1.24	0.044	190	0.105	1.01	58	34.3
Median		14.3	5.57	13	15600	7.38	2740	291	0.075	0.7	7.06	427	1.24	0.044	190	0.105	1.01	58	34.3
St. Deviation		6.3	0.3	3	1700	2.03	810	5	0.038	0.6	0.28	225	0.32	0.023	122	0.07	0.49	26	5.4
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		9.82	5.36	11	14400	5.94	2160	287	0.0485	0.206	6.86	268	1.01	0.0277	103	0.0554	0.665	40	30.5
Maximum		18.7	5.78	15.3	16800	8.81	3310	294	0.102	1.1	7.26	586	1.46	0.0602	276	0.155	1.36	76.1	38.1
% of values undetected										50%				50%			50%		
of values between MDL and MRL									1	1				1	1		1		
336131																			
Sample Date																			
07/11/05	0705336131SL001	18.2	8.01	21.7	21600	10.4	5000	634	**0.0378**	**0.786**	9.15	989	**0.0965**	**0.020**	185	0.109	**1.06**	65.5	63
07/19/07	0707336131SL001	16.00	2.77	13.4	8670	8.55	830	90	**0.42**	1.3	4.9	750	1.34	0.28	270	**0.07**	**5**	**2.5**	27
Mean		17	5.39	17.6	15100	9.5	2900	360	0.23	1	7	870	0.72	0.15	230	0.09	3	34	45
Median		17	5.39	17.6	15100	9.5	2900	360	0.23	1	7	870	0.72	0.15	230	0.09	3	34	45
St. Deviation		2	3.71	5.9	9100	1.3	2900	380	0.27	0.4	3	170	0.88	0.184	60	0.03	2.8	45	25
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		16	2.77	13.4	8670	8.55	830	90	0.0378	0.786	4.9	750	0.0965	0.020	185	0.07	1.06	2.5	27
Maximum		18.2	8.01	21.7	21600	10.4	5000	634	0.42	1.3	9.15	989	1.34	0.28	270	0.109	5	65.5	63
% of values undetected													50%	50%			50%	50%	
of values between MDL and MRL									2	1						1	1		
336132																			
Sample Date																			
07/11/05	0705336132SL001	6.11	**0.715**	13.4	3610	4.54	377	16.4	**0.165**	**0.66**	1.42	428	**1.59**	**0.066**	**173**	0.2	**0.66**	12.8	6.86
07/13/06	0706336132SL001	5.71	**0.248**	3.47	3150	5.18	153	5.92	0.193	**0.51**	1.59	**189**	4.10	**0.051**	**51**	0.149	**0.51**	**5.61**	8.77
Mean		5.91	0.481	8.4	3380	4.86	265	11.2	0.179	0.59	1.51	309	2.8	0.059	110	0.17	0.59	9.2	7.82
Median		5.91	0.481	8.4	3380	4.86	265	11.2	0.179	0.59	1.51	309	2.8	0.059	110	0.17	0.59	9.2	7.82
St. Deviation		0.28	0.331	7	330	0.45	158	7.4	0.02	0.11	0.12	169	1.8	0.011	90	0.04	0.11	5.1	1.35
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		5.71	0.248	3.47	3150	4.54	153	5.92	0.165	0.51	1.42	189	1.59	0.051	51	0.149	0.51	5.61	6.86
Maximum		6.11	0.715	13.4	3610	5.18	377	16.4	0.193	0.66	1.59	428	4.1	0.066	173	0.2	0.66	12.8	8.77
% of values undetected			50%							100%				100%	50%		100%		
of values between MDL and MRL			1						1			1	1		1			1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
336133																		
Sample Date																		
07/11/05	0705336133SL001	49.2			**0.897**	**0.309**	2.35	0.16	346	14900	0.288	10.8	41.8	0.243	**0.203**	**6.27**	**0.0605**	803
07/13/06	0706336133SL001	66.3			**0.234**	**0.234**	2.41	0.15	162	18600	**0.134**	9.35	37.5	0.234	**0.108**	3.35	**0.125**	676
Mean		57.8	NA	NA	0.565	0.271	2.38	0.16	254	16800	0.211	10.1	39.7	0.239	0.156	4.81	0.093	740
Median		57.8	NA	NA	0.565	0.271	2.38	0.16	254	16800	0.211	10.1	39.7	0.239	0.156	4.81	0.093	740
St. Deviation		12.1	NA	NA	0.469	0.053	0.04	0.01	130	2600	0.109	1	3	0.006	0.067	2.06	0.046	90
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		49.2	NA	NA	0.234	0.234	2.35	0.15	162	14900	0.134	9.35	37.5	0.234	0.108	3.35	0.0605	676
Maximum		66.3	NA	NA	0.897	0.309	2.41	0.16	346	18600	0.288	10.8	41.8	0.243	0.203	6.27	0.125	803
% of values undetected					50%	100%											50%	
of values between MDL and MRL					1						1				2	1	1	
336211																		
Sample Date																		
07/11/05	0705336211SL001	58.3			**0.26**	**0.26**	2.13	0.11	337	24400	0.381	8.64	121	0.562	**0.201**	**2.54**	**0.265**	1990
07/12/06	0706336211SL001	60.8			3.84	**0.625**	3.26	**0.028**	179	17600	0.170	7.23	73.2	0.353	**0.051**	**1.44**	**0.108**	1870
Mean		59.6	NA	NA	2.1	0.44	2.7	0.07	258	21000	0.28	7.94	97	0.458	0.13	1.99	0.187	1930
Median		59.6	NA	NA	2.1	0.44	2.7	0.07	258	21000	0.28	7.94	97	0.458	0.13	1.99	0.187	1930
St. Deviation		1.8	NA	NA	2.5	0.26	0.8	0.06	112	4800	0.15	1	34	0.148	0.11	0.78	0.111	80
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		58.3	NA	NA	0.26	0.26	2.13	0.028	179	17600	0.17	7.23	73.2	0.353	0.051	1.44	0.108	1870
Maximum		60.8	NA	NA	3.84	0.625	3.26	0.11	337	24400	0.381	8.64	121	0.562	0.201	2.54	0.265	1990
% of values undetected					50%	50%									50%	50%		
of values between MDL and MRL						1		1							1	1	2	
336212																		
Sample Date																		
07/11/05	0705336212SL001	28.2			**1.95**	**0.54**	11.7	0.11	1030	6260	**0.128**	**3.3**	34.8	**0.194**	**0.107**	**5.35**	**0.261**	5460
07/11/06	0706336212SL001	54.7			**0.749**	**0.284**	4.00	0.072	487	19900	0.179	7.01	106	0.419	**0.199**	2.58	**0.115**	966
Mean		41.5	NA	NA	1.35	0.412	8	0.09	760	13100	0.154	5.2	70	0.307	0.153	3.97	0.188	3210
Median		41.5	NA	NA	1.35	0.412	8	0.09	760	13100	0.154	5.2	70	0.307	0.153	3.97	0.188	3210
St. Deviation		18.7	NA	NA	0.85	0.181	5	0.03	380	9600	0.036	2.6	50	0.159	0.065	1.96	0.103	3180
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		28.2	NA	NA	0.749	0.284	4	0.072	487	6260	0.128	3.3	34.8	0.194	0.107	2.58	0.115	966
Maximum		54.7	NA	NA	1.95	0.54	11.7	0.11	1030	19900	0.179	7.01	106	0.419	0.199	5.35	0.261	5460
% of values undetected						100%									50%	50%		
of values between MDL and MRL					2						1	1		1	1		2	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
336133																			
Sample Date																			
07/11/05	0705336133SL001	17.6	4.45	15	17900	9.71	2610	212	**0.0765**	**1.01**	7.01	756	**0.92**	**0.0304**	218	0.164	**1.36**	62.8	34.6
07/13/06	0706336133SL001	8.56	3.66	11.3	23700	7.92	2570	161	**0.0538**	**0.576**	5.90	394	1.17	**0.0495**	**94.1**	0.0817	**0.735**	44.8	35.4
Mean		13.1	4.06	13	20800	8.82	2590	187	0.0652	0.79	6.5	575	1	0.0399	156	0.123	1.05	53.8	35
Median		13.1	4.06	13	20800	8.82	2590	187	0.0652	0.79	6.5	575	1	0.0399	156	0.123	1.05	53.8	35
St. Deviation		6.4	0.56	3	4100	1.27	30	36	0.0161	0.31	0.8	256	0.2	0.0135	88	0.058	0.44	12.7	0.6
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		8.56	3.66	11.3	17900	7.92	2570	161	0.0538	0.576	5.9	394	0.92	0.0304	94.1	0.0817	0.735	44.8	34.6
Maximum		17.6	4.45	15	23700	9.71	2610	212	0.0765	1.01	7.01	756	1.17	0.0495	218	0.164	1.36	62.8	35.4
% of values undetected														50%			50%		
of values between MDL and MRL									2	2			1	1	1		1		
336211																			
Sample Date																			
07/11/05	0705336211SL001	14.7	6.51	29.5	19600	8.57	4540	394	**0.0597**	4.09	8.18	824	**0.532**	**0.0254**	177	0.214	**1.12**	79.1	65.6
07/12/06	0706336211SL001	7.23	4.80	16.7	20500	5.58	2580	319	**0.0439**	2.53	4.88	422	1.12	**0.0254**	**78.5**	0.0940	**0.82**	60.5	39.2
Mean		11	5.7	23.1	20100	7.08	3560	357	0.0518	3.31	6.53	623	0.83	0.0254	128	0.15	1	69.8	52.4
Median		11	5.7	23.1	20100	7.08	3560	357	0.0518	3.31	6.53	623	0.83	0.0254	128	0.15	1	69.8	52.4
St. Deviation		5.3	1.2	9.1	600	2.11	1390	53	0.0112	1.1	2.33	284	0.42	0	70	0.08	0.2	13.2	18.7
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		7.23	4.8	16.7	19600	5.58	2580	319	0.0439	2.53	4.88	422	0.532	0.0254	78.5	0.094	0.82	60.5	39.2
Maximum		14.7	6.51	29.5	20500	8.57	4540	394	0.0597	4.09	8.18	824	1.12	0.0254	177	0.214	1.12	79.1	65.6
% of values undetected														100%			50%		
of values between MDL and MRL									2				1		1		1		
336212																			
Sample Date																			
07/11/05	0705336212SL001	5.04	**0.751**	7.8	6480	2.82	472	22.3	**0.135**	**1.43**	1.5	**248**	5.36	**0.0535**	**132**	0.148	**1.73**	13.9	8.06
07/11/06	0706336212SL001	10.6	5.24	21.3	15800	8.65	2630	245	**0.0702**	4.02	7.42	377	1.70	**0.0587**	**83.1**	0.127	**0.875**	54.0	48.8
Mean		7.8	3	15	11100	5.74	1550	134	0.103	2.73	4.5	313	3.5	0.0561	108	0.138	1.3	34	28.4
Median		7.8	3	15	11100	5.74	1550	134	0.103	2.73	4.5	313	3.5	0.0561	108	0.138	1.3	34	28.4
St. Deviation		3.9	3.17	10	6600	4.12	1530	157	0.046	1.83	4.2	91	2.6	0.0037	35	0.015	0.6	28	28.8
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		5.04	0.751	7.8	6480	2.82	472	22.3	0.0702	1.43	1.5	248	1.7	0.0535	83.1	0.127	0.875	13.9	8.06
Maximum		10.6	5.24	21.3	15800	8.65	2630	245	0.135	4.02	7.42	377	5.36	0.0587	132	0.148	1.73	54	48.8
% of values undetected														50%			100%		
of values between MDL and MRL			1						2	1		1		1	2				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
336231																		
	Sample Date																	
07/11/05	0705336231SL001	16.3		6.5	**4.8**	**0.93**	30	**0.046**	2000	3880	**0.199**	7.73	36.4	**0.257**	**0.190**	**9.45**	**0.43**	3380
07/20/07	0707336231SL001	18.6	5.1	4.2	**5.0**	**0.25**	25	**0.50**	**0.25**	7160	**0.5**	5.2	48.70	**0.27**	**10**	**5.0**	**0.28**	3740
	Mean	17.5	5.1	5.4	4.9	0.59	28	0.27	1000	5520	0.35	6.5	42.6	0.26	5	7.2	0.36	3560
	Median	17.5	5.1	5.4	4.9	0.59	28	0.27	1000	5520	0.35	6.5	42.6	0.26	5	7.2	0.36	3560
	St. Deviation	1.6	NA	1.6	0.1	0.48	4	0.32	1400	2320	0.21	1.8	8.7	0.01	7	3.1	0.11	250
	# of values	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	16.3	5.1	4.2	4.8	0.25	25	0.046	0.25	3880	0.199	5.2	36.4	0.257	0.190	5.0	0.28	3380
	Maximum	18.6	5.1	6.5	5.0	0.93	30	0.50	2000	7160	0.5	7.73	48.7	0.27	10	9.45	0.43	3740
	% of values undetected					100%		50%	50%						100%	100%		
	of values between MDL and MRL				2			1			2			2			2	
336241																		
	Sample Date																	
07/11/05	0705336241SL001	45			**1.71**	**5.5**	**1.71**	0.23	449	13000	0.347	7.19	55.2	0.235	**0.325**	**3.32**	**0.317**	1290
	Mean	45	NA	NA	1.71	5.5	1.71	0.23	449	13000	0.347	7.19	55.2	0.235	0.325	3.32	0.317	1290
	Median	45	NA	NA	1.71	5.5	1.71	0.23	449	13000	0.347	7.19	55.2	0.235	0.325	3.32	0.317	1290
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	45	NA	NA	1.71	5.5	1.71	0.23	449	13000	0.347	7.19	55.2	0.235	0.325	3.32	0.317	1290
	Maximum	45	NA	NA	1.71	5.5	1.71	0.23	449	13000	0.347	7.19	55.2	0.235	0.325	3.32	0.317	1290
	% of values undetected				100%	100%	100%									100%		
	of values between MDL and MRL														1		1	
336242																		
	Sample Date																	
07/11/05	0705336242SL001	40.4			**0.378**	**0.378**	3.39	0.24	717	27400	0.309	9.6	105	0.558	**0.197**	**3.825**	0.583	2580
	Mean	40.4	NA	NA	0.378	0.378	3.39	0.24	717	27400	0.309	9.6	105	0.558	0.197	3.825	0.583	2580
	Median	40.4	NA	NA	0.378	0.378	3.39	0.24	717	27400	0.309	9.6	105	0.558	0.197	3.825	0.583	2580
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	40.4	NA	NA	0.378	0.378	3.39	0.24	717	27400	0.309	9.6	105	0.558	0.197	3.825	0.583	2580
	Maximum	40.4	NA	NA	0.378	0.378	3.39	0.24	717	27400	0.309	9.6	105	0.558	0.197	3.825	0.583	2580
	% of values undetected				100%	100%										100%		
	of values between MDL and MRL														1			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
336231																			
	Sample Date																		
07/11/05	0705336231SL001	6.93	**2.48**	21.4	9730	1.29	291	190	**0.156**	**0.945**	1.46	**94.5**	12.7	**0.0945**	**94.5**	0.25	**3.06**	**17.7**	8.8
07/20/07	0707336231SL001	8.39	2.97	18.9	3690	1.20	390	160	**0.50**	1.3	2.5	**100**	1.40	**0.07**	240	**0.14**	**5**	**2.5**	7
	Mean	7.66	2.73	20.2	6710	1.2	340	180	0.33	1.1	2	100	7	0.082	170	0.2	4	10	7.9
	Median	7.66	2.73	20.2	6710	1.2	340	180	0.33	1.1	2	100	7	0.082	170	0.2	4	10	7.9
	St. Deviation	1.03	0.35	1.8	4270	0.1	70	20	0.24	0.3	0.7	0	8	0.017	100	0.08	1.4	11	1.3
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	6.93	2.48	18.9	3690	1.2	291	160	0.156	0.945	1.46	94.5	1.4	0.07	94.5	0.14	3.055	2.5	7
	Maximum	8.39	2.97	21.4	9730	1.29	390	190	0.50	1.3	2.5	100	12.7	0.0945	240	0.25	5	17.7	8.8
	% of values undetected									50%		50%		50%	50%		100%	50%	
	of values between MDL and MRL		1						2			1		1		1		1	
336241																			
	Sample Date																		
07/11/05	0705336241SL001	22	4.78	74.9	12300	9.44	1970	97.7	0.113	**1.49**	10.4	504	2.87	0.262	**182**	0.172	**1.07**	56	77.9
	Mean	22	4.78	74.9	12300	9.44	1970	97.7	0.113	1.49	10.4	504	2.87	0.262	182	0.172	1.07	56	77.9
	Median	22	4.78	74.9	12300	9.44	1970	97.7	0.113	1.49	10.4	504	2.87	0.262	182	0.172	1.07	56	77.9
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	22	4.78	74.9	12300	9.44	1970	97.7	0.113	1.49	10.4	504	2.87	0.262	182	0.172	1.07	56	77.9
	Maximum	22	4.78	74.9	12300	9.44	1970	97.7	0.113	1.49	10.4	504	2.87	0.262	182	0.172	1.07	56	77.9
	% of values undetected																100%		
	of values between MDL and MRL									1					1				
336242																			
	Sample Date																		
07/11/05	0705336242SL001	27.4	10.9	150	24400	8.95	4800	244	0.146	**1.51**	27.2	1080	4.36	**0.186**	251	0.263	**1.24**	76.7	91.8
	Mean	27.4	10.9	150	24400	8.95	4800	244	0.146	1.51	27.2	1080	4.36	0.186	251	0.263	1.24	76.7	91.8
	Median	27.4	10.9	150	24400	8.95	4800	244	0.146	1.51	27.2	1080	4.36	0.186	251	0.263	1.24	76.7	91.8
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	27.4	10.9	150	24400	8.95	4800	244	0.146	1.51	27.2	1080	4.36	0.186	251	0.263	1.24	76.7	91.8
	Maximum	27.4	10.9	150	24400	8.95	4800	244	0.146	1.51	27.2	1080	4.36	0.186	251	0.263	1.24	76.7	91.8
	% of values undetected																100%		
	of values between MDL and MRL									1				1					

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
336261																		
	Sample Date																	
07/11/05	0705336261SL001	38.5			**0.397**	**0.397**	**0.397**	0.11	558	19800	**0.20**	7.14	94.6	**0.219**	**0.309**	**3.955**	**0.321**	1070
08/08/05	0805336261SL001	42.1			**0.358**	**0.358**	**1.73**	0.14	463	27400	**0.0363**	**2.11**	34.7	**0.226**	**0.0725**	2.62	**0.0725**	375
07/20/07	0707336261SL001	29.6	4.2	9.4	**1.5**	**0.25**	14	**0.40**	**0.25**	18400	**0.20**	3.3	50.40	**0.16**	**10**	**5.0**	0.30	720
	Mean	36.7	4.2	9.4	0.75	0.34	5.4	0.22	340	21900	0.15	4.18	59.9	0.202	3.5	3.86	0.231	720
	Median	38.5	4.2	9.4	0.397	0.358	1.73	0.14	463	19800	0.2	3.3	50.4	0.219	0.309	3.955	0.3	720
	St. Deviation	6.4	NA	NA	0.65	0.076	7.5	0.16	298	4800	0.09	2.63	31.1	0.036	5.73	1.19	0.138	350
	# of values	3	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Minimum	29.6	4.2	9.4	0.358	0.25	0.397	0.11	0.25	18400	0.0363	2.11	34.7	0.16	0.0725	2.62	0.0725	375
	Maximum	42.1	4.2	9.4	1.5	0.397	14	0.40	558	27400	0.20	7.14	94.6	0.226	10	5.0	0.321	1070
	% of values undetected				100%	100%	33%	33%	33%		33%				67%	67%	33%	
	of values between MDL and MRL						1				2	1		3	1		1	
336281																		
	Sample Date																	
07/11/05	0705336281SL001	24.7		6.3	**0.311**	**0.311**	13	0.084	1050	23500	**0.272**	5.52	117	0.647	**0.124**	**6.15**	**0.383**	4390
07/11/05	0705336281SS001	20.8			**1.42**	**0.71**	43.3	**0.041**	818	8010	**0.361**	**4.27**	39.5	**0.432**	**0.147**	**7.35**	**0.478**	2650
	Mean	22.8	NA	6.3	0.87	0.51	28	0.063	930	15800	0.317	4.9	78	0.54	0.135	6.75	0.431	3520
	Median	22.8	NA	6.3	0.87	0.51	28	0.063	930	15800	0.317	4.9	78	0.54	0.135	6.75	0.431	3520
	St. Deviation	2.8	NA	NA	0.78	0.282	21	0.03	160	11000	0.063	0.88	55	0.152	0.016	0.85	0.067	1230
	# of values	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	20.8	NA	6.3	0.311	0.311	13	0.041	818	8010	0.272	4.27	39.5	0.432	0.124	6.15	0.383	2650
	Maximum	24.7	NA	6.3	1.42	0.71	43.3	0.084	1050	23500	0.361	5.52	117	0.647	0.147	7.35	0.478	4390
	% of values undetected				50%	100%									100%	100%		
	of values between MDL and MRL				1			1			2	1		1			2	
336282																		
	Sample Date																	
07/11/05	0705336282SL001	42.5			**0.362**	**0.362**	4.29	0.11	526	13600	**0.159**	2.88	78.5	0.341	**0.071**	**3.54**	**0.071**	2290
	Mean	42.5	NA	NA	0.362	0.362	4.29	0.11	526	13600	0.159	2.88	78.5	0.341	0.071	3.54	0.071	2290
	Median	42.5	NA	NA	0.362	0.362	4.29	0.11	526	13600	0.159	2.88	78.5	0.341	0.071	3.54	0.071	2290
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	42.5	NA	NA	0.362	0.362	4.29	0.11	526	13600	0.159	2.88	78.5	0.341	0.071	3.54	0.071	2290
	Maximum	42.5	NA	NA	0.362	0.362	4.29	0.11	526	13600	0.159	2.88	78.5	0.341	0.071	3.54	0.071	2290
	% of values undetected				100%	100%									100%	100%	100%	
	of values between MDL and MRL										1							

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
336261																			
	Sample Date																		
07/11/05	0705336261SL001	12	4.61	16	15200	9.07	3320	217	0.12	**1.11**	6.67	530	5.13	**0.0396**	210	0.236	**1.28**	58.6	32.6
08/08/05	0805336261SL001	3.84	1.63	6.84	9180	3.31	797	50.9	0.229	**0.363**	2.39	311	2.06	**0.0363**	87.4	0.107	**0.363**	16.1	9.57
07/20/07	0707336261SL001	3.11	3.33	8.2	2360	3.54	400	24.6	0.10	**0.50**	2.4	440	1.82	0.12	120	0.06	5	2.5	11
	Mean	6.3	3.19	10	8900	5.31	1510	98	0.15	0.66	3.82	430	3	0.065	140	0.134	2.21	25.7	17.7
	Median	3.84	3.33	8.2	9180	3.54	797	50.9	0.12	0.5	2.4	440	2.06	0.0396	120	0.107	1.28	16.1	11
	St. Deviation	4.9	1.49	5	6400	3.26	1580	104	0.07	0.43	2.47	110	1.85	0.047	60	0.091	2.46	29.3	12.9
	# of values	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Minimum	3.11	1.63	6.84	2360	3.31	400	24.6	0.10	0.363	2.39	311	1.82	0.0363	87.4	0.06	0.363	2.5	9.57
	Maximum	12	4.61	16	15200	9.07	3320	217	0.229	1.11	6.67	530	5.13	0.12	210	0.236	5	58.6	32.6
	% of values undetected									67%				67%			100%	33%	
	of values between MDL and MRL								1	1					3	1			
336281																			
	Sample Date																		
07/11/05	0705336281SL001	15.6	4.5	24.7	14100	8.11	3510	166	0.171	4.23	6.91	433	9.55	**0.0615**	245	0.482	**1.99**	60.3	53.2
07/11/05	0705336281SS001	7.86	**1.39**	17	3950	2.32	674	46.4	**0.117**	6.04	1.64	**73.5**	10.2	**0.0735**	173	**0.0861**	**2.37**	25	12.1
	Mean	11.7	2.9	21	9000	5.22	2090	106	0.144	5.14	4.28	253	9.9	0.0675	209	0.284	2.18	43	32.7
	Median	11.7	2.9	21	9000	5.22	2090	106	0.144	5.14	4.28	253	9.9	0.0675	209	0.284	2.18	43	32.7
	St. Deviation	5.5	2.2	5	7200	4.09	2010	85	0.038	1.28	3.73	254	0.5	0.0085	51	0.28	0.27	25	29.1
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	7.86	1.39	17	3950	2.32	674	46.4	0.117	4.23	1.64	73.5	9.55	0.0615	173	0.0861	1.99	25	12.1
	Maximum	15.6	4.5	24.7	14100	8.11	3510	166	0.171	6.04	6.91	433	10.2	0.0735	245	0.482	2.37	60.3	53.2
	% of values undetected											50%		100%			100%		
	of values between MDL and MRL		1						1						2	1			
336282																			
	Sample Date																		
07/11/05	0705336282SL001	8.64	3.2	12.1	9600	4.96	1990	134	0.114	**2.03**	4.11	**212**	4.06	**0.0354**	**152**	0.126	**1.14**	38.7	31.2
	Mean	8.64	3.2	12.1	9600	4.96	1990	134	0.114	2.03	4.11	212	4.06	0.0354	152	0.126	1.14	38.7	31.2
	Median	8.64	3.2	12.1	9600	4.96	1990	134	0.114	2.03	4.11	212	4.06	0.0354	152	0.126	1.14	38.7	31.2
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	8.64	3.2	12.1	9600	4.96	1990	134	0.114	2.03	4.11	212	4.06	0.0354	152	0.126	1.14	38.7	31.2
	Maximum	8.64	3.2	12.1	9600	4.96	1990	134	0.114	2.03	4.11	212	4.06	0.0354	152	0.126	1.14	38.7	31.2
	% of values undetected													100%			100%		
	of values between MDL and MRL									1		1			1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
336341																		
Sample Date																		
07/13/05	0705336341SL001	56.8			**0.267**	**0.267**	**1.15**	0.22	254	26600	**0.131**	6.93	85.7	0.406	**0.145**	**9.34**	**0.3**	2930
Mean		56.8	NA	NA	0.267	0.267	1.15	0.22	254	26600	0.131	6.93	85.7	0.406	0.145	9.34	0.3	2930
Median		56.8	NA	NA	0.267	0.267	1.15	0.22	254	26600	0.131	6.93	85.7	0.406	0.145	9.34	0.3	2930
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		56.8	NA	NA	0.267	0.267	1.15	0.22	254	26600	0.131	6.93	85.7	0.406	0.145	9.34	0.3	2930
Maximum		56.8	NA	NA	0.267	0.267	1.15	0.22	254	26600	0.131	6.93	85.7	0.406	0.145	9.34	0.3	2930
% of values undetected					100%	100%					100%							
of values between MDL and MRL							1								1	1	1	
336342																		
Sample Date																		
07/13/05	0705336342SL001	38.3			**1.21**	**0.926**	2.75	0.25	735	22100	**0.118**	3.44	85.5	0.509	**0.166**	**3.95**	**0.079**	4460
07/12/06	0706336342SL001	27.0			5.86	**1.33**	10.3	0.12	1230	17400	**0.0555**	3.83	73.4	0.753	**0.111**	**0.555**	**0.111**	5250
Mean		33	NA	NA	3.54	1.13	6.5	0.19	980	19800	0.087	3.64	79.5	0.631	0.138	2.25	0.095	4860
Median		33	NA	NA	3.54	1.13	6.5	0.19	980	19800	0.087	3.64	79.5	0.631	0.138	2.25	0.095	4860
St. Deviation		8	NA	NA	3.29	0.29	5.3	0.09	350	3300	0.044	0.28	8.6	0.173	0.039	2.4	0.022	560
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		27	NA	NA	1.21	0.926	2.75	0.12	735	17400	0.0555	3.44	73.4	0.509	0.111	0.555	0.079	4460
Maximum		38.3	NA	NA	5.86	1.33	10.3	0.25	1230	22100	0.118	3.83	85.5	0.753	0.166	3.95	0.111	5250
% of values undetected											50%				50%	100%	100%	
of values between MDL and MRL					1	2					1				1			
336361																		
Sample Date																		
07/13/05	0705336361SL001	38.5		3.9	**1.06**	**0.399**	**2.16**	0.2	654	5030	**0.177**	3.66	28.8	**0.115**	**0.485**	**3.905**	**0.078**	906
07/16/06	0706336361SL001	63.6			**0.502**	**0.244**	2.31	0.12	169	11100	**0.0947**	2.18	26.0	**0.0979**	0.935	3.13	**0.0466**	1120
Mean		51.1	NA	3.9	0.78	0.321	2.24	0.16	412	8100	0.136	2.92	27	0.106	0.71	3.52	0.0623	1010
Median		51.1	NA	3.9	0.78	0.321	2.24	0.16	412	8100	0.136	2.92	27	0.106	0.71	3.52	0.0623	1010
St. Deviation		17.7	NA	NA	0.39	0.11	0.11	0.06	343	4300	0.058	1.05	2	0.012	0.318	0.55	0.0222	150
# of values		2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		38.5	NA	3.9	0.502	0.244	2.16	0.12	169	5030	0.0947	2.18	26	0.0979	0.485	3.13	0.0466	906
Maximum		63.6	NA	3.9	1.06	0.399	2.31	0.2	654	11100	0.177	3.66	28.8	0.115	0.935	3.905	0.078	1120
% of values undetected						100%										50%	100%	
of values between MDL and MRL					2		1				2			2	1			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
336341																			
Sample Date																			
07/13/05	0705336341SL001	11.8	9.66	18.5	25500	9.18	7390	447	0.203	**0.806**	10.8	**340**	2.67	**0.0628**	**131**	0.0936	**4.23**	62.8	37.8
Mean		11.8	9.66	18.5	25500	9.18	7390	447	0.203	0.806	10.8	340	2.67	0.0628	131	0.0936	4.23	62.8	37.8
Median		11.8	9.66	18.5	25500	9.18	7390	447	0.203	0.806	10.8	340	2.67	0.0628	131	0.0936	4.23	62.8	37.8
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		11.8	9.66	18.5	25500	9.18	7390	447	0.203	0.806	10.8	340	2.67	0.0628	131	0.0936	4.23	62.8	37.8
Maximum		11.8	9.66	18.5	25500	9.18	7390	447	0.203	0.806	10.8	340	2.67	0.0628	131	0.0936	4.23	62.8	37.8
% of values undetected															100%		100%		
of values between MDL and MRL										1		1		1					
336342																			
Sample Date																			
07/13/05	0705336342SL001	8.52	4.3	10.2	13000	6.66	4040	189	0.25	**0.835**	4.8	421	4.13	**0.0395**	**248**	0.096	**1.28**	42	22.9
07/12/06	0706336342SL001	5.52	3.97	8.11	11500	6.07	2590	220	**0.0864**	**0.555**	3.92	378	5.02	**0.159**	**159**	**0.0691**	**1.79**	35.3	16.7
Mean		7.02	4.1	9.2	12000	6.37	3320	200	0.17	0.695	4.4	400	4.58	0.099	204	0.083	1.53	39	19.8
Median		7.02	4.1	9.2	12000	6.37	3320	200	0.17	0.695	4.4	400	4.58	0.099	204	0.083	1.53	39	19.8
St. Deviation		2.12	0.2	1.5	1000	0.42	1030	20	0.12	0.198	0.6	30	0.63	0.084	63	0.019	0.36	5	4.4
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		5.52	3.97	8.11	11500	6.07	2590	189	0.0864	0.555	3.92	378	4.13	0.0395	159	0.0691	1.275	35.3	16.7
Maximum		8.52	4.3	10.2	13000	6.66	4040	220	0.25	0.835	4.8	421	5.02	0.159	248	0.096	1.785	42	22.9
% of values undetected										50%				50%			100%		
of values between MDL and MRL									1	1				1	2	1			
336361																			
Sample Date																			
07/13/05	0705336361SL001	18.5	3.56	59.4	11200	8.49	889	90.6	0.352	**2.34**	5.94	594	2.82	**0.0953**	**215**	0.158	**1.26**	68.9	15.7
07/16/06	0706336361SL001	15.4	6.98	163	23200	13.3	3440	249	**0.0471**	1.84	9.88	475	0.933	0.196	**89.3**	0.0479	**0.23**	77.2	42.6
Mean		17	5.27	111	17200	10.9	2160	170	0.2	2.09	7.91	535	1.88	0.146	152	0.103	0.75	73.1	29.2
Median		17	5.27	111	17200	10.9	2160	170	0.2	2.09	7.91	535	1.88	0.146	152	0.103	0.75	73.1	29.2
St. Deviation		2.2	2.42	73	8500	3.4	1800	112	0.216	0.35	2.79	84	1.33	0.071	89	0.078	0.73	5.9	19
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		15.4	3.56	59.4	11200	8.49	889	90.6	0.0471	1.84	5.94	475	0.933	0.0953	89.3	0.0479	0.23	68.9	15.7
Maximum		18.5	6.98	163	23200	13.3	3440	249	0.352	2.34	9.88	594	2.82	0.196	215	0.158	1.26	77.2	42.6
% of values undetected																	100%		
of values between MDL and MRL									1	1				1	2				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
336362																		
	Sample Date																	
07/13/05	0705336362SL001	34.6			**0.446**	**0.446**	**2.76**	0.24	214	41800	0.321	18	189	0.942	**0.267**	**4.36**	**0.339**	2970
07/14/06	0706336362SL001	33.7		27.5	**0.459**	**0.459**	6.10	0.21	1160	48000	**0.208**	13.0	153	0.661	**0.225**	4.79	**0.200**	2050
07/20/07	0707336362SL001	29.3	4.7	6.1	11	**0.90**	11	**0.40**	13.8	51600	**0.40**	11.7	169	0.69	**50**	**25**	**0.25**	2940
	Mean	32.5	4.7	16.8	4	0.60	7	0.28	460	47100	0.31	14	170	0.764	16.8	11.4	0.26	2650
	Median	33.7	4.7	16.8	0.459	0.459	6.1	0.24	214	48000	0.321	13	169	0.69	0.267	4.79	0.25	2940
	St. Deviation	2.8	NA	15.1	6.1	0.258	4	0.1	610	5000	0.097	3	18	0.155	28.7	11.8	0.07	520
	# of values	3	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Minimum	29.3	4.7	6.1	0.446	0.446	2.76	0.21	13.8	41800	0.208	11.7	153	0.661	0.225	4.36	0.2	2050
	Maximum	34.6	4.7	27.5	11	0.90	11	0.40	1160	51600	0.40	18	189	0.942	50	25	0.339	2970
	% of values undetected				67%	67%		33%							33%	67%		
	of values between MDL and MRL					1	1				2				2		3	
435061																		
	Sample Date																	
07/14/05	0705435061SL001	22.3			**0.68**	**1.58**	**2.55**	0.15	1140	9220	0.67	18.5	81.8	0.689	**0.60**	**6.85**	1.69	18700
	Mean	22.3	NA	NA	0.68	1.58	2.55	0.15	1140	9220	0.67	18.5	81.8	0.689	0.60	6.85	1.69	18700
	Median	22.3	NA	NA	0.68	1.58	2.55	0.15	1140	9220	0.67	18.5	81.8	0.689	0.60	6.85	1.69	18700
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	22.3	NA	NA	0.68	1.58	2.55	0.15	1140	9220	0.67	18.5	81.8	0.689	0.60	6.85	1.69	18700
	Maximum	22.3	NA	NA	0.68	1.58	2.55	0.15	1140	9220	0.67	18.5	81.8	0.689	0.60	6.85	1.69	18700
	% of values undetected				100%											100%		
	of values between MDL and MRL					1	1								1			
435062																		
	Sample Date																	
07/14/05	0705435062SL001	46.6			**0.328**	**0.328**	**1.82**	0.29	737	16600	0.353	24.8	99.2	0.877	1.05	**3.27**	0.618	4780
	Mean	46.6	NA	NA	0.328	0.328	1.82	0.29	737	16600	0.353	24.8	99.2	0.877	1.05	3.27	0.618	4780
	Median	46.6	NA	NA	0.328	0.328	1.82	0.29	737	16600	0.353	24.8	99.2	0.877	1.05	3.27	0.618	4780
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	46.6	NA	NA	0.328	0.328	1.82	0.29	737	16600	0.353	24.8	99.2	0.877	1.05	3.27	0.618	4780
	Maximum	46.6	NA	NA	0.328	0.328	1.82	0.29	737	16600	0.353	24.8	99.2	0.877	1.05	3.27	0.618	4780
	% of values undetected				100%	100%										100%		
	of values between MDL and MRL						1											

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
336362																			
	Sample Date																		
07/13/05	0705336362SL001	35.3	11.2	197	31100	11	6150	392	0.382	4.15	21.9	970	8.71	1.1	234	0.241	**1.405**	123	69.7
07/14/06	0706336362SL001	25.5	9.45	152	39500	9.67	4630	377	0.179	3.33	17.9	642	3.66	0.934	138	0.199	**0.44**	95.5	55.3
07/20/07	0707336362SL001	42.40	10.10	195	13700	13.10	6410	260	0.6	3.1	28.7	810	3.61	0.53	330	0.34	**5.0**	**10**	72
	Mean	34.4	10.3	181	28100	11.3	5730	343	0.387	3.53	22.8	810	5.33	0.9	234	0.26	2.28	76	65.7
	Median	35.3	10.1	195	31100	11	6150	377	0.382	3.33	21.9	810	3.66	0.934	234	0.241	1.405	95.5	69.7
	St. Deviation	8.5	0.9	25	13200	1.7	960	72	0.211	0.553	5.5	160	2.93	0.3	96	0.072	2.4	59	9.1
	# of values	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Minimum	25.5	9.45	152	13700	9.67	4630	260	0.179	3.1	17.9	642	3.61	0.53	138	0.199	0.44	10	55.3
	Maximum	42.4	11.2	197	39500	13.1	6410	392	0.6	4.15	28.7	970	8.71	1.1	330	0.34	5.0	123	72
	% of values undetected																100%	33%	
	of values between MDL and MRL							1							2				
435061																			
	Sample Date																		
07/14/05	0705435061SL001	6.52	4.9	38.8	17900	48	2140	2070	0.719	**1.76**	4.06	1020	6.46	0.767	**151**	0.324	**2.21**	33	203
	Mean	6.52	4.9	38.8	17900	48	2140	2070	0.719	1.76	4.06	1020	6.46	0.767	151	0.324	2.21	33	203
	Median	6.52	4.9	38.8	17900	48	2140	2070	0.719	1.76	4.06	1020	6.46	0.767	151	0.324	2.21	33	203
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	6.52	4.9	38.8	17900	48	2140	2070	0.719	1.76	4.06	1020	6.46	0.767	151	0.324	2.21	33	203
	Maximum	6.52	4.9	38.8	17900	48	2140	2070	0.719	1.76	4.06	1020	6.46	0.767	151	0.324	2.21	33	203
	% of values undetected																100%		
	of values between MDL and MRL									1					1				
435062																			
	Sample Date																		
07/14/05	0705435062SL001	7.88	5.63	25.3	23000	68.2	2060	1810	0.284	**2.08**	3.54	946	4.35	1.24	**134**	0.398	**1.06**	57.4	228
	Mean	7.88	5.63	25.3	23000	68.2	2060	1810	0.284	2.08	3.54	946	4.35	1.24	134	0.398	1.06	57.4	228
	Median	7.88	5.63	25.3	23000	68.2	2060	1810	0.284	2.08	3.54	946	4.35	1.24	134	0.398	1.06	57.4	228
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	7.88	5.63	25.3	23000	68.2	2060	1810	0.284	2.08	3.54	946	4.35	1.24	134	0.398	1.06	57.4	228
	Maximum	7.88	5.63	25.3	23000	68.2	2060	1810	0.284	2.08	3.54	946	4.35	1.24	134	0.398	1.06	57.4	228
	% of values undetected																100%		
	of values between MDL and MRL									1					1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
435161																		
Sample Date																		
07/14/05	0705435161SL001	80.9		0.93	**0.509**	**0.188**	2.41	0.1	108	15100	0.282	14.9	59.1	0.377	**0.108**	**1.90**	**0.179**	920
Mean		80.9	NA	0.93	0.509	0.188	2.41	0.1	108	15100	0.282	14.9	59.1	0.377	0.108	1.90	0.179	920
Median		80.9	NA	0.93	0.509	0.188	2.41	0.1	108	15100	0.282	14.9	59.1	0.377	0.108	1.90	0.179	920
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		80.9	NA	0.93	0.509	0.188	2.41	0.1	108	15100	0.282	14.9	59.1	0.377	0.108	1.90	0.179	920
Maximum		80.9	NA	0.93	0.509	0.188	2.41	0.1	108	15100	0.282	14.9	59.1	0.377	0.108	1.90	0.179	920
% of values undetected						100%										100%		
of values between MDL and MRL					1										1		1	
435162																		
Sample Date																		
07/14/05	0705435162SL001	76.4			**0.201**	**0.414**	**0.946**	**0.053**	48.3	11000	0.196	8.69	41.9	0.291	**0.0396**	**1.98**	**0.0396**	1200
Mean		76.4	NA	NA	0.201	0.414	0.946	0.053	48.3	11000	0.196	8.69	41.9	0.291	0.0396	1.98	0.0396	1200
Median		76.4	NA	NA	0.201	0.414	0.946	0.053	48.3	11000	0.196	8.69	41.9	0.291	0.0396	1.98	0.0396	1200
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		76.4	NA	NA	0.201	0.414	0.946	0.053	48.3	11000	0.196	8.69	41.9	0.291	0.0396	1.98	0.0396	1200
Maximum		76.4	NA	NA	0.201	0.414	0.946	0.053	48.3	11000	0.196	8.69	41.9	0.291	0.0396	1.98	0.0396	1200
% of values undetected					100%										100%	100%	100%	
of values between MDL and MRL						1	1	1										
435221																		
Sample Date																		
08/09/05	0805435221SL001	73.6			**0.206**	**0.206**	**0.691**	0.22	144	12400	0.134	7.58	34.2	0.211	**0.12**	3.08	**0.0413**	570
Mean		73.6	NA	NA	0.206	0.206	0.691	0.22	144	12400	0.134	7.58	34.2	0.211	0.12	3.08	0.0413	570
Median		73.6	NA	NA	0.206	0.206	0.691	0.22	144	12400	0.134	7.58	34.2	0.211	0.12	3.08	0.0413	570
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		73.6	NA	NA	0.206	0.206	0.691	0.22	144	12400	0.134	7.58	34.2	0.211	0.12	3.08	0.0413	570
Maximum		73.6	NA	NA	0.206	0.206	0.691	0.22	144	12400	0.134	7.58	34.2	0.211	0.12	3.08	0.0413	570
% of values undetected					100%	100%											100%	
of values between MDL and MRL							1								1			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
435161																			
Sample Date																			
07/14/05	0705435161SL001	15.1	5.65	14.4	20200	8.46	3850	311	0.137	**0.706**	8.56	534	1.35	**0.0506**	139	0.0785	**0.61**	43.5	41.1
Mean		15.1	5.65	14.4	20200	8.46	3850	311	0.137	0.706	8.56	534	1.35	0.0506	139	0.0785	0.61	43.5	41.1
Median		15.1	5.65	14.4	20200	8.46	3850	311	0.137	0.706	8.56	534	1.35	0.0506	139	0.0785	0.61	43.5	41.1
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		15.1	5.65	14.4	20200	8.46	3850	311	0.137	0.706	8.56	534	1.35	0.0506	139	0.0785	0.61	43.5	41.1
Maximum		15.1	5.65	14.4	20200	8.46	3850	311	0.137	0.706	8.56	534	1.35	0.0506	139	0.0785	0.61	43.5	41.1
% of values undetected																	100%		
of values between MDL and MRL										1				1					
435162																			
Sample Date																			
07/14/05	0705435162SL001	10.6	3.81	8.64	15200	6.41	3050	186	0.126	**0.658**	5.36	394	0.705	**0.0198**	128	0.0526	**0.64**	39.5	34.6
Mean		10.6	3.81	8.64	15200	6.41	3050	186	0.126	0.658	5.36	394	0.705	0.0198	128	0.0526	0.64	39.5	34.6
Median		10.6	3.81	8.64	15200	6.41	3050	186	0.126	0.658	5.36	394	0.705	0.0198	128	0.0526	0.64	39.5	34.6
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		10.6	3.81	8.64	15200	6.41	3050	186	0.126	0.658	5.36	394	0.705	0.0198	128	0.0526	0.64	39.5	34.6
Maximum		10.6	3.81	8.64	15200	6.41	3050	186	0.126	0.658	5.36	394	0.705	0.0198	128	0.0526	0.64	39.5	34.6
% of values undetected														100%			100%		
of values between MDL and MRL										1									
435221																			
Sample Date																			
08/09/05	0805435221SL001	8.28	2.58	6.87	14700	6.5	1760	152	0.0711	**0.436**	3.54	292	1.12	**0.042**	**124**	0.0773	**0.2065**	35.4	22.8
Mean		8.28	2.58	6.87	14700	6.5	1760	152	0.0711	0.436	3.54	292	1.12	0.042	124	0.0773	0.2065	35.4	22.8
Median		8.28	2.58	6.87	14700	6.5	1760	152	0.0711	0.436	3.54	292	1.12	0.042	124	0.0773	0.2065	35.4	22.8
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		8.28	2.58	6.87	14700	6.5	1760	152	0.0711	0.436	3.54	292	1.12	0.042	124	0.0773	0.2065	35.4	22.8
Maximum		8.28	2.58	6.87	14700	6.5	1760	152	0.0711	0.436	3.54	292	1.12	0.042	124	0.0773	0.2065	35.4	22.8
% of values undetected																	100%		
of values between MDL and MRL										1				1	1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
435222																		
Sample Date																		
08/09/05	0805435222SL001	75.1			**0.408**	**0.204**	**1.24**	0.14	116	15700	0.151	9.37	36.9	0.173	**0.154**	3.59	**0.0815**	774
07/14/06	0706435222SL001	74.3			**0.209**	**0.209**	2.17	0.15	128	13600	**0.114**	7.84	28.8	0.188	**0.122**	2.62	**0.0829**	517
Mean		74.7	NA	NA	0.308	0.206	1.71	0.15	122	14700	0.133	8.61	32.9	0.181	0.138	3.11	0.0822	646
Median		74.7	NA	NA	0.308	0.206	1.71	0.15	122	14700	0.133	8.61	32.9	0.181	0.138	3.11	0.0822	646
St. Deviation		0.6	NA	NA	0.141	0.003	0.66	0.01	8	1500	0.026	1.08	5.7	0.011	0.023	0.69	0.001	182
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		74.3	NA	NA	0.209	0.204	1.24	0.14	116	13600	0.114	7.84	28.8	0.173	0.122	2.62	0.0815	517
Maximum		75.1	NA	NA	0.408	0.209	2.17	0.15	128	15700	0.151	9.37	36.9	0.188	0.154	3.59	0.0829	774
% of values undetected					50%	100%												
of values between MDL and MRL					1		1				1				2		2	
435223																		
Sample Date																		
08/09/05	0805435223SL001	80.4			**0.184**	**0.184**	**0.545**	0.099	91.4	11000	0.172	8.83	62.7	0.293	**0.101**	3.49	**0.0985**	1450
07/14/06	0706435223SL001	83.9			**0.185**	**0.185**	1.30	0.10	50.0	12700	**0.110**	6.88	49.6	0.237	**0.0364**	1.90	**0.123**	1340
Mean		82.2	NA	NA	0.184	0.184	0.9	0.1	71	12000	0.14	7.86	56.2	0.265	0.069	2.7	0.111	1400
Median		82.2	NA	NA	0.184	0.184	0.9	0.1	71	12000	0.14	7.86	56.2	0.265	0.069	2.7	0.111	1400
St. Deviation		2.5	NA	NA	0	0	0.5	0	29	1000	0.04	1.38	9.3	0.04	0.046	1.1	0.017	80
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		80.4	NA	NA	0.184	0.184	0.545	0.099	50	11000	0.11	6.88	49.6	0.237	0.0364	1.9	0.0985	1340
Maximum		83.9	NA	NA	0.185	0.185	1.3	0.1	91.4	12700	0.172	8.83	62.7	0.293	0.101	3.49	0.123	1450
% of values undetected					100%	100%									50%			
of values between MDL and MRL							1				1				1		2	
435301																		
Sample Date																		
07/15/05	0705435301SL001	69			**0.685**	**0.221**	1.47	0.14	252	13100	**0.291**	7.8	32.4	0.282	**0.16**	**2.21**	**0.0891**	874
07/20/07	0707435301SL001	78.7	5.0	0.8	**1.5**	**0.25**	**7.0**	**0.15**	**0.25**	23800	**0.3**	9.2	58.30	0.52	**10**	**5.0**	**0.14**	1920
Mean		74	5	0.8	1.1	0.24	4.2	0.15	130	18500	0.3	8.5	45.4	0.4	5	3.6	0.11	1400
Median		74	5	0.8	1.1	0.24	4.2	0.15	130	18500	0.3	8.5	45.4	0.4	5	3.6	0.11	1400
St. Deviation		7	NA	NA	0.6	0.02	3.9	0.01	180	7600	0.01	1	18.3	0.17	7	2	0.04	740
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		69	5	0.8	0.685	0.221	1.47	0.14	0.25	13100	0.291	7.8	32.4	0.282	0.16	2.21	0.0891	874
Maximum		78.7	5	0.8	1.5	0.25	7.0	0.15	252	23800	0.3	9.2	58.3	0.52	10	5.0	0.14	1920
% of values undetected					50%	100%		50%	50%						50%	100%		
of values between MDL and MRL					1		1				2				1		2	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
435222																			
Sample Date																			
08/09/05	0805435222SL001	11.9	3.56	9.63	21200	7.54	2830	206	0.0649	**0.615**	5.61	422	0.811	**0.0592**	**115**	0.0817	**0.197**	48.9	30.8
07/14/06	0706435222SL001	9.64	2.88	7.73	18900	6.76	2470	159	**0.0415**	**0.440**	4.84	335	1.22	**0.0461**	**89.6**	0.0665	**0.665**	37.8	29.0
Mean		10.8	3.22	8.68	20100	7.15	2650	183	0.0532	0.53	5.23	379	1.02	0.0527	102	0.0741	0.431	43.4	30
Median		10.8	3.22	8.68	20100	7.15	2650	183	0.0532	0.53	5.23	379	1.02	0.0527	102	0.0741	0.431	43.4	30
St. Deviation		1.6	0.48	1.34	1600	0.55	250	33	0.0165	0.12	0.54	62	0.29	0.0093	18	0.0107	0.331	7.8	1
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		9.64	2.88	7.73	18900	6.76	2470	159	0.0415	0.44	4.84	335	0.811	0.0461	89.6	0.0665	0.197	37.8	29
Maximum		11.9	3.56	9.63	21200	7.54	2830	206	0.0649	0.615	5.61	422	1.22	0.0592	115	0.0817	0.665	48.9	30.8
% of values undetected																	100%		
of values between MDL and MRL									1	2				2	2				
435223																			
Sample Date																			
08/09/05	0805435223SL001	10.4	4.63	9.99	14600	7.06	3030	285	0.0578	**0.191**	7.28	526	**0.308**	**0.0191**	146	0.0417	**0.191**	40.1	36
07/14/06	0706435223SL001	8.16	4.61	12.3	14900	5.64	2920	245	**0.0283**	**0.182**	6.87	430	0.757	**0.0182**	127	0.0297	**0.585**	32.7	31.7
Mean		9.3	4.62	11.1	14800	6.35	2980	265	0.0431	0.187	7.08	480	0.533	0.0187	137	0.0357	0.388	36.4	34
Median		9.3	4.62	11.1	14800	6.35	2980	265	0.0431	0.187	7.08	480	0.533	0.0187	137	0.0357	0.388	36.4	34
St. Deviation		1.6	0.01	1.6	200	1	80	28	0.0205	0.006	0.29	70	0.317	0.0006	13	0.0085	0.279	5.2	3
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		8.16	4.61	9.99	14600	5.64	2920	245	0.0283	0.182	6.87	430	0.308	0.0182	127	0.0297	0.191	32.7	31.7
Maximum		10.4	4.63	12.3	14900	7.06	3030	285	0.0578	0.191	7.28	526	0.757	0.0191	146	0.0417	0.585	40.1	36
% of values undetected										100%			50%	100%			100%		
of values between MDL and MRL									1										
435301																			
Sample Date																			
07/15/05	0705435301SL001	12.6	5.18	11.5	15900	6.74	3040	234	0.208	**0.538**	7.0	**301**	2.08	**0.0221**	**111**	0.0918	**3.56**	39.7	26.9
07/20/07	0707435301SL001	24.9	8.98	14.2	10600	8.49	5280	400	**0.07**	**0.5**	15.6	660	1.23	**0.05**	260	**0.025**	**5.0**	26.1	51
Mean		18.8	7.08	12.9	13300	7.62	4160	320	0.14	0.52	11	480	1.66	0.036	185	0.058	4.3	32.9	39
Median		18.8	7.08	12.9	13300	7.62	4160	320	0.14	0.52	11	480	1.66	0.036	185	0.058	4.3	32.9	39
St. Deviation		8.7	2.69	1.9	3700	1.24	1580	120	0.1	0.03	6	250	0.6	0.02	106	0.047	1	9.6	17
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		12.6	5.18	11.5	10600	6.74	3040	234	0.07	0.5	7.0	301	1.23	0.0221	111	0.025	3.56	26.1	26.9
Maximum		24.9	8.98	14.2	15900	8.49	5280	400	0.208	0.538	15.6	660	2.08	0.05	260	0.0918	5.0	39.7	51
% of values undetected										50%				50%	50%	50%	100%		
of values between MDL and MRL									1	1		1		1					

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
435302																		
Sample Date																		
07/15/05	0705435302SL001	74			**0.617**	**0.208**	**0.577**	0.098	48.2	12600	0.224	9.95	49.9	0.22	**0.164**	**2.065**	**0.13**	1260
Mean		74	NA	NA	0.617	0.208	0.577	0.098	48.2	12600	0.224	9.95	49.9	0.22	0.164	2.065	0.13	1260
Median		74	NA	NA	0.617	0.208	0.577	0.098	48.2	12600	0.224	9.95	49.9	0.22	0.164	2.065	0.13	1260
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		74	NA	NA	0.617	0.208	0.577	0.098	48.2	12600	0.224	9.95	49.9	0.22	0.164	2.065	0.13	1260
Maximum		74	NA	NA	0.617	0.208	0.577	0.098	48.2	12600	0.224	9.95	49.9	0.22	0.164	2.065	0.13	1260
% of values undetected						100%										100%		
of values between MDL and MRL					1		1								1		1	
435341																		
Sample Date																		
07/15/05	0705435341SL001	79.3			**0.511**	**0.848**	**0.623**	**0.049**	35.6	20100	0.225	3.59	130	0.453	**0.177**	**1.91**	0.35	2550
Mean		79.3	NA	NA	0.511	0.848	0.623	0.049	35.6	20100	0.225	3.59	130	0.453	0.177	1.91	0.35	2550
Median		79.3	NA	NA	0.511	0.848	0.623	0.049	35.6	20100	0.225	3.59	130	0.453	0.177	1.91	0.35	2550
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		79.3	NA	NA	0.511	0.848	0.623	0.049	35.6	20100	0.225	3.59	130	0.453	0.177	1.91	0.35	2550
Maximum		79.3	NA	NA	0.511	0.848	0.623	0.049	35.6	20100	0.225	3.59	130	0.453	0.177	1.91	0.35	2550
% of values undetected																100%		
of values between MDL and MRL					1	1	1	1							1			
435342																		
Sample Date																		
07/14/05	0705435342SL001	41.8			**0.791**	**0.361**	2.49	0.28	213	11200	**0.118**	4.75	68.2	**0.183**	**0.074**	**3.7**	**0.074**	1980
Mean		41.8	NA	NA	0.791	0.361	2.49	0.28	213	11200	0.118	4.75	68.2	0.183	0.074	3.7	0.074	1980
Median		41.8	NA	NA	0.791	0.361	2.49	0.28	213	11200	0.118	4.75	68.2	0.183	0.074	3.7	0.074	1980
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		41.8	NA	NA	0.791	0.361	2.49	0.28	213	11200	0.118	4.75	68.2	0.183	0.074	3.7	0.074	1980
Maximum		41.8	NA	NA	0.791	0.361	2.49	0.28	213	11200	0.118	4.75	68.2	0.183	0.074	3.7	0.074	1980
% of values undetected						100%									100%	100%	100%	
of values between MDL and MRL					1						1			1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
435302																			
	Sample Date																		
07/15/05	0705435302SL001	12.8	6.25	13.3	15400	8.26	3760	367	0.15	**0.664**	8.74	435	2.15	**0.0207**	164	0.101	**0.665**	47.9	42.9
Mean		12.8	6.25	13.3	15400	8.26	3760	367	0.15	0.664	8.74	435	2.15	0.0207	164	0.101	0.665	47.9	42.9
Median		12.8	6.25	13.3	15400	8.26	3760	367	0.15	0.664	8.74	435	2.15	0.0207	164	0.101	0.665	47.9	42.9
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		12.8	6.25	13.3	15400	8.26	3760	367	0.15	0.664	8.74	435	2.15	0.0207	164	0.101	0.665	47.9	42.9
Maximum		12.8	6.25	13.3	15400	8.26	3760	367	0.15	0.664	8.74	435	2.15	0.0207	164	0.101	0.665	47.9	42.9
% of values undetected														100%			100%		
of values between MDL and MRL										1									
435341																			
	Sample Date																		
07/15/05	0705435341SL001	21.1	7.05	15.3	16200	12.7	4290	221	0.118	**0.191**	10.4	614	0.978	**0.0398**	250	0.103	**0.615**	46.8	45
Mean		21.1	7.05	15.3	16200	12.7	4290	221	0.118	0.191	10.4	614	0.978	0.0398	250	0.103	0.615	46.8	45
Median		21.1	7.05	15.3	16200	12.7	4290	221	0.118	0.191	10.4	614	0.978	0.0398	250	0.103	0.615	46.8	45
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		21.1	7.05	15.3	16200	12.7	4290	221	0.118	0.191	10.4	614	0.978	0.0398	250	0.103	0.615	46.8	45
Maximum		21.1	7.05	15.3	16200	12.7	4290	221	0.118	0.191	10.4	614	0.978	0.0398	250	0.103	0.615	46.8	45
% of values undetected										100%							100%		
of values between MDL and MRL														1					
435342																			
	Sample Date																		
07/14/05	0705435342SL001	9.81	3.43	11.2	18600	7.82	2530	304	0.272	**0.37**	4.42	439	2.19	**0.037**	**203**	0.0584	**1.20**	41.4	40.8
Mean		9.81	3.43	11.2	18600	7.82	2530	304	0.272	0.37	4.42	439	2.19	0.037	203	0.0584	1.20	41.4	40.8
Median		9.81	3.43	11.2	18600	7.82	2530	304	0.272	0.37	4.42	439	2.19	0.037	203	0.0584	1.20	41.4	40.8
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		9.81	3.43	11.2	18600	7.82	2530	304	0.272	0.37	4.42	439	2.19	0.037	203	0.0584	1.20	41.4	40.8
Maximum		9.81	3.43	11.2	18600	7.82	2530	304	0.272	0.37	4.42	439	2.19	0.037	203	0.0584	1.20	41.4	40.8
% of values undetected										100%				100%			100%		
of values between MDL and MRL															1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
436041																		
Sample Date																		
07/13/05	0705436041SL001	71.2			**0.692**	**0.215**	3.75	0.13	161	6270	**0.125**	2.63	25.2	**0.0807**	**0.0982**	**2.15**	**0.043**	852
07/20/07	0707436041SL001	85.6	4.4	**0.3**	**1.5**	**0.25**	**6.0**	**0.15**	**1.7**	15000	**0.3**	4.0	92.5	**0.17**	**10**	**5.0**	**0.09**	2690
Mean		78.4	4.4	0.3	1.1	0.232	4.9	0.14	80	11000	0.21	3.3	58.9	0.13	5	3.6	0.067	1770
Median		78.4	4.4	0.3	1.1	0.232	4.9	0.14	80	11000	0.21	3.3	58.9	0.13	5	3.6	0.067	1770
St. Deviation		10.2	NA	NA	0.6	0.025	1.6	0.01	110	6000	0.12	1	47.6	0.06	7	2	0.033	1300
# of values		2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		71.2	4.4	0.3	0.692	0.215	3.75	0.13	1.7	6270	0.125	2.63	25.2	0.0807	0.0982	2.15	0.043	852
Maximum		85.6	4.4	0.3	1.5	0.25	6.0	0.15	161	15000	0.3	4.0	92.5	0.17	10	5.0	0.09	2690
% of values undetected					50%	100%		50%							50%	100%	50%	
of values between MDL and MRL				1	1		1		1		2			2	1		1	
436221																		
Sample Date																		
07/14/05	0705436221SL001	26.2		4.1	4.23	**0.575**	**2.9**	0.084	409	15700	**0.26**	5.57	88.5	0.554	**0.115**	**5.75**	**0.115**	2320
08/08/05	0805436221SL001	16.4			8.94	**0.915**	**4.26**	0.081	381	2610	**0.094**	**4.12**	27.9	**0.219**	**0.188**	8.03	**0.188**	1750
07/20/07	0707436221SL001	26.6	4.8	5.0	**1.5**	**0.25**	**7.0**	**0.45**	**0.25**	18500	**0.3**	2.8	65.5	0.49	**10**	**5.0**	**0.16**	2530
Mean		23.1	4.8	4.6	4.89	0.58	4.7	0.21	263	12300	0.22	4.16	60.6	0.421	3.4	6.26	0.154	2200
Median		26.2	4.8	4.6	4.23	0.575	4.26	0.084	381	15700	0.26	4.12	65.5	0.49	0.188	5.75	0.16	2320
St. Deviation		5.8	NA	0.6	3.76	0.333	2.1	0.21	228	8500	0.11	1.39	30.6	0.178	5.7	1.58	0.037	400
# of values		3	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		16.4	4.8	4.1	1.5	0.25	2.9	0.081	0.25	2610	0.094	2.8	27.9	0.219	0.115	5.0	0.115	1750
Maximum		26.6	4.8	5	8.94	0.915	7.0	0.45	409	18500	0.3	5.57	88.5	0.554	10	8.03	0.188	2530
% of values undetected					33%	100%		33%	33%		33%				100%	67%	67%	
of values between MDL and MRL							3				2	1		1			1	
436222																		
Sample Date																		
07/14/05	0705436222SL001	19.5			**4.9**	**0.78**	7.37	0.16	920	17300	**0.211**	13.1	89.4	0.519	**0.158**	**7.9**	**0.158**	3150
07/14/05	0705436222SS001	37.5			**1.88**	**0.411**	6.01	**0.0135**	471	19500	**0.257**	**1.32**	64.5	0.44	**0.0815**	**4.08**	**0.0815**	1350
07/14/06	0706436222SL001	24.9			4.16	**0.62**	8.33	0.16	442	9470	**0.0595**	**3.49**	36.2	**0.266**	**0.120**	**2.58**	**0.120**	1090
Mean		27.3	NA	NA	3.65	0.60	7.24	0.11	611	15400	0.176	6	63.4	0.408	0.12	4.85	0.12	1860
Median		24.9	NA	NA	4.16	0.62	7.37	0.16	471	17300	0.211	3.49	64.5	0.44	0.120	4.08	0.120	1350
St. Deviation		9.2	NA	NA	1.57	0.19	1.17	0.08	268	5300	0.103	6.3	26.6	0.129	0.038	2.74	0.038	1120
# of values		3	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		19.5	NA	NA	1.88	0.411	6.01	0.0135	442	9470	0.0595	1.32	36.2	0.266	0.0815	2.58	0.0815	1090
Maximum		37.5	NA	NA	4.9	0.78	8.33	0.16	920	19500	0.257	13.1	89.4	0.519	0.158	7.9	0.158	3150
% of values undetected						100%		33%			33%	33%			100%	67%	100%	
of values between MDL and MRL					2						2	1		1		1		

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
436041																			
Sample Date																			
07/13/05	0705436041SL001	4.05	2.59	9.59	13700	3.36	1110	172	0.162	**1.19**	1.56	200	1.28	**0.0215**	**80.3**	0.0534	**0.695**	44	19.8
07/20/07	0707436041SL001	7.88	6.37	18.3	13600	4.76	2640	650	**0.02**	2.3	3.6	970	0.70	**0.015**	**160**	**0.025**	**5.0**	58.3	41
Mean		5.97	4.48	13.9	13700	4.06	1880	410	0.09	1.7	2.6	590	1	0.018	120	0.039	2.8	51	30
Median		5.97	4.48	13.9	13700	4.06	1880	410	0.09	1.7	2.6	590	1	0.018	120	0.039	2.8	51	30
St. Deviation		2.71	2.67	6.2	100	0.99	1080	340	0.1	0.8	1.4	540	0.4	0.005	60	0.02	3	10	15
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		4.05	2.59	9.59	13600	3.36	1110	172	0.02	1.19	1.56	200	0.7	0.015	80.3	0.025	0.695	44	19.8
Maximum		7.88	6.37	18.3	13700	4.76	2640	650	0.162	2.3	3.6	970	1.28	0.0215	160	0.0534	5.0	58.3	41
% of values undetected									50%					100%		50%	100%		
of values between MDL and MRL										1					2				
436221																			
Sample Date																			
07/14/05	0705436221SL001	16.7	5.23	17.3	13600	8.62	2470	177	0.386	7.88	7.05	**310**	5.52	**0.0575**	**200**	0.143	**1.85**	64.9	34.1
08/08/05	0805436221SL001	**0.364**	4.07	**2.65**	20900	**1.04**	264	312	**0.129**	**1.89**	**0.946**	**94**	**0.455**	**0.094**	**94**	**0.0188**	**0.94**	21	6.88
07/20/07	0707436221SL001	13.5	2.95	20.3	10200	4.32	1030	84.1	**0.05**	6.2	4.7	280	4.55	**0.09**	**120**	**0.025**	**5.0**	**2.5**	16
Mean		10.2	4.08	13.4	14900	4.66	1250	191	0.188	5.32	4.23	230	3.51	0.081	140	0.062	2.6	29	19
Median		13.5	4.07	17.3	13600	4.32	1030	177	0.129	6.2	4.7	280	4.55	0.09	120	0.025	1.85	21	16
St. Deviation		8.7	1.14	9.4	5500	3.8	1120	115	0.176	3.09	3.08	120	2.69	0.02	60	0.07	2.1	32	13.9
# of values		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		0.364	2.95	2.65	10200	1.04	264	84.1	0.05	1.89	0.946	94	0.455	0.0575	94	0.0188	0.94	2.5	6.88
Maximum		16.7	5.23	20.3	20900	8.62	2470	312	0.386	7.88	7.05	310	5.52	0.094	200	0.143	5.0	64.9	34.1
% of values undetected		33%							33%			33%	33%	67%	33%	67%	100%	33%	
of values between MDL and MRL				1		1			1	1	1	1		1	2				
436222																			
Sample Date																			
07/14/05	0705436222SL001	13.2	5.15	14.7	35900	7.15	1550	230	**0.155**	8.43	4.6	**278**	6.22	**0.079**	**193**	0.23	**0.79**	83.6	24.9
07/14/05	0705436222SS001	14	2.2	18.6	6980	7.1	1550	76.6	0.251	9.51	4.71	**203**	3.96	**0.0408**	**131**	0.133	**0.408**	54.3	17
07/14/06	0706436222SL001	2.28	2.06	6.75	22200	2.95	583	86.0	**0.0712**	**3.79**	2.08	**168**	2.01	**0.0595**	**59.5**	**0.0120**	**1.93**	30.4	13.7
Mean		9.8	3.14	13.4	21700	5.73	1230	130	0.159	7.24	3.8	216	4.06	0.0598	128	0.125	1.04	56.1	18.5
Median		13.2	2.2	14.7	22200	7.1	1550	86	0.155	8.43	4.6	203	3.96	0.0595	131	0.133	0.79	54.3	17
St. Deviation		6.5	1.75	6	14500	2.41	560	90	0.09	3.04	1.49	56	2.11	0.0191	67	0.109	0.79	26.6	5.8
# of values		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		2.28	2.06	6.75	6980	2.95	583	76.6	0.0712	3.79	2.08	168	2.01	0.0408	59.5	0.0120	0.408	30.4	13.7
Maximum		14	5.15	18.6	35900	7.15	1550	230	0.251	9.51	4.71	278	6.22	0.079	193	0.23	1.93	83.6	24.9
% of values undetected														100%	33%	33%	100%		
of values between MDL and MRL									2	1		3			2				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
436223																		
Sample Date																		
07/14/05	0705436223SL001	14.2			8.88	**1.09**	43.3	**0.049**	1990	8940	**2.14**	**34.3**	576	**5.89**	**2.13**	**10.65**	**2.13**	31100
07/14/06	0706436223SL001	13.4			11.1	**1.16**	11.1	0.090	1900	10700	**0.111**	**3.43**	63.7	**0.512**	**0.222**	**1.135**	**0.744**	2800
Mean		13.8	NA	NA	10	1.12	27.2	0.07	1900	9800	1.13	18.9	320	3.2	1.18	5.9	1.44	17000
Median		13.8	NA	NA	10	1.12	27.2	0.07	1900	9800	1.13	18.9	320	3.2	1.18	5.9	1.44	17000
St. Deviation		0.6	NA	NA	1.6	0.05	22.8	0.029	100	1200	1.43	21.8	362	3.8	1.35	6.7	0.98	20000
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		13.4	NA	NA	8.88	1.09	11.1	0.049	1900	8940	0.111	3.43	63.7	0.512	0.222	1.135	0.744	2800
Maximum		14.2	NA	NA	11.1	1.16	43.3	0.09	1990	10700	2.14	34.3	576	5.89	2.13	10.65	2.13	31100
% of values undetected						100%					50%	50%			100%	100%	50%	
of values between MDL and MRL								1			1	1		2			1	
436361																		
Sample Date																		
07/15/05	0705436361SL001	55.2			**1.06**	**0.278**	**0.278**	0.2	373	6410	0.455	27.3	29.8	0.205	**0.248**	**2.77**	**0.217**	809
Mean		55.2	NA	NA	1.06	0.278	0.278	0.2	373	6410	0.455	27.3	29.8	0.205	0.248	2.77	0.217	809
Median		55.2	NA	NA	1.06	0.278	0.278	0.2	373	6410	0.455	27.3	29.8	0.205	0.248	2.77	0.217	809
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		55.2	NA	NA	1.06	0.278	0.278	0.2	373	6410	0.455	27.3	29.8	0.205	0.248	2.77	0.217	809
Maximum		55.2	NA	NA	1.06	0.278	0.278	0.2	373	6410	0.455	27.3	29.8	0.205	0.248	2.77	0.217	809
% of values undetected						100%	100%									100%		
of values between MDL and MRL					1										1		1	
436362																		
Sample Date																		
07/15/05	0705436362SL001	33.3			**1.79**	**0.463**	**0.463**	0.15	658	6410	0.373	15.8	26.1	**0.147**	**0.279**	**4.53**	**0.262**	1260
Mean		33.3	NA	NA	1.79	0.463	0.463	0.15	658	6410	0.373	15.8	26.1	0.147	0.279	4.53	0.262	1260
Median		33.3	NA	NA	1.79	0.463	0.463	0.15	658	6410	0.373	15.8	26.1	0.147	0.279	4.53	0.262	1260
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		33.3	NA	NA	1.79	0.463	0.463	0.15	658	6410	0.373	15.8	26.1	0.147	0.279	4.53	0.262	1260
Maximum		33.3	NA	NA	1.79	0.463	0.463	0.15	658	6410	0.373	15.8	26.1	0.147	0.279	4.53	0.262	1260
% of values undetected						100%	100%									100%		
of values between MDL and MRL					1									1	1		1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
436223																			
	Sample Date																		
07/14/05	0705436223SL001	57.6	**16.7**	149	89400	29.3	5130	671	0.696	**68.1**	26.3	**1065**	79.3	**1.07**	**1065**	2.08	**34.3**	227	**55**
07/14/06	0706436223SL001	**1.15**	**2.16**	14.1	6520	4.67	732	74.8	**0.135**	**4.87**	3.37	**247**	4.69	**0.111**	**111**	**0.0832**	**1.11**	**18.3**	15.5
	Mean	29.4	9.4	82	48000	17	2930	373	0.416	36.5	14.8	660	42	0.59	590	1.08	17.7	123	35
	Median	29.4	9.4	82	48000	17	2930	373	0.416	36.5	14.8	660	42	0.59	590	1.08	17.7	123	35
	St. Deviation	39.9	10.3	95	58600	17.4	3110	422	0.397	44.7	16.2	580	52.8	0.67	670	1.41	23.5	148	28
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	1.15	2.16	14.1	6520	4.67	732	74.8	0.135	4.87	3.37	247	4.69	0.111	111	0.0832	1.11	18.3	15.5
	Maximum	57.6	16.7	149	89400	29.3	5130	671	0.696	68.1	26.3	1065	79.3	1.07	1065	2.08	34.3	227	55
	% of values undetected											50%		100%	100%		100%		
	of values between MDL and MRL	1	2						1	2		1				1		1	1
436361																			
	Sample Date																		
07/15/05	0705436361SL001	10.3	3.68	21.7	14100	5.48	775	127	0.265	**1.04**	8.94	438	2.7	0.296	**119**	0.134	**0.895**	48.2	19
	Mean	10.3	3.68	21.7	14100	5.48	775	127	0.265	1.04	8.94	438	2.7	0.296	119	0.134	0.895	48.2	19
	Median	10.3	3.68	21.7	14100	5.48	775	127	0.265	1.04	8.94	438	2.7	0.296	119	0.134	0.895	48.2	19
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	10.3	3.68	21.7	14100	5.48	775	127	0.265	1.04	8.94	438	2.7	0.296	119	0.134	0.895	48.2	19
	Maximum	10.3	3.68	21.7	14100	5.48	775	127	0.265	1.04	8.94	438	2.7	0.296	119	0.134	0.895	48.2	19
	% of values undetected																100%		
	of values between MDL and MRL									1					1				
436362																			
	Sample Date																		
07/15/05	0705436362SL001	7.27	3.6	17.9	9870	4.72	716	38.4	0.424	**0.453**	6.47	545	3.76	**0.249**	**219**	0.149	**1.46**	21.9	11.3
	Mean	7.27	3.6	17.9	9870	4.72	716	38.4	0.424	0.453	6.47	545	3.76	0.249	219	0.149	1.46	21.9	11.3
	Median	7.27	3.6	17.9	9870	4.72	716	38.4	0.424	0.453	6.47	545	3.76	0.249	219	0.149	1.46	21.9	11.3
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	7.27	3.6	17.9	9870	4.72	716	38.4	0.424	0.453	6.47	545	3.76	0.249	219	0.149	1.46	21.9	11.3
	Maximum	7.27	3.6	17.9	9870	4.72	716	38.4	0.424	0.453	6.47	545	3.76	0.249	219	0.149	1.46	21.9	11.3
	% of values undetected									100%							100%		
	of values between MDL and MRL													1	1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
535051																		
	Sample Date																	
07/14/05	0705535051SL001	29.4		4.6	**1.56**	**1.70**	3.66	0.12	947	14200	**1.9**	45.5	394	**2.89**	**1.05**	**5.25**	**1.05**	7350
	Mean	29.4	NA	4.6	1.56	1.70	3.66	0.12	947	14200	1.9	45.5	394	2.89	1.05	5.25	1.05	7350
	Median	29.4	NA	4.6	1.56	1.70	3.66	0.12	947	14200	1.9	45.5	394	2.89	1.05	5.25	1.05	7350
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	29.4	NA	4.6	1.56	1.70	3.66	0.12	947	14200	1.9	45.5	394	2.89	1.05	5.25	1.05	7350
	Maximum	29.4	NA	4.6	1.56	1.70	3.66	0.12	947	14200	1.9	45.5	394	2.89	1.05	5.25	1.05	7350
	% of values undetected					100%									100%	100%	100%	
	of values between MDL and MRL				1						1			1				
535052																		
	Sample Date																	
07/15/05	0705535052SL001	72.2		1	**0.662**	**0.214**	**0.854**	0.071	145	16000	0.171	18.2	93.1	0.489	**0.1**	**2.05**	**0.238**	2300
07/15/05	0705535052SS001	95			**0.161**	**0.332**	**0.161**	**0.032**	**16.7**	7200	0.129	10.3	33.6	0.282	**0.0321**	**1.6**	**0.194**	1880
	Mean	84	NA	1	0.411	0.273	0.507	0.052	81	12000	0.15	14.3	63.4	0.386	0.07	1.8	0.216	2100
	Median	84	NA	1	0.411	0.273	0.507	0.052	81	12000	0.15	14.3	63.4	0.386	0.07	1.8	0.216	2100
	St. Deviation	16	NA	NA	0.355	0.084	0.49	0.028	91	6000	0.03	5.6	42.1	0.146	0.05	0.3	0.031	300
	# of values	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	72.2	NA	1	0.161	0.214	0.161	0.032	16.7	7200	0.129	10.3	33.6	0.282	0.0321	1.6	0.194	1880
	Maximum	95	NA	1	0.662	0.332	0.854	0.071	145	16000	0.171	18.2	93.1	0.489	0.1	2.05	0.238	2300
	% of values undetected				50%	50%	50%								50%	100%		
	of values between MDL and MRL				1	1	1	1	1						1		2	
SEC03																		
	Sample Date																	
09/02/04	090204SEC03SL001	17.4			**4.29**	**4.29**	354	**0.055**	2200	6360	**0.088**	**1.615**	92.9	**0.329**	**0.176**	**28.35**	**0.648**	7180
09/02/04	090204SEC03SL002	77.7			**0.752**	**0.195**	5.98	0.16	150	16400	0.128	4.54	55.4	0.2	**0.0944**	**6.2**	**0.0384**	1360
09/02/04	090204SEC03SL003	66.8			**0.805**	**0.227**	2	0.14	297	23600	**0.698**	6.64	76.3	0.317	**0.0946**	**7.4**	**0.0459**	1810
09/03/04	090304SEC03SL001	38.5			**4.00**	**0.903**	44.9	0.58	945	9190	**0.0403**	**0.74**	55.5	**0.192**	**0.0805**	**4.025**	**0.0805**	720
09/03/04	090304SEC03SL002	79.7			**0.193**	**0.436**	5.59	0.1	69.3	31300	0.165	7.2	171	0.628	**0.038**	**5.82**	**0.038**	2040
	Mean	56.0	NA	NA	2.01	1.21	82	0.21	730	17400	0.224	4.15	90.2	0.333	0.097	10.4	0.17	2620
	Median	66.8	NA	NA	0.805	0.436	5.98	0.14	297	16400	0.128	4.54	76.3	0.317	0.0944	6.2	0.0459	1810
	St. Deviation	27.1	NA	NA	1.97	1.74	153	0.21	890	10300	0.269	2.9	47.8	0.177	0.05	10.1	0.268	2600
	# of values	5	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	17.4	NA	NA	0.193	0.195	2	0.055	69.3	6360	0.0403	0.74	55.4	0.192	0.038	4.025	0.038	720
	Maximum	79.7	NA	NA	4.29	4.29	354	0.58	2200	31300	0.698	7.2	171	0.628	0.176	28.35	0.648	7180
	% of values undetected				60%	60%		20%			40%	40%			60%	80%	80%	
	of values between MDL and MRL				2	2					1			2	2	1	1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
535051																			
Sample Date																			
07/14/05	0705535051SL001	113	**11.1**	179	10300	56.2	5140	383	0.462	**5.25**	21.1	3440	70.1	**1.45**	**1860**	**0.672**	**17.0**	200	82.4
Mean		113	11.1	179	10300	56.2	5140	383	0.462	5.25	21.1	3440	70.1	1.45	1860	0.672	17.0	200	82.4
Median		113	11.1	179	10300	56.2	5140	383	0.462	5.25	21.1	3440	70.1	1.45	1860	0.672	17.0	200	82.4
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		113	11.1	179	10300	56.2	5140	383	0.462	5.25	21.1	3440	70.1	1.45	1860	0.672	17.0	200	82.4
Maximum		113	11.1	179	10300	56.2	5140	383	0.462	5.25	21.1	3440	70.1	1.45	1860	0.672	17.0	200	82.4
% of values undetected										100%							100%		
of values between MDL and MRL			1											1	1	1			
535052																			
Sample Date																			
07/15/05	0705535052SL001	18.1	6.37	14.2	21900	7.52	4060	279	0.169	**0.838**	8.63	429	0.886	**0.0205**	258	0.0799	**0.66**	47.9	40.8
07/15/05	0705535052SS001	8.75	4.91	7.15	17000	3.72	3980	329	0.0977	**0.382**	6.41	356	**0.2585**	**0.016**	170	0.0235	**0.515**	27.6	36.9
Mean		13.4	5.64	10.7	19000	5.62	4020	304	0.133	0.61	7.52	393	0.572	0.018	210	0.0517	0.59	37.8	38.9
Median		13.4	5.64	10.7	19000	5.62	4020	304	0.133	0.61	7.52	393	0.572	0.018	210	0.0517	0.59	37.8	38.9
St. Deviation		6.6	1.03	5	3000	2.69	60	35	0.05	0.322	1.57	52	0.444	0.003	60	0.0399	0.1	14.4	2.8
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		8.75	4.91	7.15	17000	3.72	3980	279	0.0977	0.382	6.41	356	0.2585	0.016	170	0.0235	0.515	27.6	36.9
Maximum		18.1	6.37	14.2	21900	7.52	4060	329	0.169	0.838	8.63	429	0.886	0.0205	258	0.0799	0.66	47.9	40.8
% of values undetected													50%	100%			100%		
of values between MDL and MRL										2									
SEC03																			
Sample Date																			
09/02/04	090204SEC03SL001	5.68	**1.15**	10.5	4970	2.03	615	68.6	**0.0794**	**2.51**	**0.176**	**256**	**2.34**	**0.088**	**188**	**0.0176**	**2.84**	**10.8**	9.81
09/02/04	090204SEC03SL002	12.6	5.09	10.8	19100	5.39	3220	297	0.0525	**0.445**	6.12	449	0.836	**0.0192**	163	0.0324	**0.62**	50.2	31.5
09/02/04	090204SEC03SL003	30.1	10.2	15	34100	6.03	6340	427	**0.045**	**0.512**	18.4	**400**	1.14	**0.0229**	**104**	**0.0046**	**0.74**	66.6	51.2
09/03/04	090304SEC03SL001	5.93	**0.195**	8.21	613	3.2	93.4	5.43	0.164	**0.403**	0.59	**151**	**1.25**	**0.0403**	**174**	**0.00805**	**0.403**	**4.67**	2.77
09/03/04	090304SEC03SL002	28.5	13.3	18.1	30800	7.16	4430	642	0.0592	**0.652**	13.3	475	**0.43**	**0.0386**	131	0.168	1.27	70.4	54.7
Mean		16.6	6	12.5	17900	4.76	2940	288	0.08	0.9	7.7	346	1.2	0.0418	152	0.0461	1.17	40.5	30
Median		12.6	5.09	10.8	19100	5.39	3220	297	0.0592	0.512	6.12	400	1.14	0.0386	163	0.0176	0.74	50.2	31.5
St. Deviation		12	5.7	4	15000	2.1	2620	261	0.049	0.9	8	138	0.71	0.0275	34	0.069	0.98	31	23.5
# of values		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Minimum		5.68	0.195	8.21	613	2.03	93.4	5.43	0.045	0.403	0.176	151	0.43	0.0192	104	0.0046	0.403	4.67	2.77
Maximum		30.1	13.3	18.1	34100	7.16	6340	642	0.164	2.51	18.4	475	2.34	0.088	188	0.168	2.84	70.4	54.7
% of values undetected			20%							20%	20%			80%		60%	80%		
of values between MDL and MRL			1						2	4		3	3	1	3			2	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC04																		
Sample Date																		
08/26/04	082604SEC04SL001	90.1			**0.152**	**0.152**	**0.657**	**0.047**	22.4	5280	**0.0851**	**1.45**	28.8	0.138	**0.0333**	**1.66**	**0.0333**	1800
09/02/04	090204SEC04SL001	81			**0.558**	**0.188**	3.05	0.19	109	11800	0.164	6.12	41.5	0.289	**0.107**	**5.95**	**0.037**	696
09/02/04	090204SEC04SS001	80.6			**0.563**	**0.190**	5.12	0.14	89.3	19700	0.214	8.58	79.9	0.473	**0.143**	**6.1**	**0.0378**	1070
09/03/04	090204SEC04SL001	80.3		3.51														
09/03/04	090204SEC04SS001	81.6		2.91														
09/03/04	090304SEC04SL001	75		1.17	1.37	**0.803**	3.61	0.21	180	13200	0.181	23.4	74.9	0.395	**0.041**	**4.76**	**0.041**	2660
09/03/04	090304SEC04SL002	50.6			28.3	**1.55**	15.8	0.22	235	15400	**0.141**	7.97	87	0.309	**0.0595**	**2.97**	**0.0595**	2610
09/03/04	090304SEC04SL003	82			3.09	**0.61**	2.98	0.39	171	22800	0.147	6.43	126	0.414	**0.0361**	**1.805**	**0.0899**	1800
09/03/04	090304SEC04SL004	76.4			**11.4**	**0.492**	5.59	0.57	302	10800	**0.09**	3.29	95.3	0.178	**0.0398**	**1.99**	**0.0398**	1550
09/03/04	090304SEC04SS001	92.4		0.6	**0.511**	1.27	3.7	**0.047**	50.2	11000	0.142	26	64.2	0.325	**0.0328**	**1.64**	**0.0328**	2300
09/03/04	090304SEC04SS005	82.4		2.51	**0.57**	**0.184**	2.82	0.22	143	22600	0.142	7.2	125	0.55	**0.0374**	**1.87**	**0.112**	1470
	Mean	79.3	NA	2.14	5.2	0.6	4.8	0.23	145	14700	0.145	10	80	0.341	0.059	3.19	0.054	1770
	Median	81	NA	2.51	0.57	0.492	3.61	0.21	143	13200	0.142	7.2	79.9	0.325	0.0398	1.99	0.0398	1800
	St. Deviation	10.8	NA	1.22	9.4	0.51	4.4	0.17	89	5900	0.04	8.6	33	0.133	0.039	1.89	0.028	670
	# of values	11	0	5	9	9	9	9	9	9	9	9	9	9	9	9	9	9
	Minimum	50.6	NA	0.6	0.152	0.152	0.657	0.047	22.4	5280	0.0851	1.45	28.8	0.138	0.0328	1.64	0.0328	696
	Maximum	92.4	NA	3.51	28.3	1.55	15.8	0.57	302	22800	0.214	26	126	0.55	0.143	6.1	0.112	2660
	% of values undetected				11%	44%									78%	89%	78%	
	of values between MDL and MRL				5	4	1	2			3	1			2	1	2	
SEC05																		
Sample Date																		
09/02/04	090204SEC05SL001	80.6			2.49	3.1	3.28	0.2	95.8	14100	0.176	5.92	78.3	0.282	**0.0818**	**1.85**	**0.037**	2600
09/02/04	090204SEC05SL002	93		0.936	**0.164**	**0.164**	**0.854**	0.14	46.2	9520	0.27	13.7	52.9	0.29	**0.0798**	**5.3**	**0.033**	2750
09/02/04	090204SEC05SS001	95.1			**0.161**	**0.404**	2.54	0.09	30.3	10500	0.174	14.7	59.1	0.248	**0.0321**	**5.15**	**0.0321**	3480
	Mean	89.6	NA	0.936	0.94	1.22	2.22	0.14	57.4	11400	0.207	11.4	63.4	0.273	0.0646	4.1	0.034	2940
	Median	93	NA	0.936	0.164	0.404	2.54	0.14	46.2	10500	0.176	13.7	59.1	0.282	0.0798	5.15	0.033	2750
	St. Deviation	7.8	NA	NA	1.34	1.63	1.24	0.06	34.2	2400	0.055	4.8	13.2	0.022	0.0282	1.95	0.003	470
	# of values	3	0	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Minimum	80.6	NA	0.936	0.161	0.164	0.854	0.09	30.3	9520	0.174	5.92	52.9	0.248	0.0321	1.85	0.0321	2600
	Maximum	95.1	NA	0.936	2.49	3.1	3.28	0.2	95.8	14100	0.27	14.7	78.3	0.29	0.0819	5.3	0.037	3480
	% of values undetected				67%	33%									33%	100%	100%	
	of values between MDL and MRL					1	1								2			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC04																		
Sample Date																		
08/26/04 082604SEC04SL001	2.71	4.22	9.54	1430	1.82	989	308	**0.0139**	**0.734**	1.52	174	**0.181**	**0.0166**	**58.6**	**0.0033**	**0.535**	39.7	15.3
09/02/04 090204SEC04SL001	15.7	4.97	28	1830	5.02	1710	201	0.126	1.57	5.99	483	**0.595**	**0.057**	**112**	**0.0037**	**0.595**	32.5	28.7
09/02/04 090204SEC04SS001	20	8.59	53	3100	6.58	3280	356	0.0652	2.61	10.5	694	0.777	**0.101**	166	**0.0038**	**0.610**	55.4	44.3
09/03/04 090204SEC04SL001																		
09/03/04 090204SEC04SS001																		
09/03/04 090304SEC04SL001	16.7	4.44	10.3	1480	6.21	2370	251	**0.0162**	1.63	8.01	638	**0.624**	**0.0205**	231	0.114	**0.660**	39.3	26.2
09/03/04 090304SEC04SL002	15.1	2.57	7.28	1070	6.01	2090	84.3	**0.0118**	**0.691**	8.25	553	**0.559**	**0.0297**	359	0.0683	**0.955**	22.5	37.6
09/03/04 090304SEC04SL003	23.2	13.7	17	2490	6.03	5020	606	**0.0468**	**0.573**	17	597	**0.457**	**0.0181**	151	0.0882	**0.580**	59.2	50.7
09/03/04 090304SEC04SL004	10	2.83	8.02	1130	3.39	1640	113	**0.0443**	**0.514**	4.62	454	**0.346**	**0.0552**	**107**	0.0785	**0.640**	26.1	25.2
09/03/04 090304SEC04SS001	17.4	10.5	12.9	1950	5.99	3670	788	**0.0065**	1.86	8.88	823	**0.406**	**0.0164**	158	0.0983	**0.530**	48.1	32.4
09/03/04 090304SEC04SS005	20	10.6	20.7	2630	6.31	4820	539	**0.0354**	**0.539**	14.2	737	**0.496**	**0.0187**	139	0.074	**0.605**	61.9	49.6
Mean	15.6	6.9	18.5	1900	5.26	2840	361	0.041	1.19	8.8	573	0.493	0.037	165	0.059	0.63	42.7	34.4
Median	16.7	4.97	12.9	1830	6.01	2370	308	0.0354	0.734	8.25	597	0.496	0.0205	151	0.074	0.605	39.7	32.4
St. Deviation	6.1	4	14.6	710	1.61	1440	238	0.038	0.75	4.7	191	0.173	0.029	87	0.044	0.13	14.3	12.0
# of values	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Minimum	2.71	2.57	7.28	1070	1.82	989	84.3	0.0065	0.514	1.52	174	0.181	0.0164	58.6	0.0033	0.53	22.5	15.3
Maximum	23.2	13.7	53	3100	6.58	5020	788	0.126	2.61	17	823	0.777	0.101	359	0.114	0.955	61.9	50.7
% of values undetected								22%					67%		33%	100%		
of values between MDL and MRL								5	5			8	3	3				
SEC05																		
Sample Date																		
09/02/04 090204SEC05SL001	17.6	5.25	11.1	2290	7.7	3060	311	**0.0273**	**0.185**	6.66	615	**0.533**	**0.0598**	255	**0.0037**	**0.595**	56.2	37.6
09/02/04 090204SEC05SL002	15.6	5.66	15	2050	4.53	3650	408	**0.0147**	**0.698**	6.83	511	**0.310**	**0.0356**	315	**0.0033**	**0.530**	39.1	38.4
09/02/04 090204SEC05SS001	12.8	7.74	16.1	2340	4.56	5210	493	**0.0062**	**0.681**	8.29	755	**0.283**	**0.048**	282	**0.0032**	**0.515**	54.5	50.2
Mean	15.3	6.22	14.1	2230	5.6	3970	404	0.0161	0.521	7.26	627	0.375	0.0478	284	0.0034	0.547	49.9	42.1
Median	15.6	5.66	15	2290	4.56	3650	408	0.0147	0.681	6.83	615	0.31	0.048	282	0.0033	0.53	54.5	38.4
St. Deviation	2.4	1.34	2.6	160	1.82	1110	91	0.0106	0.291	0.9	122	0.137	0.0121	30	0.0003	0.043	9.4	7.1
# of values	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	12.8	5.25	11.1	2050	4.53	3060	311	0.0062	0.185	6.66	511	0.283	0.0356	255	0.0032	0.515	39.1	37.6
Maximum	17.6	7.74	16.1	2340	7.7	5210	493	0.0273	0.698	8.29	755	0.533	0.0598	315	0.0037	0.595	56.2	50.2
% of values undetected								33%	33%						100%	100%		
of values between MDL and MRL								2	2			3	3					

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC06																		
Sample Date																		
09/02/04	090204SEC06SL001	87.7			**0.175**	**0.576**	3.85	0.28	51.9	9180	0.188	25.3	58.9	0.335	0.798	**5.6**	0.867	1550
09/02/04	090204SEC06SL002	68.2			5.49	**0.227**	3.77	0.46	358	12900	0.235	16	34.6	0.332	0.363	**7.25**	0.342	552
Mean		78	NA	NA	2.83	0.401	3.81	0.37	205	11000	0.212	21	46.8	0.334	0.581	6.4	0.605	1050
Median		78	NA	NA	2.83	0.401	3.81	0.37	205	11000	0.212	21	46.8	0.334	0.581	6.4	0.605	1050
St. Deviation		13.8	NA	NA	3.76	0.247	0.06	0.13	216	2600	0.033	7	17.2	0.002	0.308	1.2	0.371	710
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		68.2	NA	NA	0.175	0.227	3.77	0.28	51.9	9180	0.188	16	34.6	0.332	0.363	5.6	0.342	552
Maximum		87.7	NA	NA	5.49	0.576	3.85	0.46	358	12900	0.235	25.3	58.9	0.335	0.798	7.25	0.867	1550
% of values undetected					50%	50%										100%		
of values between MDL and MRL						1												
SEC1																		
Sample Date																		
08/26/04	082604SEC1SL001	75.9			8.69	**0.203**	11.9	0.21	162	16100	0.161	13.3	62.9	0.363	**0.0404**	**2.02**	**0.109**	973
Mean		75.9	NA	NA	8.69	0.203	11.9	0.21	162	16100	0.161	13.3	62.9	0.363	0.0404	2.02	0.109	973
Median		75.9	NA	NA	8.69	0.203	11.9	0.21	162	16100	0.161	13.3	62.9	0.363	0.0404	2.02	0.109	973
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		75.9	NA	NA	8.69	0.203	11.9	0.21	162	16100	0.161	13.3	62.9	0.363	0.0404	2.02	0.109	973
Maximum		75.9	0	0	8.69	0.203	11.9	0.21	162	16100	0.161	13.3	62.9	0.363	0.0404	2.02	0.109	973
% of values undetected						100%									100%	100%		
of values between MDL and MRL																	1	
SEC11																		
Sample Date																		
09/04/04	090404SEC11SL001	70.3			**1.38**	**0.52**	7.78	0.23	150	29600	0.155	9.01	45.9	0.321	**0.0435**	**4.73**	**0.0435**	1070
09/04/04	090404SEC11SL002	72.9			**0.903**	**0.209**	3.29	0.32	246	22800	0.196	9.08	40.6	0.249	**0.0424**	**4.61**	**0.0424**	918
09/04/04	090404SEC11SL003	91.5			**0.409**	**0.334**	1.6	0.16	75.6	13500	0.167	8.29	65.2	0.29	**0.0332**	**4.75**	**0.156**	1470
09/04/04	090404SEC11SS002	81.2		3.21	**0.186**	**0.186**	18.9	0.21	106	22300	0.283	16.5	64.9	0.317	**0.0368**	**5.9**	**0.0742**	1030
Mean		79	NA	3.21	0.72	0.312	7.9	0.23	144	22100	0.2	10.7	54.2	0.294	0.039	5	0.079	1120
Median		77.1	NA	3.21	0.66	0.272	5.5	0.22	128	22600	0.182	9	55.4	0.304	0.0396	4.74	0.059	1050
St. Deviation		9.6	NA	NA	0.53	0.153	7.8	0.07	74	6600	0.058	3.9	12.8	0.033	0.0048	0.6	0.053	240
# of values		4	0	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Minimum		70.3	NA	3.21	0.186	0.186	1.6	0.16	75.6	13500	0.155	8.29	40.6	0.249	0.0332	4.61	0.0424	918
Maximum		91.5	NA	3.21	1.38	0.52	18.9	0.32	246	29600	0.283	16.5	65.2	0.321	0.0435	5.9	0.156	1470
% of values undetected					25%	50%									100%		50%	
of values between MDL and MRL					3	2										4	2	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC06																			
Sample Date																			
09/02/04	090204SEC06SL001	4.71	6.44	19.7	20300	78.4	2380	1840	**0.0247**	2.21	1.91	959	1.22	0.669	**56.2**	0.141	**0.560**	51.6	187
09/02/04	090204SEC06SL002	7.09	7.71	18.8	25500	51	1820	1470	0.0699	**1.28**	2.87	753	1.31	0.927	**78.8**	0.0849	**0.725**	63.9	227
Mean		5.9	7.08	19.3	22900	65	2100	1660	0.0473	1.75	2.39	856	1.27	0.798	67.5	0.113	0.64	57.8	207
Median		5.9	7.08	19.3	22900	65	2100	1660	0.0473	1.75	2.39	856	1.27	0.798	67.5	0.113	0.64	57.8	207
St. Deviation		1.68	0.9	0.6	3700	19	400	260	0.032	0.66	0.68	146	0.06	0.182	16	0.04	0.12	8.7	28
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		4.71	6.44	18.8	20300	51	1820	1470	0.0247	1.28	1.91	753	1.22	0.669	56.2	0.0849	0.56	51.6	187
Maximum		7.09	7.71	19.7	25500	78.4	2380	1840	0.0699	2.21	2.87	959	1.31	0.927	78.8	0.141	0.725	63.9	227
% of values undetected																	100%		
of values between MDL and MRL									1	1					2				
SEC1																			
Sample Date																			
08/26/04	082604SEC1SL001	14.8	6.17	19.4	26100	10.5	2830	325	0.0669	**0.554**	9.97	1090	**0.214**	**0.0929**	153	**0.00405**	1.33	54.7	54.6
Mean		14.8	6.17	19.4	26100	10.5	2830	325	0.0669	0.554	9.97	1090	0.214	0.0929	153	0.00405	1.33	54.7	54.6
Median		14.8	6.17	19.4	26100	10.5	2830	325	0.0669	0.554	9.97	1090	0.214	0.0929	153	0.00405	1.33	54.7	54.6
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		14.8	6.17	19.4	26100	10.5	2830	325	0.0669	0.554	9.97	1090	0.214	0.0929	153	0.00405	1.33	54.7	54.6
Maximum		14.8	6.17	19.4	26100	10.5	2830	325	0.0669	0.554	9.97	1090	0.214	0.0929	153	0.00405	1.33	54.7	54.6
% of values undetected																100%			
of values between MDL and MRL										1			1	1					
SEC11																			
Sample Date																			
09/04/04	090404SEC11SL001	11.8	5.72	14.6	24500	8.61	2940	342	**0.0552**	**0.744**	5.3	371	1.41	**0.0218**	148	**0.00435**	**0.700**	60.5	42.3
09/04/04	090404SEC11SL002	11.9	5	14.5	22200	8.26	2320	312	**0.0521**	**0.706**	4.99	388	1.13	**0.0212**	**134**	**0.00425**	**0.685**	54.2	40.9
09/04/04	090404SEC11SL003	9.7	5.8	22.3	17900	11.0	3130	527	**0.014**	**0.750**	5.4	524	**0.417**	**0.0166**	110	**0.0033**	**0.535**	40.4	59.7
09/04/04	090404SEC11SS002	14.2	12.2	24.8	27600	10.5	3620	457	**0.03**	**0.696**	9.14	469	0.802	**0.0184**	138	**0.0037**	**0.595**	57.1	52.1
Mean		11.9	7	19.1	23100	9.6	3000	410	0.038	0.724	6.2	438	0.94	0.0195	133	0.0039	0.629	53.1	48.8
Median		11.9	6	18.5	23400	9.6	3040	400	0.041	0.725	5.4	429	0.97	0.0198	136	0.004	0.64	55.7	47.2
St. Deviation		1.8	3	5.3	4100	1.4	540	100	0.019	0.027	2	72	0.43	0.0024	16	0.0005	0.078	8.8	8.8
# of values		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Minimum		9.7	5	14.5	17900	8.26	2320	312	0.014	0.696	4.99	371	0.417	0.0166	110	0.0033	0.535	40.4	40.9
Maximum		14.2	12.2	24.8	27600	11	3620	527	0.0552	0.75	9.14	524	1.41	0.0218	148	0.00435	0.7	60.5	59.7
% of values undetected														100%		100%	100%		
of values between MDL and MRL									4	4			1		1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC12																		
Sample Date																		
09/02/04	090204SEC12SL001	85.5			2.18	**0.179**	6.08	0.13	82.7	15700	0.182	6.69	24.6	0.177	**0.0356**	**5.75**	0.125	754
09/03/04	090304SEC12SL001	44.7			**0.346**	2.54	84.1	0.43	1160	16200	0.176	5.15	119	0.617	**0.069**	**3.45**	0.257	4170
09/03/04	090304SEC12SL002	16.4			**9.20**	39.3	129	**0.13**	1090	3560	**0.0945**	**1.74**	66.1	**0.0945**	**0.189**	**9.45**	**0.189**	5780
Mean		48.9	NA	NA	3.91	14.00	73	0.23	780	11800	0.151	4.53	70	0.296	0.098	6.22	0.19	3570
Median		44.7	NA	NA	2.18	2.54	84.1	0.13	1090	15700	0.176	5.15	66.1	0.177	0.069	5.75	0.189	4170
St. Deviation		34.7	NA	NA	4.67	21.9	62	0.17	600	7200	0.049	2.54	47	0.281	0.08	3.03	0.066	2570
# of values		3	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		16.4	NA	NA	0.346	0.179	6.08	0.13	82.7	3560	0.0945	1.74	24.6	0.0945	0.0356	3.45	0.125	754
Maximum		85.5	NA	NA	9.2	39.3	129	0.43	1160	16200	0.182	6.69	119	0.617	0.189	9.45	0.257	5780
% of values undetected					67%	33%		33%			33%	33%		33%	100%	100%	33%	
of values between MDL and MRL						1					1						2	
SEC12E																		
Sample Date																		
08/27/04	82704SEC12ESL001	67.4						0.2		12200	**0.14**	3.87	33.8	0.211	**0.161**	**2.25**	**0.0449**	340
Mean		67.4	NA	NA	NA	NA	NA	0.2	NA	12200	0.14	3.87	33.8	0.211	0.161	2.25	0.0449	340
Median		67.4	NA	NA	NA	NA	NA	0.2	NA	12200	0.14	3.87	33.8	0.211	0.161	2.25	0.0449	340
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1
Minimum		67.4	NA	NA	NA	NA	NA	0.2	NA	12200	0.14	3.87	33.8	0.211	0.161	2.25	0.0449	340
Maximum		67.4	NA	NA	0	0	0	0.2	0	12200	0.14	3.87	33.8	0.211	0.161	2.25	0.0449	340
% of values undetected																100%	100%	
of values between MDL and MRL											1				1			
SEC13																		
Sample Date																		
08/26/04	082604SEC13SL001	82.4			**0.175**	**0.175**	2.23	0.068	70.1	15200	0.185	10.5	58.9	0.382	**0.0371**	**1.86**	**0.0371**	741
09/03/04	090304SEC13SL001	78.2			2.88	**0.198**	4.92	**0.14**	139	18000	0.196	9.63	72.3	0.348	**0.121**	**1.93**	**0.0386**	864
09/03/04	090304SEC13SL002	77.3			2.94	**0.200**	5.7	0.18	110	25000	0.214	10.5	73.6	0.411	**0.0394**	**1.97**	**0.0394**	1060
09/03/04	090304SEC13SL003	75.7			3.28	1.75	31.5	0.17	108	16100	0.221	8.19	58.6	0.396	**0.102**	**1.98**	**0.0395**	1200
Mean		78.4	NA	NA	2.32	0.58	11.1	0.14	107	19000	0.204	9.7	65.9	0.384	0.075	1.93	0.0386	970
Median		77.8	NA	NA	2.91	0.2	5.3	0.16	109	17000	0.205	10.1	65.6	0.389	0.071	1.95	0.039	960
St. Deviation		2.9	NA	NA	1.44	0.78	13.7	0.05	28	4000	0.016	1.1	8.2	0.027	0.043	0.06	0.0011	200
# of values		4	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Minimum		75.7	NA	NA	0.175	0.175	2.23	0.068	70.1	15200	0.185	8.19	58.6	0.348	0.0371	1.86	0.0371	741
Maximum		82.4	NA	NA	3.28	1.75	31.5	0.18	139	25000	0.221	10.5	73.6	0.411	0.121	1.975	0.0395	1200
% of values undetected					25%	75%		25%							50%	100%	100%	
of values between MDL and MRL															2			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC12																			
Sample Date																			
09/02/04	090204SEC12SL001	8.46	6.88	95.8	21600	23.5	4210	519	**0.0292**	1.69	4.43	367	1.25	**0.0708**	**77.1**	**0.00355**	**0.575**	50.8	60.7
09/03/04	090304SEC12SL001	15.4	3.75	20.1	9080	4.7	1070	124	0.144	**0.919**	9.42	**201**	**0.943**	**0.0345**	**148**	0.0563	**1.11**	42	15.5
09/03/04	090304SEC12SL002	4.02	4.16	4.93	12900	1.36	965	138	**0.0361**	**0.945**	3.44	**211**	**0.4565**	**0.0945**	**94.5**	**0.0189**	**3.04**	**8.59**	8.74
Mean		9.3	4.93	40.3	14500	9.9	2080	260	0.07	1.18	5.76	260	0.88	0.0666	107	0.0262	1.58	33.8	28.3
Median		8.46	4.16	20.1	12900	4.7	1070	138	0.0361	0.945	4.43	211	0.943	0.0708	94.5	0.0189	1.11	42	15.5
St. Deviation		5.7	1.7	48.7	6400	11.9	1840	224	0.064	0.443	3.21	93	0.4	0.0302	37	0.0271	1.3	22.3	28.3
# of values		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		4.02	3.75	4.93	9080	1.36	965	124	0.0292	0.919	3.44	201	0.4565	0.0345	77.1	0.00355	0.575	8.59	8.74
Maximum		15.4	6.88	95.8	21600	23.5	4210	519	0.144	1.69	9.42	367	1.25	0.0945	148	0.0563	3.04	50.8	60.7
% of values undetected									33%	33%			33%	67%	33%	67%	100%		
of values between MDL and MRL									1	1		2	1	1	2			1	
SEC12E																			
Sample Date																			
08/27/04	82704SEC12ESL001	9.26	1.38	6.35	14700	6.34	406	75.5	**0.0573**	**0.547**	1.14	238	0.849	0.145	**136**	**0.0045**	**0.725**	42.8	16.1
Mean		9.26	1.38	6.35	14700	6.34	406	75.5	0.0573	0.547	1.14	238	0.849	0.145	136	0.0045	0.725	42.8	16.1
Median		9.26	1.38	6.35	14700	6.34	406	75.5	0.0573	0.547	1.14	238	0.849	0.145	136	0.0045	0.725	42.8	16.1
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		9.26	1.38	6.35	14700	6.34	406	75.5	0.0573	0.547	1.14	238	0.849	0.145	136	0.0045	0.725	42.8	16.1
Maximum		9.26	1.38	6.35	14700	6.34	406	75.5	0.0573	0.547	1.14	238	0.849	0.145	136	0.0045	0.725	42.8	16.1
% of values undetected																100%	100%		
of values between MDL and MRL									1	1					1				
SEC13																			
Sample Date																			
08/26/04	082604SEC13SL001	13.4	9.35	14.5	20000	8.75	2710	650	**0.0361**	**0.424**	9.1	575	**0.297**	**0.0186**	**99.1**	**0.0099**	**0.600**	45.2	40.3
09/03/04	090304SEC13SL001	22.1	7.36	26.1	23400	5.78	3820	378	**0.0357**	**0.848**	11.1	790	0.735	**0.0193**	**117**	0.107	**0.620**	64.1	39.7
09/03/04	090304SEC13SL002	24.8	8.83	28.1	27800	5.95	4380	392	**0.0383**	**0.744**	12.6	808	0.849	**0.0197**	**123**	0.114	**0.635**	72.6	44.1
09/03/04	090304SEC13SL003	12.7	5.07	18.8	20900	5.85	2050	283	**0.0254**	2.17	7.19	744	0.822	**0.0198**	185	0.0606	**0.635**	47.1	55.4
Mean		18.3	7.65	21.9	23000	6.58	3240	426	0.0333	1.05	10.0	729	0.676	0.0193	131	0.073	0.62	57.3	44.9
Median		17.8	8.1	22.5	22200	5.9	3270	385	0.0359	0.8	10.1	767	0.779	0.0195	120	0.084	0.63	55.6	42.2
St. Deviation		6.1	1.92	6.3	3500	1.45	1050	157	0.0058	0.77	2.4	106	0.257	0.0006	37	0.048	0.02	13.3	7.3
# of values		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Minimum		12.7	5.07	14.5	20000	5.78	2050	283	0.0254	0.424	7.19	575	0.297	0.0186	99.1	0.0099	0.60	45.2	39.7
Maximum		24.8	9.35	28.1	27800	8.75	4380	650	0.0383	2.17	12.6	808	0.849	0.0198	185	0.114	0.635	72.6	55.4
% of values undetected														100%			100%		
of values between MDL and MRL									4	3			1		3	1			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
	Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC16																	
Sample Date																	
09/04/04 090404SEC16SL001	87.4		0.31	**0.74**	**0.160**	5.62	0.11	30.8	14600	0.274	13	101	0.47	**0.111**	**1.7**	**0.089**	1180
09/04/04 090404SEC16SL002	82.2			**1**	**0.185**	2.21	0.18	97.1	16400	0.19	9.48	34.2	0.226	**0.037**	**1.85**	**0.037**	881
09/04/04 090404SEC16SS001	86.5		0.462	**0.513**	**0.836**	5.45	0.057	30.4	20800	**0.269**	13	109	0.402	**0.0355**	**5.95**	**0.0355**	1300
Mean	85.4	NA	0.386	0.8	0.39	4.43	0.12	52.8	17300	0.244	12	81	0.366	0.061	3.17	0.054	1120
Median	86.5	NA	0.386	0.74	0.185	5.45	0.11	30.8	16400	0.269	13	101	0.402	0.037	1.85	0.037	1180
St. Deviation	2.8	NA	0.11	0.2	0.383	1.92	0.06	38.4	3200	0.047	2	41	0.126	0.043	2.41	0.03	220
# of values	3	0	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	82.2	NA	0.31	0.513	0.160	2.21	0.057	30.4	14600	0.19	9.48	34.2	0.226	0.0355	1.7	0.0355	881
Maximum	87.4	NA	0.462	1	0.836	5.62	0.18	97.1	20800	0.274	13	109	0.47	0.111	5.95	0.089	1300
% of values undetected					67%									67%	67%	67%	
of values between MDL and MRL				3	1					1				1	1	1	
SEC17																	
Sample Date																	
09/04/04 090404SEC17SL001	73.4			**1.01**	**0.209**	5.16	0.15	94.7	26900	0.213	12.3	64.8	0.365	**0.0414**	**6.21**	**0.0414**	1280
09/04/04 090404SEC17SL002	83.2			**0.926**	**0.551**	2.92	0.11	63.3	18800	0.226	12.6	68.1	0.434	**0.0359**	**5.87**	**0.0359**	1070
09/04/04 090404SEC17SL003	83.0			2.91	**0.187**	3.77	0.27	113	24700	0.222	8.81	74.9	0.403	**0.0371**	**5.82**	**0.0371**	1000
Mean	79.9	NA	NA	1.62	0.32	3.95	0.18	90	23500	0.22	11.2	69.3	0.401	0.0381	5.97	0.0381	1120
Median	83	NA	NA	1.01	0.209	3.77	0.15	94.7	24700	0.222	12.3	68.1	0.403	0.0371	5.87	0.0371	1070
St. Deviation	5.6	NA	NA	1.12	0.204	1.13	0.08	25	4200	0.007	2.1	5.2	0.035	0.0029	0.21	0.0029	150
# of values	3	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	73.4	NA	NA	0.926	0.187	2.92	0.11	63.3	18800	0.213	8.81	64.8	0.365	0.03585	5.82	0.0359	1000
Maximum	83.2	NA	NA	2.91	0.551	5.16	0.27	113	26900	0.226	12.6	74.9	0.434	0.04138	6.21	0.0414	1280
% of values undetected					67%									100%		100%	
of values between MDL and MRL				2	1										3		
SEC18																	
Sample Date																	
09/04/04 090404SEC18SL001	79.5			2.72	**0.238**	14.5	0.17	162	23000	0.282	12.7	71.5	0.454	**0.135**	**1.91**	**0.125**	1080
09/04/04 090404SEC18SL002	65.2			1.64	**0.209**	5.89	0.4	291	28300	0.164	7.15	41.1	0.278	**0.14**	**2.32**	**0.125**	865
09/04/04 090404SEC18SL003	84.2			**1.54**	**0.612**	5.38	0.15	70.9	21900	0.273	13.3	92.7	0.485	**0.122**	**1.83**	**0.0949**	1580
Mean	76.3	NA	NA	1.97	0.353	8.6	0.24	175	24400	0.24	11.1	68.4	0.406	0.132	2.02	0.115	1180
Median	79.5	NA	NA	1.64	0.238	5.89	0.17	162	23000	0.273	12.7	71.5	0.454	0.135	1.91	0.125	1080
St. Deviation	9.9	NA	NA	0.65	0.225	5.1	0.14	111	3400	0.066	3.4	25.9	0.112	0.009	0.27	0.017	370
# of values	3	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	65.2	NA	NA	1.54	0.209	5.38	0.15	70.9	21900	0.164	7.15	41.1	0.278	0.122	1.83	0.0949	865
Maximum	84.2	NA	NA	2.72	0.612	14.5	0.4	291	28300	0.282	13.3	92.7	0.485	0.14	2.32	0.125	1580
% of values undetected					67%										100%		
of values between MDL and MRL				1	1									3		3	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC16																			
Sample Date																			
09/04/04	090404SEC16SL001	15.5	5.98	12.7	18500	8.25	3630	409	**0.0266**	**0.631**	8.66	725	**0.0825**	**0.0843**	131	0.0672	**0.550**	46.5	33.4
09/04/04	090404SEC16SL002	12.3	5.06	9.77	20600	6.14	2820	285	**0.0296**	**0.883**	5.26	419	0.85	**0.0185**	128	0.124	**0.595**	50.2	32.5
09/04/04	090404SEC16SS001	15	5.79	12	23500	7.07	3800	430	**0.0306**	**0.547**	7.97	705	**0.39**	**0.0178**	**89**	**0.0125**	**0.575**	44.2	37
Mean		14.3	5.61	11.5	20900	7.15	3420	375	0.0289	0.687	7.3	616	0.44	0.0402	116	0.068	0.573	47	34.3
Median		15	5.79	12	20600	7.07	3630	409	0.0296	0.631	7.97	705	0.39	0.0185	128	0.0672	0.575	46.5	33.4
St. Deviation		1.7	0.49	1.5	2500	1.06	520	78	0.0021	0.175	1.8	171	0.39	0.0382	23	0.056	0.023	3	2.4
# of values		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		12.3	5.06	9.77	18500	6.14	2820	285	0.0266	0.547	5.26	419	0.0825	0.0178	89	0.0125	0.55	44.2	32.5
Maximum		15.5	5.98	12.7	23500	8.25	3800	430	0.0306	0.883	8.66	725	0.85	0.0843	131	0.124	0.595	50.2	37
% of values undetected													33%	67%	33%		100%		
of values between MDL and MRL									3	3			1	1		1			
SEC17																			
Sample Date																			
09/04/04	090404SEC17SL001	22.8	6.84	24.2	31200	7.86	3690	140	0.0623	**1.09**	9.96	625	**0.634**	**0.0207**	**132**	0.0643	**0.665**	66.5	41.3
09/04/04	090404SEC17SL002	17.5	6.35	17.1	22100	8.43	3130	341	0.0494	**0.715**	7.44	663	**0.47**	**0.0179**	140	0.0306	**0.580**	52	41.9
09/04/04	090404SEC17SL003	18.6	6.77	24.8	24800	6.68	3250	274	0.0552	**1.06**	8.36	599	0.682	**0.0185**	130	0.0256	**0.595**	57.9	39.8
Mean		19.6	6.65	22	26000	7.66	3360	252	0.0556	0.96	8.59	629	0.595	0.019	130	0.0402	0.613	58.8	41
Median		18.6	6.77	24.2	24800	7.86	3250	274	0.0552	1.06	8.36	625	0.634	0.0185	132	0.0306	0.595	57.9	41.3
St. Deviation		2.8	0.27	4.3	4700	0.89	290	102	0.0065	0.21	1.28	32	0.111	0.0015	10	0.021	0.045	7.3	1.1
# of values		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		17.5	6.35	17.1	22100	6.68	3130	140	0.0494	0.715	7.44	599	0.47	0.0179	130	0.0256	0.58	52	39.8
Maximum		22.8	6.84	24.8	31200	8.43	3690	341	0.0623	1.09	9.96	663	0.682	0.0207	140	0.0643	0.665	66.5	41.9
% of values undetected														100%			100%		
of values between MDL and MRL										3			2		1				
SEC18																			
Sample Date																			
09/04/04	090404SEC18SL001	20.8	10.6	26.1	23700	8.97	4090	507	0.063	**0.691**	14.4	649	**0.375**	**0.0898**	147	0.0982	**0.615**	61.8	35.6
09/04/04	090404SEC18SL002	13.1	4.22	16.6	24600	6.82	1910	192	0.201	**0.789**	5.74	311	1.39	**0.0642**	**127**	0.0768	**0.750**	61.3	40.6
09/04/04	090404SEC18SL003	22.4	10.6	36.5	26300	10.1	5170	584	0.0594	**0.544**	15	1330	**0.302**	**0.0862**	165	0.173	**0.590**	67.1	45.1
Mean		18.8	8.5	26.4	24900	8.6	3720	428	0.108	0.675	11.7	760	0.69	0.0801	146	0.116	0.65	63.4	40.4
Median		20.8	10.6	26.1	24600	8.97	4090	507	0.063	0.691	14.4	649	0.375	0.0862	147	0.0982	0.615	61.8	40.6
St. Deviation		5	3.7	10	1300	1.7	1660	208	0.081	0.123	5.2	520	0.61	0.0139	19	0.051	0.09	3.2	4.8
# of values		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		13.1	4.22	16.6	23700	6.82	1910	192	0.0594	0.544	5.74	311	0.302	0.0642	127	0.0768	0.59	61.3	35.6
Maximum		22.4	10.6	36.5	26300	10.1	5170	584	0.201	0.789	15	1330	1.39	0.0898	165	0.173	0.75	67.1	45.1
% of values undetected																	100%		
of values between MDL and MRL										3			2	3	1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC19																		
Sample Date																		
09/02/04	090204SEC19SL001	84.2		2	1.58	**0.182**	9.3	0.1	110	16600	0.23	9.26	49.2	0.258	**0.0804**	**5.85**	**0.0362**	1410
09/02/04	090204SEC19SS001	85.7		0.572	1.31	**0.178**	9.33	**0.0285**	17.6	16400	0.28	10.6	108	0.419	**0.0911**	**5.65**	**0.0839**	1620
Mean		85.0	NA	1.29	1.45	0.18	9.3	0.06	60	16500	0.26	9.9	79	0.339	0.0858	5.75	0.0601	1520
Median		85.0	NA	1.29	1.45	0.18	9.3	0.06	60	16500	0.26	9.9	79	0.339	0.0858	5.75	0.0601	1520
St. Deviation		1.1	NA	1.01	0.19	0.003	0	0.05	70	100	0.04	0.9	42	0.114	0.0076	0.14	0.0337	150
# of values		2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		84.2	NA	0.572	1.31	0.178	9.3	0.0285	17.6	16400	0.23	9.26	49.2	0.258	0.0804	5.65	0.0362	1410
Maximum		85.7	NA	2	1.58	0.182	9.33	0.1	110	16600	0.28	10.6	108	0.419	0.0911	5.85	0.0839	1620
% of values undetected						100%		50%								100%	50%	
of values between MDL and MRL															2		1	
SEC2																		
Sample Date																		
08/25/04	082504SEC2SL001	74.5			**0.829**	**0.52**	2.4	0.28	263	12900	0.188	3.53	113	0.313	**0.0410**	**2.05**	**0.0410**	2830
Mean		74.5	NA	NA	0.829	0.52	2.4	0.28	263	12900	0.188	3.53	113	0.313	0.0410	2.05	0.0410	2830
Median		74.5	NA	NA	0.829	0.52	2.4	0.28	263	12900	0.188	3.53	113	0.313	0.0410	2.05	0.0410	2830
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	NA	NA	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		74.5	1	1	0.829	0.52	2.4	0.28	263	12900	0.188	3.53	113	0.313	0.0410	2.05	0.0410	2830
Maximum		74.5	NA	NA	0.829	0.52	2.4	0.28	263	12900	0.188	3.53	113	0.313	0.0410	2.05	0.0410	2830
% of values undetected			NA	NA											100%	100%	100%	
of values between MDL and MRL					1	1												
SEC20																		
Sample Date																		
09/03/04	090304SEC20SL001	70.3			5.09	**0.221**	9.39	0.36	161	18900	0.168	7.46	36.5	0.257	**0.0423**	**2.11**	**0.0423**	710
09/03/04	090304SEC20SL002	79.8			3.01	**0.194**	7.78	0.2	92.1	20500	0.2	9.74	58.1	0.316	**0.0384**	**1.92**	**0.0384**	908
Mean		75.1	NA	NA	4.05	0.207	8.59	0.28	127	19700	0.18	8.6	47.3	0.287	0.0403	2.02	0.0403	810
Median		75.1	NA	NA	4.05	0.207	8.59	0.28	127	19700	0.18	8.6	47.3	0.287	0.0403	2.02	0.0403	810
St. Deviation		6.7	NA	NA	1.47	0.019	1.14	0.11	49	1100	0.02	1.61	15.3	0.042	0.0027	0.13	0.0027	140
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		70.3	NA	NA	3.01	0.194	7.78	0.2	92.1	18900	0.168	7.46	36.5	0.257	0.0384	1.92	0.0384	710
Maximum		79.8	NA	NA	5.09	0.221	9.39	0.36	161	20500	0.2	9.74	58.1	0.316	0.0423	2.11	0.0423	908
% of values undetected						100%									100%	100%	100%	
of values between MDL and MRL																		

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC19																			
Sample Date																			
09/02/04	090204SEC19SL001	13.8	5.67	11.8	19900	6.68	2880	315	**0.0318**	**0.577**	6.32	505	0.713	**0.0479**	148	**0.0036**	**0.585**	48.4	34.7
09/02/04	090204SEC19SS001	15.9	5.84	11.6	22400	7.33	3300	457	**0.0314**	**0.589**	7.15	660	**0.425**	**0.080**	146	**0.0035**	**0.565**	49.6	40.4
Mean		14.9	5.76	11.7	21200	7.01	3100	386	0.0316	0.583	6.74	580	0.569	0.064	147	0.0036	0.575	49	37.6
Median		14.9	5.76	11.7	21200	7.01	3100	386	0.0316	0.583	6.74	580	0.569	0.064	147	0.0036	0.575	49	37.6
St. Deviation		1.5	0.12	0.1	1800	0.46	300	100	0.0003	0.008	0.59	110	0.204	0.023	1	0.0001	0.014	0.8	4
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		13.8	5.67	11.6	19900	6.68	2880	315	0.0314	0.577	6.32	505	0.425	0.0479	146	0.0035	0.565	48.4	34.7
Maximum		15.9	5.84	11.8	22400	7.33	3300	457	0.0318	0.589	7.15	660	0.713	0.08	148	0.0036	0.585	49.6	40.4
% of values undetected																100%	100%		
of values between MDL and MRL									2	2			1	2					
SEC2																			
Sample Date																			
08/25/04	082504SEC2SL001	16.8	4.58	7.4	29500	5.61	2370	161	**0.0383**	**0.524**	7.33	316	**0.207**	**0.0948**	189	**0.025**	**0.66**	39.6	28.2
Mean		16.8	4.58	7.4	29500	5.61	2370	161	0.0383	0.524	7.33	316	0.207	0.0948	189	0.025	0.66	39.6	28.2
Median		16.8	4.58	7.4	29500	5.61	2370	161	0.0383	0.524	7.33	316	0.207	0.0948	189	0.025	0.66	39.6	28.2
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		16.8	4.58	7.4	29500	5.61	2370	161	0.0383	0.524	7.33	316	0.207	0.0948	189	0.025	0.66	39.6	28.2
Maximum		16.8	4.58	7.4	29500	5.61	2370	161	0.0383	0.524	7.33	316	0.207	0.0948	189	0.025	0.66	39.6	28.2
% of values undetected																	100%		
of values between MDL and MRL									1	1			1	1		1			
SEC20																			
Sample Date																			
09/03/04	090304SEC20SL001	14.6	4.42	17.3	19300	5.86	2240	220	0.0671	**0.857**	5.93	437	0.954	**0.0211**	**112**	0.0488	**0.68**	58.3	34.6
09/03/04	090304SEC20SL002	16.5	8.53	27.1	21300	6.38	3500	358	**0.0388**	**1.23**	11.2	591	**0.593**	**0.0192**	**120**	0.0748	**0.62**	56.2	37.0
Mean		15.6	6.48	22.2	20300	6.12	2900	290	0.053	1.04	8.6	514	0.774	0.0202	120	0.0618	0.65	57.3	36.0
Median		15.6	6.48	22.2	20300	6.12	2900	290	0.053	1.04	8.6	514	0.774	0.0202	120	0.0618	0.65	57.3	36.0
St. Deviation		1.3	2.91	6.9	1400	0.37	900	100	0.02	0.26	3.7	109	0.255	0.0013	10	0.0184	0.04	1.5	2
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		14.6	4.42	17.3	19300	5.86	2240	220	0.0388	0.857	5.93	437	0.593	0.0192	112	0.0488	0.62	56.2	34.6
Maximum		16.5	8.53	27.1	21300	6.38	3500	358	0.0671	1.23	11.2	591	0.954	0.0211	120	0.0748	0.68	58.3	37.0
% of values undetected														100%			100%		
of values between MDL and MRL									1	2			1		2				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
	Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC21																	
Sample Date																	
09/02/04 090204SEC21SL001	84.6			2.43	**0.48**	7.03	0.19	29	22000	0.248	12.3	174	0.697	**0.132**	**1.82**	**0.143**	2150
09/02/04 090204SEC21SS002	26.0			**33.8**	**5.6**	328	**0.125**	1070	4900	**0.059**	**2.39**	24.6	**0.059**	**0.119**	**5.9**	**0.119**	1020
09/03/04 090304SEC21SL001	82.1			3.31	**0.186**	8.15	0.082	115	12200	0.139	3.69	55.6	0.293	**0.0372**	**1.86**	**0.0372**	2020
09/03/04 090304SEC21SL002	34.1			8.66	**1.91**	35.6	0.34	1290	23200	**0.228**	**4.29**	106	0.354	**0.088**	**4.395**	**0.195**	4630
Mean	56.7	NA	NA	12.1	2	95	0.18	630	16000	0.169	5.7	90	0.351	0.094	3.49	0.123	2460
Median	58.1	NA	NA	6	1.2	22	0.16	590	17000	0.184	4	81	0.324	0.103	3.13	0.131	2090
St. Deviation	31	NA	NA	14.8	2.5	156	0.11	650	9000	0.087	4.5	65	0.264	0.042	2.01	0.066	1540
# of values	4	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Minimum	26	NA	NA	2.43	0.186	7.03	0.082	29	4900	0.059	2.39	24.6	0.059	0.0372	1.82	0.0372	1020
Maximum	84.6	NA	NA	33.8	5.6	328	0.34	1290	23200	0.248	12.3	174	0.697	0.132	5.9	0.195	4630
% of values undetected					50%		25%			25%			25%	75%	100%	50%	
of values between MDL and MRL				1	2					1	2			1		2	
SEC22																	
Sample Date																	
09/03/04 090304SEC22SL001	85.1			2.87	**0.178**	7.01	0.15	94	18900	**0.257**	11.1	48.8	0.364	0.243	**4.88**	**0.0349**	959
09/03/04 090304SEC22SL002	76.0			2.43	**0.203**	**1.22**	**0.145**	146	26700	0.152	6.5	71.6	0.466	**0.0878**	**1.955**	**0.109**	1030
09/03/04 090304SEC22SL003	89.8			**0.169**	**0.169**	2.28	0.15	52.3	15700	0.16	9.51	63.6	0.379	**0.0334**	**1.665**	**0.0963**	1320
Mean	83.6	NA	NA	1.82	0.18	3.5	0.15	97	20400	0.19	9	61.3	0.403	0.121	2.83	0.08	1100
Median	85.1	NA	NA	2.43	0.178	2.28	0.15	94	18900	0.16	9.51	63.6	0.379	0.0878	1.955	0.0963	1030
St. Deviation	7.0	NA	NA	1.45	0.018	3.08	0	47	5700	0.058	2.3	11.6	0.055	0.109	1.78	0.04	190
# of values	3	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	76	NA	NA	0.169	0.169	1.22	0.145	52.3	15700	0.152	6.5	48.8	0.364	0.0334	1.665	0.0349	959
Maximum	89.8	NA	NA	2.87	0.203	7.01	0.15	146	26700	0.257	11.1	71.6	0.466	0.243	4.88	0.109	1320
% of values undetected				33%	100%		33%							33%	67%	33%	
of values between MDL and MRL						1				1				1	1	2	
SEC22W																	
Sample Date																	
08/26/04 82604SEC22WSL001	27			12.8	**0.57**	23.3	0.12	1160	1730	**0.257**	**4.39**	62.5	0.678	**0.114**	**5.5**	**0.248**	1420
Mean	27	NA	NA	12.8	0.57	23.3	0.12	1160	1730	0.257	4.39	62.5	0.678	0.114	5.5	0.248	1420
Median	27	NA	NA	12.8	0.57	23.3	0.12	1160	1730	0.257	4.39	62.5	0.678	0.114	5.5	0.248	1420
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	27	NA	NA	12.8	0.57	23.3	0.12	1160	1730	0.257	4.39	62.5	0.678	0.114	5.5	0.248	1420
Maximum	27	NA	NA	12.8	0.57	23.3	0.12	1160	1730	0.257	4.39	62.5	0.678	0.114	5.5	0.248	1420
% of values undetected					100%									100%	100%		
of values between MDL and MRL										1	1					1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC21																		
Sample Date																		
09/02/04 090204SEC21SL001	27.8	14.2	112	28300	9.64	4800	867	0.0603	1.75	16.7	714	**0.088**	**0.11**	171	0.2	1.22	66.7	50.6
09/02/04 090204SEC21SS002	3.2	**0.286**	16.3	5270	1.48	160	16.3	**0.0858**	3.84	**0.119**	**59**	**1.13**	**0.059**	**246**	0.16	**1.91**	13.7	**5.9**
09/03/04 090304SEC21SL001	6.32	5.27	20.9	14500	4.04	2450	476	**0.0334**	1.46	4.36	492	**0.405**	**0.0186**	**67.6**	0.0562	**0.60**	47.8	45.6
09/03/04 090304SEC21SL002	10.2	2.78	18.3	15500	7.62	1870	140	0.143	4.01	5.5	510	**0.977**	**0.0440**	**130**	0.221	**1.42**	41.7	34.6
Mean	11.9	5.6	42	15900	5.7	2300	375	0.081	2.75	6.7	440	0.65	0.06	154	0.16	1.29	42.5	34.2
Median	8.3	4	20	15000	5.83	2200	308	0.073	2.77	4.9	500	0.69	0.05	151	0.18	1.32	44.8	40.1
St. Deviation	11	6.1	47	9500	3.64	1900	381	0.047	1.36	7.1	280	0.49	0.04	75	0.07	0.54	21.9	20
# of values	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Minimum	3.2	0.286	16.3	5270	1.48	160	16.3	0.0334	1.46	0.119	59	0.088	0.0186	67.6	0.0562	0.6	13.7	5.9
Maximum	27.8	14.2	112	28300	9.64	4800	867	0.143	4.01	16.7	714	1.13	0.11	246	0.221	1.91	66.7	50.6
% of values undetected		25%								25%	25%	25%	75%			75%		25%
of values between MDL and MRL								2				3	1	3				
SEC22																		
Sample Date																		
09/03/04 090304SEC22SL001	16.5	7.83	13.1	22800	8.3	3130	417	**0.0385**	**0.529**	10.6	599	**0.554**	**0.0175**	135	0.0714	**0.565**	49.9	50.8
09/03/04 090304SEC22SL002	16.6	6.67	13.4	21900	5.9	2850	339	**0.0473**	**0.96**	8.53	428	0.765	**0.0196**	**98.1**	0.225	**0.63**	49.5	49.1
09/03/04 090304SEC22SL003	15.7	7	14	19600	8.01	3460	558	**0.0406**	**0.518**	9.8	704	**0.421**	**0.0167**	139	0.138	**0.54**	43.7	47.8
Mean	16.3	7.17	13.5	21400	7.4	3150	438	0.0421	0.669	9.6	577	0.58	0.0179	124	0.145	0.58	47.7	49.2
Median	16.5	7	13.4	21900	8.01	3130	417	0.0406	0.529	9.8	599	0.554	0.0175	135	0.138	0.565	49.5	49.1
St. Deviation	0.5	0.6	0.5	1700	1.3	310	111	0.0046	0.252	1	139	0.173	0.0015	23	0.077	0.05	3.5	1.5
# of values	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	15.7	6.67	13.1	19600	5.9	2850	339	0.0385	0.518	8.53	428	0.421	0.0167	98.1	0.0714	0.54	43.7	47.8
Maximum	16.6	7.83	14	22800	8.3	3460	558	0.0473	0.96	10.6	704	0.765	0.0196	139	0.225	0.63	49.9	50.8
% of values undetected													100%			100%		
of values between MDL and MRL								3	3			2		1				
SEC22W																		
Sample Date																		
08/26/04 82604SEC22WSL001	11.7	2.21	13.1	9440	6.18	1280	81.8	**0.0788**	9.09	2.34	**190**	2.07	**0.314**	**57**	**0.0114**	**1.84**	66.6	18.2
Mean	11.7	2.21	13.1	9440	6.18	1280	81.8	0.0788	9.09	2.34	190	2.07	0.314	57	0.0114	1.84	66.6	18.2
Median	11.7	2.21	13.1	9440	6.18	1280	81.8	0.0788	9.09	2.34	190	2.07	0.314	57	0.0114	1.84	66.6	18.2
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	11.7	2.21	13.1	9440	6.18	1280	81.8	0.0788	9.09	2.34	190	2.07	0.314	57	0.0114	1.84	66.6	18.2
Maximum	11.7	2.21	13.1	9440	6.18	1280	81.8	0.0788	9.09	2.34	190	2.07	0.314	57	0.0114	1.84	66.6	18.2
% of values undetected														100%	100%	100%		
of values between MDL and MRL								1			1		1					

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC23																		
Sample Date																		
09/02/04	090204SEC23SL001	89.7			**8.72**	**0.169**	32.4	0.11	49.4	12900	0.188	9.51	41.6	0.333	**0.14**	**1.67**	**0.0717**	893
09/03/04	090304SEC23SL001	24		65.1	12.8	**1.285**	174	0.29	1610	5820	**0.260**	7.67	31.8	**0.304**	**0.126**	**6.25**	0.879	3860
Mean		57	NA	NA	10.8	0.73	103	0.2	830	9400	0.22	8.59	36.7	0.319	0.133	3.96	0.475	2380
Median		57	NA	NA	10.8	0.73	103	0.2	830	9400	0.22	8.59	36.7	0.319	0.133	3.96	0.475	2380
St. Deviation		46	NA	NA	2.9	0.79	100	0.13	1100	5000	0.05	1.3	6.9	0.021	0.01	3.24	0.571	2100
# of values		2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		24	NA	NA	8.72	0.169	32.4	0.11	49.4	5820	0.188	7.67	31.8	0.304	0.126	1.67	0.0717	893
Maximum		89.7	NA	NA	12.8	1.285	174	0.29	1610	12900	0.26	9.51	41.6	0.333	0.14	6.25	0.879	3860
% of values undetected						100%									50%	100%		
of values between MDL and MRL					1						1			1	1		1	
SEC24																		
Sample Date																		
09/03/04	090304SEC24SL001	83.6			2.8	**0.473**	6.37	0.15	79.5	1750	1.50	36.1	57.7	0.288	**0.223**	**1.83**	0.303	1820
09/03/04	090304SEC24SL002	70.0			1.97	**0.220**	18.0	0.75	417	17900	0.182	5.19	62.7	0.268	**0.0433**	**2.17**	**0.24**	1690
Mean		77	NA	NA	2.4	0.35	12	0.45	248	9800	0.8	20.6	60.2	0.278	0.133	2	0.27	1760
Median		77	NA	NA	2.4	0.35	12	0.45	248	9800	0.8	20.6	60.2	0.278	0.133	2	0.27	1760
St. Deviation		10	NA	NA	0.6	0.18	8	0.42	239	11400	0.9	21.9	3.5	0.014	0.127	0.24	0.04	90
# of values		2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		70	NA	NA	1.97	0.22	6.37	0.15	79.5	1750	0.182	5.19	57.7	0.268	0.0433	1.83	0.24	1690
Maximum		83.6	NA	NA	2.8	0.473	18	0.75	417	17900	1.5	36.1	62.7	0.288	0.223	2.17	0.303	1820
% of values undetected						50%									50%	100%		
of values between MDL and MRL						1									1		1	
SEC26																		
Sample Date																		
09/02/04	090204SEC26SL001	48.6			3.61	**0.862**	24.5	0.23	422	21000	**0.18**	6.9	41.3	0.21	**0.369**	**3.15**	**0.063**	565
Mean		48.6	NA	NA	3.61	0.862	24.5	0.23	422	21000	0.18	6.9	41.3	0.21	0.369	3.15	0.063	565
Median		48.6	NA	NA	3.61	0.862	24.5	0.23	422	21000	0.18	6.9	41.3	0.21	0.369	3.15	0.063	565
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		48.6	NA	NA	3.61	0.862	24.5	0.23	422	21000	0.18	6.9	41.3	0.21	0.369	3.15	0.063	565
Maximum		48.6	NA	NA	3.61	0.862	24.5	0.23	422	21000	0.18	6.9	41.3	0.21	0.369	3.15	0.063	565
% of values undetected																100%	100%	
of values between MDL and MRL						1					1				1			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC23																			
Sample Date																			
09/02/04	090204SEC23SL001	8.05	4.22	8.02	14900	7.12	2610	287	**0.0222**	**0.714**	5.14	467	**0.429**	**0.0541**	141	0.0794	**0.54**	30.4	25.7
09/03/04	090304SEC23SL001	8.05	2.14	23	6380	1.48	298	48	**0.0551**	**2.47**	2.08	**62.5**	**1.11**	**0.0625**	271	0.187	**2.03**	25.4	4.84
Mean		8.05	3.18	16	10600	4.3	1450	170	0.0387	1.59	3.61	265	0.77	0.0583	206	0.133	1.28	27.9	15.3
Median		8.05	3.18	16	10600	4.3	1450	170	0.0387	1.59	3.61	265	0.77	0.0583	206	0.133	1.28	27.9	15.3
St. Deviation		0	1.47	11	6000	3.99	1630	170	0.0233	1.24	2.16	286	0.48	0.0059	92	0.076	1.05	3.5	14.8
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		8.05	2.14	8.02	6380	1.48	298	48	0.0222	0.714	2.08	62.5	0.429	0.0541	141	0.0794	0.54	25.4	4.84
Maximum		8.05	4.22	23	14900	7.12	2610	287	0.0551	2.47	5.14	467	1.11	0.0625	271	0.187	2.03	30.4	25.7
% of values undetected												50%		50%			100%		
of values between MDL and MRL									2	2			2	1	1				
SEC24																			
Sample Date																			
09/03/04	090304SEC24SL001	33.9	12.7	132	28600	12.1	3750	461	0.0562	1.47	18.5	779	**0.567**	0.453	**110**	0.133	**0.59**	97.7	170
09/03/04	090304SEC24SL002	18.2	7.98	83.3	16200	5.37	2250	214	0.0795	**0.93**	15.4	592	**0.613**	**0.0988**	**123**	0.166	**0.70**	49.1	50.9
Mean		26.1	10.3	108	9500	8.7	3000	338	0.0679	1.2	17	686	0.59	0.276	120	0.15	0.65	73.4	110
Median		26.1	10.3	108	9500	8.7	3000	338	0.0679	1.2	17	686	0.59	0.276	120	0.15	0.65	73.4	110
St. Deviation		11.1	3.3	34	9400	4.8	1060	175	0.0165	0.4	2.2	132	0.033	0.25	10	0.023	0.08	34.4	80
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		18.2	7.98	83.3	2860	5.37	2250	214	0.0562	0.93	15.4	592	0.567	0.0988	110	0.133	0.59	49.1	50.9
Maximum		33.9	12.7	132	16200	12.1	3750	461	0.0795	1.47	18.5	779	0.613	0.453	123	0.166	0.7	97.7	170
% of values undetected																	100%		
of values between MDL and MRL										1			2	1	2				
SEC26																			
Sample Date																			
09/02/04	090204SEC26SL001	20.7	1.84	36.7	7460	5.87	1700	61	0.0833	2.56	4.85	279	2.39	**0.112**	**116**	**0.0063**	**1.02**	33.9	16.2
Mean		20.7	1.84	36.7	7460	5.87	1700	61	0.0833	2.56	4.85	279	2.39	0.112	116	0.0063	1.02	33.9	16.2
Median		20.7	1.84	36.7	7460	5.87	1700	61	0.0833	2.56	4.85	279	2.39	0.112	116	0.0063	1.02	33.9	16.2
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		20.7	1.84	36.7	7460	5.87	1700	61	0.0833	2.56	4.85	279	2.39	0.112	116	0.0063	1.02	33.9	16.2
Maximum		20.7	1.84	36.7	7460	5.87	1700	61	0.0833	2.56	4.85	279	2.39	0.112	116	0.0063	1.02	33.9	16.2
% of values undetected																100%	100%		
of values between MDL and MRL														1	1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
	Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC26E																	
Sample Date																	
08/25/04 82504SEC26ESL001	58.1			3.16	**0.265**	2.28	0.32	627	16700	**0.129**	**8.77**	35	**0.303**	**0.257**	**6.76**	**0.257**	1190
Mean	58.1	NA	NA	3.16	0.265	2.28	0.32	627	16700	0.129	8.77	35	0.303	0.257	6.76	0.257	1190
Median	58.1	NA	NA	3.16	0.265	2.28	0.32	627	16700	0.129	8.77	35	0.303	0.257	6.76	0.257	1190
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	58.1	NA	NA	3.16	0.265	2.28	0.32	627	16700	0.129	8.77	35	0.303	0.257	6.76	0.257	1190
Maximum	58.1	NA	NA	3.16	0.265	2.28	0.32	627	16700	0.129	8.77	35	0.303	0.257	6.76	0.257	1190
% of values undetected					100%					100%				100%		100%	
of values between MDL and MRL											1		1		1		
SEC26W																	
Sample Date																	
08/26/04 82604SEC26WSL001	68.5			**0.657**	**0.208**	4.83	0.33	213	25500	**0.0511**	2.54	71.4	0.227	**0.0433**	**2.165**	**0.0978**	2820
Mean	68.5	NA	NA	0.657	0.208	4.83	0.33	213	25500	0.0511	2.54	71.4	0.227	0.0433	2.165	0.0978	2820
Median	68.5	NA	NA	0.657	0.208	4.83	0.33	213	25500	0.0511	2.54	71.4	0.227	0.0433	2.165	0.0978	2820
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	68.5	NA	NA	0.657	0.208	4.83	0.33	213	25500	0.0511	2.54	71.4	0.227	0.0433	2.165	0.0978	2820
Maximum	68.5	NA	NA	0.657	0.208	4.83	0.33	213	25500	0.0511	2.54	71.4	0.227	0.0433	2.165	0.0978	2820
% of values undetected					100%									100%	100%		
of values between MDL and MRL				1						1						1	
SEC27																	
Sample Date																	
09/03/04 090304SEC27SL001	87.6			**0.450**	**0.175**	1.65	0.16	125	11000	0.240	9.53	48.9	0.374	**0.0730**	**1.75**	**0.0349**	1670
09/03/04 090304SEC27SL002	87.2			**0.662**	**0.530**	2.09	0.094	65.1	14500	0.168	11.1	92.9	0.452	**0.0353**	**1.77**	**0.0894**	1050
09/03/04 090304SEC27SL003	82.4			**0.966**	**0.187**	5.72	0.26	816	92600	0.163	10.3	44.5	0.359	**0.0366**	**1.83**	**0.0366**	794
09/04/04 090404SEC27SL001	92.5			**0.165**	**0.165**	**0.165**	0.076	13.5	14500	0.121	6.04	70.7	0.424	**0.0330**	**3.59**	**0.033**	1840
09/04/04 090404SEC27SL002	87.6			**1.07**	**0.497**	**0.555**	**0.0275**	**3.66**	12200	0.245	11.1	85.3	0.369	**0.0350**	**4.05**	**0.107**	3130
09/04/04 090404SEC27SL003	84.4			1.29	**0.786**	4.21	0.11	30.3	18700	0.185	7.32	87	0.325	**0.0352**	**3.83**	**0.0352**	2270
Mean	87	NA	NA	0.77	0.390	2.40	0.12	176	27300	0.187	9.2	71.6	0.384	0.041	2.8	0.056	1790
Median	87.4	NA	NA	0.81	0.342	1.87	0.10	48	14500	0.177	9.9	78	0.372	0.035	2.71	0.036	1760
St. Deviation	3.4	NA	NA	0.42	0.255	2.16	0.08	317	32100	0.048	2.1	20.6	0.046	0.016	1.13	0.033	850
# of values	6	0	0	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Minimum	82.4	NA	NA	0.165	0.165	0.165	0.0275	3.66	11000	0.121	6.04	44.5	0.325	0.033	1.75	0.033	794
Maximum	92.5	NA	NA	1.29	0.786	5.72	0.26	816	92600	0.245	11.1	92.9	0.452	0.073	4.05	0.107	3130
% of values undetected				17%	50%	33%	17%							83%	50%	67%	
of values between MDL and MRL				4	3			1						1	3	2	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC26E																		
Sample Date																		
08/25/04 82504SEC26ESL001	5.2	**3.46**	6.42	14900	3.92	2220	117	0.0941	**1.29**	4.12	**128.5**	**0.62**	**0.129**	**129**	**0.0257**	**1.29**	35.2	19.1
Mean	5.2	3.46	6.42	14900	3.92	2220	117	0.0941	1.29	4.12	128.5	0.62	0.129	129	0.0257	1.29	35.2	19.1
Median	5.2	3.46	6.42	14900	3.92	2220	117	0.0941	1.29	4.12	128.5	0.62	0.129	129	0.0257	1.29	35.2	19.1
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	5.2	3.46	6.42	14900	3.92	2220	117	0.0941	1.29	4.12	128.5	0.62	0.129	129	0.0257	1.29	35.2	19.1
Maximum	5.2	3.46	6.42	14900	3.92	2220	117	0.0941	1.29	4.12	128.5	0.62	0.129	129	0.0257	1.29	35.2	19.1
% of values undetected									100%		100%	100%	100%	100%	100%	100%		
of values between MDL and MRL		1																
SEC26W																		
Sample Date																		
08/26/04 82604SEC26WSL001	11	10.9	17.2	32300	7.85	9340	462	**0.0428**	**0.217**	10.8	430	**0.436**	**0.0527**	153	**0.00435**	**0.7**	76.6	48.1
Mean	11	10.9	17.2	32300	7.85	9340	462	0.0428	0.217	10.8	430	0.436	0.0527	153	0.00435	0.7	76.6	48.1
Median	11	10.9	17.2	32300	7.85	9340	462	0.0428	0.217	10.8	430	0.436	0.0527	153	0.00435	0.7	76.6	48.1
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	11	10.9	17.2	32300	7.85	9340	462	0.0428	0.217	10.8	430	0.436	0.0527	153	0.00435	0.7	76.6	48.1
Maximum	11	10.9	17.2	32300	7.85	9340	462	0.0428	0.217	10.8	430	0.436	0.0527	153	0.00435	0.7	76.6	48.1
% of values undetected									100%						100%	100%		
of values between MDL and MRL								1				1	1					
SEC27																		
Sample Date																		
09/03/04 090304SEC27SL001	10.2	4.68	13	17600	6.41	3460	343	**0.0208**	**0.467**	7.89	703	**0.281**	**0.0175**	131	0.0654	**0.565**	37.5	44.6
09/03/04 090304SEC27SL002	14.5	6.85	18.9	18000	8.04	3370	489	**0.0356**	**0.424**	9.57	727	**0.257**	**0.0177**	129	0.0694	**0.57**	40.2	49
09/03/04 090304SEC27SL003	13.1	5.88	14.7	10300	7.34	2880	430	**0.0416**	**0.617**	7.24	511	0.726	**0.0183**	135	0.0746	**0.59**	52.4	40
09/04/04 090404SEC27SL001	11.7	4.86	9.91	19300	5.05	3290	418	**0.0137**	**0.165**	5.71	554	**0.182**	**0.0165**	151	**0.0033**	**0.53**	41.7	41.9
09/04/04 090404SEC27SL002	17.2	5.51	12.8	22800	7.85	2880	414	**0.0185**	**0.401**	6.31	617	**0.0845**	**0.0175**	251	**0.0035**	**0.565**	58.3	38.9
09/04/04 090404SEC27SL003	17.5	5.93	10.6	21200	8.38	3380	232	**0.0194**	**0.176**	7.19	624	**0.227**	**0.0176**	180	**0.0035**	**0.57**	51.8	34.1
Mean	14.0	5.62	13.3	34000	7.18	3210	388	0.0249	0.375	7.32	623	0.293	0.0175	163	0.037	0.57	47.0	41.4
Median	13.8	5.70	12.9	20000	7.60	3330	416	0.0201	0.413	7.22	621	0.242	0.0176	143	0.034	0.57	46.8	41.0
St. Deviation	2.9	0.79	3.2	34000	1.25	260	89	0.011	0.175	1.34	83	0.223	0.0006	47	0.036	0.02	8.3	5.1
# of values	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Minimum	10.2	4.68	9.91	17600	5.05	2880	232	0.0137	0.165	5.71	511	0.0845	0.0165	129	0.0033	0.53	37.5	34.1
Maximum	17.5	6.85	18.9	103000	8.38	3460	489	0.0416	0.617	9.57	727	0.726	0.0183	251	0.0746	0.59	58.3	49
% of values undetected									33%			17%	100%		50%	100%		
of values between MDL and MRL								6	4			4						

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC28																		
Sample Date																		
08/25/04	082504SEC28SL001	66.9			0.927	0.225	18.5	0.39	183	26300	0.162	5.56	68.6	0.482	0.0457	2.28	0.0457	2240
09/02/04	090204SEC28SL001	76.9			1.56	6.36	1820	0.098	85.1	20000	0.322	11.2	58.5	0.419	0.104	6.2	0.0385	2280
09/02/04	090204SEC28SL002	87			0.751	0.177	3.94	0.16	55.7	16000	0.35	13	47.1	0.308	0.0929	5.5	0.0342	1390
09/03/04	090304SEC28SL001	55.2		6.1	1.57	0.277	61.3	0.21	247	10900	0.241	3.16	96	0.439	0.054	2.705	0.131	1700
09/03/04	090304SEC28SL002	28.8			2.41	0.535	170	0.45	1140	16200	0.202	0.99	68.5	0.506	0.108	5.4	0.374	2280
09/03/04	090304SEC28SS001	63.9		4.73	0.239	0.239	18.2	0.22	224	21000	0.195	2.7	80.2	0.422	0.0475	2.375	0.103	1570
Mean		63.1	NA	5.4	1.24	1.3	350	0.25	320	30000	0.245	6	69.8	0.429	0.075	4.1	0.121	1910
Median		65.4	NA	5.42	1.24	0.26	40	0.22	200	20000	0.222	4	68.6	0.431	0.073	4.1	0.074	1970
St. Deviation		20.1	NA	0.97	0.76	2.48	720	0.14	410	40000	0.075	5	17	0.069	0.029	1.8	0.13	400
# of values		6	0	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Minimum		28.8	NA	4.73	0.239	0.177	3.94	0.098	55.7	16000	0.162	0.99	47.1	0.308	0.04565	2.28	0.0342	1390
Maximum		87	NA	6.1	2.41	6.36	1820	0.45	1140	10900	0.35	13	96	0.506	0.1075	6.2	0.374	2280
% of values undetected					17%	83%						17%			67%	100%	50%	
of values between MDL and MRL					4	1					1	1			2		3	
SEC29																		
Sample Date																		
09/02/04	090204SEC29SL001	81			2.72	0.189	5.06	0.18	67.2	22400	0.483	49.2	163	0.451	0.34	5.9	0.0366	780
Mean		81	NA	NA	2.72	0.189	5.06	0.18	67.2	22400	0.483	49.2	163	0.451	0.34	5.9	0.0366	780
Median		81	NA	NA	2.72	0.189	5.06	0.18	67.2	22400	0.483	49.2	163	0.451	0.34	5.9	0.0366	780
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		81	NA	NA	2.72	0.189	5.06	0.18	67.2	22400	0.483	49.2	163	0.451	0.34	5.9	0.0366	780
Maximum		81	NA	NA	2.72	0.189	5.06	0.18	67.2	22400	0.483	49.2	163	0.451	0.34	5.9	0.0366	780
% of values undetected						100%										100%	100%	
of values between MDL and MRL																		
SEC30																		
Sample Date																		
08/26/04	082604SEC30SL001	82.9			1.8	0.173	6.46	0.11	85.6	12500	0.164	5.95	43.1	0.345	0.0358	1.79	0.0358	1090
09/02/04	090204SEC30SL001	59.8			0.762	0.263	1.27	0.29	405	13300	0.120	4.18	36.7	0.162	0.197	2.515	0.0505	402
09/02/04	090204SEC30SL002	50.7			0.324	0.324	64.1	0.23	578	20100	0.224	5.54	59.4	0.266	0.205	2.96	0.269	2170
		1.0	1.0	1.0	2.0	3.0	1.0	2.0	0.0	-2.0	3.0	2.0	1.0	3.0	3.0	2.0	3.0	-1.0
Mean		64.5	NA	NA	0.96	0.25	23.9	0.21	356	15300	0.169	5.22	46.4	0.258	0.146	2.42	0.118	1220
Median		59.8	NA	NA	0.762	0.263	6.46	0.23	405	13300	0.164	5.54	43.1	0.266	0.197	2.515	0.0505	1090
St. Deviation		16.6	NA	NA	0.76	0.076	34.9	0.09	250	4200	0.052	0.93	11.7	0.092	0.095	0.59	0.131	890
# of values		3	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		50.7	NA	NA	0.324	0.173	1.27	0.11	85.6	12500	0.12	4.18	36.7	0.162	0.0358	1.79	0.0358	402
Maximum		82.9	NA	NA	1.8	0.324	64.1	0.29	578	20100	0.224	5.95	59.4	0.345	0.205	2.96	0.269	2170
% of values undetected					33%	100%									33%	100%	67%	
of values between MDL and MRL					1		1	1			1				2		1	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC28																			
Sample Date																			
08/25/04	082504SEC28SL001	20.5	11.6	19.7	31200	10.4	5730	339	0.0608	**0.639**	18.7	591	0.799	**0.0817**	276	**0.00455**	**0.735**	76.2	45.9
09/02/04	090204SEC28SL001	20.8	6.22	53	17000	9.17	3650	139	**0.0306**	4.44	8.06	468	1.25	**0.081**	169	**0.00385**	**0.620**	67.2	36.3
09/02/04	090204SEC28SL002	17.3	8.58	50.6	28500	6.44	3490	404	**0.0372**	1.44	9.81	577	0.922	**0.0388**	175	**0.0034**	**0.550**	64.2	47.2
09/03/04	090304SEC28SL001	11.3	4.8	14.6	64900	7.23	2520	138	0.081	5.32	5.53	299	**0.613**	**0.0271**	134	0.104	**0.875**	68.2	45.5
09/03/04	090304SEC28SL002	8.05	1.8	16.1	6470	4.34	965	114	**0.111**	**2.29**	1.94	168	**1.03**	**0.054**	151	0.0927	**1.74**	22.8	15.1
09/03/04	090304SEC28SS001	10.1	4.24	13.1	12200	6.95	2230	123	**0.0608**	4.48	4.87	291	**0.659**	**0.0238**	112	0.0931	**0.765**	63	39.6
Mean		14.7	6.2	27.9	26700	7.4	3100	210	0.064	3.13	8.2	399	0.88	0.0511	170	0.05	0.88	60.3	38.3
Median		14.3	5.5	17.9	22800	7.1	3010	139	0.061	3.37	6.8	384	0.86	0.0464	160	0.049	0.75	65.7	42.6
St. Deviation		5.6	3.5	18.7	21000	2.1	1610	128	0.029	1.9	5.8	172	0.24	0.0258	57	0.051	0.43	18.9	12.1
# of values		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Minimum		8.05	1.8	13.1	6470	4.34	965	114	0.0306	0.639	1.94	168	0.613	0.0238	112	0.0034	0.55	22.8	15.1
Maximum		20.8	11.6	53	64900	10.4	5730	404	0.111	5.32	18.7	591	1.25	0.0817	276	0.104	1.735	76.2	47.2
% of values undetected														50%		50%	100%		
of values between MDL and MRL									4	2		1	3	3	3				
SEC29																			
Sample Date																			
09/02/04	090204SEC29SL001	39.7	9.75	192	57500	4.64	7210	262	0.0521	13.6	16	5510	2.71	0.296	512	0.235	**0.59**	139	30.4
Mean		39.7	9.75	192	57500	4.64	7210	262	0.0521	13.6	16	5510	2.71	0.296	512	0.235	0.59	139	30.4
Median		39.7	9.75	192	57500	4.64	7210	262	0.0521	13.6	16	5510	2.71	0.296	512	0.235	0.59	139	30.4
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		39.7	9.75	192	57500	4.64	7210	262	0.0521	13.6	16	5510	2.71	0.296	512	0.235	0.59	139	30.4
Maximum		39.7	9.75	192	57500	4.64	7210	262	0.0521	13.6	16	5510	2.71	0.296	512	0.235	0.59	139	30.4
% of values undetected																	100%		
of values between MDL and MRL																			
SEC30																			
Sample Date																			
08/26/04	082604SEC30SL001	13.1	5.2	8.71	16400	5.34	3160	318	**0.0312**	**0.179**	7.2	359	0.69	**0.0179**	118	**0.0036**	**0.575**	37.0	31.9
09/02/04	090204SEC30SL001	13.6	4.26	16.6	17400	6.12	1050	119	**0.0648**	**1.10**	5.37	252	0.878	**0.0616**	**97.7**	0.0902	**0.810**	52.2	**8.1**
09/02/04	090204SEC30SL002	25.2	4.82	52.6	18100	10.6	3410	148	**0.0506**	2.22	14.1	421	1.15	**0.114**	199	0.121	**0.955**	52.3	71.3
		1.0	2.0	1.0	-2.0	1.0	-1.0	0.0	4.0	2.0	1.0	0.0	2.0	3.0	0.0	3.0	3.0	1.0	1.0
Mean		17.3	4.76	26	17300	7.4	2540	195	0.0489	1.17	8.9	344	0.91	0.065	138	0.072	0.78	47.2	37.1
Median		13.6	4.82	16.6	17400	6.12	3160	148	0.0506	1.1	7.2	359	0.878	0.0616	118	0.0902	0.81	52.2	31.9
St. Deviation		6.8	0.47	23.4	900	2.8	1300	108	0.0169	1.02	4.6	85	0.23	0.048	54	0.061	0.192	8.8	31.9
# of values		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		13.1	4.26	8.71	16400	5.34	1050	119	0.0312	0.179	5.37	252	0.69	0.0179	97.7	0.0036	0.575	37.0	8.1
Maximum		25.2	5.2	52.6	18100	10.6	3410	318	0.0648	2.22	14.1	421	1.15	0.114	199	0.121	0.955	52.3	71.3
% of values undetected										33%				33%		33%	100%		33%
of values between MDL and MRL									3	1				2	1				

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
		Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC31																		
Sample Date																		
09/02/04	090204SEC31SL001	69.8			3.06	**0.218**	3.63	0.46	196	19500	0.411	10.2	44	0.231	**0.224**	**2.17**	**0.117**	948
Mean		69.8	NA	NA	3.06	0.218	3.63	0.46	196	19500	0.411	10.2	44	0.231	0.224	2.17	0.117	948
Median		69.8	NA	NA	3.06	0.218	3.63	0.46	196	19500	0.411	10.2	44	0.231	0.224	2.17	0.117	948
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		69.8	NA	NA	3.06	0.218	3.63	0.46	196	19500	0.411	10.2	44	0.231	0.224	2.17	0.117	948
Maximum		69.8	NA	NA	3.06	0.218	3.63	0.46	196	19500	0.411	10.2	44	0.231	0.224	2.17	0.117	948
% of values undetected						100%										100%		
of values between MDL and MRL															1		1	
SEC32																		
Sample Date																		
09/02/04	090204SEC32SL001	80.8			1.96	**0.200**	5.84	0.085	28.9	17900	0.152	5.15	96.9	0.392	**0.0961**	**1.89**	**0.094**	2410
09/02/04	090204SEC32SL002	59.3			2.9	**0.617**	2.58	**0.23**	397	4750	**0.0884**	**2.24**	22.1	**0.0514**	**0.143**	**2.54**	**0.31**	412
09/02/04	090204SEC32SL003	82.2			1.91	**0.206**	8.54	0.14	199	22400	0.25	8.88	47.3	0.313	0.282	**1.84**	**0.0368**	511
Mean		74.1	NA	NA	2.26	0.341	5.65	0.15	208	15000	0.163	5.42	55.4	0.252	0.174	2.09	0.15	1110
Median		80.8	NA	NA	1.96	0.206	5.84	0.14	199	17900	0.152	5.15	47.3	0.313	0.143	1.89	0.094	511
St. Deviation		12.8	NA	NA	0.56	0.239	2.98	0.07	184	9200	0.081	3.33	38.1	0.178	0.097	0.39	0.14	1130
# of values		3	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		59.3	NA	NA	1.91	0.200	2.58	0.085	28.9	4750	0.0884	2.24	22.1	0.0514	0.0961	1.84	0.0368	412
Maximum		82.2	NA	NA	2.9	0.617	8.54	0.23	397	22400	0.25	8.88	96.9	0.392	0.282	2.54	0.31	2410
% of values undetected						67%										100%	33%	
of values between MDL and MRL						1		1			1	1		1	2		2	
SEC34																		
Sample Date																		
09/03/04	090304SEC34SL001	85.5			**0.56**	**0.177**	1.77	0.31	240	17800	**0.0397**	2.2	67.8	0.243	**0.0356**	**1.78**	**0.0356**	4270
09/03/04	090304SEC34SL002	67.5			1.94	**0.522**	8.01	0.63	445	15800	**0.0919**	**2.22**	72.4	0.294	**0.0452**	**2.26**	**0.17**	7020
09/04/04	090404SEC34SL001	77.5			2.98	**0.200**	6.31	0.19	70.7	27900	0.191	8.79	105	0.409	**0.0391**	**6.81**	**0.0391**	1830
09/04/04	090404SEC34SL002	83.3			2.44	**0.593**	6.26	**0.046**	74	16600	0.199	4.43	94.6	0.367	**0.0369**	**5.28**	**0.119**	4240
Mean		78.5	NA	NA	1.98	0.373	5.59	0.29	210	19500	0.13	4.41	85	0.328	0.0392	4.03	0.091	4340
Median		80.4	NA	NA	2.19	0.361	6.29	0.25	160	17200	0.141	3.33	84	0.331	0.038	3.77	0.079	4260
St. Deviation		8	NA	NA	1.04	0.215	2.67	0.25	180	5600	0.078	3.1	18	0.074	0.0042	2.41	0.065	2120
# of values		4	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Minimum		67.5	NA	NA	0.56	0.177	1.77	0.046	70.7	15800	0.0397	2.2	67.8	0.243	0.0356	1.78	0.0356	1830
Maximum		85.5	NA	NA	2.98	0.593	8.01	0.63	445	27900	0.199	8.79	105	0.409	0.0452	6.81	0.17	7020
% of values undetected						50%									100%	50%	50%	
of values between MDL and MRL					1	2		1			2	1				2	2	

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC31																			
Sample Date																			
09/02/04	090204SEC31SL001	10.2	6.14	54.1	23700	12.3	2460	407	**0.0497**	2.47	6.58	385	0.925	**0.0721**	125	0.251	**0.7**	70.2	46.6
Mean		10.2	6.14	54.1	23700	12.3	2460	407	0.0497	2.47	6.58	385	0.925	0.0721	125	0.251	0.7	70.2	46.6
Median		10.2	6.14	54.1	23700	12.3	2460	407	0.0497	2.47	6.58	385	0.925	0.0721	125	0.251	0.7	70.2	46.6
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum		10.2	6.14	54.1	23700	12.3	2460	407	0.0497	2.47	6.58	385	0.925	0.0721	125	0.251	0.7	70.2	46.6
Maximum		10.2	6.14	54.1	23700	12.3	2460	407	0.0497	2.47	6.58	385	0.925	0.0721	125	0.251	0.7	70.2	46.6
% of values undetected																	100%		
of values between MDL and MRL									1					1	1				
SEC32																			
Sample Date																			
09/02/04	090204SEC32SL001	16.4	6.83	13.5	20100	7.7	4440	511	**0.025**	**0.189**	9.65	642	**0.221**	**0.0959**	149	0.0405	**0.61**	47.0	35.4
09/02/04	090204SEC32SL002	6.05	1.39	18.4	8370	13.8	762	71	**0.0458**	**1.3**	1.59	484	**0.298**	**0.162**	**103**	0.0653	**0.82**	31.9	**8.2**
09/02/04	090204SEC32SL003	25.5	8.71	134	39200	16.7	5930	337	0.0536	4.6	14.7	1200	1.9	0.153	**106**	0.12	**0.59**	76.6	30.9
Mean		16	5.64	55	22600	12.7	3710	306	0.0415	2	8.6	780	0.81	0.137	119	0.075	0.67	51.8	24.8
Median		16.4	6.83	18.4	20100	13.8	4440	337	0.0458	1.3	9.65	642	0.298	0.153	106	0.0653	0.61	47.0	30.9
St. Deviation		9.7	3.8	68	15600	4.6	2660	222	0.0148	2.3	6.6	380	0.95	0.036	26	0.041	0.13	22.7	14.6
# of values		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum		6.05	1.39	13.5	8370	7.7	762	71	0.025	0.189	1.59	484	0.221	0.0959	103	0.0405	0.59	31.9	8.2
Maximum		25.5	8.71	134	39200	16.7	5930	511	0.0536	4.6	14.7	1200	1.9	0.162	149	0.12	0.82	76.6	35.4
% of values undetected										33%							100%		33%
of values between MDL and MRL									2	1			2	2	2				
SEC34																			
Sample Date																			
09/03/04	090304SEC34SL001	10.6	7.6	14.4	19300	4.03	6730	441	**0.007**	**0.478**	7.94	229	0.673	**0.0178**	131	**0.0215**	**0.575**	60.1	33.3
09/03/04	090304SEC34SL002	13.0	9.69	17.9	18900	5.83	8780	603	**0.00885**	**0.565**	10.2	309	0.899	**0.0226**	192	0.0515	**0.730**	70.7	44
09/04/04	090404SEC34SL001	20.3	6.78	14.2	30600	11	4150	289	**0.0278**	**0.554**	9.82	828	**0.478**	**0.0196**	185	**0.0039**	**0.630**	64.9	45.6
09/04/04	090404SEC34SL002	18.4	5.34	15.5	17900	8.51	4540	255	**0.0071**	**0.185**	8.2	1030	**0.089**	**0.0185**	322	**0.0037**	**0.595**	49.8	55
Mean		15.6	7.35	15.5	21700	7.3	6050	397	0.013	0.445	9	600	0.535	0.0196	208	0.02	0.630	61.4	44
Median		15.7	7.19	15	19100	7.2	5640	365	0.008	0.516	9	570	0.576	0.019	189	0.013	0.610	62.5	45
St. Deviation		4.5	1.82	1.7	6000	3.1	2150	159	0.01	0.178	1.1	390	0.343	0.0021	81	0.023	0.070	8.9	9
# of values		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Minimum		10.6	5.34	14.2	17900	4.03	4150	255	0.007	0.185	7.94	229	0.089	0.0178	131	0.0037	0.575	49.8	33.3
Maximum		20.3	9.69	17.9	30600	11	8780	603	0.0278	0.565	10.2	1030	0.899	0.0226	322	0.0515	0.730	70.7	55
% of values undetected									75%	25%			25%	100%		50%	100%		
of values between MDL and MRL									1	3			1			1			

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	pH	Total Organic	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
	Wet	NA	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	pH	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC35																	
Sample Date																	
08/25/04 082504SEC35SL001	61.2						0.17		11900	0.27	8.92	29	0.359	**0.114**	**2.50**	**0.235**	623
Mean	61.2	NA	NA	NA	NA	NA	0.17	NA	11900	0.27	8.92	29	0.359	0.114	2.50	0.235	623
Median	61.2	NA	NA	NA	NA	NA	0.17	NA	11900	0.27	8.92	29	0.359	0.114	2.50	0.235	623
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1
Minimum	61.2	NA	NA	NA	NA	NA	0.17	NA	11900	0.27	8.92	29	0.359	0.114	2.50	0.235	623
Maximum	61.2	0	0	0	0	0	0.17	0	11900	0.27	8.92	29	0.359	0.114	2.50	0.235	623
% of values undetected															100%		
of values between MDL and MRL														1		1	
SEC36																	
Sample Date																	
08/25/04 082504SEC36SL001				**0.18**	**1.01**	**0.674**	0.11	57	23700	**0.0551**	**1.43**	126	0.4	**0.0377**	**1.885**	**0.0828**	3670
09/02/04 090204SEC36SL001				2.81	**0.219**	3.53	0.15	135	18000	0.844	73.8	51	0.529	**0.142**	**1.96**	**0.104**	1350
09/02/04 090204SEC36SL002				**0.203**	**0.471**	2.46	0.4	219	15000	0.162	7.28	41.8	0.221	**0.13**	**2.01**	**0.0402**	956
Mean	NA	NA	NA	1.06	0.57	2.22	0.22	137	19000	0.354	27.5	73	0.383	0.103	1.95	0.076	1990
Median	NA	NA	NA	0.203	0.471	2.46	0.15	135	18000	0.162	7.28	51	0.4	0.13	1.96	0.0828	1350
St. Deviation	NA	NA	NA	1.51	0.4	1.44	0.16	81	4000	0.428	40.2	46	0.155	0.057	0.06	0.032	1470
# of values	0	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	NA	NA	NA	0.18	0.219	0.674	0.11	57	15000	0.0551	1.43	41.8	0.221	0.0377	1.885	0.0402	956
Maximum	0	NA	NA	2.81	1.01	3.53	0.4	219	23700	0.844	73.8	126	0.529	0.142	2.01	0.104	3670
% of values undetected				67%	33%									33%	100%	33%	
of values between MDL and MRL					2	1				1	1			2		2	

Key: **Bold Results** = Parameter undetected by test, value shown is 1/2 MDL or 1/2 MRL.
If result was not detected at the lab MDL, the value shown is 1/2 MDL.
If result was validation flagged U or UJ, the value shown is 1/2 MRL.
Green Results = Estimate result reported by laboratory below reporting limit (MRL).
MDL = Method Detection Limit.
MRL = Method Reporting Limit.
NA = Not Applicable.
Note: All results reported on dry weight basis, except total solids reported on wet weight basis.

Appendix 10.1B
Soil Samples Results Summary, Mine Study Area, 2004-2007

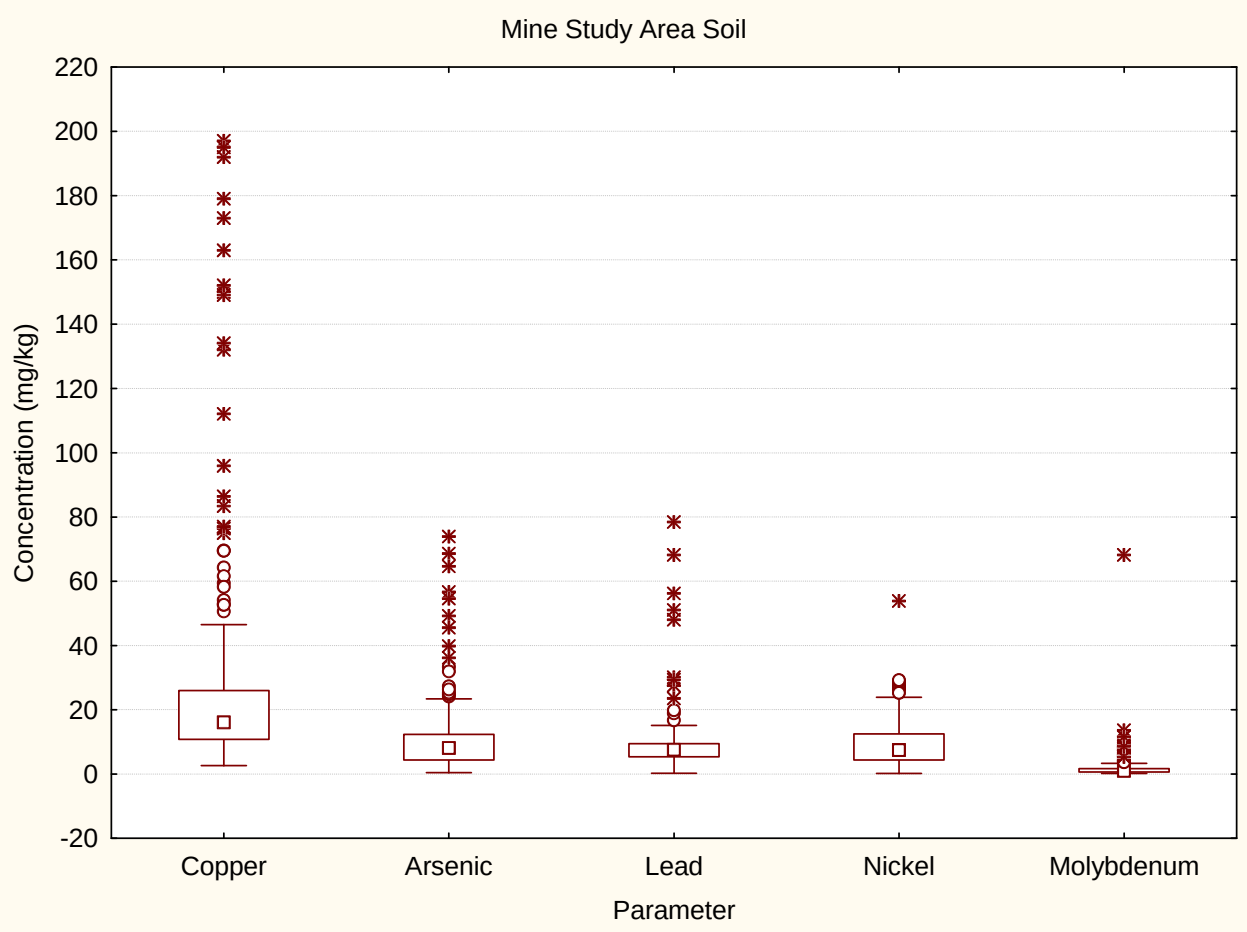
STATION		Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/k
SEC35																			
	Sample Date																		
08/25/04	082504SEC35SL001	9.69	2.06	8.15	14900	8.64	1110	151	**0.0637**	**1.2**	2.9	728	**0.536**	0.174	332	**0.0136**	**0.805**	40.3	44.1
	Mean	9.69	2.06	8.15	14900	8.64	1110	151	0.0637	1.2	2.9	728	0.536	0.174	332	0.0136	0.805	40.3	44.1
	Median	9.69	2.06	8.15	14900	8.64	1110	151	0.0637	1.2	2.9	728	0.536	0.174	332	0.0136	0.805	40.3	44.1
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	9.69	2.06	8.15	14900	8.64	1110	151	0.0637	1.2	2.9	728	0.536	0.174	332	0.0136	0.805	40.3	44.1
	Maximum	9.69	2.06	8.15	14900	8.64	1110	151	0.0637	1.2	2.9	728	0.536	0.174	332	0.0136	0.805	40.3	44.1
	% of values undetected																100%		
	of values between MDL and MRL								1	1			1			1			
SEC36																			
	Sample Date																		
08/25/04	082504SEC36SL001	48.3	12.3	13	28300	2.83	4890	372	**0.0233**	**0.189**	23.1	254	**0.091**	**0.105**	266	**0.00375**	**0.605**	75.6	45.6
09/02/04	090204SEC36SL001	19.4	21.9	64.3	29100	7.72	2810	529	**0.0485**	1.46	26.6	603	1.49	0.377	**82.6**	0.161	**0.630**	70.5	29.4
09/02/04	090204SEC36SL002	10.2	3.03	6.57	16000	6.18	1610	176	**0.0388**	**0.608**	3.74	263	0.738	**0.0201**	132	0.131	**0.650**	47.2	16.6
	Mean	26	12.4	28	24500	5.58	3100	359	0.0369	0.75	17.8	373	0.77	0.167	160	0.099	0.630	64.4	30.5
	Median	19.4	12.3	13	28300	6.18	2810	372	0.0388	0.608	23.1	263	0.738	0.105	132	0.131	0.630	70.5	29.4
	St. Deviation	19.9	9.4	31.6	7300	2.5	1660	177	0.0127	0.65	12.3	199	0.7	0.186	95	0.083	0.020	15.1	14.5
	# of values	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Minimum	10.2	3.03	6.57	16000	2.83	1610	176	0.0233	0.189	3.74	254	0.091	0.0201	82.6	0.00375	0.605	47.2	16.6
	Maximum	48.3	21.9	64.3	29100	7.72	4890	529	0.0485	1.46	26.6	603	1.49	0.377	266	0.161	0.650	75.6	45.6
	% of values undetected									33%			33%	33%		33%	100%		
	of values between MDL and MRL								3	1				1	1				

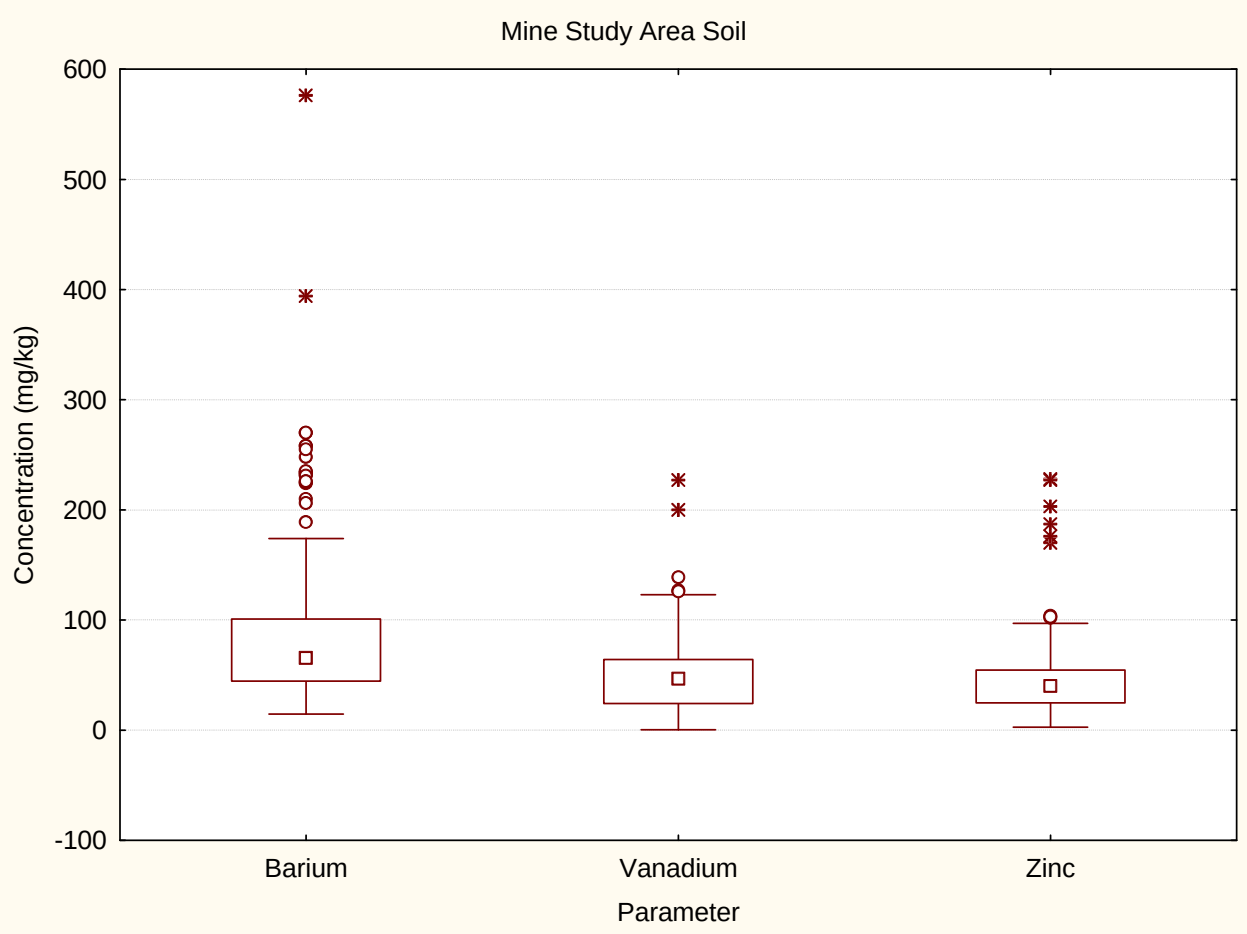
APPENDIX 10.1C

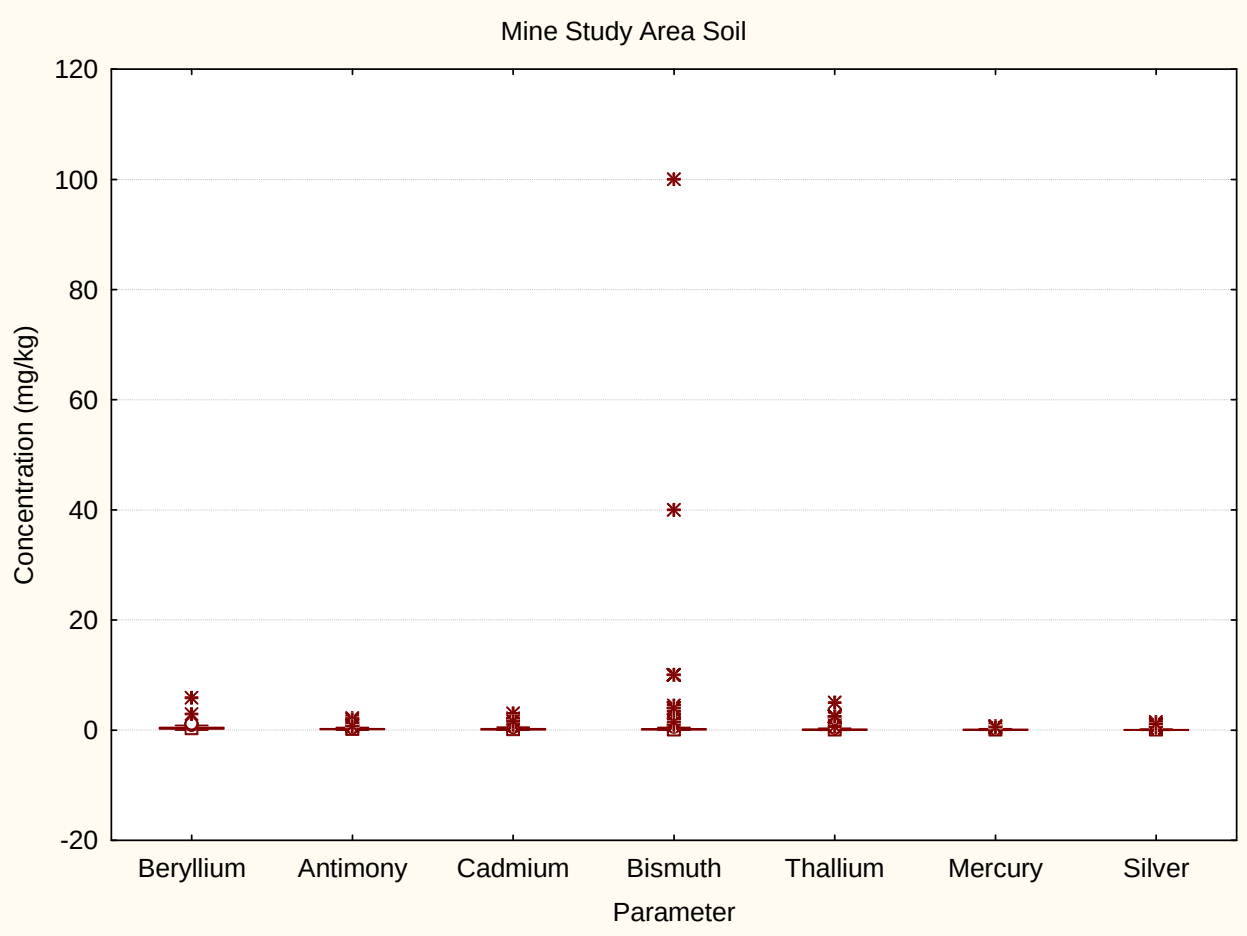
Box-and-Whisker Plots for Soil Data by Chemical Parameter, Mine Study Area, 2004-2007

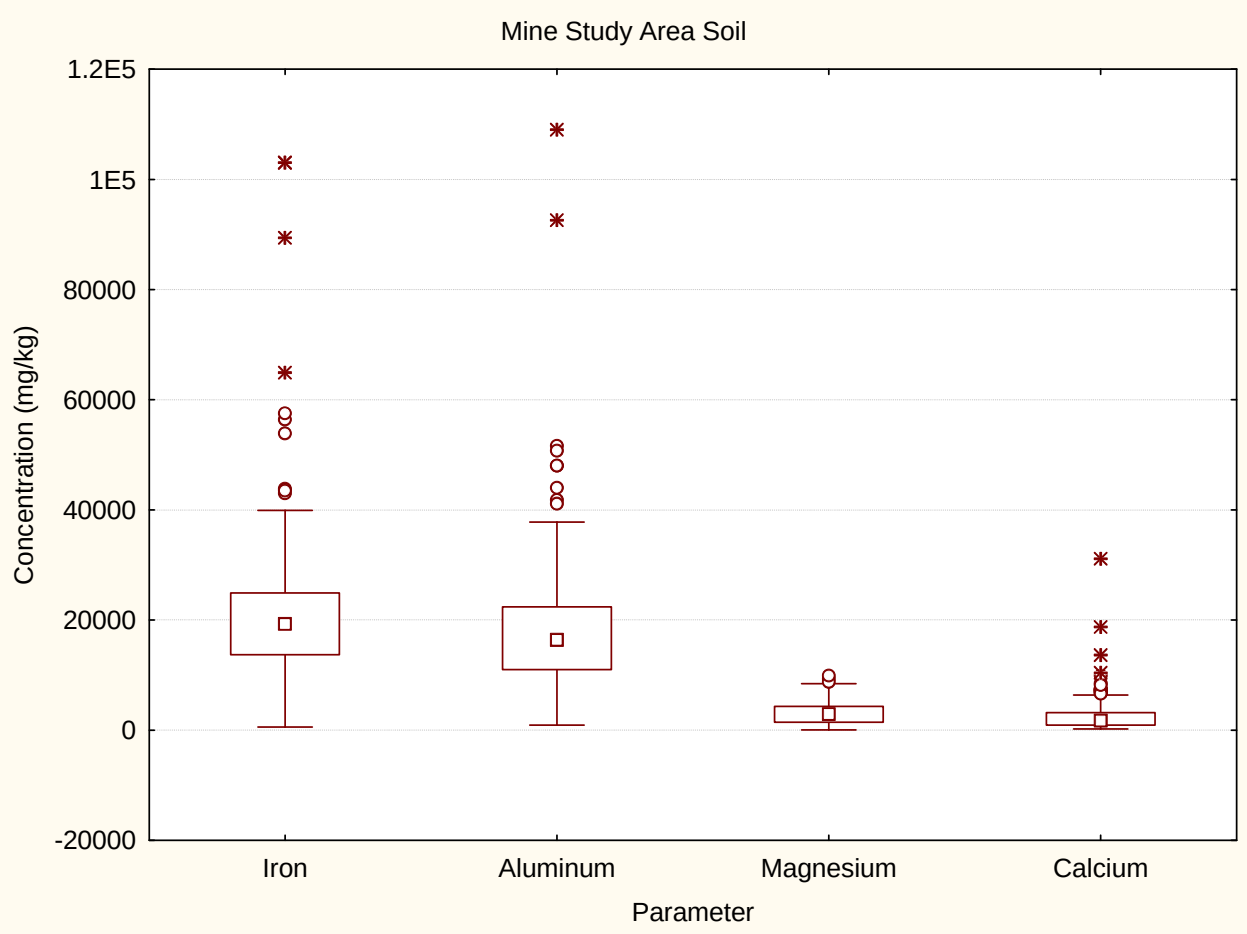
Boxplot Legend: This legend applies to all soil boxplots for the mine study area.

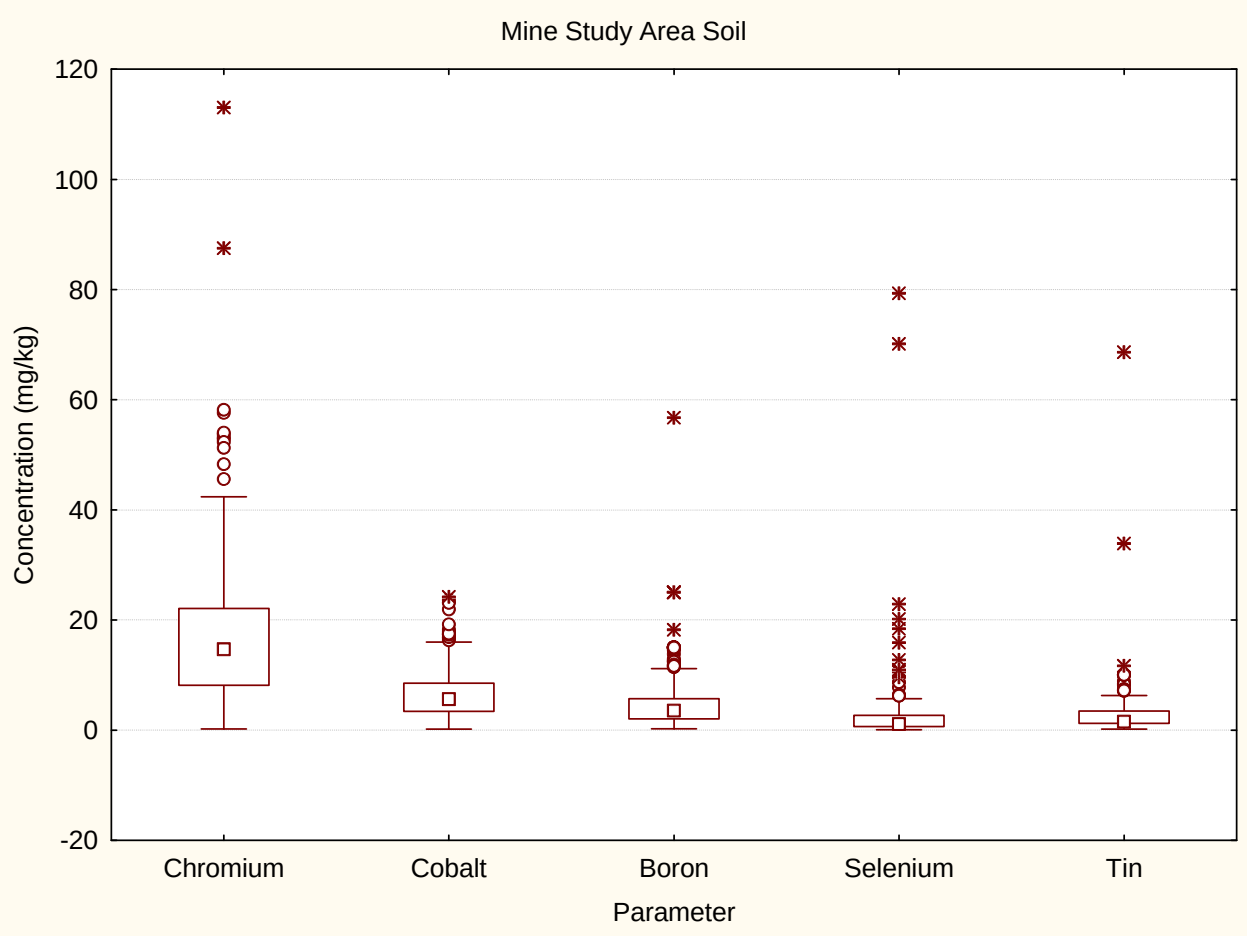
Median □ 25%-75% ⌶ Non-outlier Range Outliers Extremes

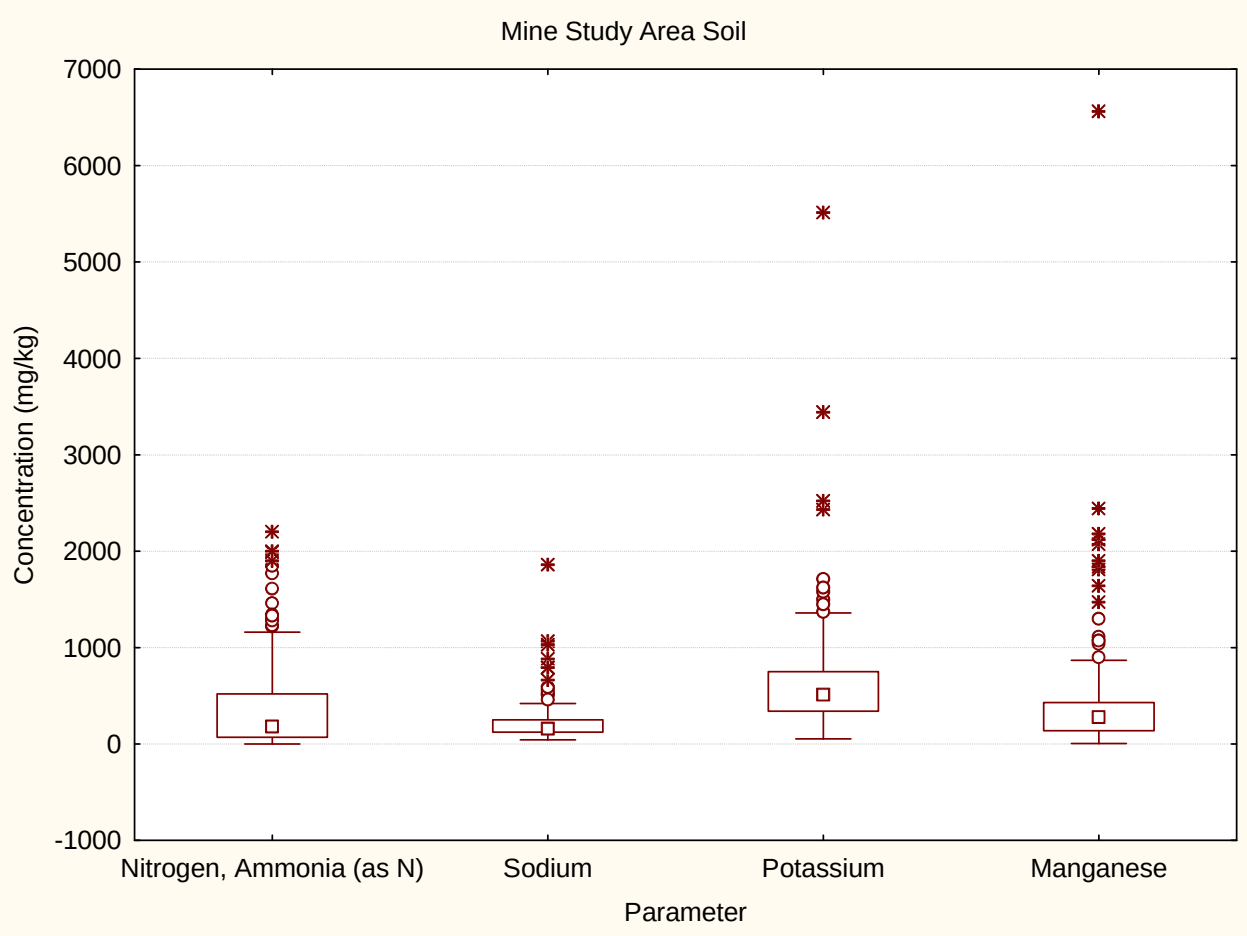


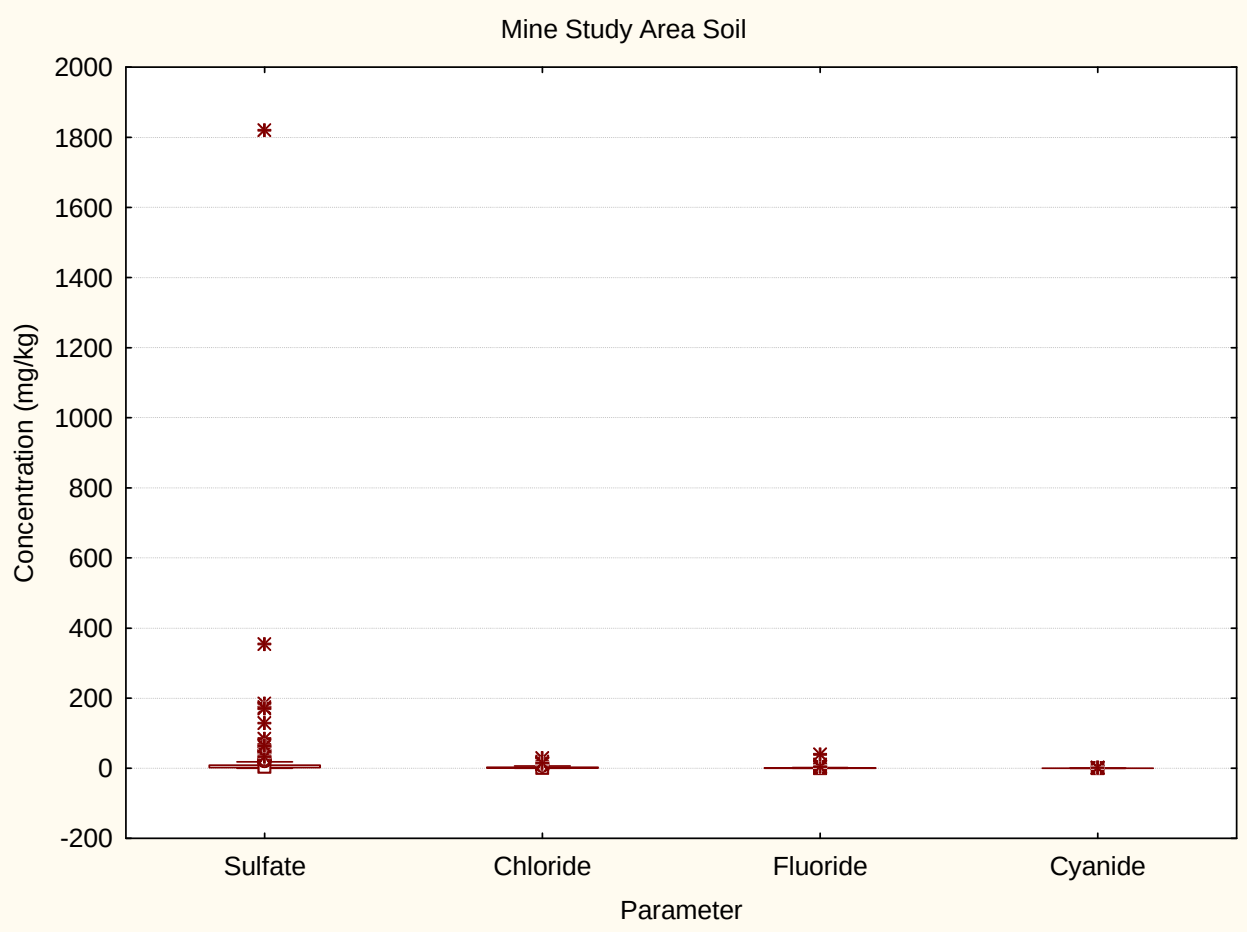

Mine Study Area Soil
600
500
400
300
200
100
0
-100
Concentration (mg/kg)
Barium
Vanadium
Zinc
Parameter


Mine Study Area Soil
120
100
80
60
40
20
0
-20
Concentration (mg/kg)
Beryllium
Antimony
Cadmium
Bismuth
Thallium
Mercury
Silver
Parameter


Mine Study Area Soil
1.2E5
1E5
80000
60000
40000
20000
0
-20000
Concentration (mg/kg)
Iron
Aluminum
Magnesium
Calcium
Parameter


Mine Study Area Soil
120
100
80
60
40
20
0
-20
Concentration (mg/kg)
Chromium
Cobalt
Boron
Selenium
Tin
Parameter


Mine Study Area Soil
Concentration (mg/kg)
7000
6000
5000
4000
3000
2000
1000
0
-1000
Nitrogen, Ammonia (as N)
Sodium
Potassium
Manganese
Parameter



Note: Only shallow soil samples are included in soil boxplots for the mine study area. Data from sample locations 082704SEC12ESL001, 090404SEC18SL001, 090404SEC18SL002, and 090404SEC18SL003 were removed from the soil dataset before completion of boxplots because exact locations could not be determined for these samples.

APPENDIX 10.1D

Kruskal-Wallis Test Results for NOCs in Surface Soil by Geological Landform

Appendix 10.1D
Kruskal-Wallis Test Results for NOCs in Surface Soil by Geological Landform

Analyte: [a]	Aluminum		Antimony		**Arsenic**		Barium		Beryllium		Bismuth	
	H = 12.588	p = 0.248	H = 14.617	p = 0.147	H = 20.127	**p = 0.0281**	H = 17.156	p = 0.0710	H = 3.968	p = 0.949	H = 13.443	p = 0.200
Geological Landform	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**
Solifluction	8	958.5	8	576.0	8	935.0	8	1109.5	8	859.5	8	1015.0
Drift of Brooks Lake Glaciation, Kvichak stade	59	6150.5	59	6295.0	59	6704.5	59	5684.5	59	6361.0	59	5914.5
Bedrock, undifferentiated	42	4457.0	42	4968.0	42	3899.0	42	3901.0	42	4093.0	42	4708.0
Glacial-lake deposits	47	4951.5	47	4566.0	47	4825.0	47	6027.0	47	5273.5	47	5392.5
Drift of pre-Brooks Lake age	17	2517.5	17	2164.5	17	2178.0	17	2181.0	17	2115.5	17	1641.5
Bedrock, glaciated	3	363.0	3	518.5	3	528.0	3	297.0	3	350.0	3	445.5
Outwash associated with Drift of Kvichak Stade	8	1020.5	8	954.5	8	973.0	8	844.5	8	908.0	8	586.5
Colluvium, undivided	19	1837.5	19	1792.0	19	1623.5	19	1813.5	19	2155.0	19	2627.5
Terrace gravel	3	141.0	3	403.0	3	313.0	3	307.5	3	357.0	3	211.5
Drift of Brooks Lake Glaciation, Iliamna Stade	5	669.0	5	586.0	5	661.5	5	714.0	5	689.5	5	419.0
Fan delta deposits	7	805.0	7	1047.5	7	1230.5	7	991.5	7	709.0	7	909.5

Notes:

a. Analytes with significant differences shown in bold font.

NOC = Naturally occurring constituent.

NA = Element not included in Kruskall-Wallis analysis because of insufficient sampling frequency.

H = Kruskal-Wallis test statistic.

N = Sample size.

p = Probability.

Appendix 10.1D
Kruskal-Wallis Test Results for NOCs in Surface Soil by Geological Landform

Analyte: [a]	Boron		Cadmium		**Calcium**		**Chromium**		**Cobalt**		**Copper**		Cyanide	
	H = 11.499	p = 0.320	H = 13.594	p =0.192	H = 40.426	**p = 0.0000**	H = 28.539	**p = 0.0015**	H = 26.857	**p = 0.0027**	H = 33.775	**p = 0.0002**	H = 11.993	p = 0.286
Geological Landform	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**
Solifluction	8	948.0	8	1069.0	8	1107.5	8	1084.0	8	1223.5	8	592.0	8	833.5
Drift of Brooks Lake Glaciation, Kvichak stade	59	5946.0	59	5883.0	59	4767.5	59	6414.0	59	6123.5	59	5161.0	59	5550.5
Bedrock, undifferentiated	42	4323.5	42	4526.0	42	4399.0	42	3828.5	42	3835.0	42	5617.5	42	4843.0
Glacial-lake deposits	47	5612.0	47	5653.5	47	6701.5	47	5210.0	47	5400.5	47	4735.5	47	4703.0
Drift of pre-Brooks Lake age	17	1607.0	17	1805.5	17	1426.0	17	2556.5	17	2517.0	17	2770.5	17	2228.5
Bedrock, glaciated	3	391.0	3	257.5	3	60.0	3	416.5	3	234.5	3	456.0	3	445.5
Outwash associated with Drift of Kvichak Stade	8	653.0	7	555.5	7	920.0	8	1075.5	7	568.5	8	836.5	8	1108.5
Colluvium, undivided	19	2604.5	19	2609.0	19	2389.0	19	1198.5	19	1630.0	19	1873.0	19	2328.5
Terrace gravel	3	384.5	3	155.5	3	388.0	3	350.5	3	245.0	3	222.5	3	310.0
Drift of Brooks Lake Glaciation, Iliamna Stade	5	444.0	5	393.0	5	511.0	5	798.0	5	821.0	5	663.5	5	564.5
Fan delta deposits	7	957.5	7	745.5	7	983.5	7	939.0	7	1054.5	7	943.0	7	955.5

Notes:

a. Analytes with significant differences shown in b

NOC = Naturally occurring constituent.

NA = Element not included in Kruskall-Wallis analy

H = Kruskal-Wallis test statistic.

N = Sample size.

p = Probability.

Appendix 10.1D
Kruskal-Wallis Test Results for NOCs in Surface Soil by Geological Landform

Analyte: [a]	Iron		Lead		Magnesium		Manganese		Mercury		Molybdenum		Nickel	
	H = 22.645	**p = 0.0121**	H = 8.513	p = 0.579	H = 13.606	p = 0.192	H =14.788	p = 0.140	H = 27.932	**p = 0.0019**	H = 41.830	**p = 0.0000**	H = 25.845	**p = 0.0040**
Geological Landform	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**
Solifluction	8	1194.0	8	847.5	8	1039.0	8	1118.0	8	668.0	8	672.0	8	1024.0
Drift of Brooks Lake Glaciation, Kvichak stade	59	6161.5	59	6935.0	59	6534.0	59	6749.5	59	5785.5	59	4436.5	59	6490.5
Bedrock, undifferentiated	42	3758.0	42	5255.0	42	4108.5	42	4012.0	42	5303.0	42	5894.0	42	3907.0
Glacial-lake deposits	47	5377.5	47	4708.5	47	5320.5	47	5228.5	47	5551.5	47	4785.5	47	5480.5
Drift of pre-Brooks Lake age	17	2280.0	17	1846.5	17	2349.0	17	2250.5	17	1524.0	17	2006.0	17	2567.5
Bedrock, glaciated	3	460.0	3	238.0	3	352.5	3	191.5	3	339.0	3	556.0	3	311.0
Outwash associated with Drift of Kvichak Stade	8	686.0	8	772.5	8	769.0	8	571.5	8	564.0	8	981.5	8	929.0
Colluvium, undivided	19	1734.0	19	1700.0	19	1488.0	19	1806.0	19	2630.5	19	2637.5	19	1235.0
Terrace gravel	3	299.5	3	240.5	3	317.0	3	314.5	3	134.0	3	286.0	3	216.0
Drift of Brooks Lake Glaciation, Iliamna Stade	5	781.0	5	491.0	5	768.0	5	767.5	5	252.0	5	557.0	5	780.5
Fan delta deposits	7	1139.5	7	836.5	7	825.5	7	861.5	7	1119.5	7	1059.0	7	930.0

Notes:

a. Analytes with significant differences shown in b

NOC = Naturally occurring constituent.

NA = Element not included in Kruskall-Wallis analy

H = Kruskal-Wallis test statistic.

N = Sample size.

p = Probability.

Appendix 10.1D
Kruskal-Wallis Test Results for NOCs in Surface Soil by Geological Landform

Analyte: [a]	Potassium		Selenium		Silver		Sodium		Thallium		Tin	
	H = 30.107	**p = 0.0008**	H = 33.209	**p = 0.0003**	H = 28.412	**p = 0.0016**	H = 16.573	p = 0.084	H = 15.227	p = 0.124	H = 34.739	**p = 0.0001**
Geological Landform	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**
Solifluction	8	1001.5	8	930.5	8	1217.0	8	1225.5	8	896.0	8	1190.0
Drift of Brooks Lake Glaciation, Kvichak stade	59	6899.0	59	5419.0	59	5475.5	59	6229.0	59	5858.5	59	4965.5
Bedrock, undifferentiated	42	4733.5	42	5599.0	42	4958.5	42	3908.5	42	5160.5	42	4980.5
Glacial-lake deposits	47	4369.5	47	5139.0	47	5181.0	47	5894.5	47	5092.0	47	6411.5
Drift of pre-Brooks Lake age	17	2552.5	17	1098.5	17	1302.5	17	1709.5	17	2249.0	17	1145.0
Bedrock, glaciated	3	585.0	3	403.0	3	608.5	3	531.5	3	392.5	3	295.0
Outwash associated with Drift of Kvichak Stade	8	844.0	8	795.5	8	744.0	8	996.5	8	794.5	8	803.0
Colluvium, undivided	19	1257.0	19	2941.0	19	2684.5	19	1669.5	19	2211.0	19	2418.0
Terrace gravel	3	266.0	3	209.0	3	391.5	3	368.0	3	27.5	3	222.0
Drift of Brooks Lake Glaciation, Iliamna Stade	5	769.5	5	396.0	5	360.0	5	538.5	5	595.0	5	448.0
Fan delta deposits	7	593.5	7	940.5	7	948.0	7	800.0	7	594.5	7	992.5

Notes:

a. Analytes with significant differences shown in b

NOC = Naturally occurring constituent.

NA = Element not included in Kruskall-Wallis analy

H = Kruskal-Wallis test statistic.

N = Sample size.

p = Probability.

Appendix 10.1D
Kruskal-Wallis Test Results for NOCs in Surface Soil by Geological Landform

Analyte: [a]	Vanadium		Zinc		Chloride		Fluoride		Nitrogen (Ammonia as N)		Sulfate	
	H = 26.418	**p = 0.0032**	H = 21.520	**p = 0.018**	H = 20.000	**p = 0.018**	H = 41.4056	**p = 0.0000**	H = 20.616	**p = 0.015**	H = 27.013	**p = 0.0014**
Geological Landform	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**	**Valid N**	**Sum of Ranks**
Solifluction	8	808.0	8	1143.0	8	958.5	8	1273.0	8	791.0	8	868.5
Drift of Brooks Lake Glaciation, Kvichak stade	59	6351.0	59	6308.5	59	4997.5	59	4367.5	59	5644.0	59	4953.5
Bedrock, undifferentiated	42	5173.0	42	5042.5	42	4081.0	42	4717.0	42	5598.0	42	3996.5
Glacial-lake deposits	47	3769.5	47	5166.5	47	6131.5	47	6357.5	47	4605.0	47	6398.0
Drift of pre-Brooks Lake age	17	2703.0	17	2296.5	17	1869.5	17	1388.5	17	1680.5	17	1587.5
Bedrock, glaciated	3	477.0	3	229.5	NA	NA	NA	NA	NA	NA	NA	NA
Outwash associated with Drift of Kvichak Stade	8	800.5	8	561.0	8	963.5	8	1081.5	8	1069.0	8	1125.0
Colluvium, undivided	19	1893.5	19	1317.0	19	2552.0	19	2388.0	19	2632.5	19	2458.5
Terrace gravel	3	401.0	3	242.5	3	353.5	3	353.0	3	306.5	3	313.0
Drift of Brooks Lake Glaciation, Iliamna Stade	5	606.5	5	789.0	5	596.0	5	356.0	5	334.5	5	572.5
Fan delta deposits	7	888.0	7	775.0	7	717.0	7	938.0	7	559.0	7	947.0

Notes:

a. Analytes with significant differences shown in b

NOC = Naturally occurring constituent.

NA = Element not included in Kruskall-Wallis analy

H = Kruskal-Wallis test statistic.

N = Sample size.

p = Probability.

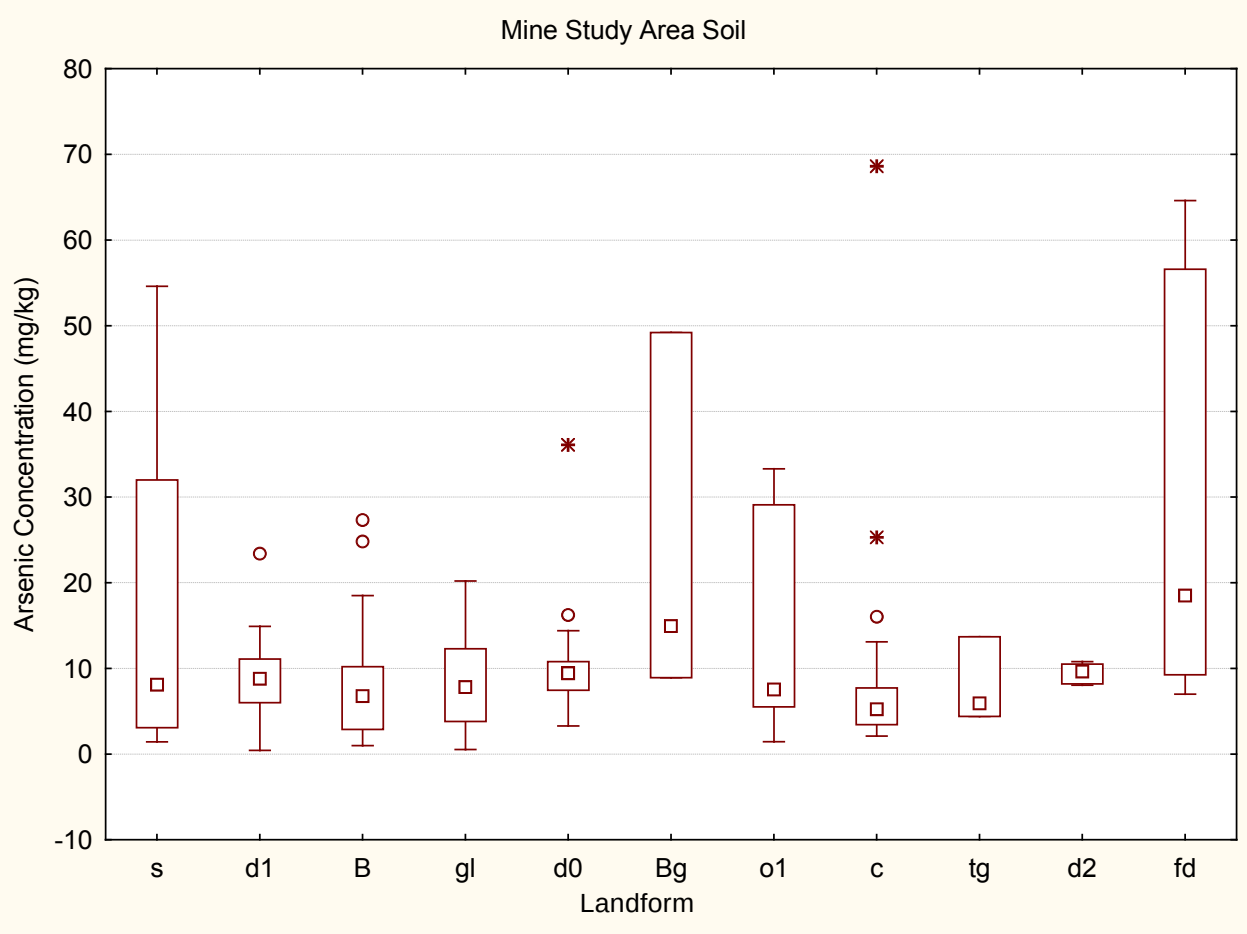
APPENDIX 10.1E

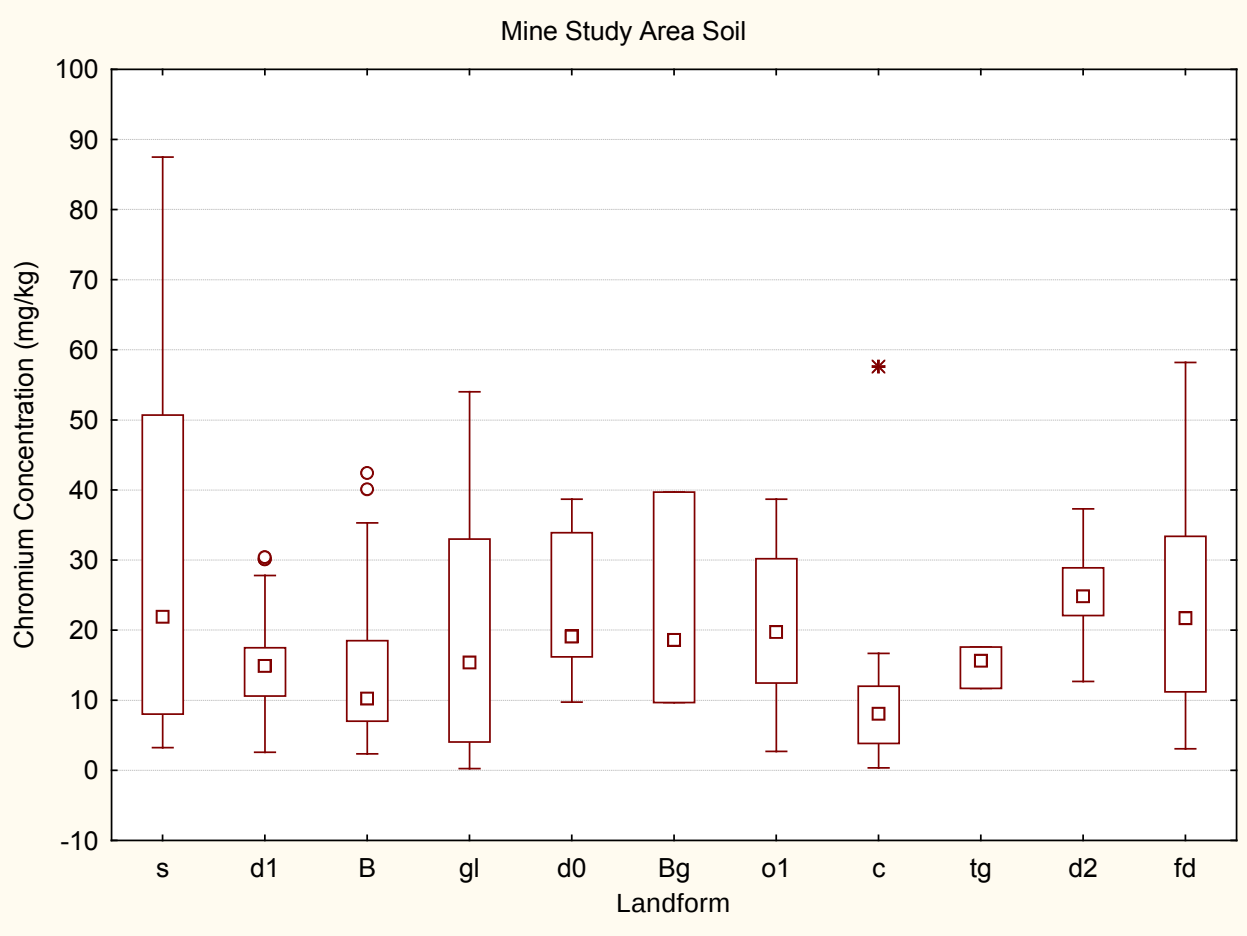
Box-and-Whisker Plots for Soil Data by Landform, Mine Study Area, 2004-2007

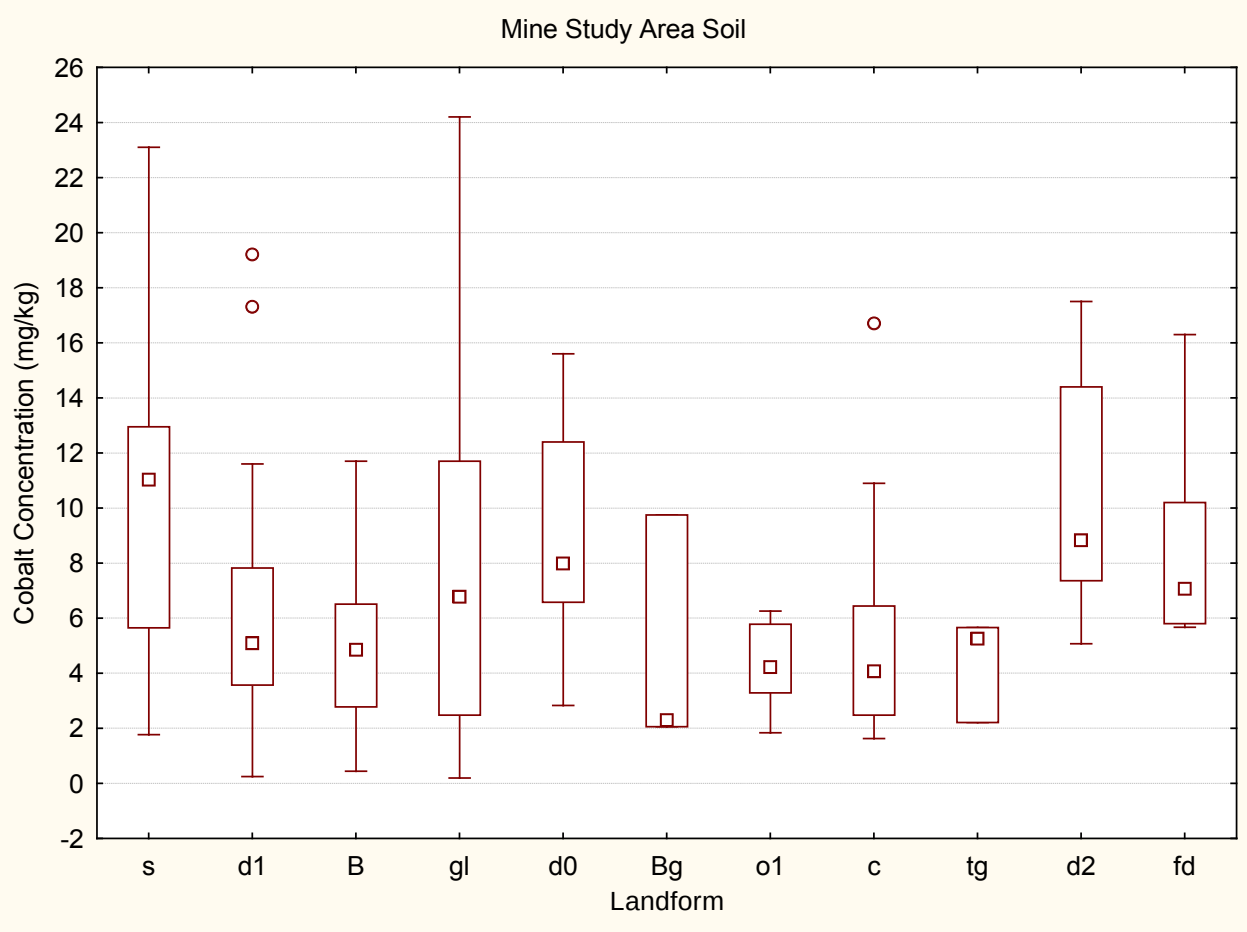
Boxplot Legend: This legend applies to all soil by landform boxplots for the mine study area.

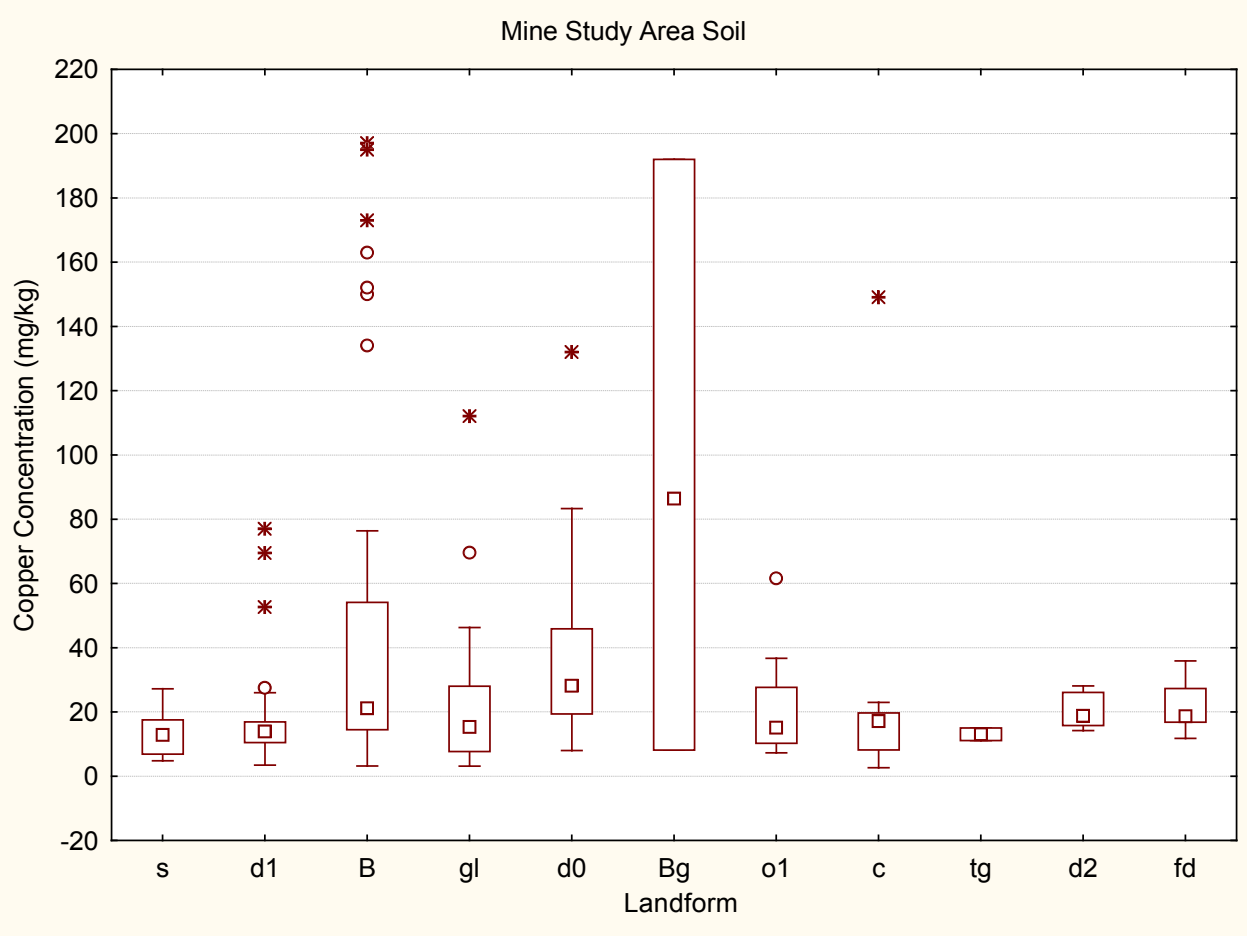
Median 25%-75% Non-Outlier Range Outliers Extremes

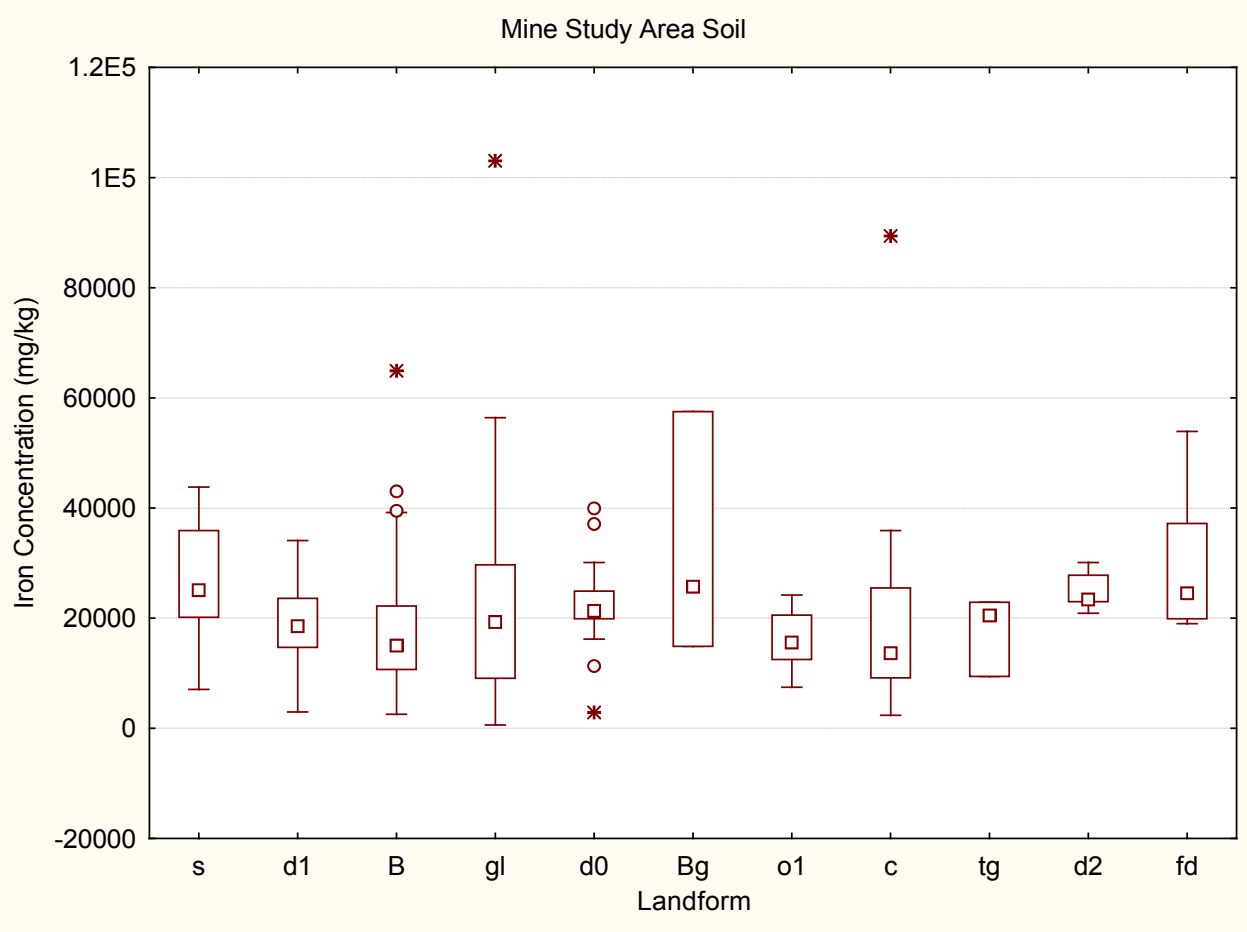
Landform Codes: al = Alluvium, Bg = Bedrock, glaciated, B = Bedrock, undifferentiated, c = Colluvium, undivided, d0 = Drift of pre-Brooks Lake Age, d1 = Drift of Brooks Lake Glaciation, Kvichak Stade, d2 = Drift of Brooks Lake Glaciation, Iliamna Stade, d3 = Drift of Brooks Lake Glaciation, Newhalen Stade, fd = Fan Delta Deposits, Gl = Glacial-lake Deposits, o1 = Outwash Associated with Drift of Kvichak Stade, o2 = Outwash Associated with Drift of Iliamna Stade, o/gl = Outwash/Glaciation, s = Solifluction, tg = Terrace Gravel

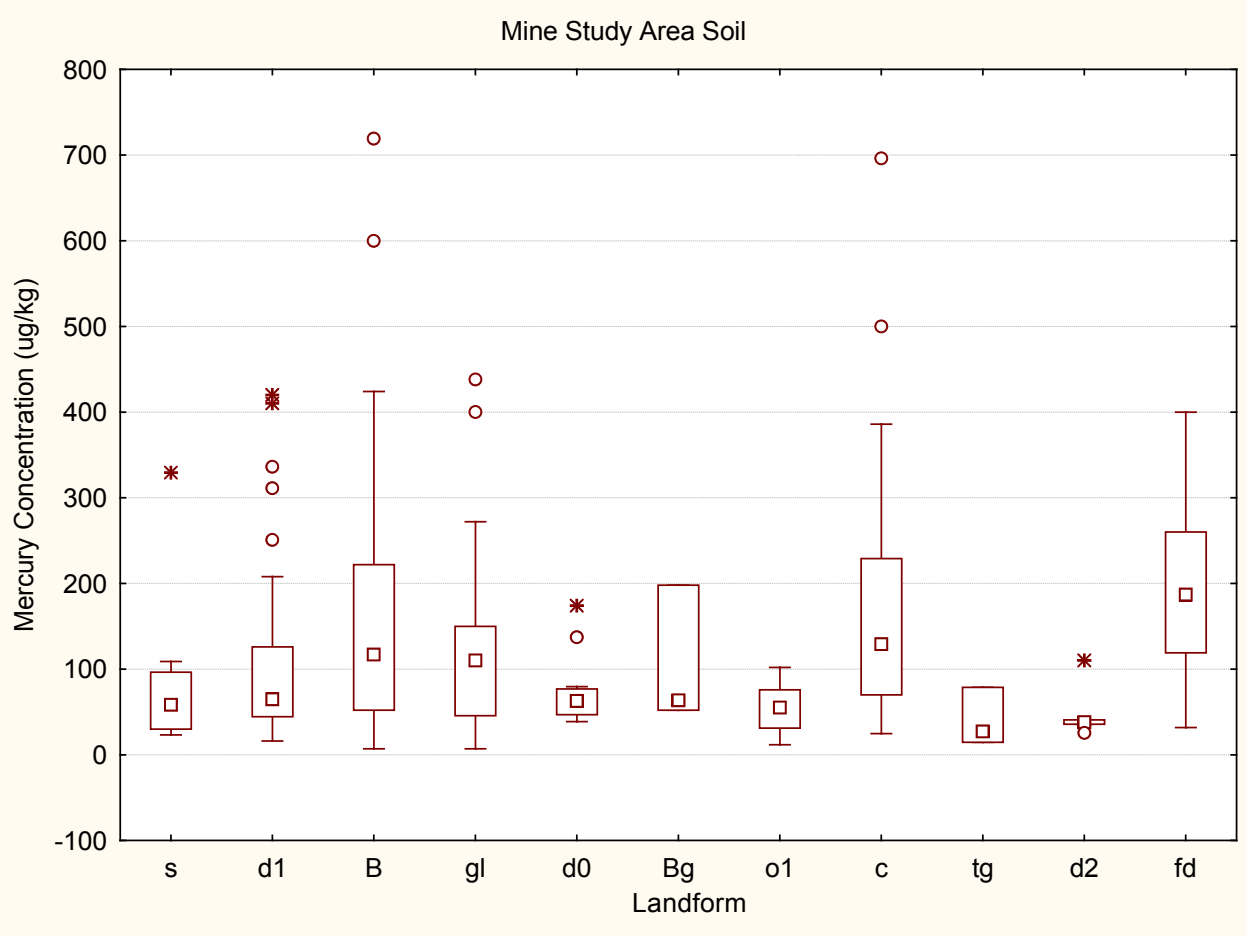


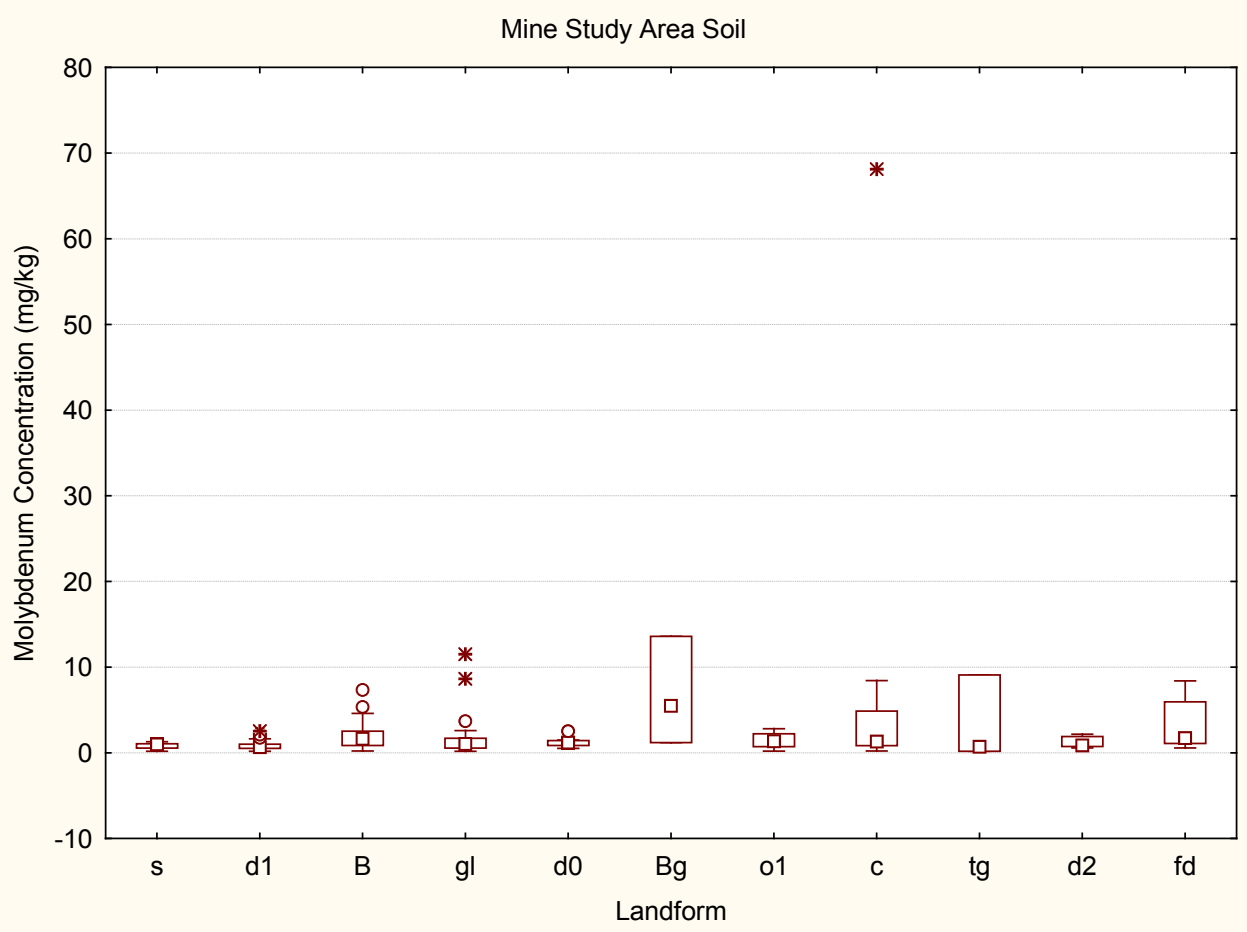

Mine Study Area Soil
Chromium Concentration (mg/kg)
100
90
80
70
60
50
40
30
20
10
0
-10
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform

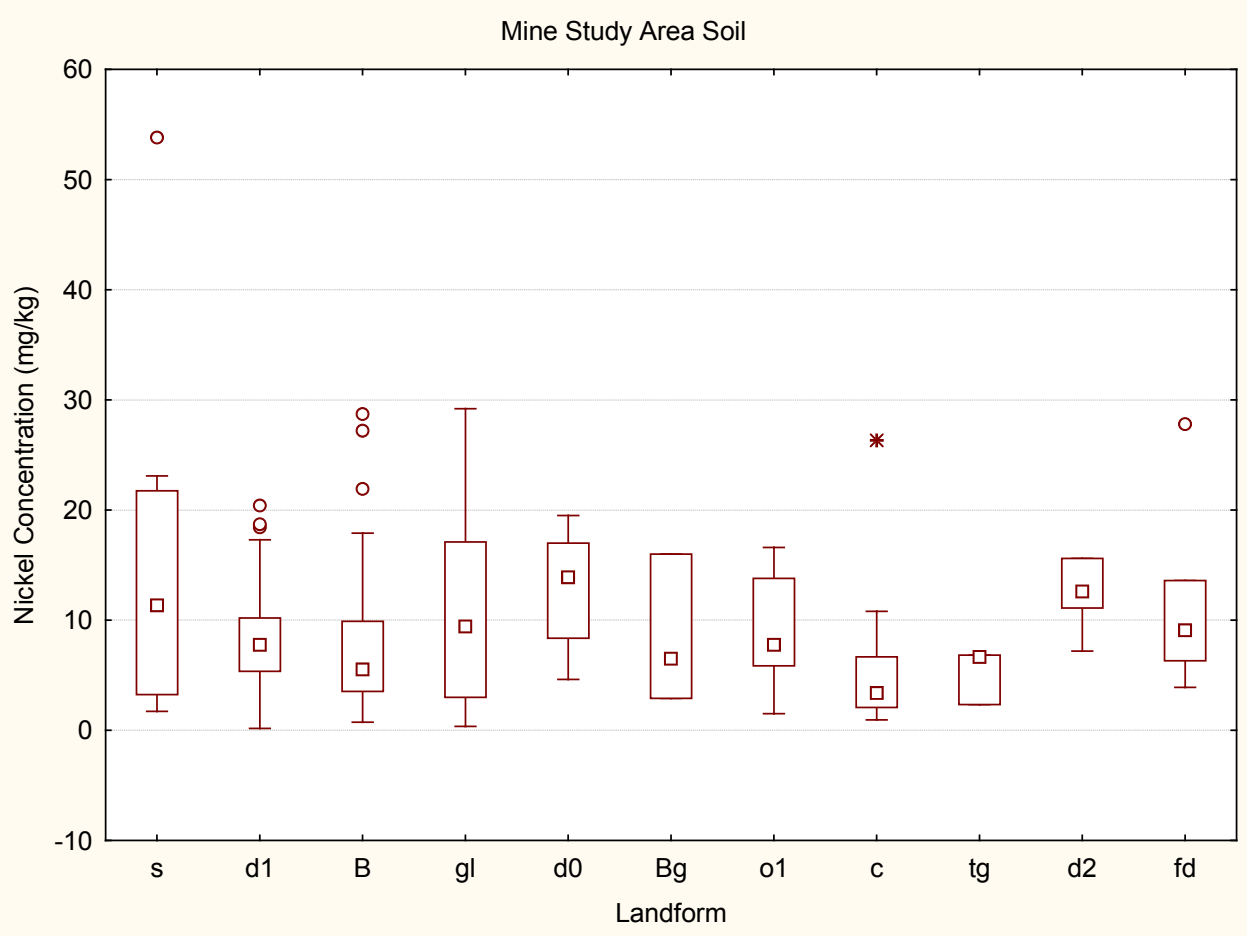

Mine Study Area Soil
Cobalt Concentration (mg/kg)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-2
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform

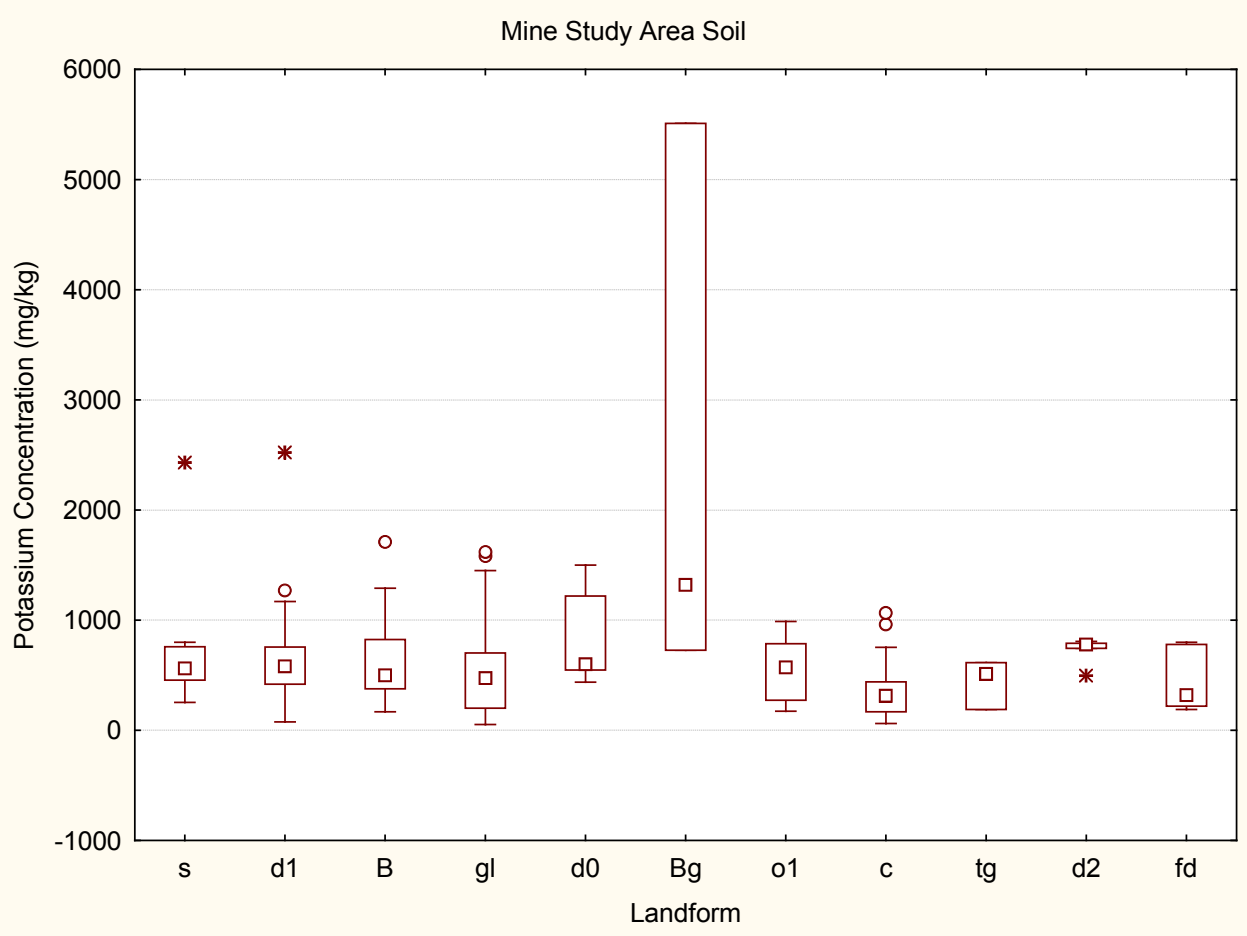

Mine Study Area Soil
Copper Concentration (mg/kg)
220
200
180
160
140
120
100
80
60
40
20
0
-20
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform

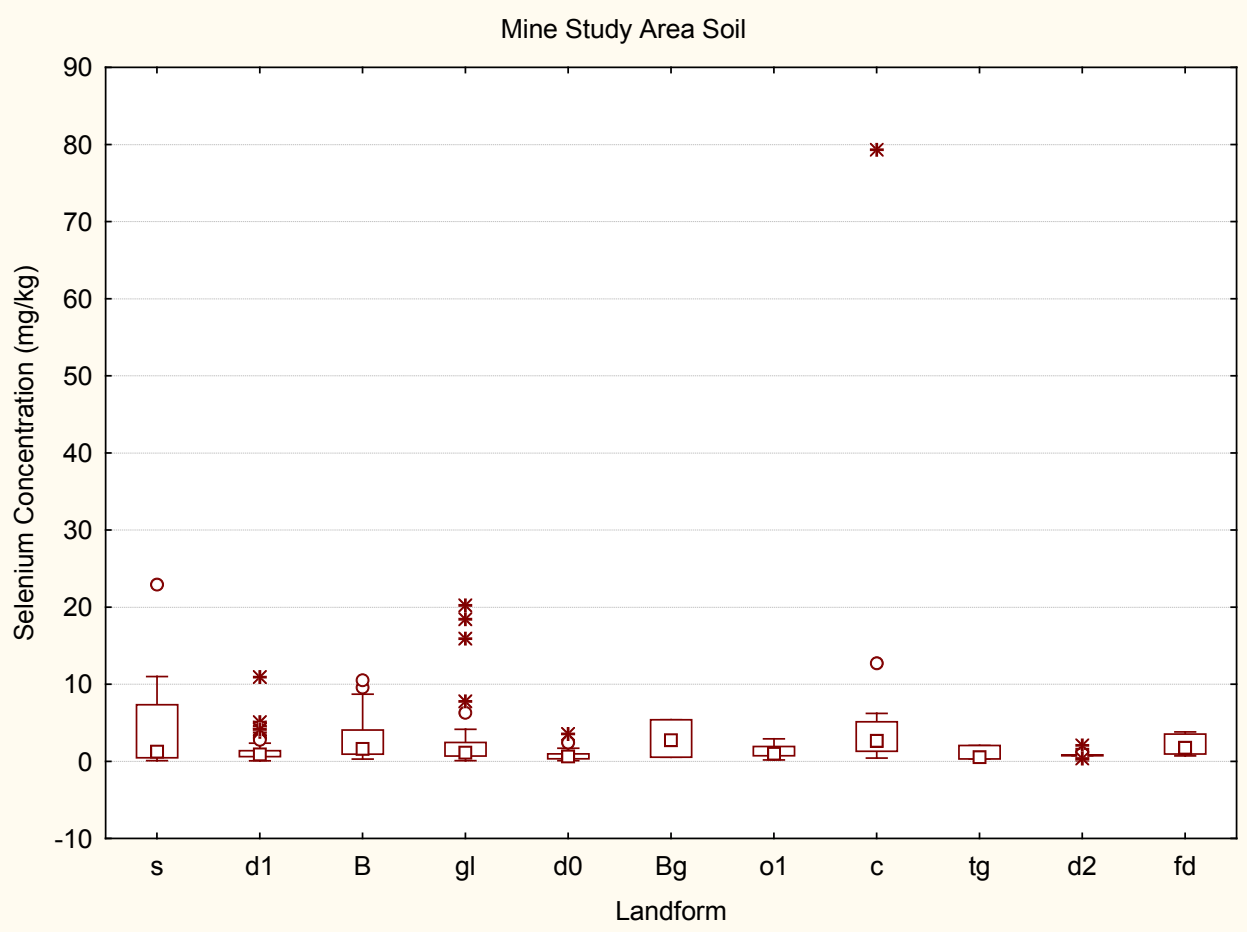

Mine Study Area Soil
Iron Concentration (mg/kg)
1.2E5
1E5
80000
60000
40000
20000
0
-20000
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform

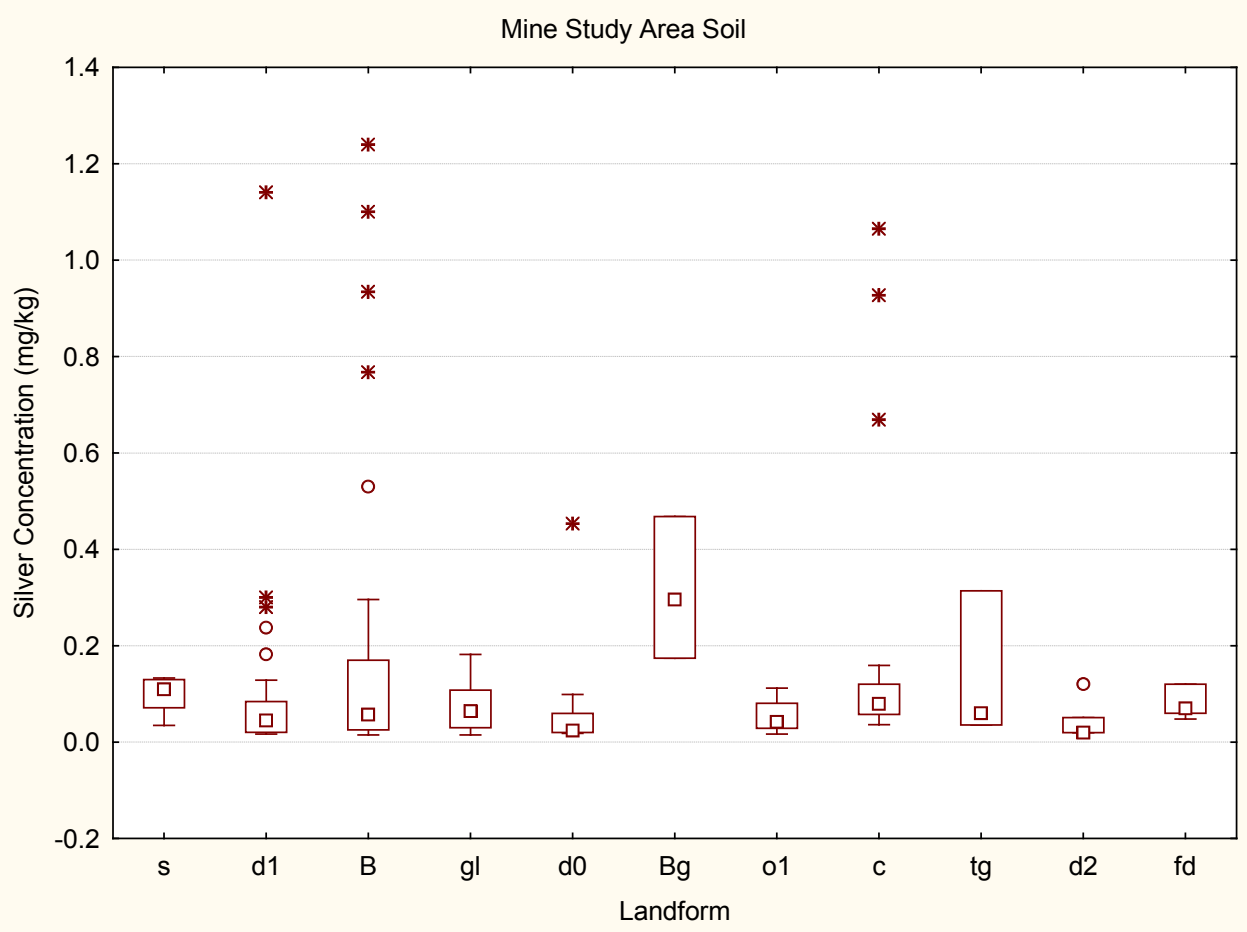

Mine Study Area Soil
Mercury Concentration (ug/kg)
800
700
600
500
400
300
200
100
0
-100
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform

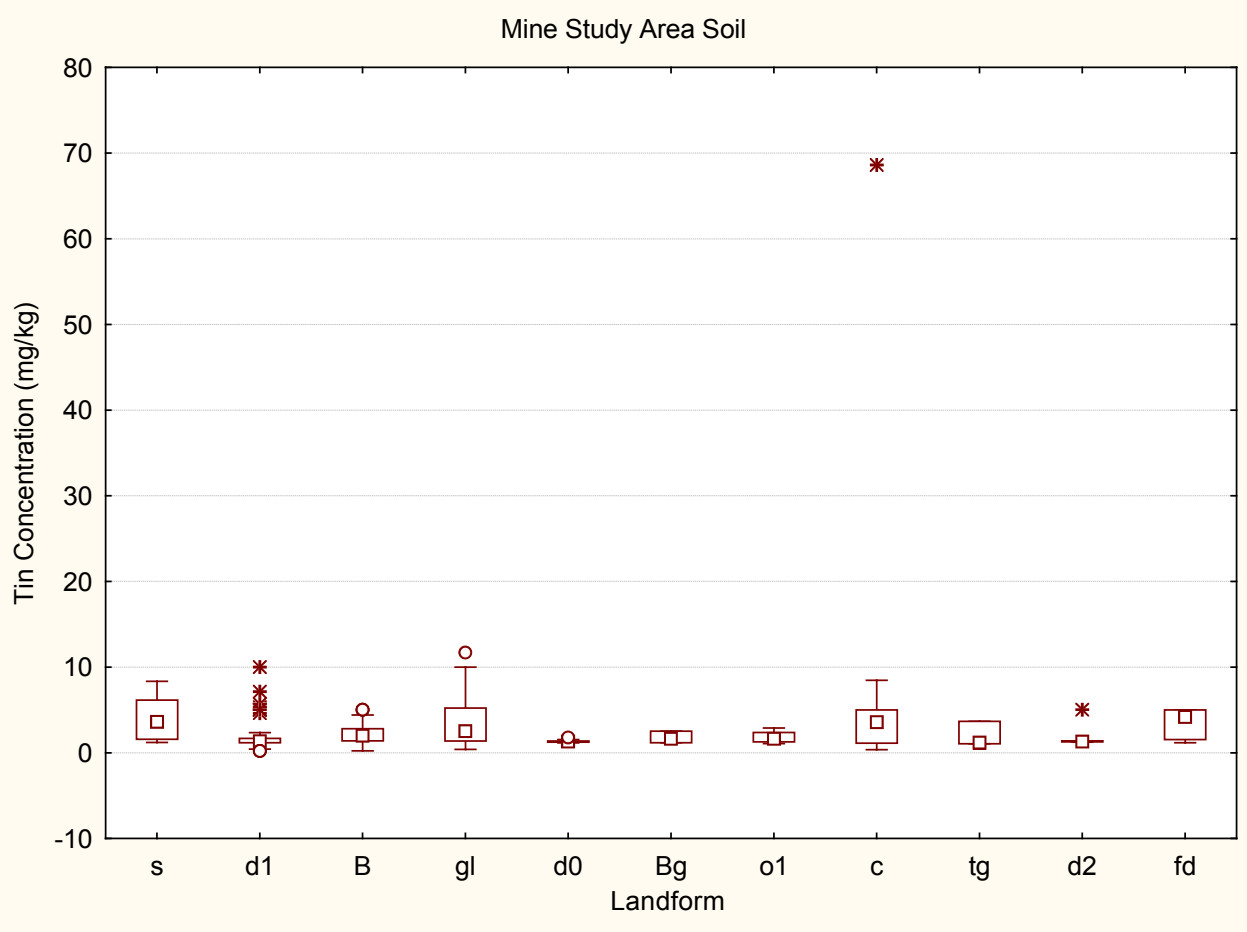

Mine Study Area Soil
Molybdenum Concentration (mg/kg)
80
70
60
50
40
30
20
10
0
-10
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform

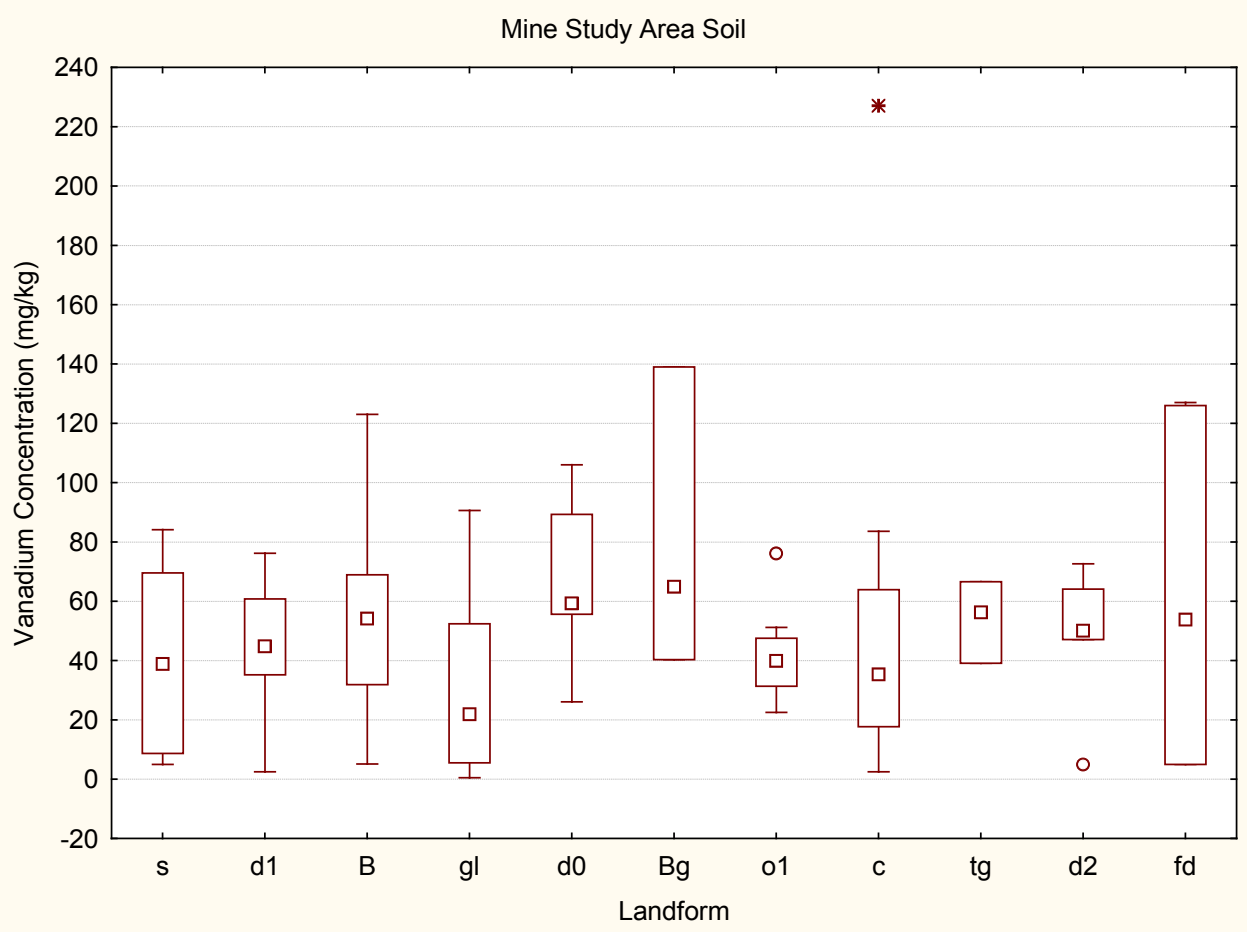

Mine Study Area Soil
Nickel Concentration (mg/kg)
60
50
40
30
20
10
0
-10
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform

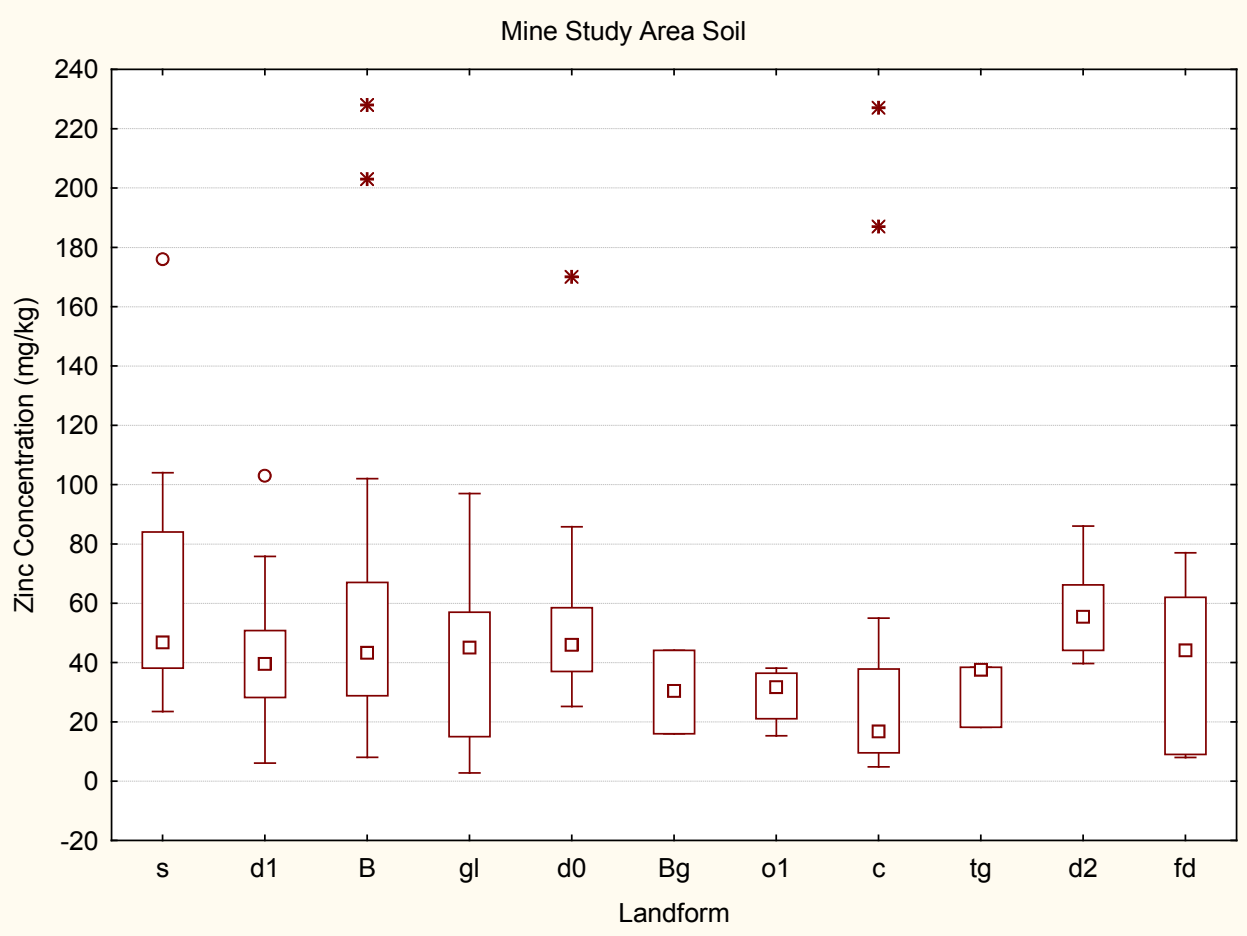

Mine Study Area Soil
Potassium Concentration (mg/kg)
6000
5000
4000
3000
2000
1000
0
-1000
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform


Mine Study Area Soil
Selenium Concentration (mg/kg)
90
80
70
60
50
40
30
20
10
0
-10
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform


Mine Study Area Soil
Silver Concentration (mg/kg)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform


Mine Study Area Soil
Tin Concentration (mg/kg)
80
70
60
50
40
30
20
10
0
-10
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform


Mine Study Area Soil
Vanadium Concentration (mg/kg)
240
220
200
180
160
140
120
100
80
60
40
20
0
-20
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform


Mine Study Area Soil
Zinc Concentration (mg/kg)
240
220
200
180
160
140
120
100
80
60
40
20
0
-20
s
d1
B
gl
d0
Bg
o1
c
tg
d2
fd
Landform

APPENDIX 10.1F

Mann-Whitney U-test Results, Comparison of Vegetation Data for July and August, Mine Study Area, 2005-2007

Appendix 10.1F
Mann-Whitney U-Test Results
July and August Vegetative Tissue Sample Data Comparison

Species	Trace Elements [a]	Rank Sum July	Rank Sum August	U	Z	p-level	Z adjusted	p-level	Valid N July	Valid N August	2*1sided exact p
Dwarf Birch	Barium	456	491	225	-0.16	0.87	-0.16	0.87	21	22	0.88
	Cadmium	492	412	181	1.01	0.31	1.01	0.31	21	21	0.32
	Copper	551	395	142	2.16	0.03	2.16	0.03	21	22	0.03
	Lead	444	502	213	-0.44	0.66	-0.44	0.66	21	22	0.67
	Manganese	426	520	195	-0.87	0.38	-0.87	0.38	21	22	0.39
	Mercury	312	391	122	-1.49	0.14	-1.49	0.13	19	18	0.14
	Nickel	497	449	196	0.85	0.40	0.85	0.40	21	22	0.41
	Vanadium	221	446	116	-1.25	0.21	-1.26	0.21	14	22	0.21
	Zinc	537	409	156	1.82	0.07	1.82	0.068	21	22	0.070
Short Stalk Sedge	**Barium**	379	847	189	-1.98	0.048	-1.98	0.048	19	30	0.046980
	Cadmium	452	630	252	0.11	0.91	0.11	0.91	19	27	0.91
	Copper	634	592	127	3.25	0.0011	3.25	0.0011	19	30	0.00082
	Lead	424	801	234	-1.05	0.30	-1.05	0.29	19	30	0.30
	Manganese	442	783	252	-0.68	0.50	-0.68	0.50	19	30	0.51
	Mercury	175	686	70	-3.27	0.0011	-3.28	0.0010	14	27	0.00071
	Nickel	426	800	236	-1.02	0.31	-1.02	0.31	19	30	0.31
	Silver	406	297	87	2.53	0.011	2.54	0.011	17	20	0.011
	Vanadium	119	585	83	-1.24	0.22	-1.24	0.21	8	29	0.22
	Zinc	593	633	128	-3.23	0.0012	-3.23	0.0012	30	19	0.00089
Field Horse Tail	Arsenic	32	104	22	-0.24	0.81	-0.24	0.81	4	12	0.86
	Barium	242	137	46	2.21	0.03	2.21	0.027	14	13	0.025
	Cadmium	167	158	67	0.60	0.55	0.60	0.55	12	13	0.57
	Copper	208	171	66	1.24	0.22	1.24	0.22	13	14	0.22
	Lead	137	241	46	-2.18	0.03	-2.19	0.03	13	14	0.03
	Manganese	160	218	69	-1.07	0.29	-1.07	0.29	13	14	0.30
	Mercury	113	118	52	0.21	0.83	0.21	0.83	10	11	0.86
	Nickel	134	245	43	-2.35	0.019	-2.35	0.019	13	14	0.017
	Silver	36	30	15	0	1.00	0	1.00	6	5	1.00
	Vanadium	134	166	68	-0.20	0.84	-0.20	0.84	11	13	0.86
	Zinc	211	167	62	1.41	0.16	1.41	0.16	13	14	0.17

Species	Trace Elements [a]	Rank Sum July	Rank Sum August	U	Z	p-level	Z adjusted	p-level	Valid N July	Valid N August	2*1sided exact p
Crowberry	Barium	318	313	142	0.38	0.70	0.38	0.70	17	18	0.71
	Cadmium	64	108	19	-1.94	0.05	-1.95	0.051	9	9	0.050
	Copper	329	301	130	0.76	0.45	0.76	0.45	17	18	0.46
	Lead	292	339	139	-0.48	0.63	-0.48	0.63	17	18	0.64
	Manganese	347	284	113	1.34	0.18	1.34	0.18	17	18	0.18
	Mercury	249	280	127	0.038	0.97	0.038	0.97	15	17	0.97
	Nickel	269	361	116	-1.22	0.22	-1.22	0.22	17	18	0.23
	Silver	60	60	24	-0.46	0.64	-0.48	0.63	8	7	0.69
	Vanadium	283	245	74	1.98	0.048	1.98	0.048	14	18	0.049
	Zinc	331	299	128	0.83	0.41	0.83	0.41	17	18	0.42
Reindeer Lichen	Arsenic	263	599	172	-0.29	0.77	-0.30	0.77	13	28	0.77
	Barium	415	621	186	1.10	0.27	1.10	0.27	16	29	0.27
	Cadmium	368	668	232	-0.01	0.99	-0.011884	0.99	16	29	0.99
	Copper	370	666	231	0.035567	0.97	0.035580	0.97	16	29	0.97
	Lead	320	716	184	-1.15	0.25	-1.15	0.25	16	29	0.25
	Manganese	428	608	173	1.41	0.16	1.41	0.16	16	29	0.16
	Mercury	260	687	155	-1.26	0.21	-1.26	0.21	14	29	0.21
	Nickel	274	761	138	-2.23	0.03	-2.23	0.026	16	29	0.03
	Silver	329	533	193	-0.20	0.84	-0.20	0.84	16	25	0.84
	Vanadium	314	722	178	-1.29	0.20	-1.29	0.20	16	29	0.20
	Zinc	403	632	197	0.83	0.41	0.83	0.41	16	29	0.42
Narrow Leaf Labrador Tea	Barium	181	197	77	0.63	0.53	0.63	0.53	12	15	0.55
	Cadmium	42	95	14	-1.91	0.06	-1.92	0.055	7	9	0.055
	Copper	175	203	83	0.34	0.73	0.34	0.73	12	15	0.76
	Lead	143	236	65	-1.24	0.21	-1.25	0.21	12	15	0.22
	Manganese	159	219	81	-0.44	0.66	-0.44	0.66	12	15	0.68
	Mercury	125	129	51	0.63	0.53	0.63	0.53	10	12	0.54
	Nickel	145	233	67	-1.12	0.26	-1.12	0.26	12	15	0.28
	Silver	41	37	16	0.32	0.75	0.33	0.74	6	6	0.82
	Vanadium	80	196	44	-1.03	0.30	-1.04	0.30	8	15	0.32
	Zinc	156	222	78	-0.59	0.56	-0.59	0.56	12	15	0.58

Species	Trace Elements [a]	Rank Sum July	Rank Sum August	U	Z	p-level	Z adjusted	p-level	Valid N July	Valid N August	2*1sided exact p
Mosses	Arsenic	1169	2072	608	-1.64	0.10	-1.64	0.10	33	47	0.10
	Barium	1757	2430	896	-1.03	0.30	-1.03	0.30	41	50	0.30
	Cadmium	1752	1989	861	0.48	0.63	0.48	0.63	39	47	0.63
	Copper	1831	2355	970	-0.44	0.66	-0.44	0.66	41	50	0.67
	Lead	1770	2416	909	-0.93	0.35	-0.93	0.35	41	50	0.36
	Manganese	2063	2124	849	1.41	0.16	1.41	0.16	41	50	0.16
	Mercury	1705	1950	822	0.63	0.53	0.63	0.53	38	47	0.54
	Nickel	1638	2548	777	-1.98	0.05	-1.98	0.05	41	50	0.048
	Silver	931	839	370	-0.90	0.37	-0.90	0.37	33	26	0.37
	Vanadium	1612	2575	751	-2.19	0.03	-2.19	0.03	41	50	0.028
	Zinc	2055	2132	857	1.34	0.18	1.34	0.18	41	50	0.18
Cloudberry	Barium	131	169	53	-1.10	0.27	-1.10	0.27	12	12	0.29
	Cadmium	136	96	30	1.80	0.073	1.80	0.072	10	11	0.072
	Copper	192	108	30	2.42	0.015	2.42	0.015	12	12	0.014
	Lead	122	179	44	-1.65	0.100	-1.66	0.096	12	12	0.10
	Manganese	141	160	63	-0.55	0.58	-0.55	0.58	12	12	0.59
	Mercury	121	132	55	-0.36	0.72	-0.36	0.72	11	11	0.75
	Nickel	151	150	72	0.03	0.98	0.029	0.98	12	12	0.98
	Vanadium	109	145	54	-0.43	0.67	-0.43	0.67	10	12	0.67
	Zinc	169	131	53	1.10	0.27	1.10	0.27	12	12	0.29
Diamond-leaf Willow	Barium	450	776	260	-0.52	0.60	-0.52	0.60	19	30	0.60
	Cadmium	387	741	216	-0.98	0.32	-0.98	0.32	18	29	0.33
	Copper	575	650	185	2.05	0.040	2.05	0.040	19	30	0.040
	Lead	301	924	111	-3.57	0.00036	-3.62	0.00030	19	30	0.00022
	Manganese	389	836	199	-1.76	0.078	-1.76	0.078	19	30	0.079
	Mercury	285	619	132	-2.08	0.038	-2.08	0.038	17	25	0.037
	Nickel	336	568	183	-0.77	0.44	-0.77	0.44	17	25	0.45
	Vanadium	234	670	156	-0.68	0.50	-0.68	0.49	12	30	0.50
	Zinc	789	436	246	0.80	0.42	0.80	0.42	30	19	0.43

Species	Trace Elements [a]	Rank Sum July	Rank Sum August	U	Z	p-level	Z adjusted	p-level	Valid N July	Valid N August	2*1sided exact p
Bog Blueberry	**Barium**	346	981	115	-3.84	0.00012	-3.84	0.00012	21	30	0.000061
	Cadmium	525	802	294	-0.41	0.68	-0.41	0.68	21	30	0.68
	Copper	709	618	153	3.11	0.00	3.11	0.0019	21	30	0.0015
	Lead	603	724	259	1.08	0.28	1.10	0.27	21	30	0.28
	Manganese	486	840	255	-1.15	0.25	-1.15	0.25	21	30	0.26
	Mercury	269	722	98	-3.26	0.0011	-3.26	0.0011	18	26	0.00077
	Nickel	294	696	123	-2.65	0.01	-2.65	0.0080	18	26	0.0074
	Vanadium	206	614	128	-1.18	0.24	-1.19	0.24	12	28	0.25
	Zinc	551	269	145	-0.68	0.50	-0.68	0.50	28	12	0.51
Lingonberry	Barium	86	145	31	-1.69	0.091	-1.69	0.091	10	11	0.099
	Cadmium	91	119	46	-0.27	0.79	-0.27	0.79	9	11	0.82
	Copper	123	109	43	0.88	0.38	0.88	0.38	10	11	0.39
	Lead	105	127	50	-0.39	0.70	-0.39	0.70	10	11	0.70
	Manganese	74	157	19	-2.54	0.01	-2.54	0.01	10	11	0.01
	Mercury	88	103	37	0.62	0.54	0.62	0.54	8	11	0.54
	Nickel	103	129	48	-0.53	0.60	-0.53	0.60	10	11	0.60
	Vanadium	44	92	23	-0.76	0.45	-0.76	0.44	6	10	0.49
	Zinc	118	113	52	-0.21	0.83	-0.21	0.83	11	10	0.86

Footnotes:

[a] Trace elements with significant differences are shown in bold font.

APPENDIX 10.1G

Mann-Whitney U-test Results, Comparison of Data for Fruit and Vegetative Tissues, Mine Study Area, 2005-2007

Appendix 10.1G
Mann-Whitney U-test Results
Statistical Comparison of Fruit and Vegetative Tissues

Species	Trace Elements [a]	Rank Sum Fruit Tissues	Rank Sum Vegetative Tissues	U	Z	p-level	Z adjusted	p-level	Valid N Fruit Tissues	Valid N Vegetative Samples	2*1 sided exact p
Crowberry	**Barium**	210	1330	0.00	-6.12	9.15E-10	-6.12	9.11E-10	20	35	3.96E-15
	Cadmium	74.5	202	30.5	1.08	0.28	1.08	0.28	5	18	0.29
	Copper	681	859	229	2.12	0.034	2.12	0.034	20	35	0.034
	Lead	427	1005	256	-1.12	0.26	-1.12	0.26	18	35	0.27
	Manganese	210	1330	0.00	-6.12	9.15E-10	-6.12	9.15E-10	20	35	3.96E-15
	Mercury	196	750	130	-1.28	0.20	-1.29	0.20	11	32	0.21
	Nickel	495	1045	285	-1.14	0.26	-1.14	0.26	20	35	0.26
	Silver	83.0	170	50.0	0.18	0.86	0.19	0.85	7	15	0.89
	Vanadium	325	901	172	-2.11	0.035	-2.12	0.034	17	32	0.034
	Zinc	257	1284	46.5	-5.31	1.10E-07	-5.31	1.09E-07	20	35	2.39E-09
Early Blueberry	**Barium**	36.0	289	0.00	-3.96	0.000075	-3.96	0.000075	8	17	1.85E-06
	Cadmium	17.5	193	11.5	-1.48	0.14	-1.49	0.14	3	17	0.15
	Copper	64.5	261	28.5	-2.30	0.021	-2.30	0.021	8	17	0.019
	Lead	21.0	255	0.00	-3.57	0.000356	-3.58	0.000345	6	17	0.000020
	Manganese	36.0	289	0.00	-3.96	0.000075	-3.96	0.000075	8	17	1.85E-06
	Mercury	351	210	90.0	1.63	0.10	1.66	0.097	18	15	0.11
	Nickel	75.0	250	39.0	-1.69	0.091	-1.69	0.091	8	17	0.097
	Silver	NA									
	Vanadium	36.5	195	26.5	-0.67	0.50	-0.68	0.50	4	17	0.52
	Zinc	36.0	289	0.00	-3.96	0.000075	-3.96	0.000074	8	17	1.85E-06
Bog Blueberry	**Barium**	711	3117	45.0	-7.52	5.34E-14	-7.52	5.33E-14	36	51	2.96E-19
	Cadmium	981	2761	351	-4.76	1.89E-06	-4.76	1.89E-06	35	51	6.66E-07
	Copper	1693	2136	810	0.94	0.35	0.94	0.35	36	51	0.35
	Lead	1827	1659	333	4.52	6.22E-06	4.54	5.63E-06	32	51	2.66E-06
	Manganese	740	3089	73.5	-7.28	3.40E-13	-7.28	3.39E-13	36	51	2.51E-17
	Mercury	645	1771	320	-2.88	0.0040	-2.88	0.0040	25	44	0.0035
	Nickel	1873	1955	629	2.49	0.013	2.49	0.013	36	51	0.012
	Silver	351	210	90.0	1.63	0.10	1.66	0.097	18	15	0.11
	Vanadium	929	1417	523	-0.46	0.64	-0.46	0.64	28	40	0.65
	Zinc	972	2857	306	-5.28	1.30E-07	-5.28	1.30E-07	36	51	2.47E-08
Lingonberry	**Barium**	105	525	0.00	-4.95	7.43E-07	-4.95	7.43E-07	14	21	8.62E-10
	Cadmium	50.0	328	22.0	-2.66	0.0079	-2.66	0.0079	7	20	0.0063
	Copper	358	272	41.0	3.57	0.000358	3.57	0.000357	14	21	0.000172
	Lead	287	309	77.5	2.09	0.037	2.10	0.036	13	21	0.035
	Manganese	111	519	6.00	-4.75	2.06E-06	-4.75	2.05E-06	14	21	2.59E-08
	Mercury	62.0	263	41.0	-1.02	0.31	-1.02	0.31	6	19	0.33
	Nickel	302	328	97.0	1.68	0.092	1.68	0.092	14	21	0.096
	Silver	56.5	48.5	20.5	-0.45	0.65	-0.45	0.65	8	6	0.66
	Vanadium	183	253	91.5	-0.55	0.58	-0.55	0.58	13	16	0.59
	Zinc	134	496	29.0	-3.97	0.000071	-3.97	0.000071	14	21	0.000018

Footnotes:

[a] Trace elements for which the difference in concentrations between fruit and vegetative tissues is statistically significant are shown in bold text.

APPENDIX 10.1H

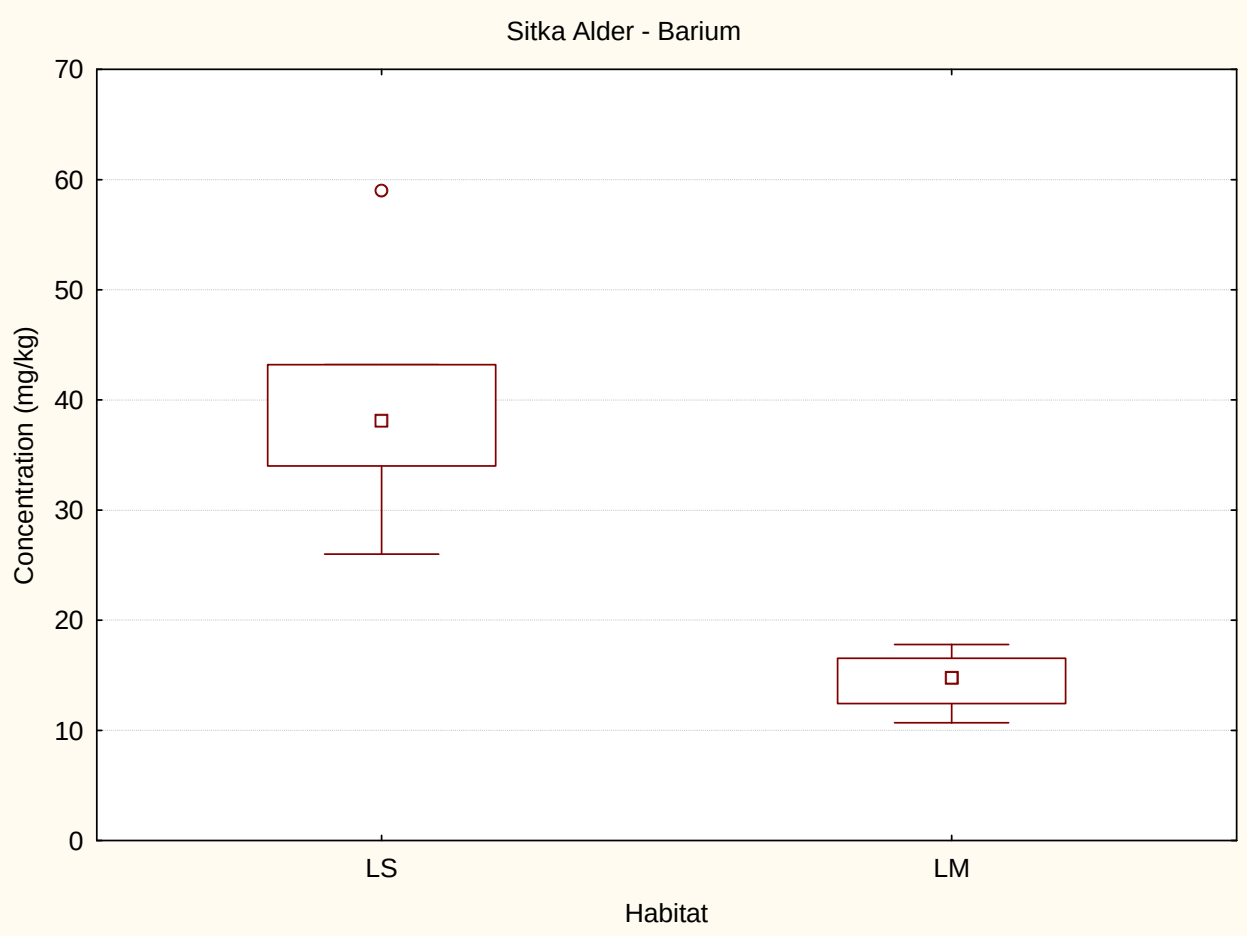
Box-and-Whisker Plots for Vegetation Data by Habitat Type, Mine Study Area, 2004-2007

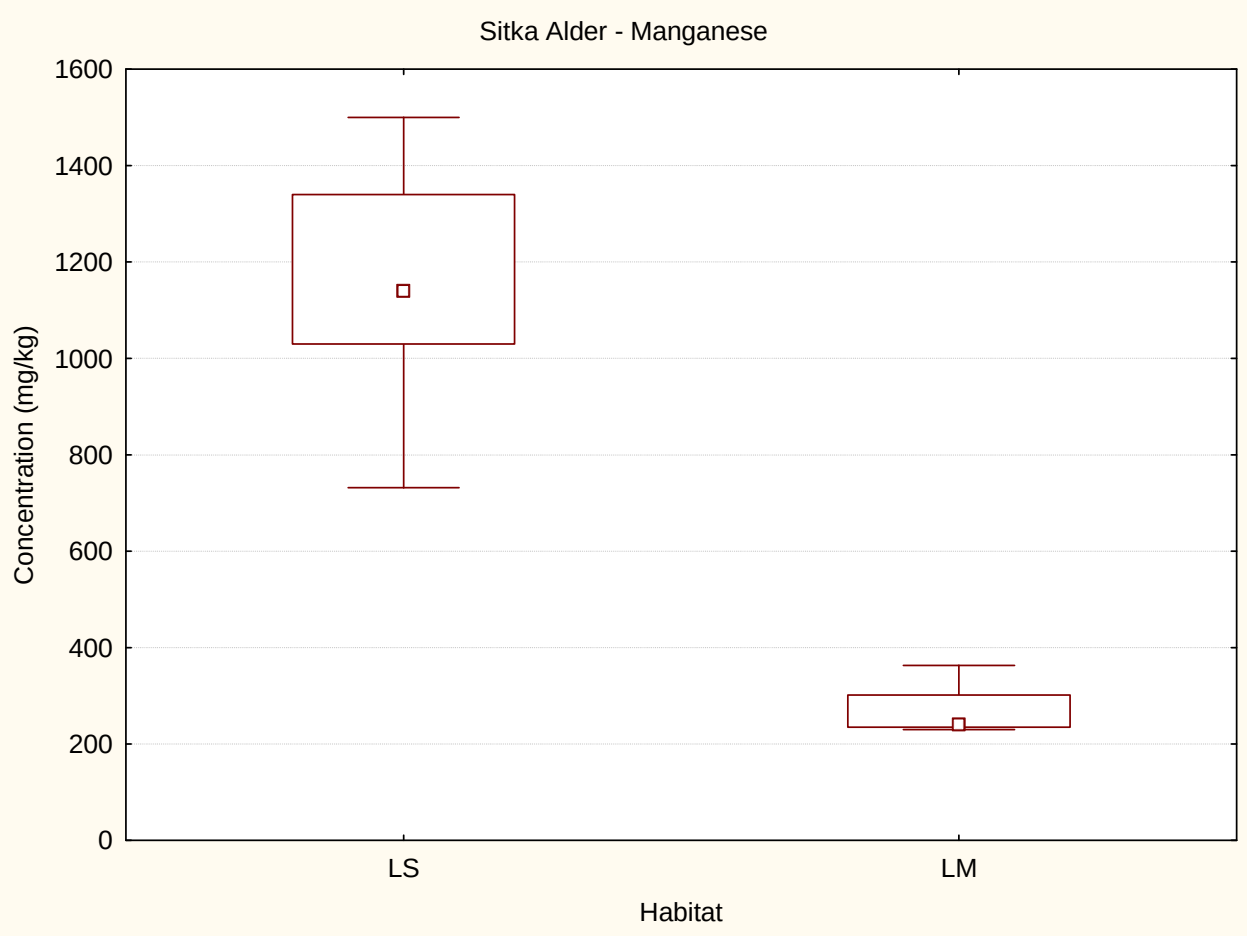
Boxplot Legend: This legend applies to all plant boxplots for the mine study area. Non-detect results are not included in boxplots.

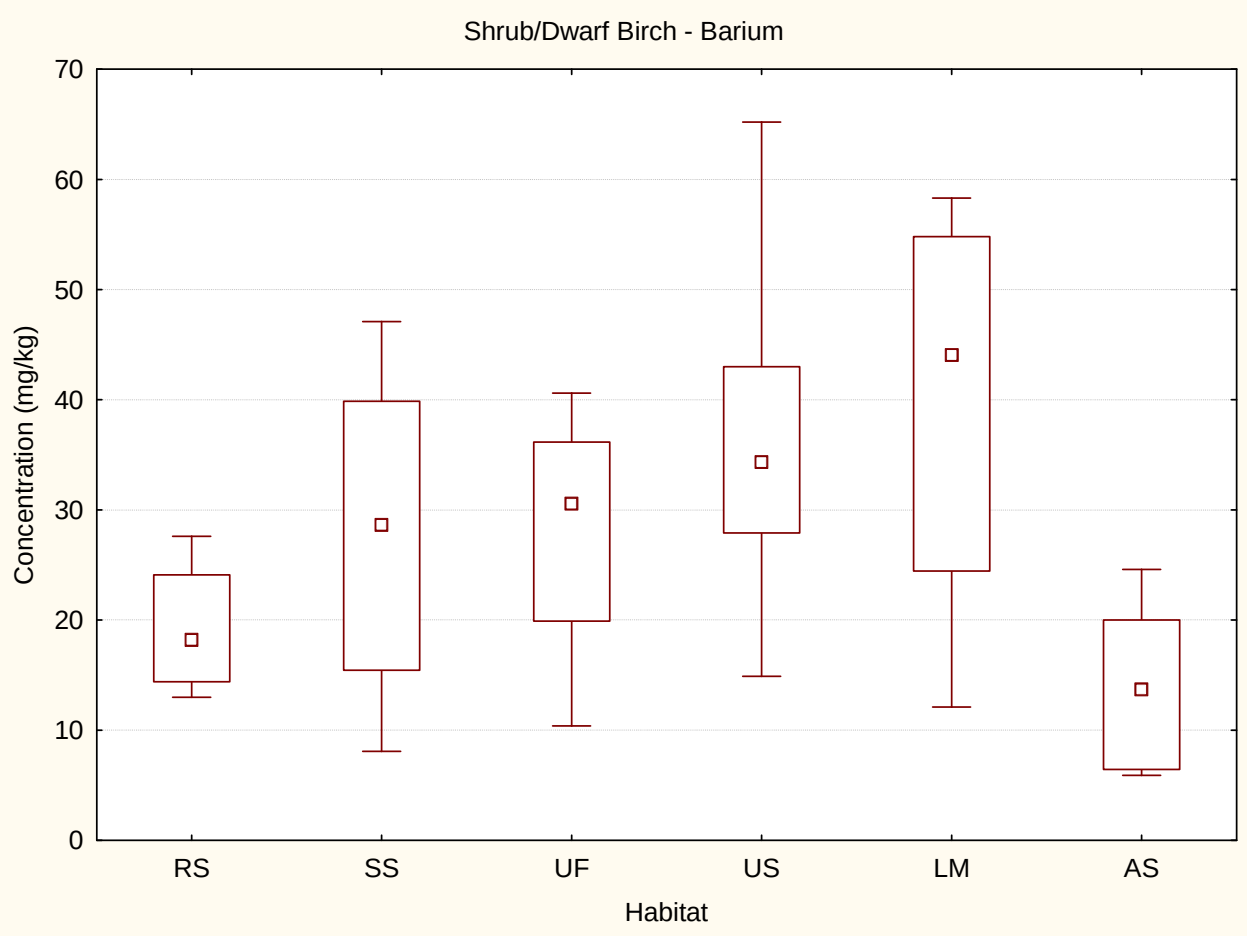
Median □ 25%-75% ⌶ Non-Outlier Range Outliers Extremes

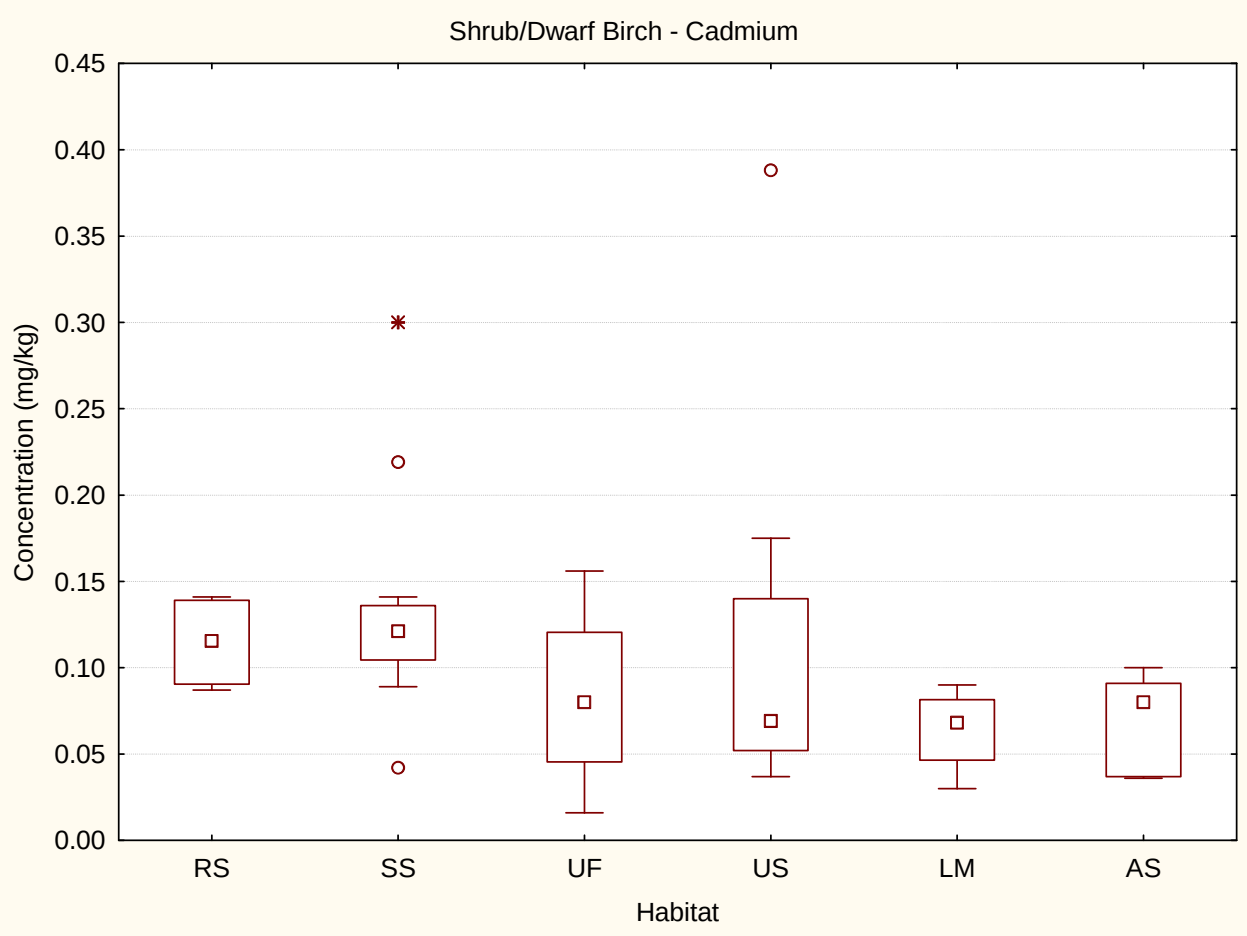
Habitat codes: AS = Alpine rock and dwarf scrub, LM = Lowland wet graminoid, moss meadow, LS = Lowland low and tall alder/willow scrub, RS = Riverine willow scrub, SS = Subalpine dwarf, low, and tall scrub, UF = Upland dwarf scrub, lichen flats, US = Upland dwarf, low, and tall scrub

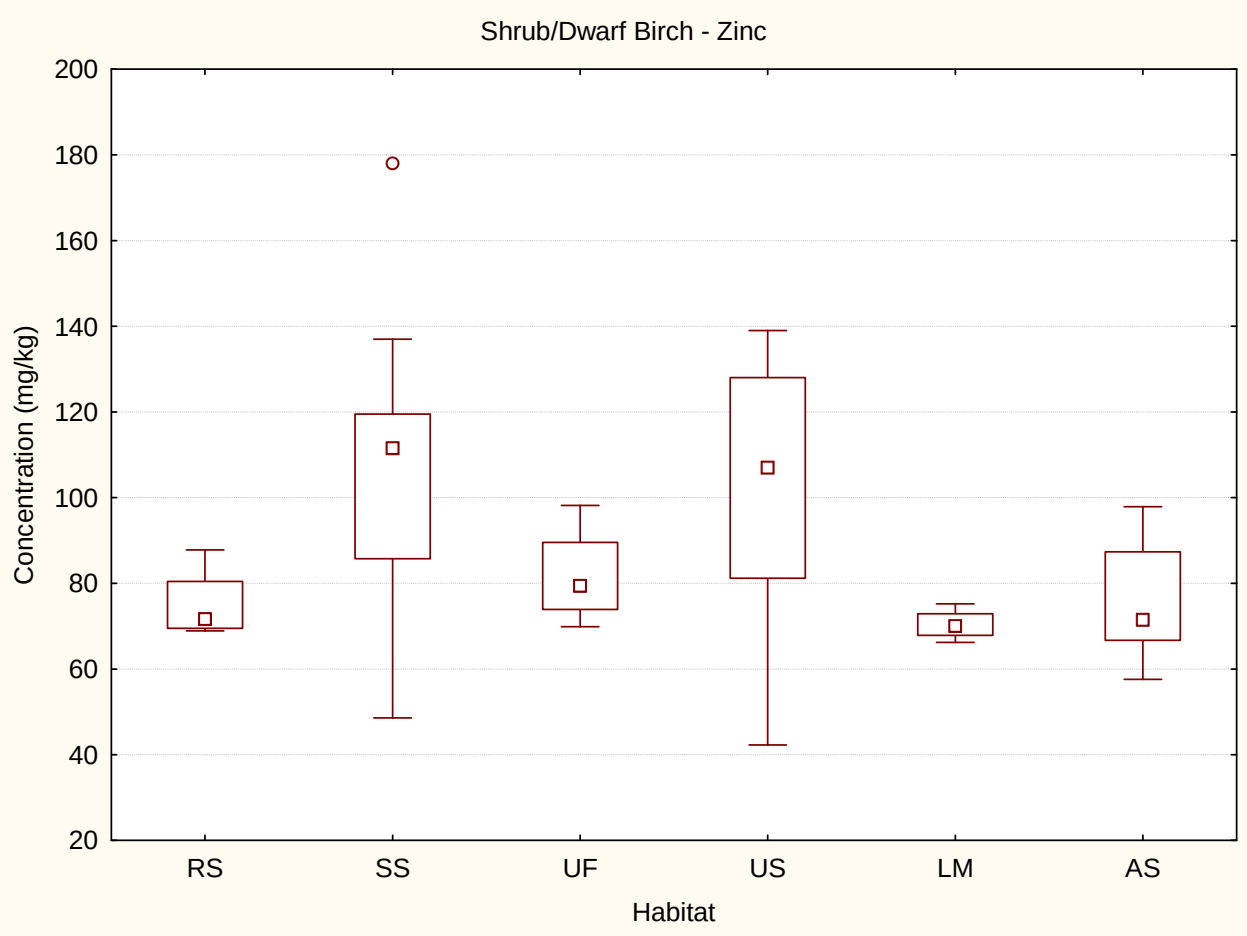
All boxplots are for vegetative tissues samples only.

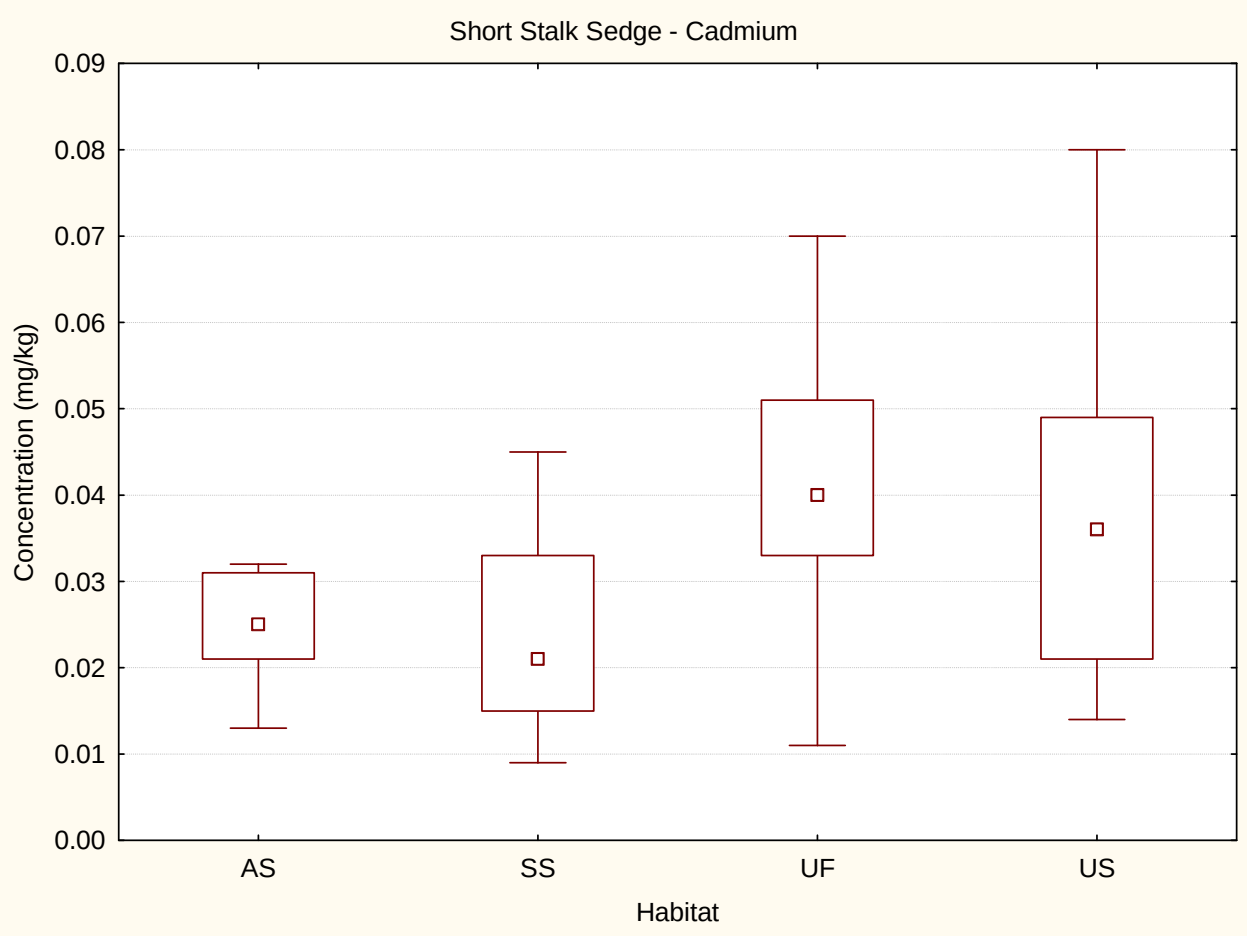


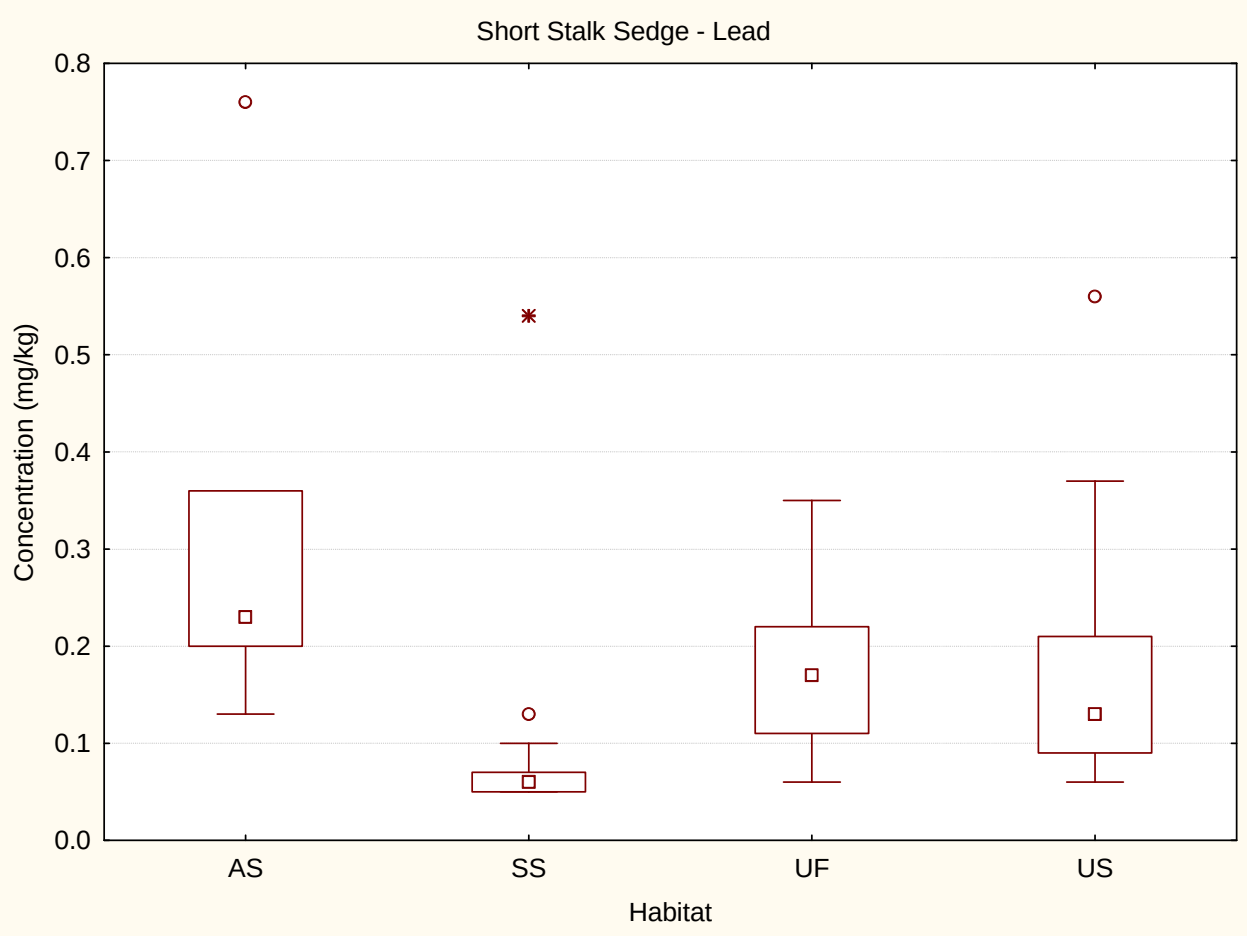

Sitka Alder - Manganese
1600
1400
1200
1000
800
600
400
200
0
Concentration (mg/kg)
LS
LM
Habitat

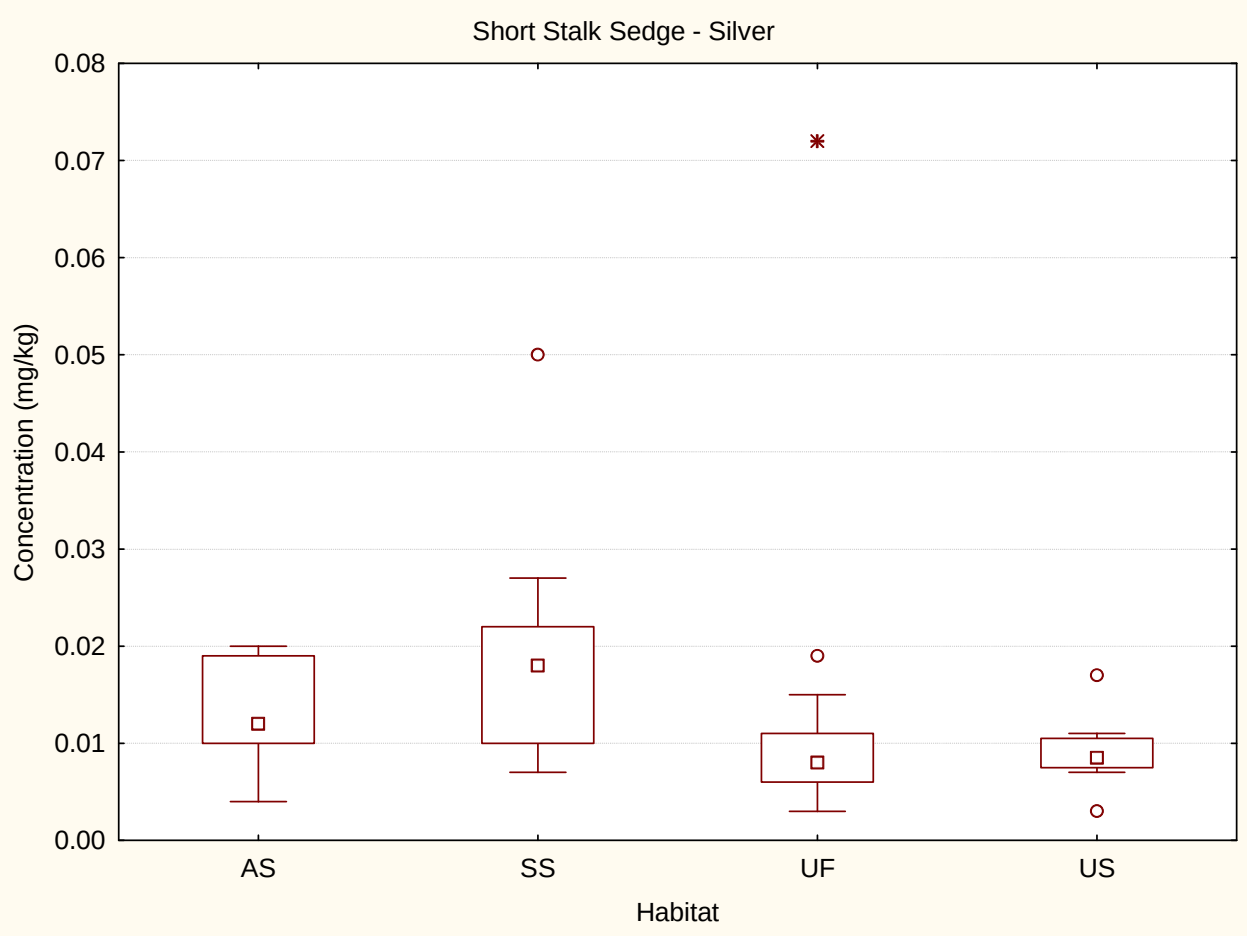

Shrub/Dwarf Birch - Barium
Concentration (mg/kg)
70
60
50
40
30
20
10
0
RS
SS
UF
US
LM
AS
Habitat

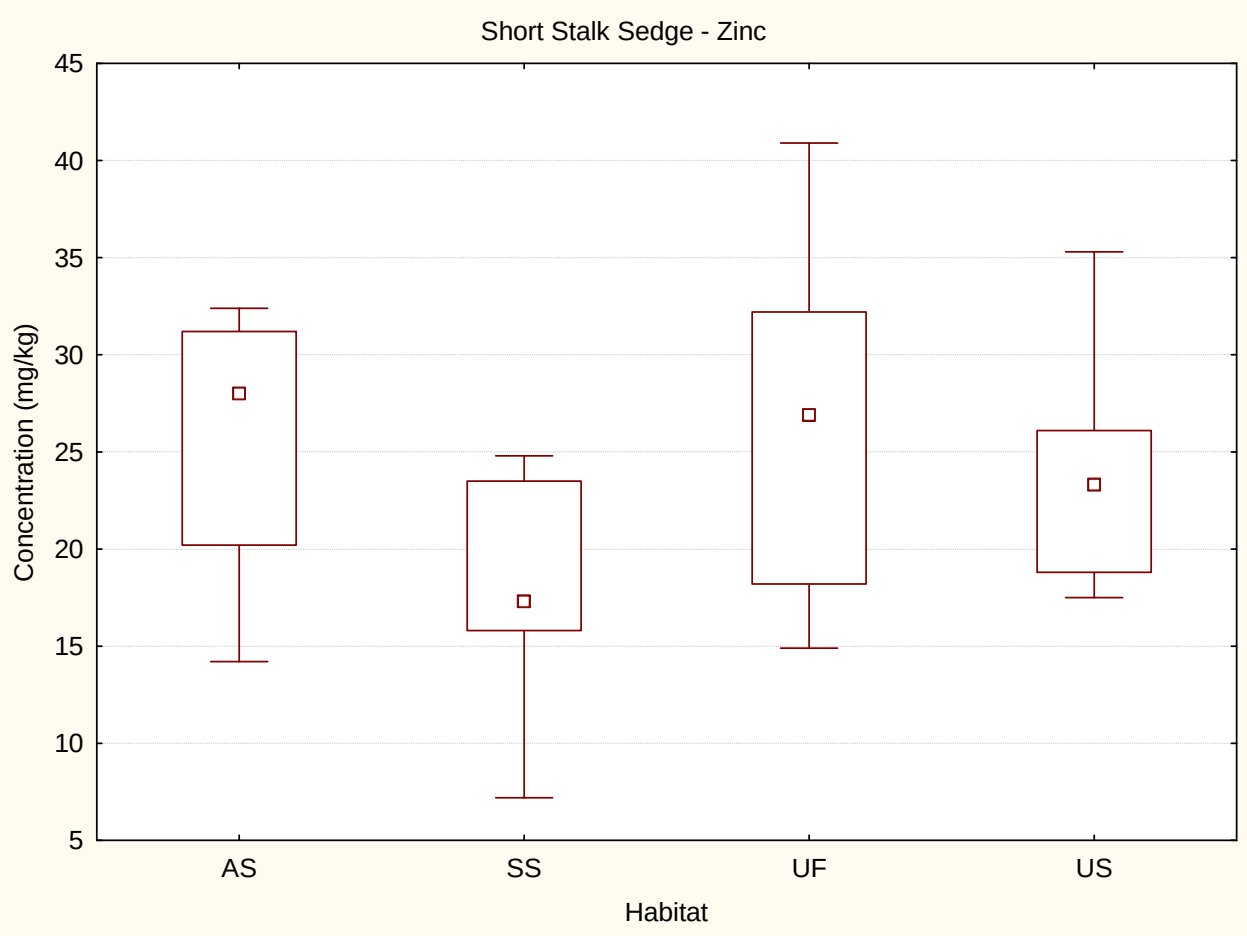

Shrub/Dwarf Birch - Cadmium
Concentration (mg/kg)
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
RS
SS
UF
US
LM
AS
Habitat

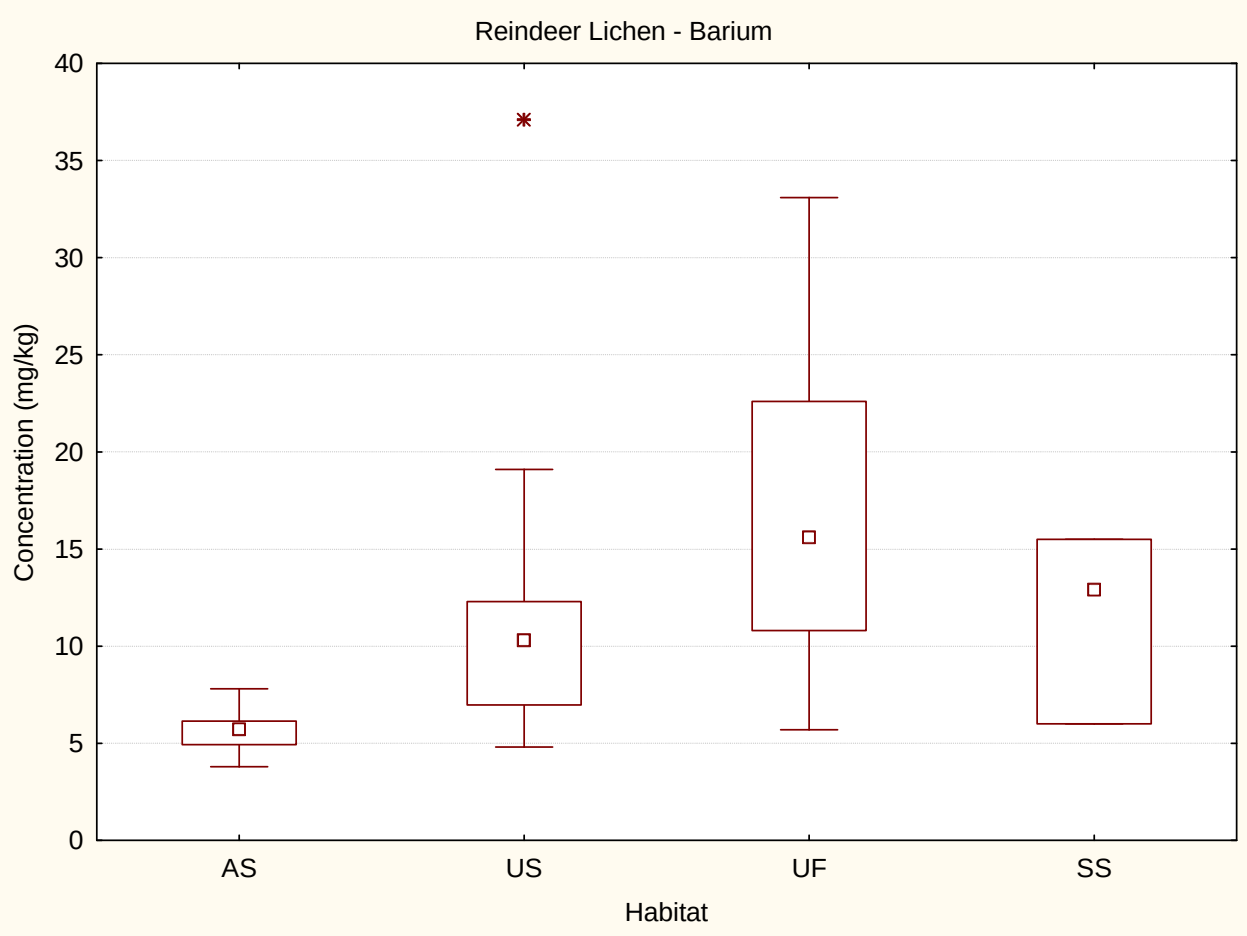

Shrub/Dwarf Birch - Zinc
Concentration (mg/kg)
200
180
160
140
120
100
80
60
40
20
RS
SS
UF
US
LM
AS
Habitat

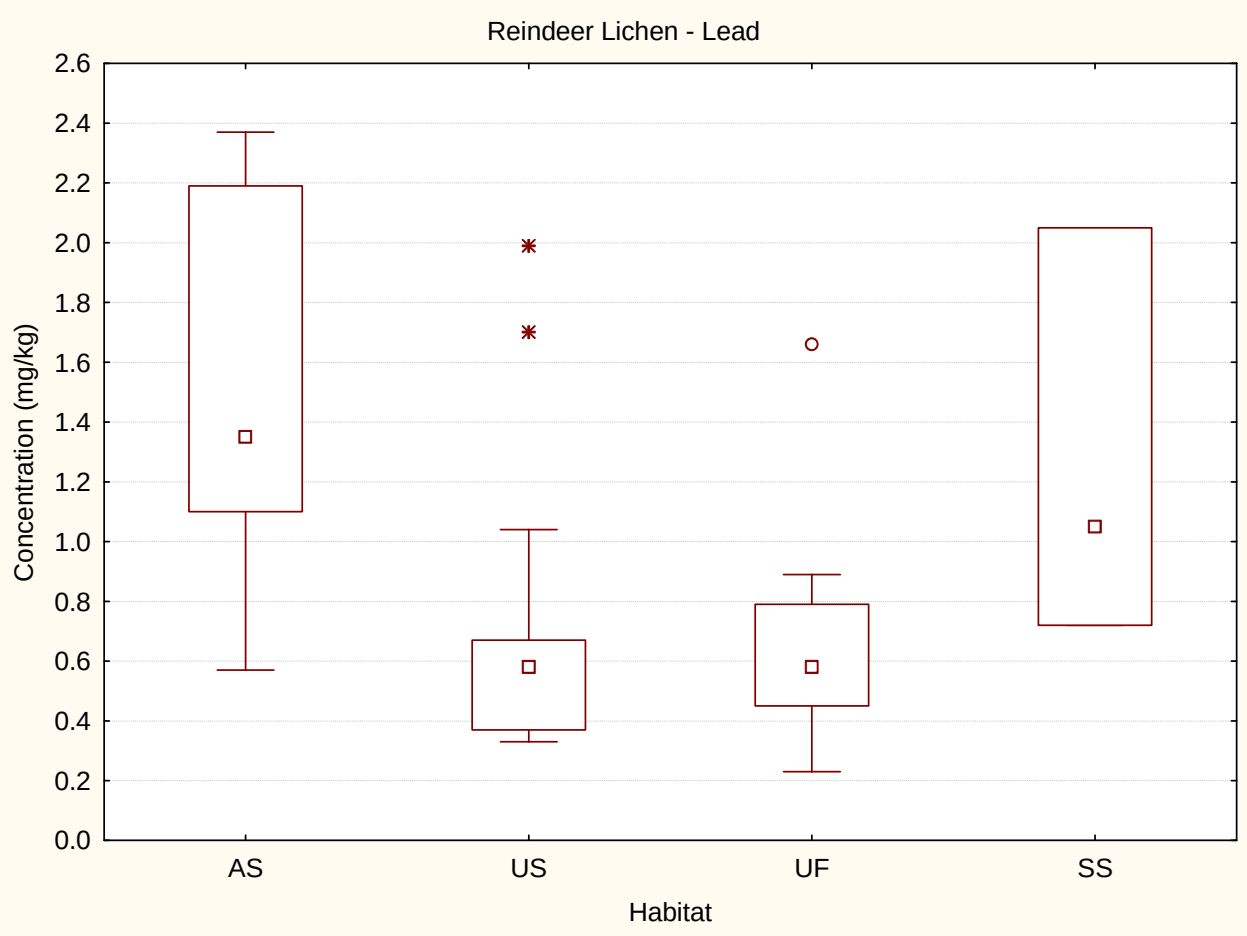

Short Stalk Sedge - Cadmium
Concentration (mg/kg)
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
AS
SS
UF
US
Habitat

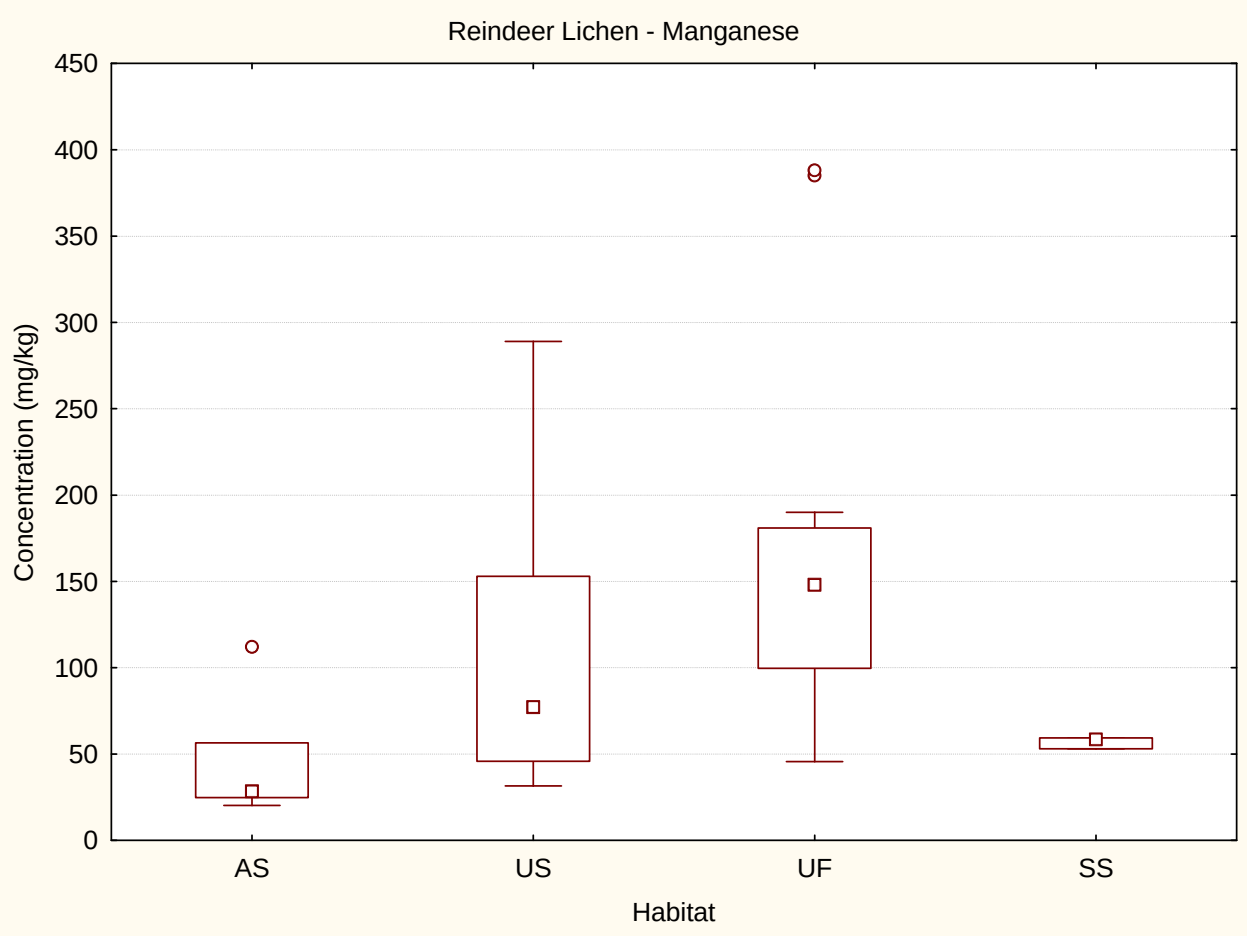

Short Stalk Sedge - Lead
Concentration (mg/kg)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
AS
SS
UF
US
Habitat

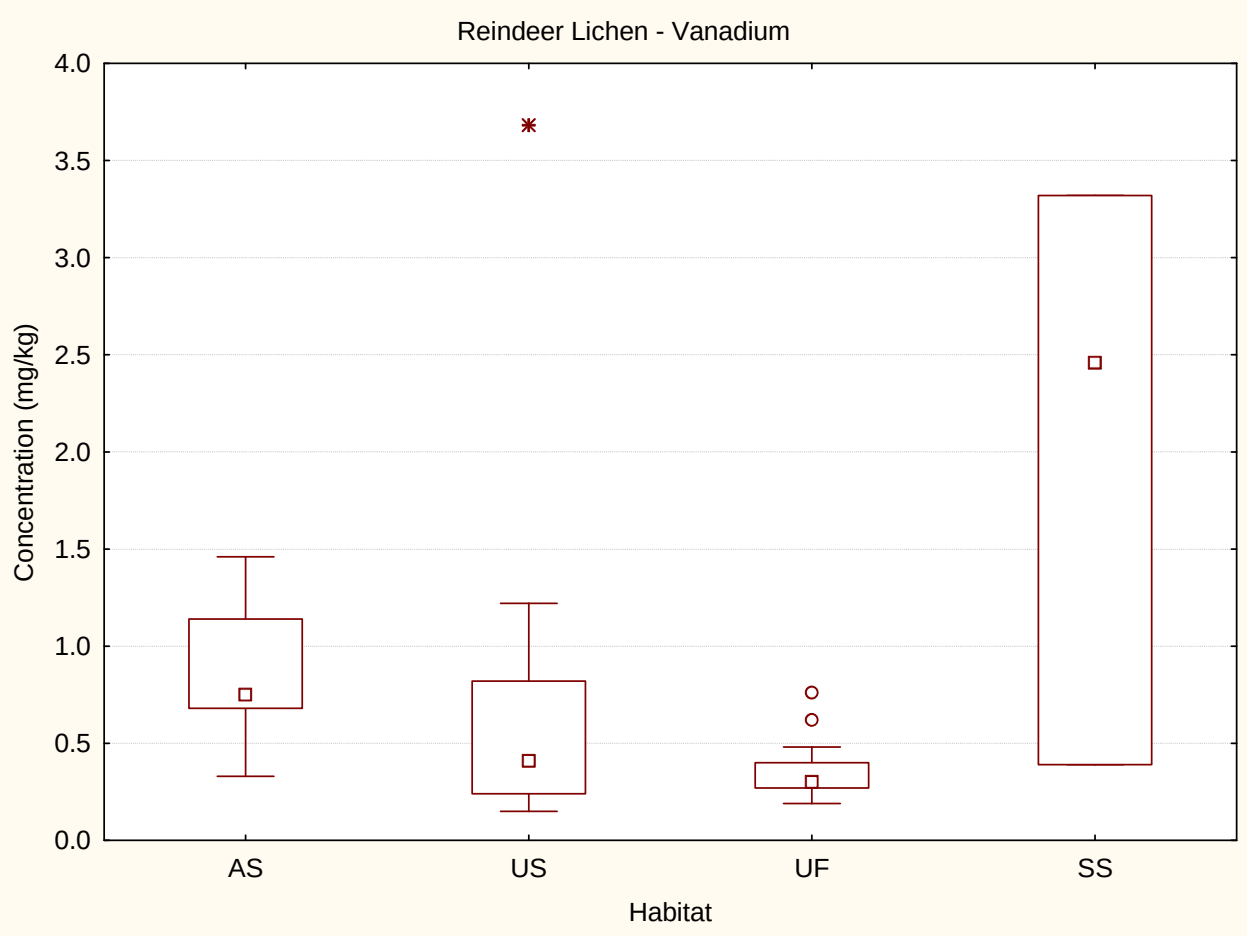

Short Stalk Sedge - Silver
Concentration (mg/kg)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
AS
SS
UF
US
Habitat

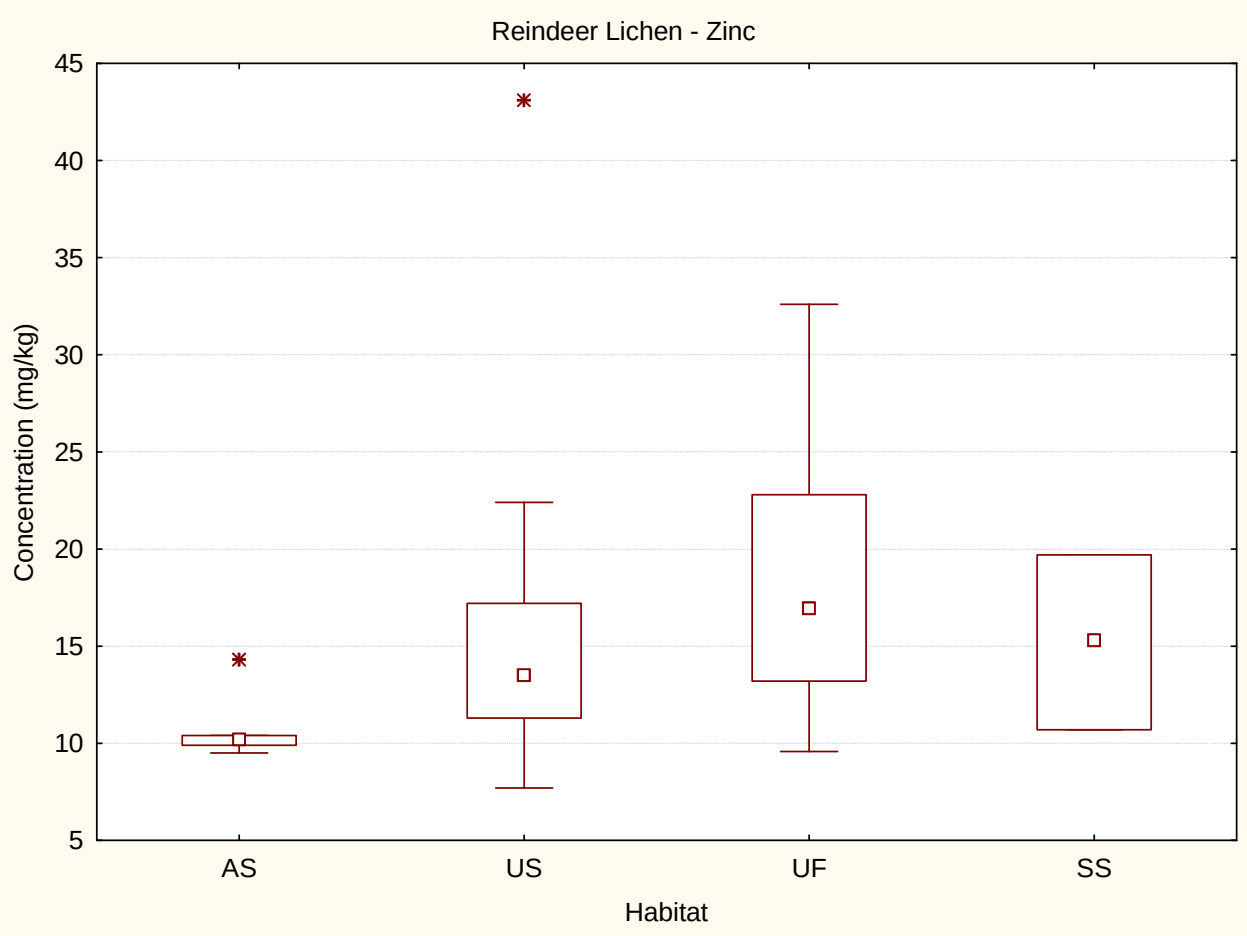

Short Stalk Sedge - Zinc
Concentration (mg/kg)
45
40
35
30
25
20
15
10
5
AS
SS
UF
US
Habitat

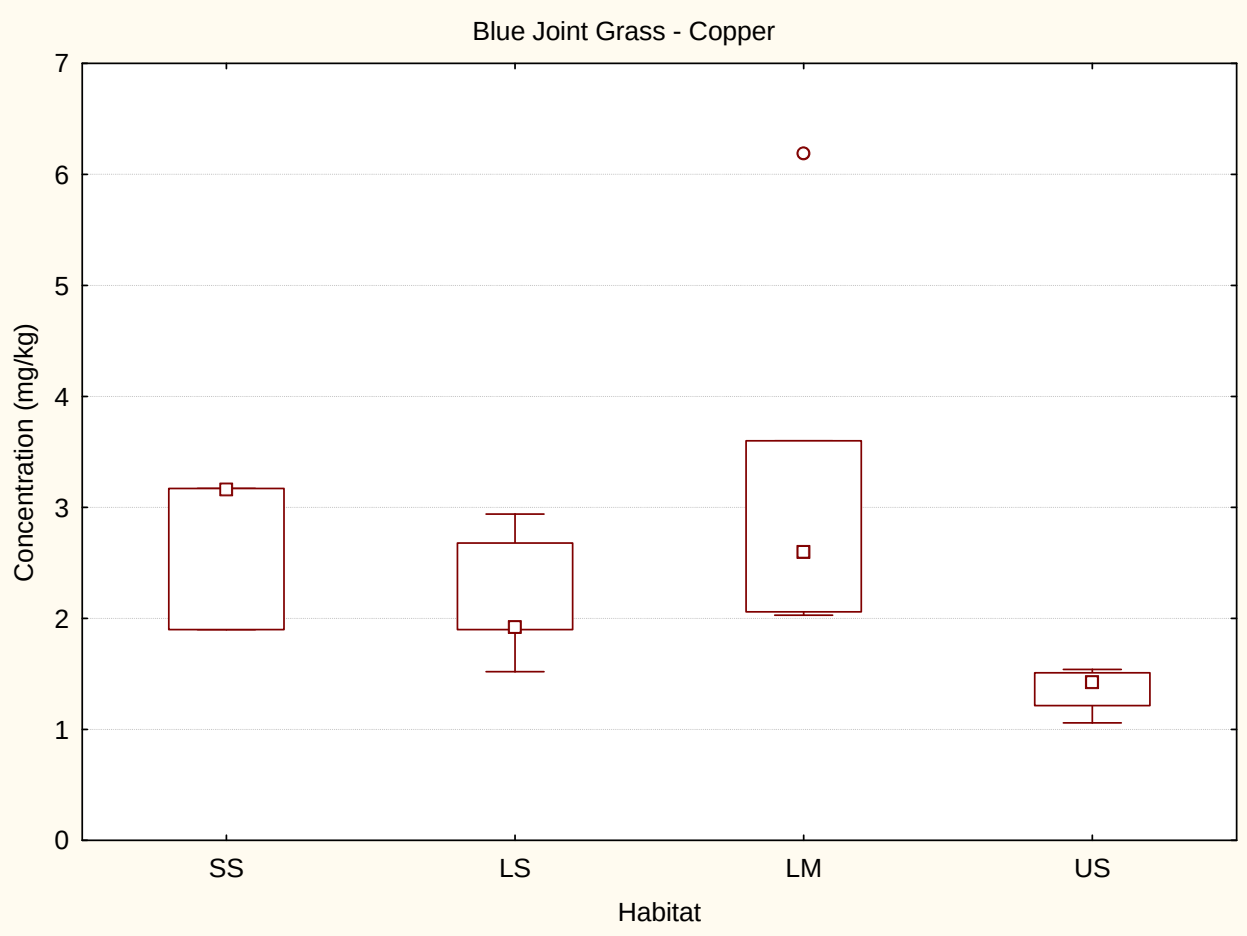

Reindeer Lichen - Barium
Concentration (mg/kg)
0
5
10
15
20
25
30
35
40
AS
US
UF
SS
Habitat

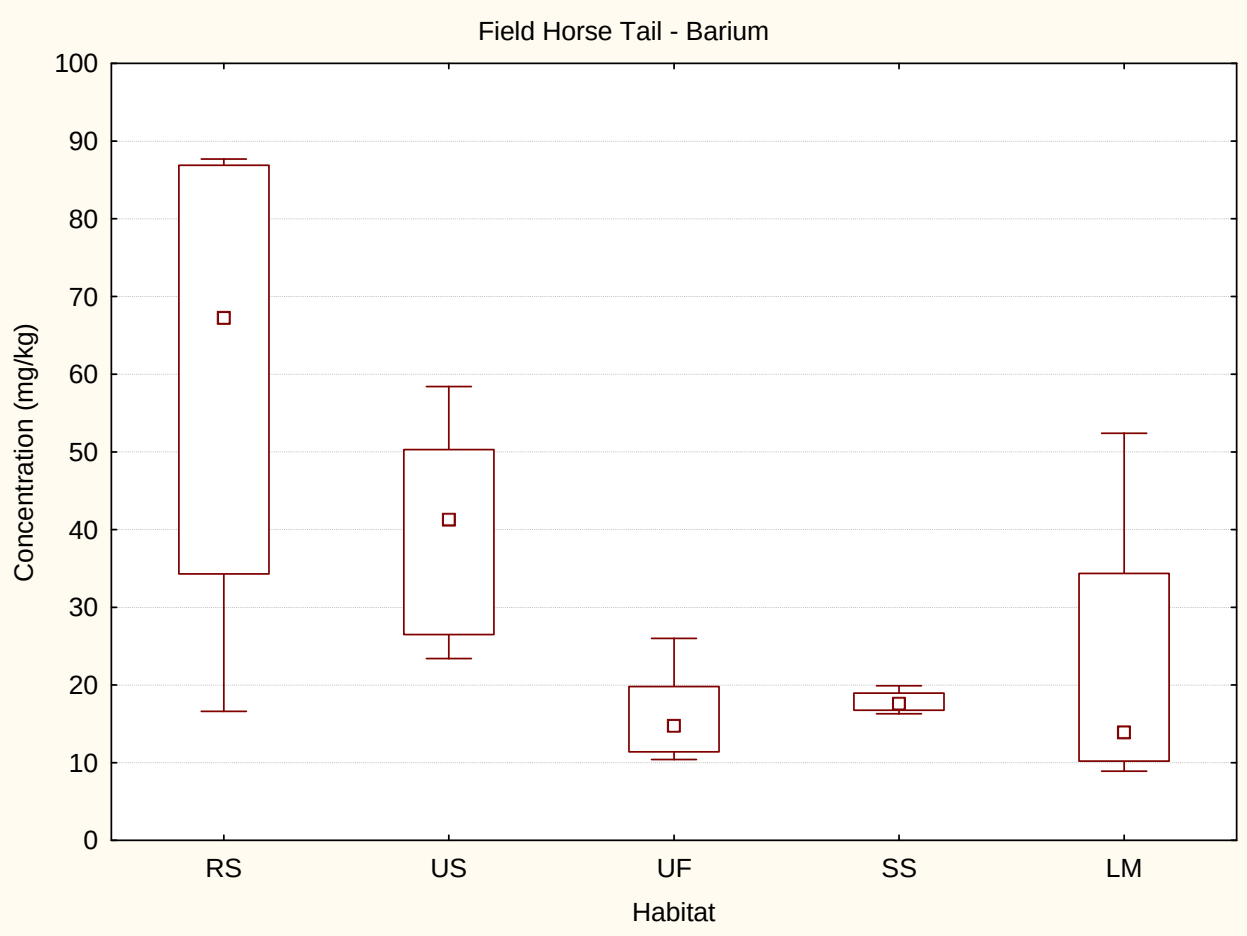

Reindeer Lichen - Lead
Concentration (mg/kg)
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
AS
US
UF
SS
Habitat

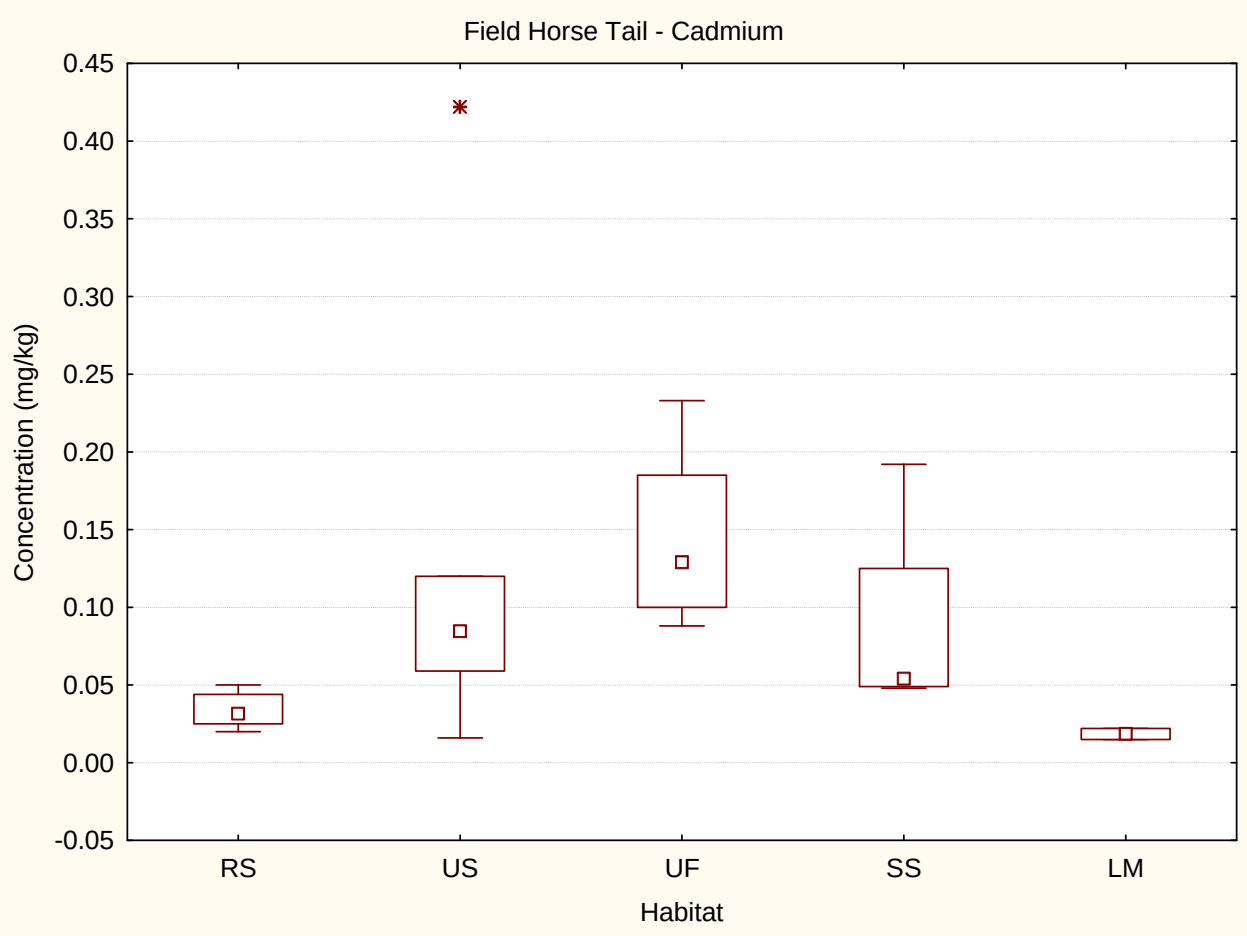

Reindeer Lichen - Manganese
Concentration (mg/kg)
450
400
350
300
250
200
150
100
50
0
AS
US
UF
SS
Habitat

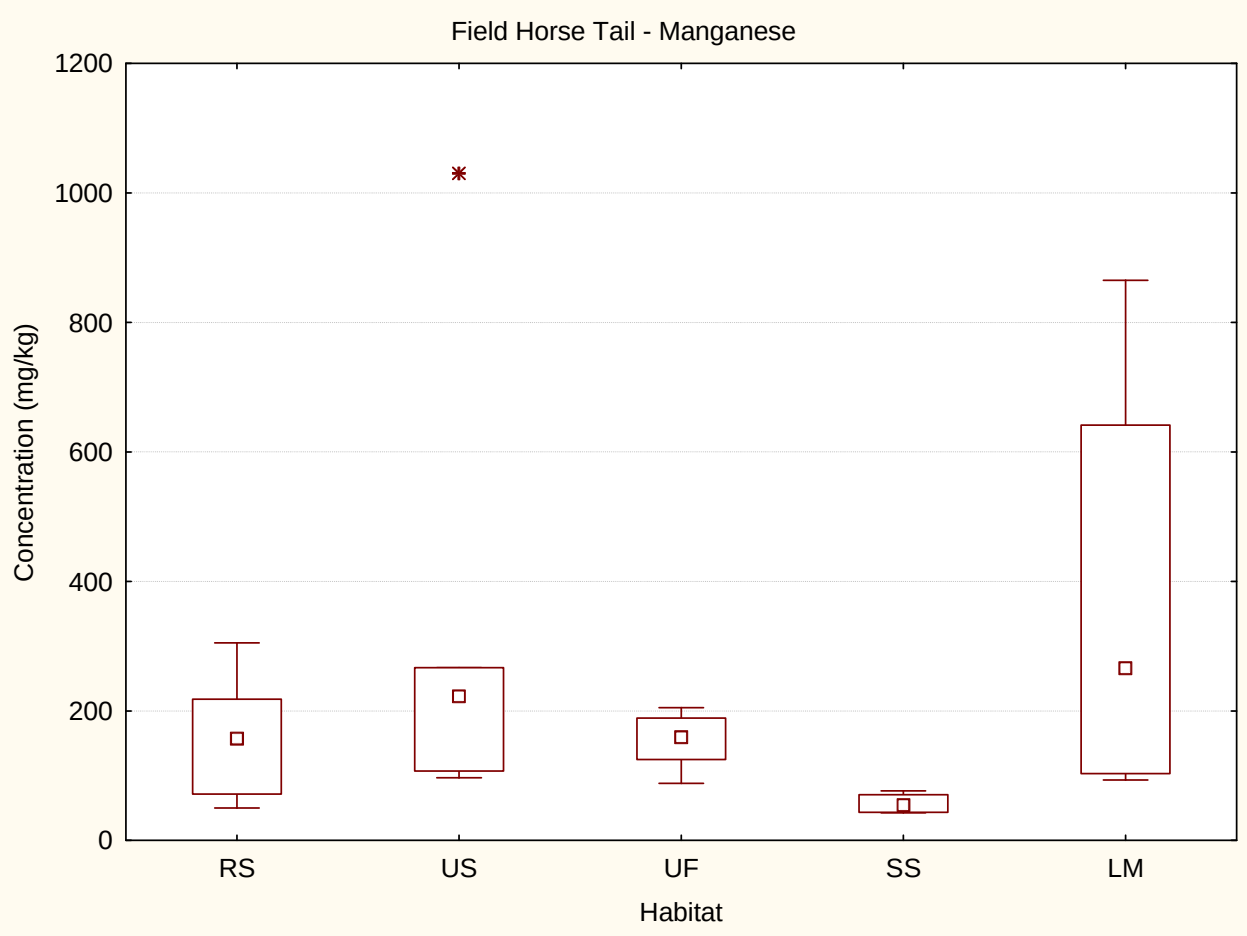

Reindeer Lichen - Vanadium
Concentration (mg/kg)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
AS
US
UF
SS
Habitat

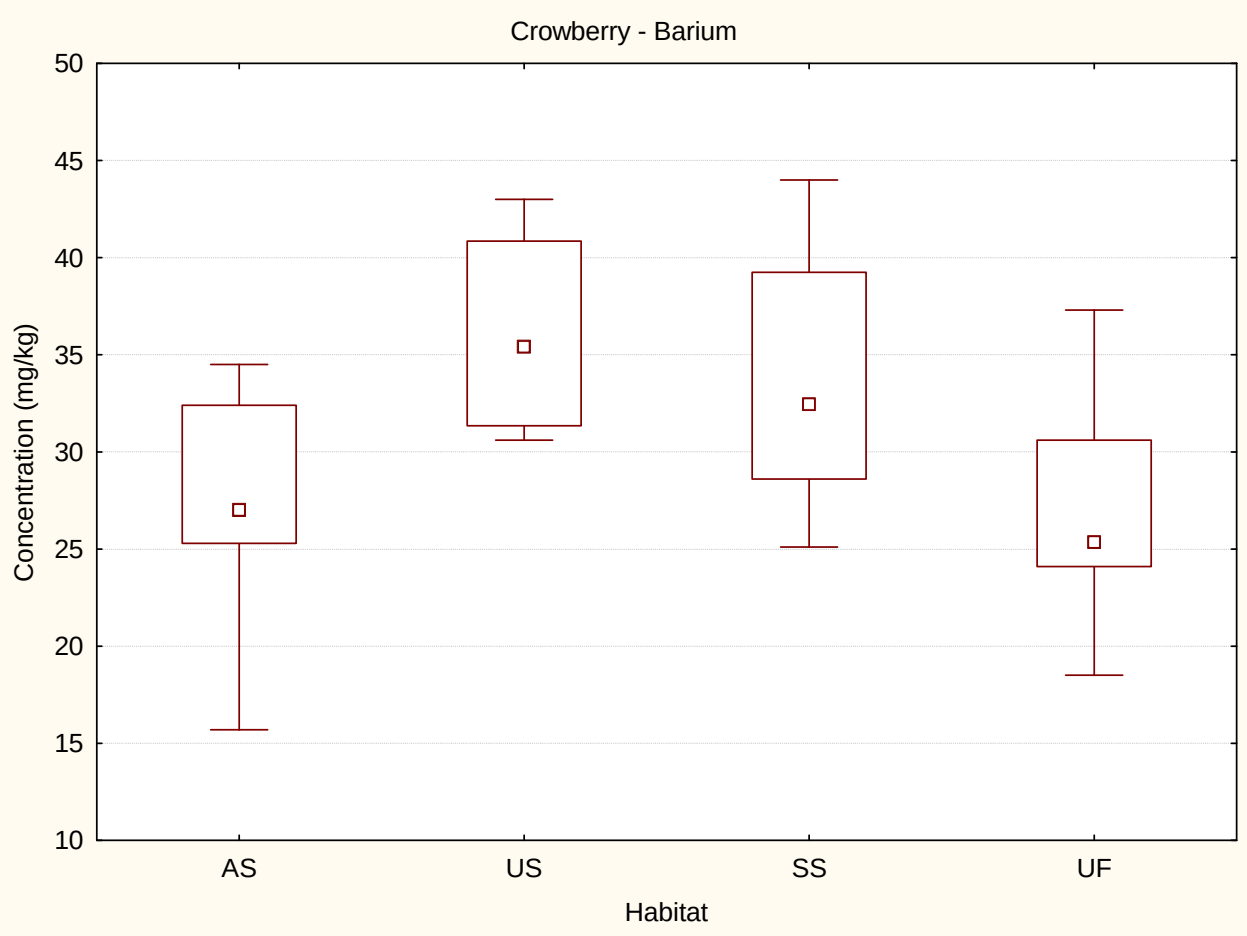

Reindeer Lichen - Zinc
Concentration (mg/kg)
45
40
35
30
25
20
15
10
5
AS
US
UF
SS
Habitat

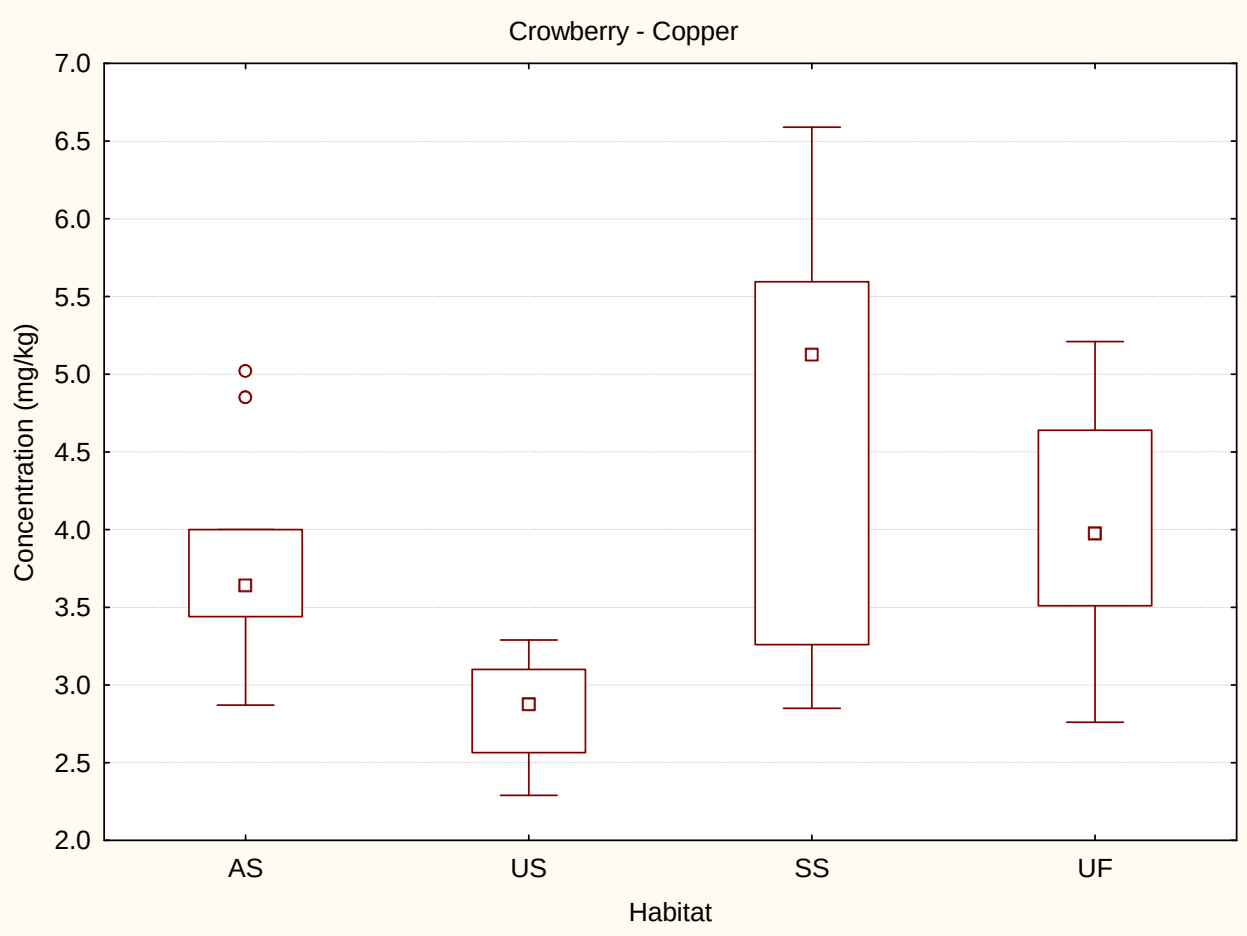

Blue Joint Grass - Copper
Concentration (mg/kg)
0
1
2
3
4
5
6
7
SS
LS
LM
US
Habitat

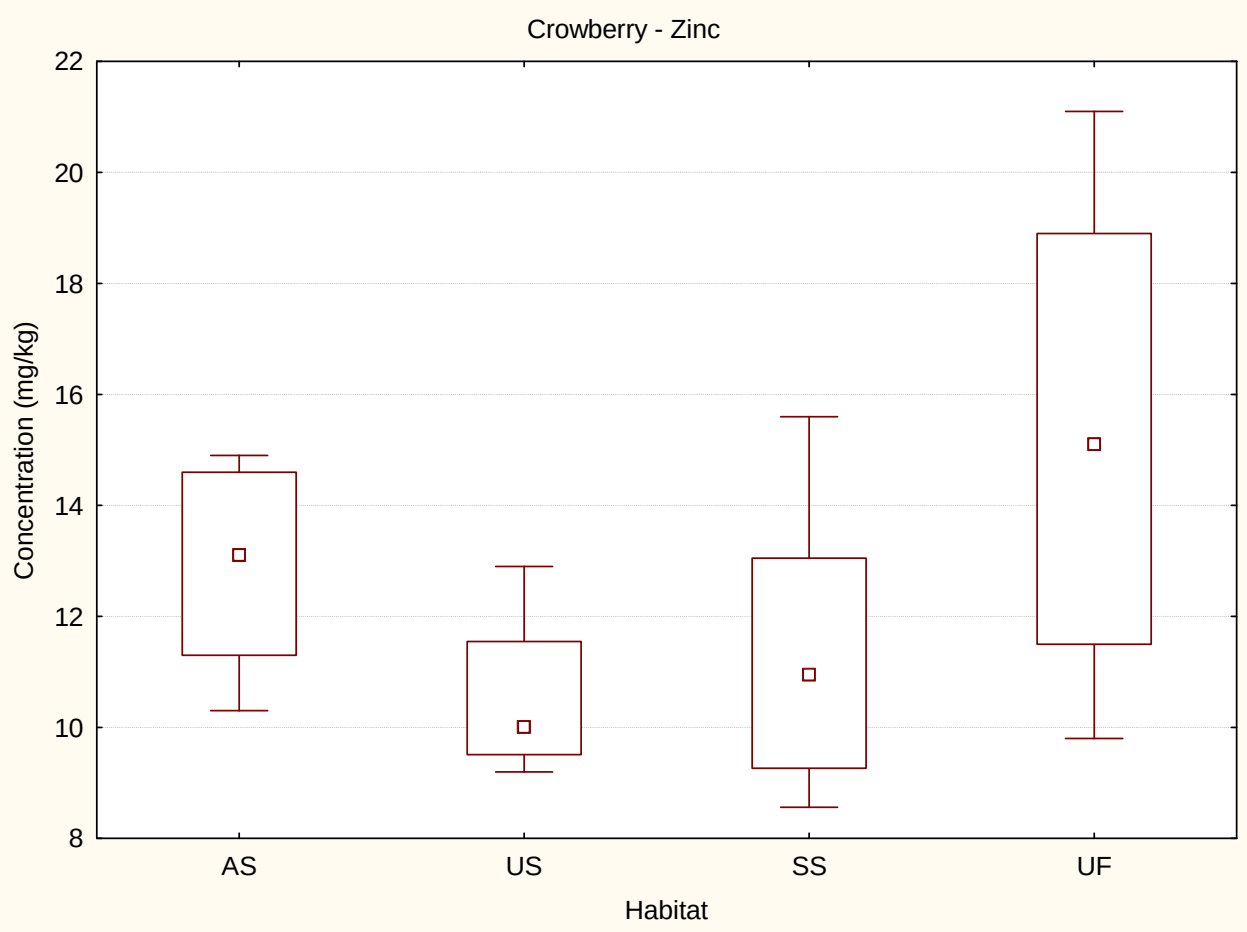

Field Horse Tail - Barium
Concentration (mg/kg)
100
90
80
70
60
50
40
30
20
10
0
RS
US
UF
SS
LM
Habitat

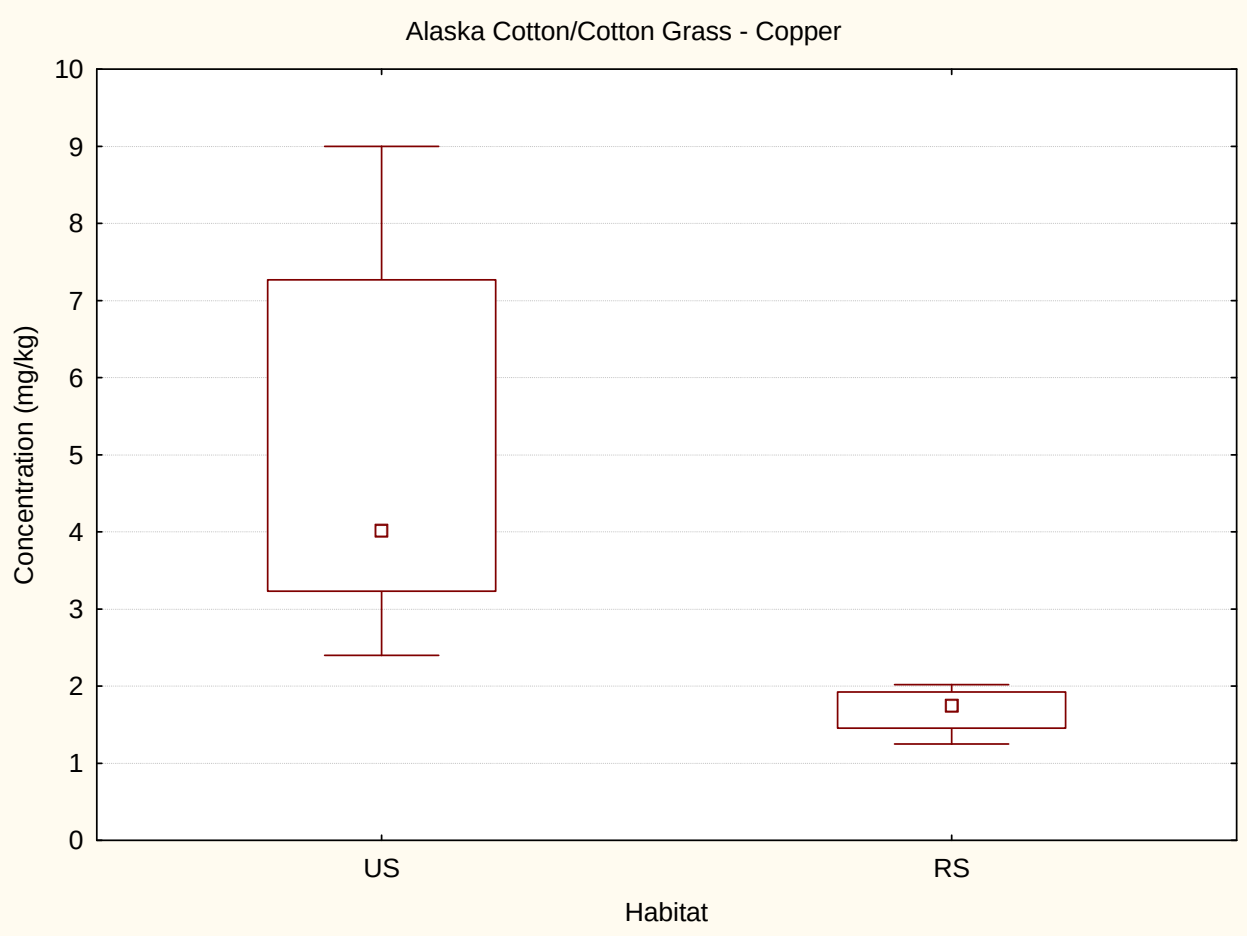

Field Horse Tail - Cadmium
Concentration (mg/kg)
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
-0.05
RS
US
UF
SS
LM
Habitat

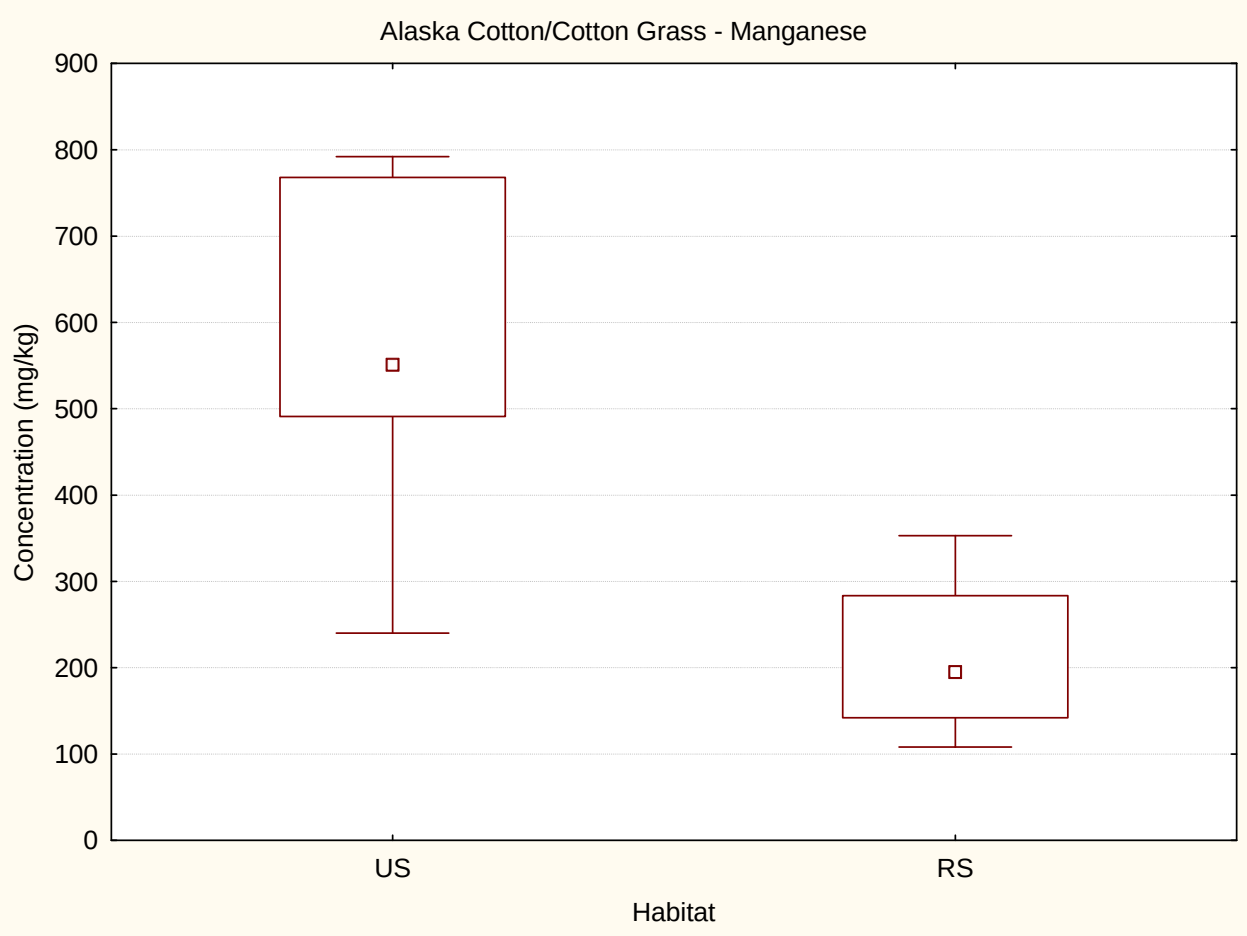

Field Horse Tail - Manganese
1200
1000
800
600
400
200
0
Concentration (mg/kg)
RS
US
UF
SS
LM
Habitat

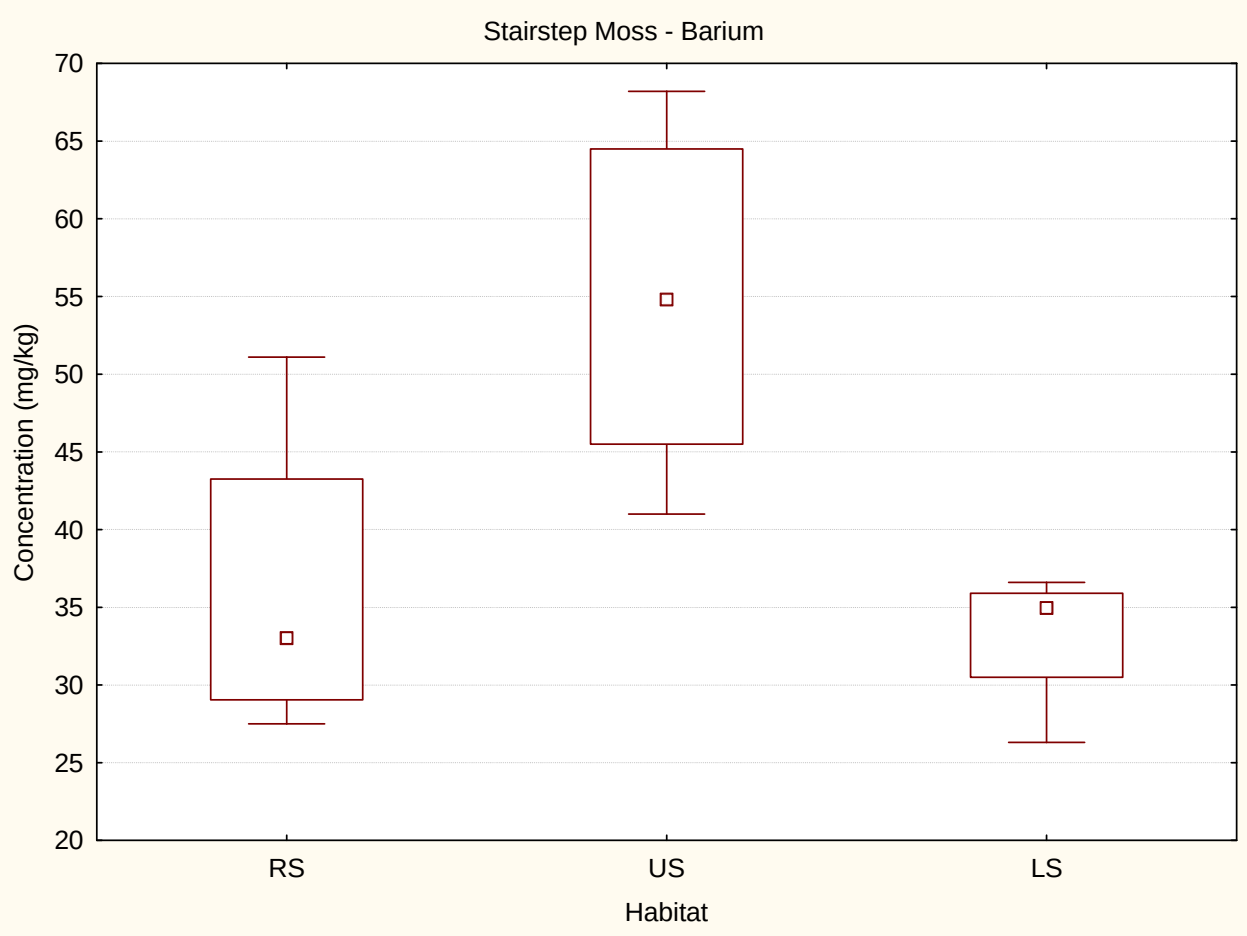

Crowberry - Barium
Concentration (mg/kg)
50
45
40
35
30
25
20
15
10
AS
US
SS
UF
Habitat

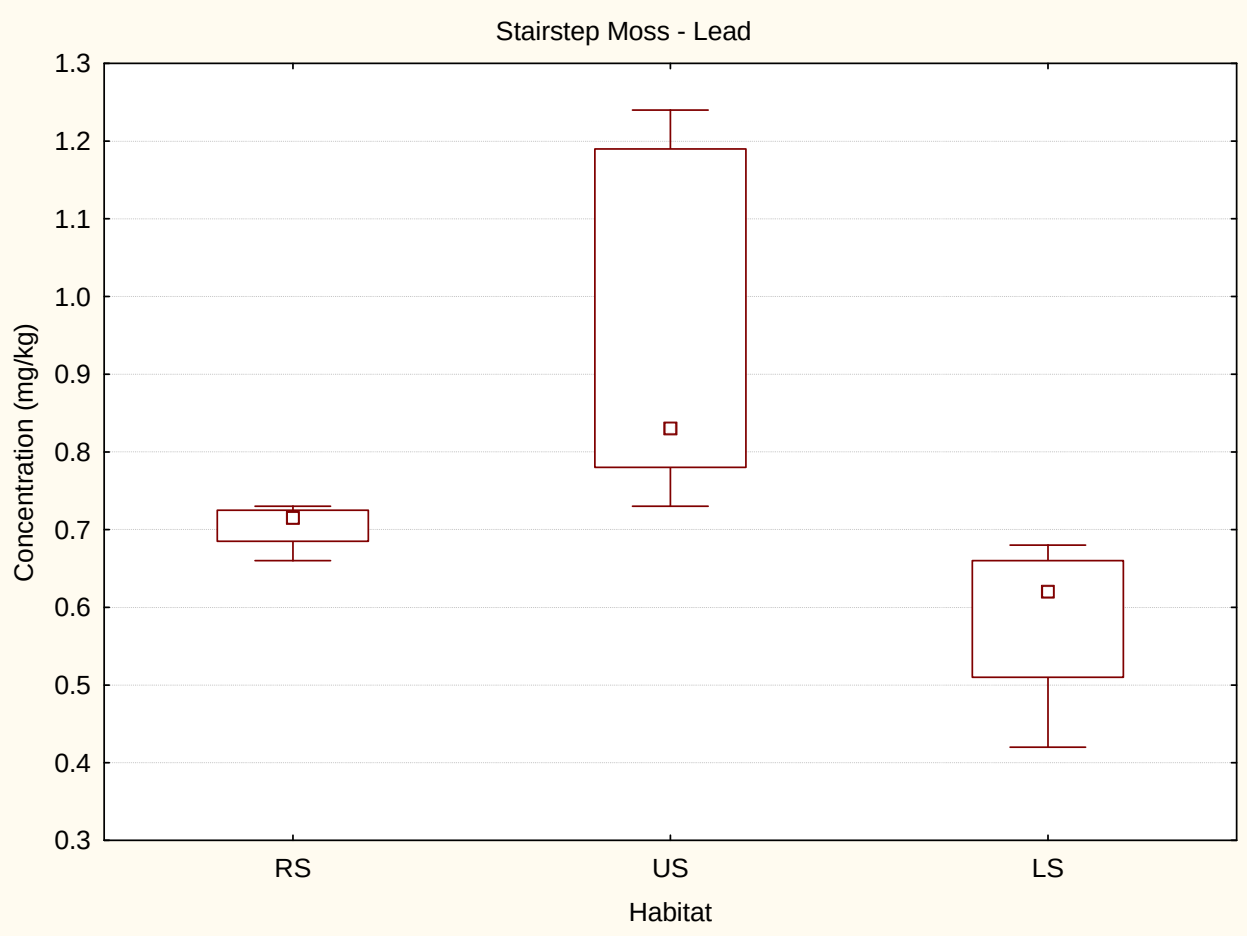

Crowberry - Copper
Concentration (mg/kg)
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
AS
US
SS
UF
Habitat

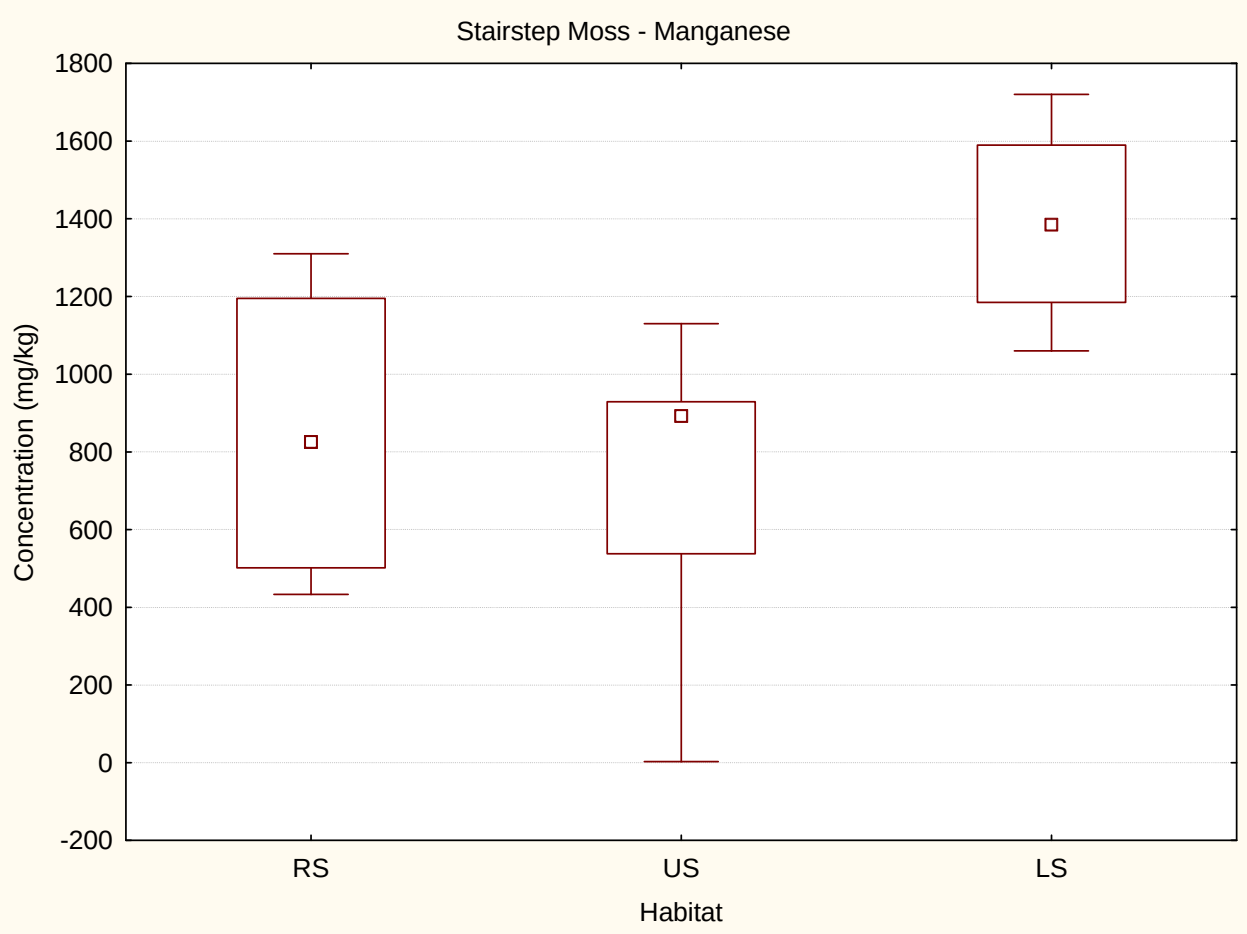

Crowberry - Zinc
Concentration (mg/kg)
22
20
18
16
14
12
10
8
AS
US
SS
UF
Habitat

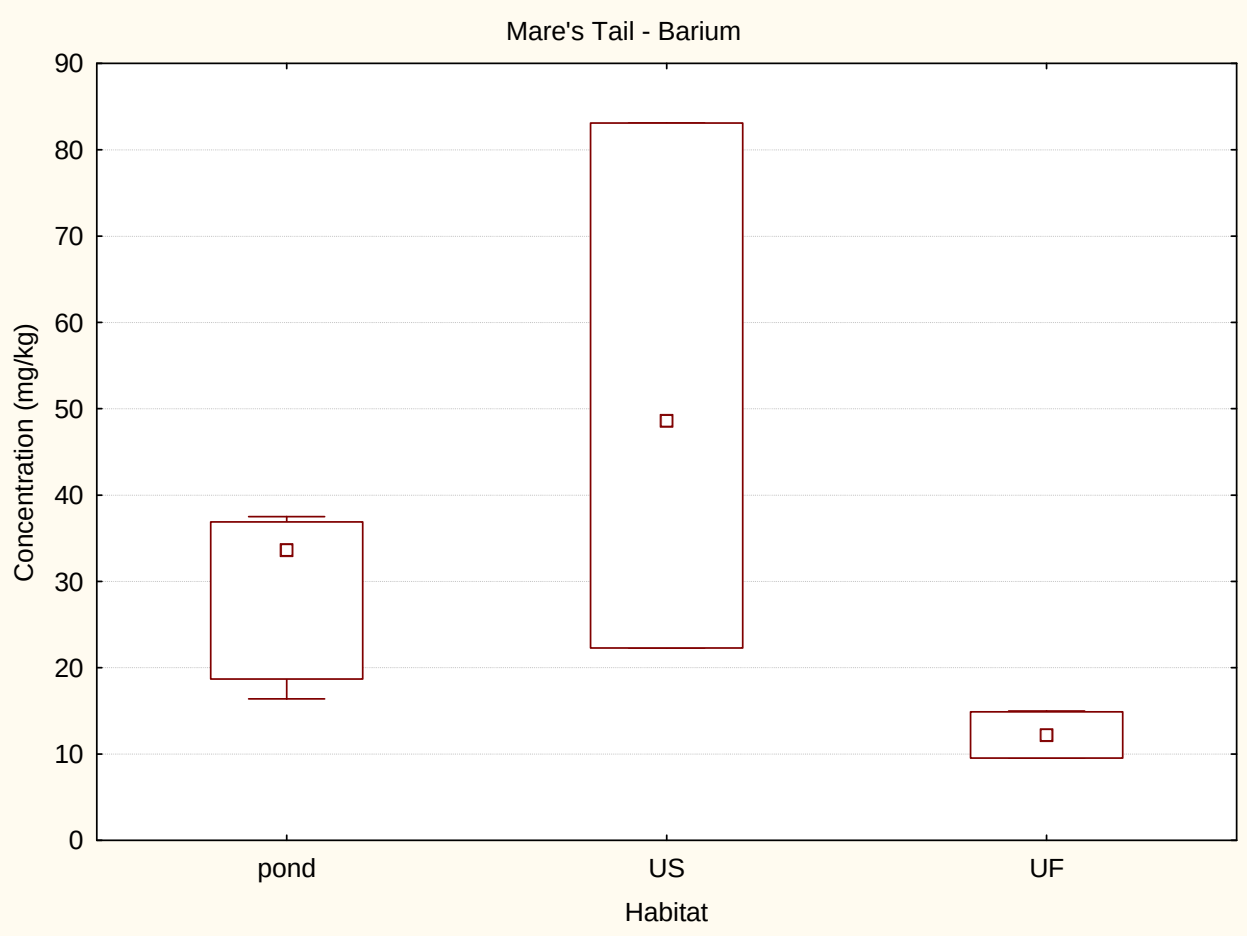

Alaska Cotton/Cotton Grass - Copper
Concentration (mg/kg)
10
9
8
7
6
5
4
3
2
1
0
US
RS
Habitat

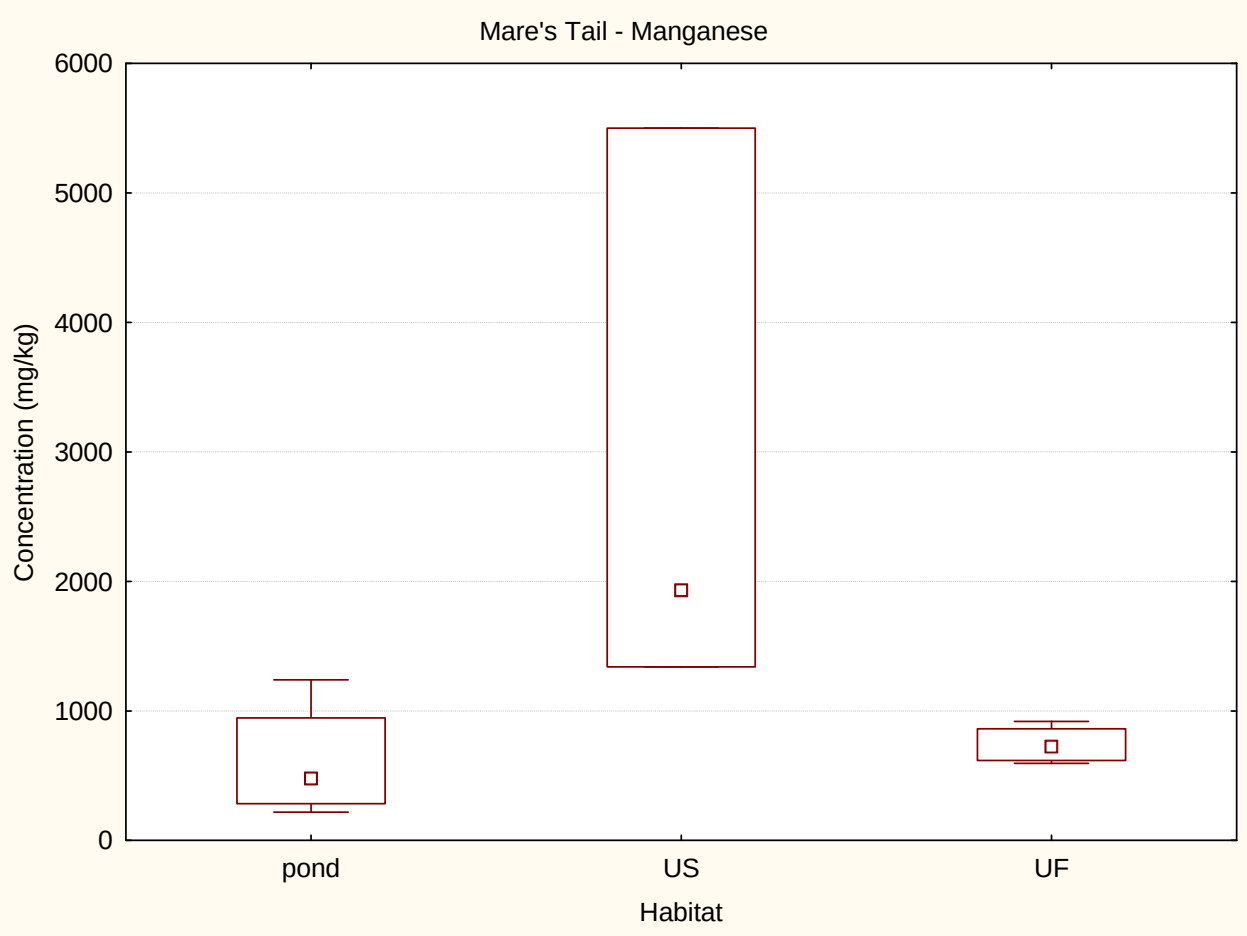

Alaska Cotton/Cotton Grass - Manganese
900
800
700
600
500
400
300
200
100
0
Concentration (mg/kg)
US
RS
Habitat

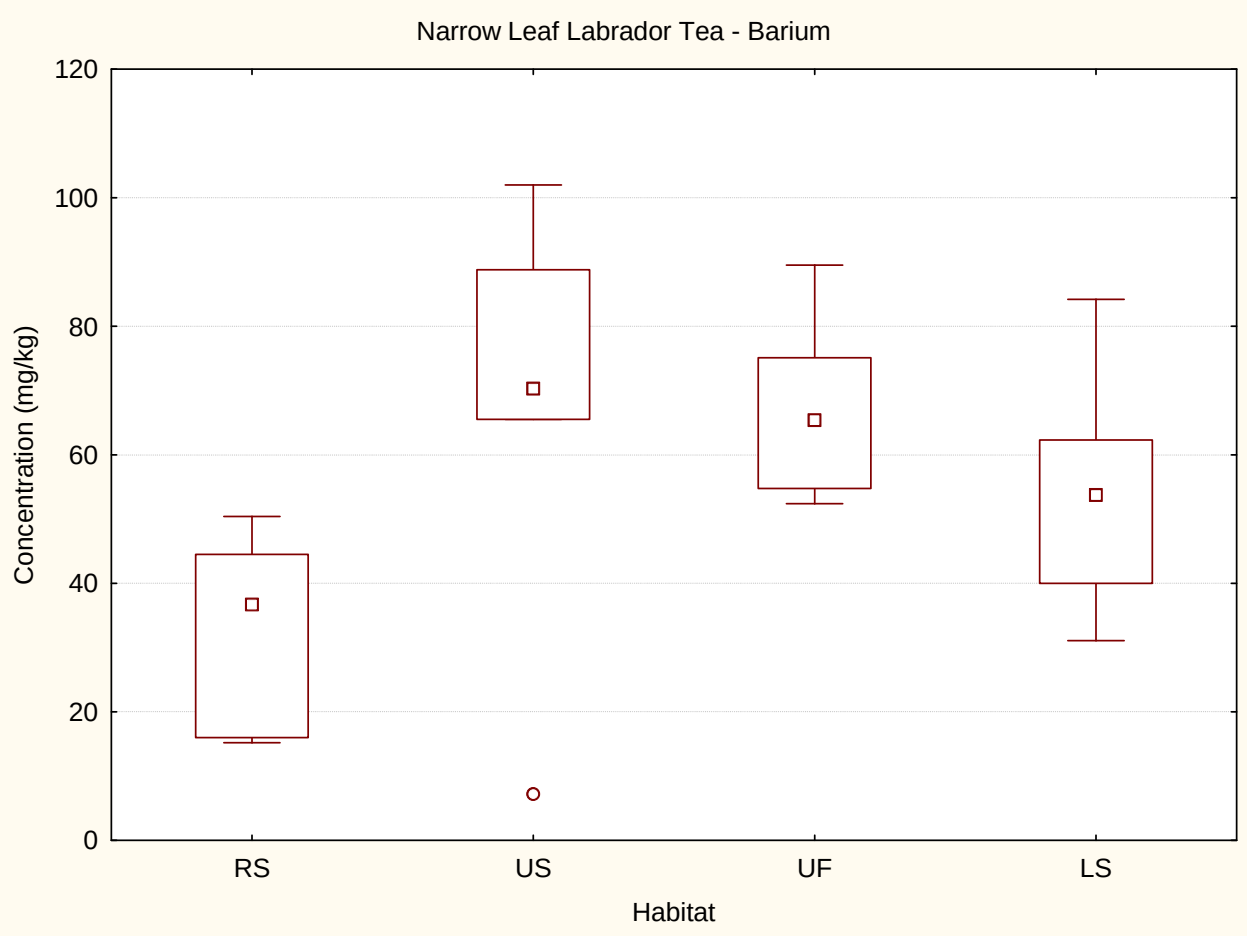

Stairstep Moss - Barium
Concentration (mg/kg)
70
65
60
55
50
45
40
35
30
25
20
RS
US
LS
Habitat

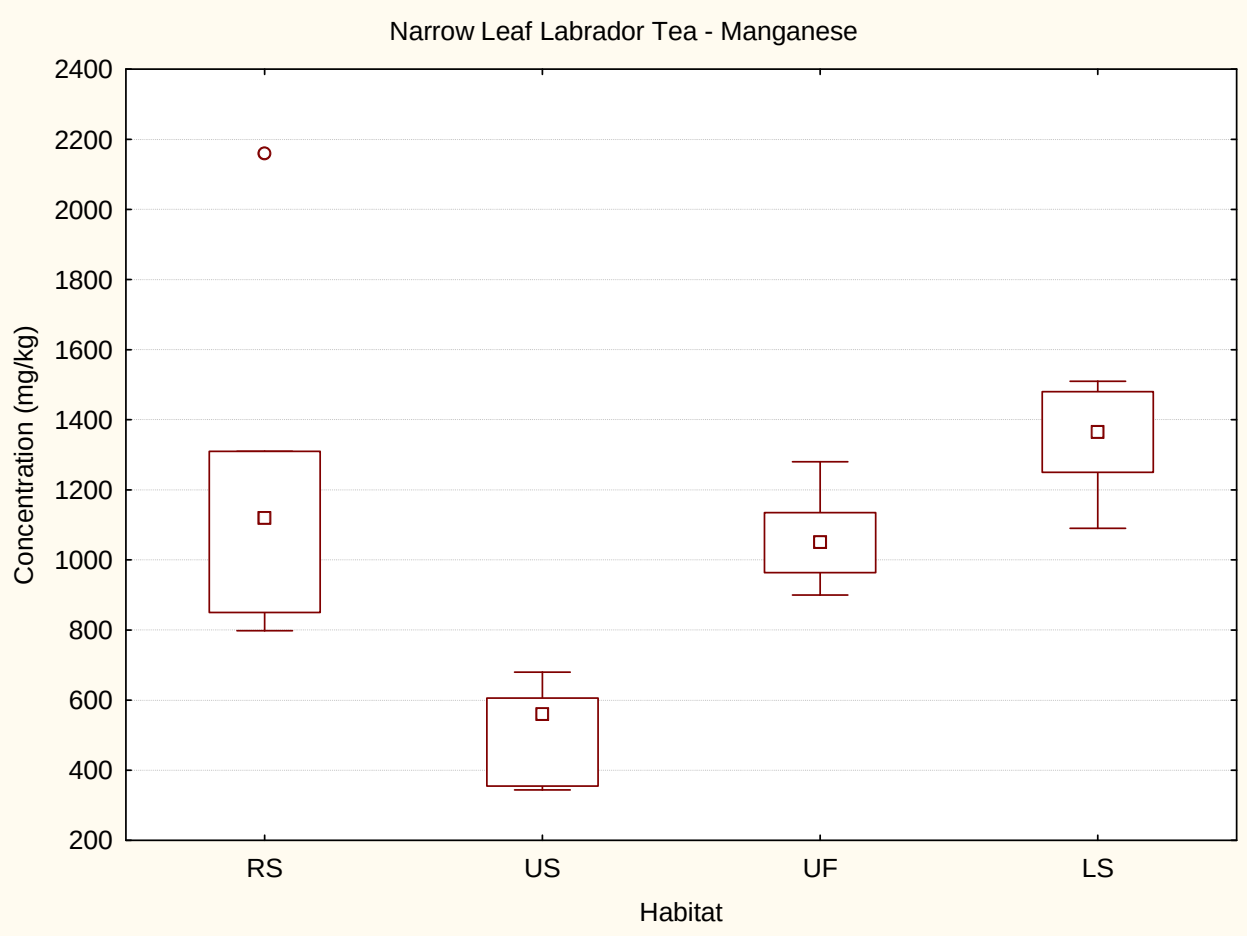

Stairstep Moss - Lead
Concentration (mg/kg)
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
RS
US
LS
Habitat

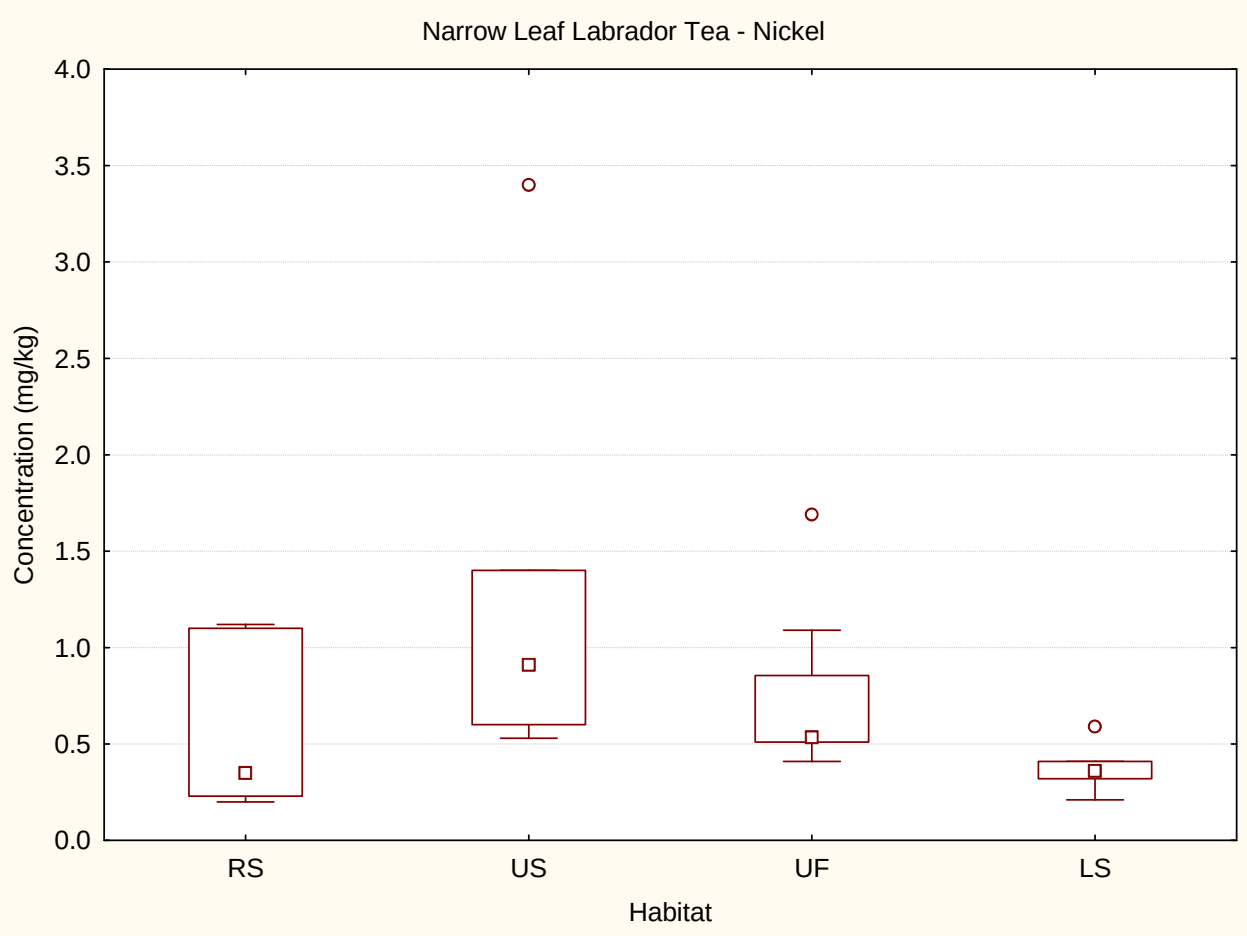

Stairstep Moss - Manganese
1800
1600
1400
1200
1000
800
600
400
200
0
-200
Concentration (mg/kg)
RS
US
LS
Habitat

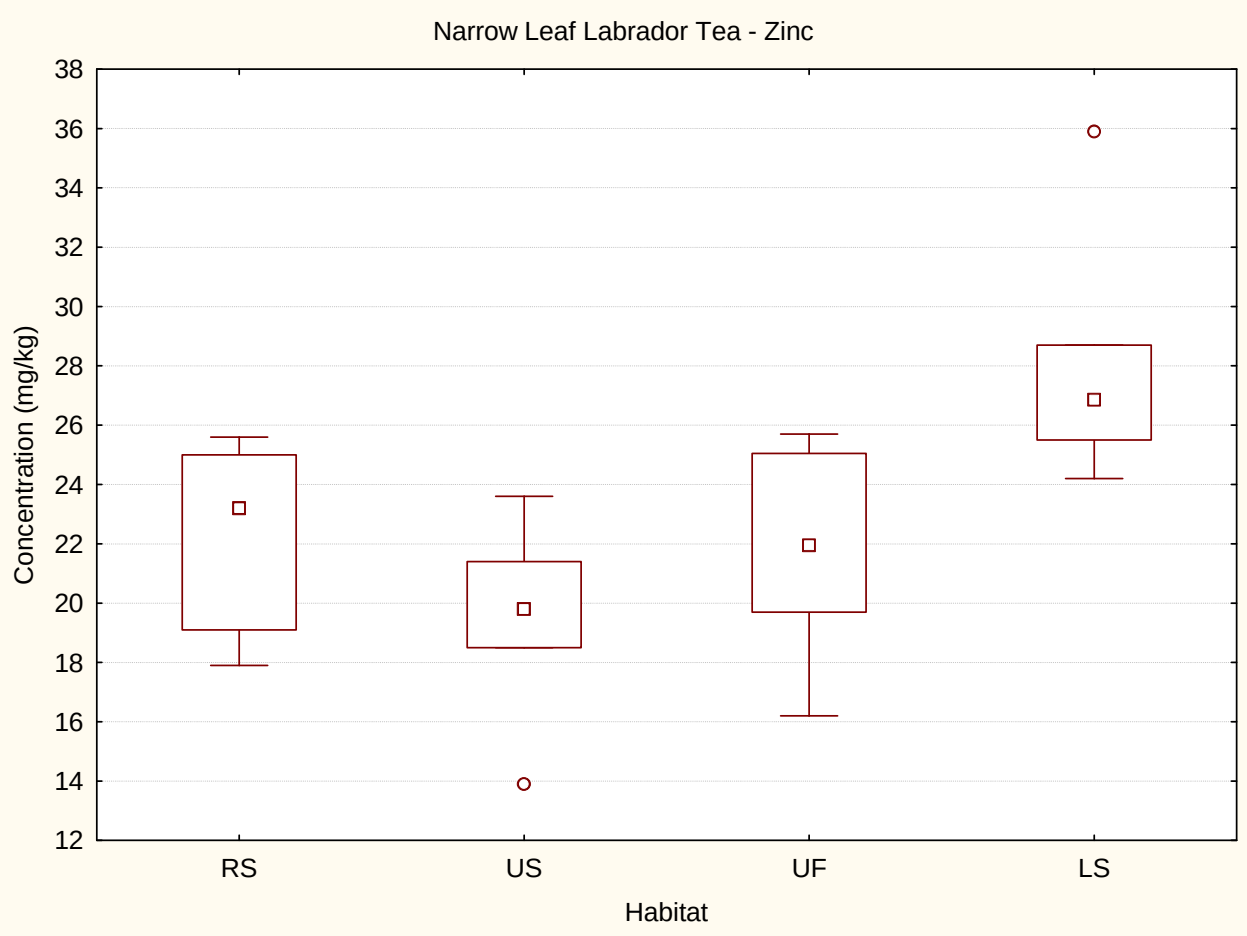

Mare's Tail - Barium
Concentration (mg/kg)
90
80
70
60
50
40
30
20
10
0
pond
US
UF
Habitat

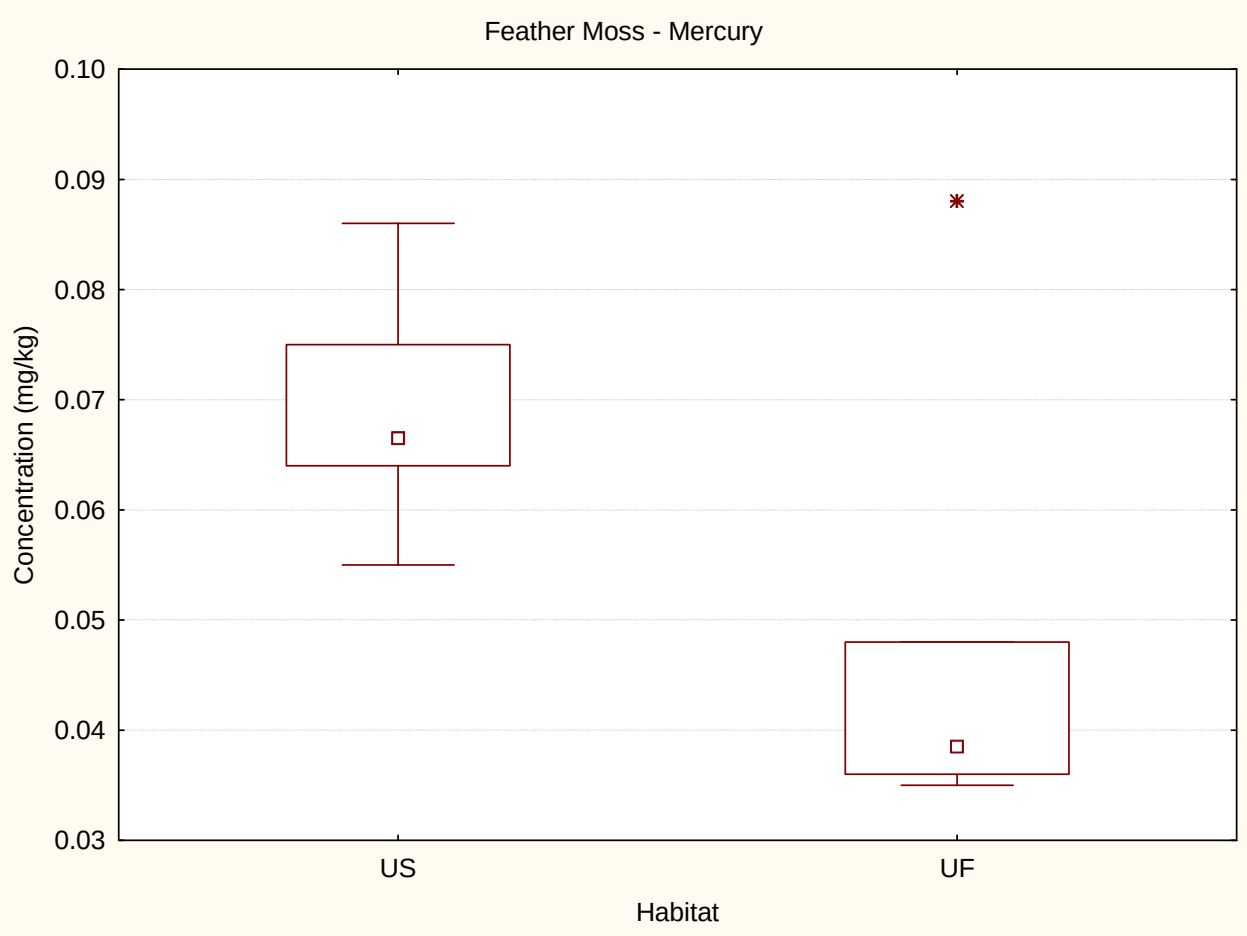

Mare's Tail - Manganese
6000
5000
4000
3000
2000
1000
0
Concentration (mg/kg)
pond
US
UF
Habitat

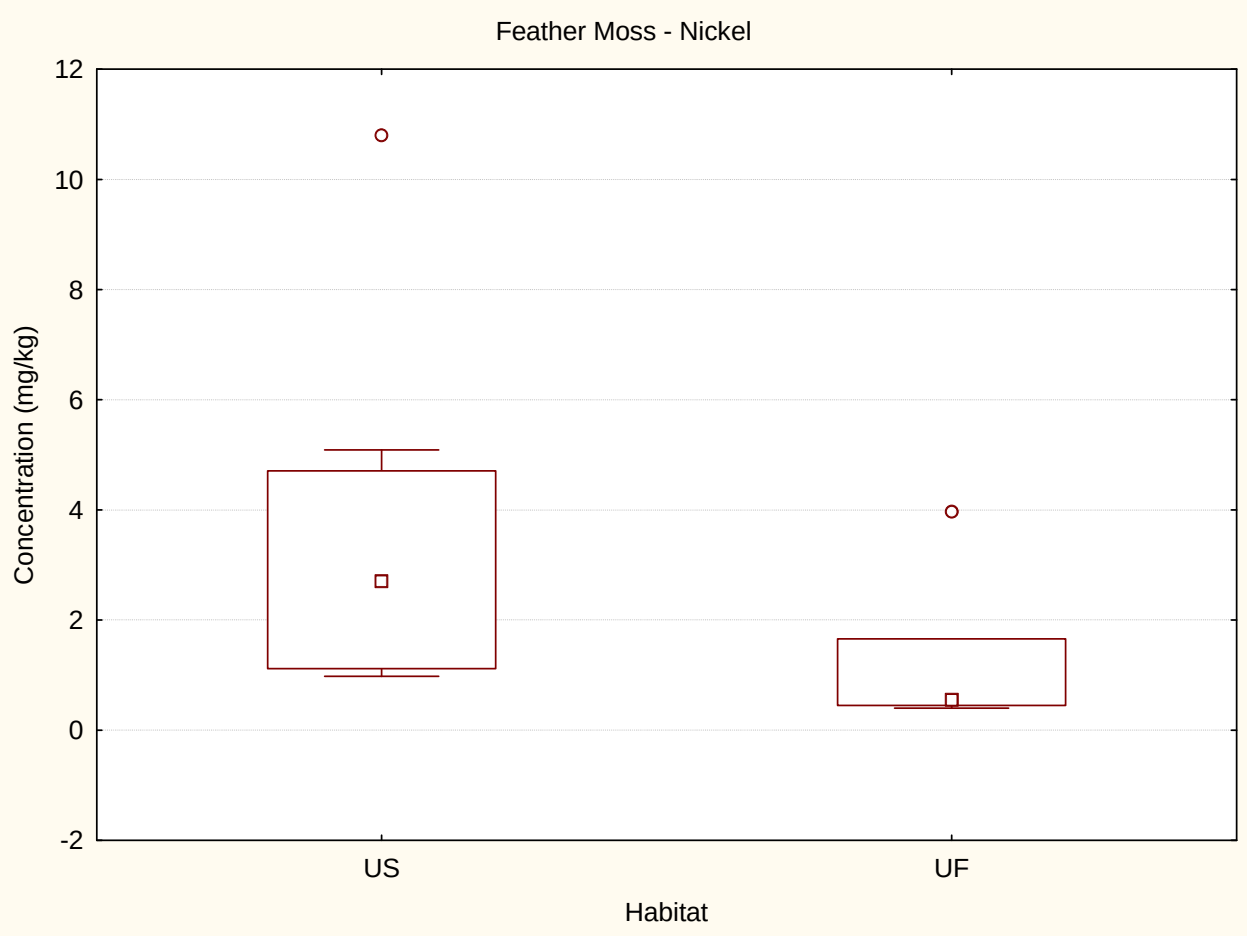

Narrow Leaf Labrador Tea - Barium
Concentration (mg/kg)
120
100
80
60
40
20
0
RS
US
UF
LS
Habitat

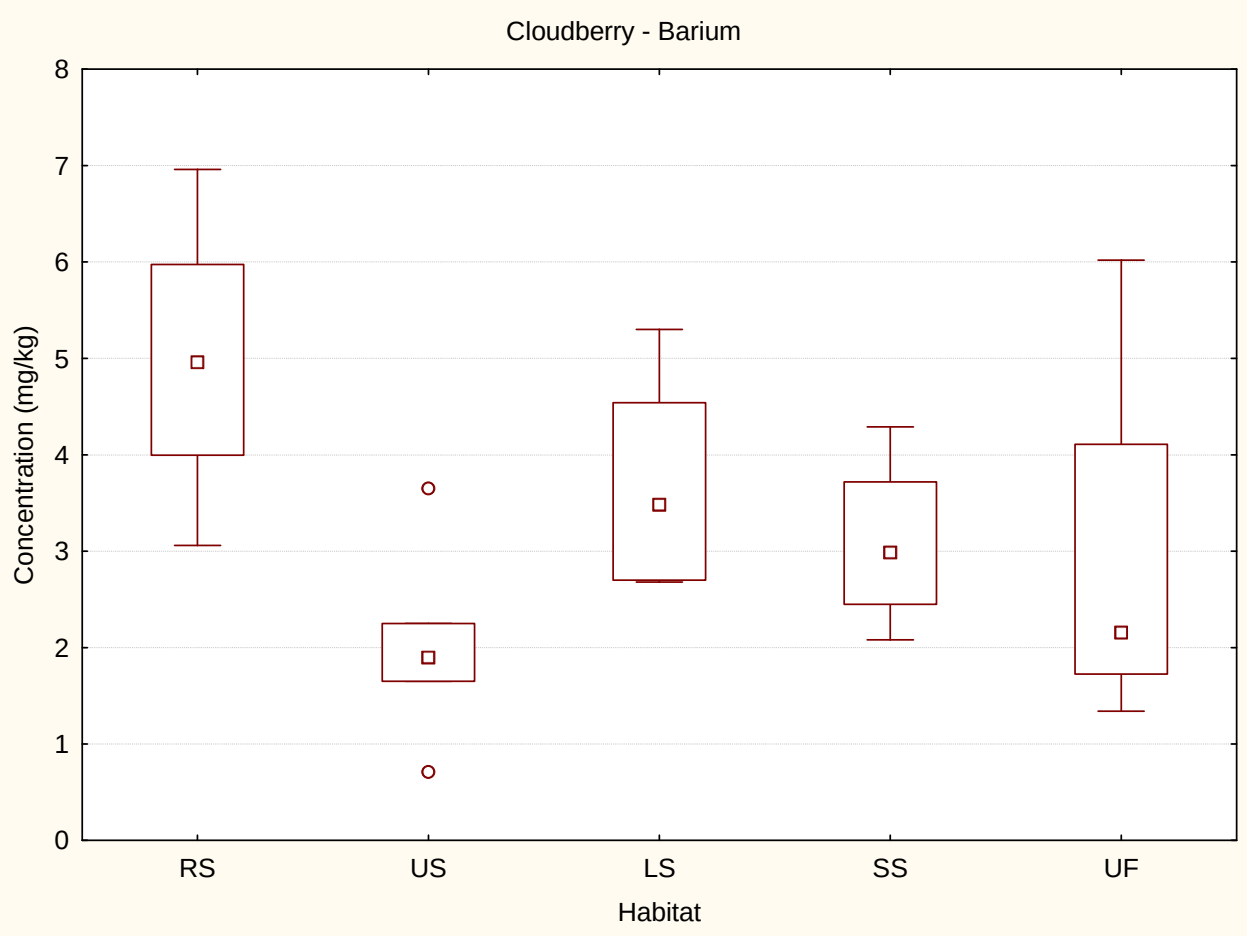

Narrow Leaf Labrador Tea - Manganese
Concentration (mg/kg)
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
RS
US
UF
LS
Habitat

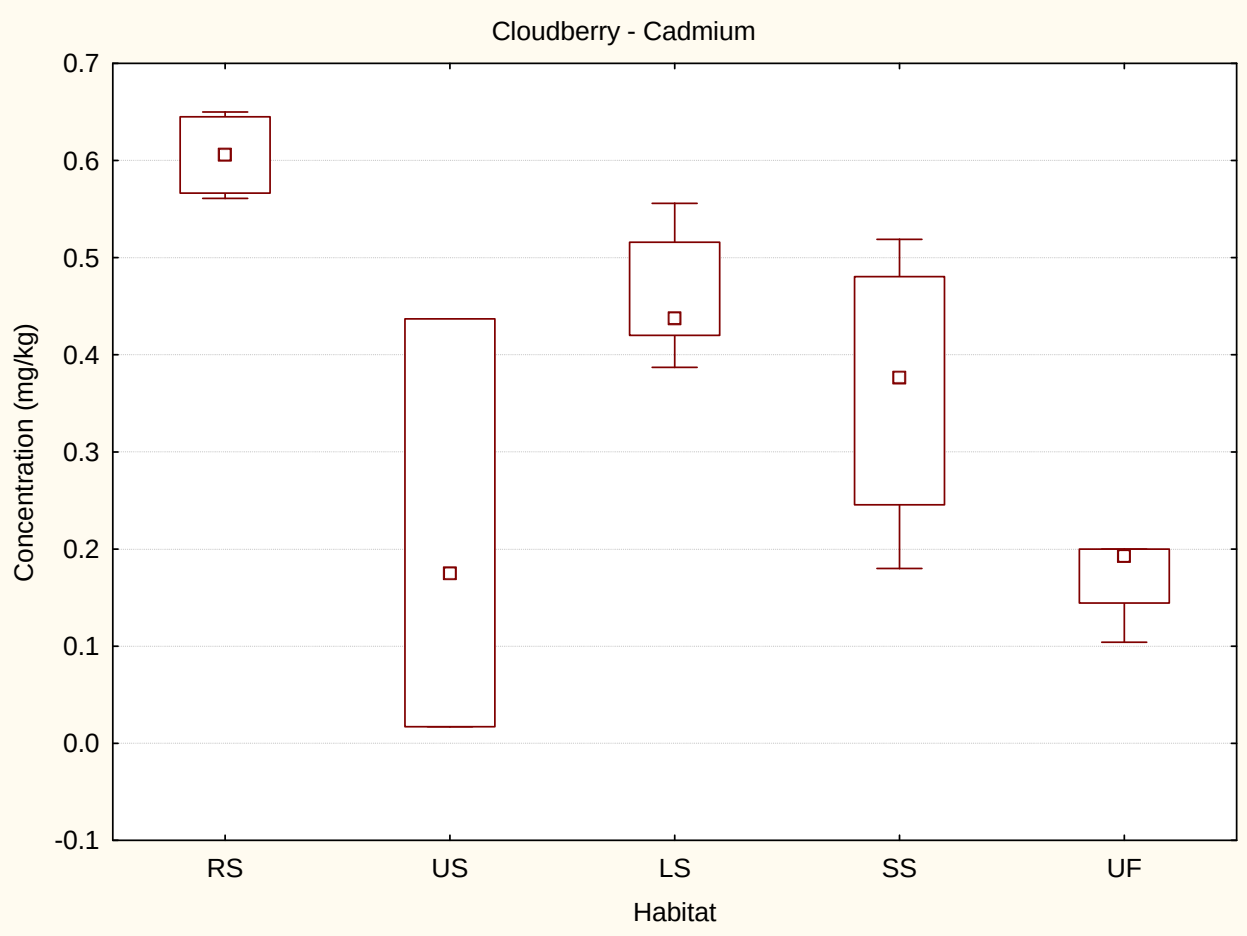

Narrow Leaf Labrador Tea - Nickel
Concentration (mg/kg)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
RS
US
UF
LS
Habitat

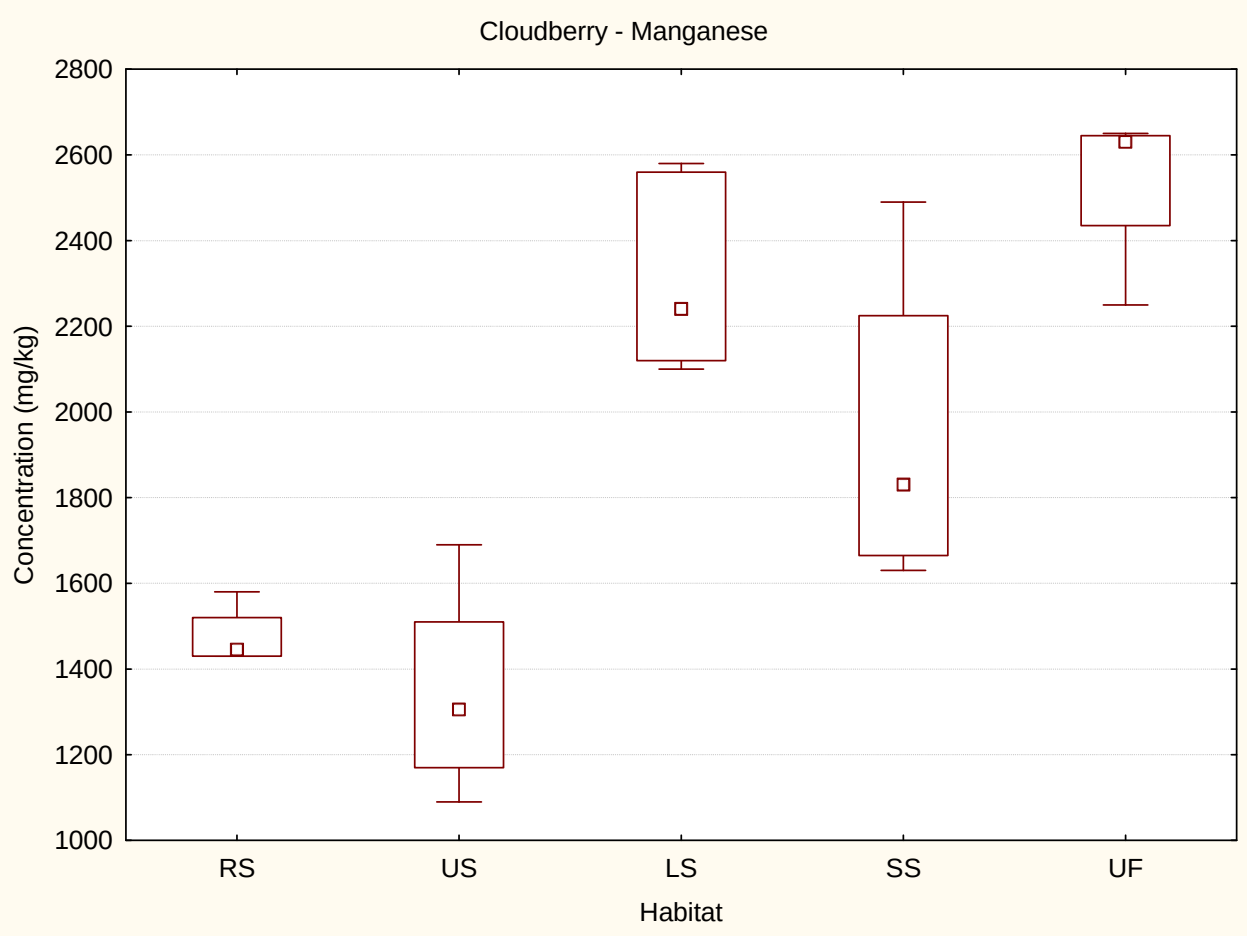

Narrow Leaf Labrador Tea - Zinc
Concentration (mg/kg)
38
36
34
32
30
28
26
24
22
20
18
16
14
12
RS
US
UF
LS
Habitat

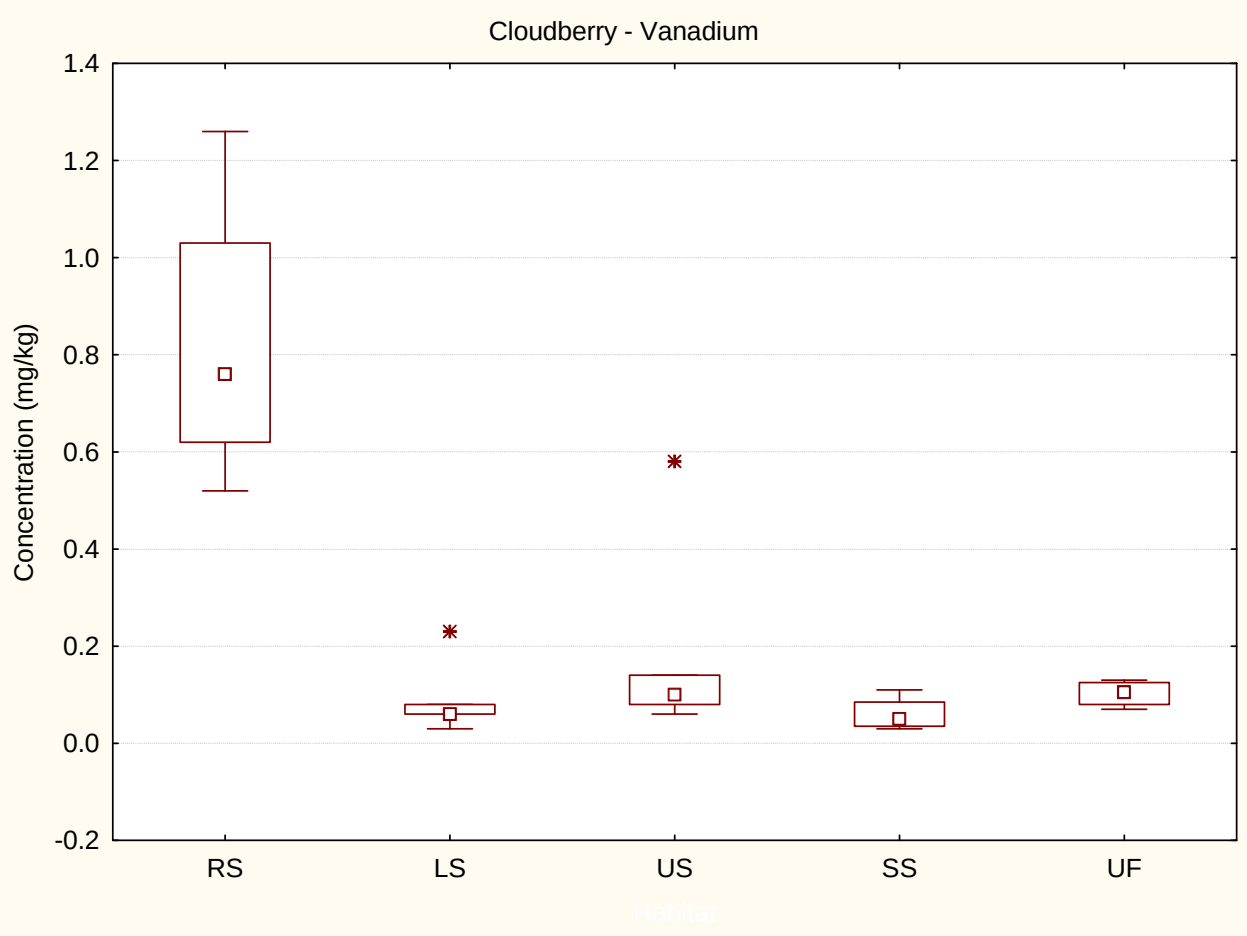

Feather Moss - Mercury
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
Concentration (mg/kg)
US
UF
Habitat

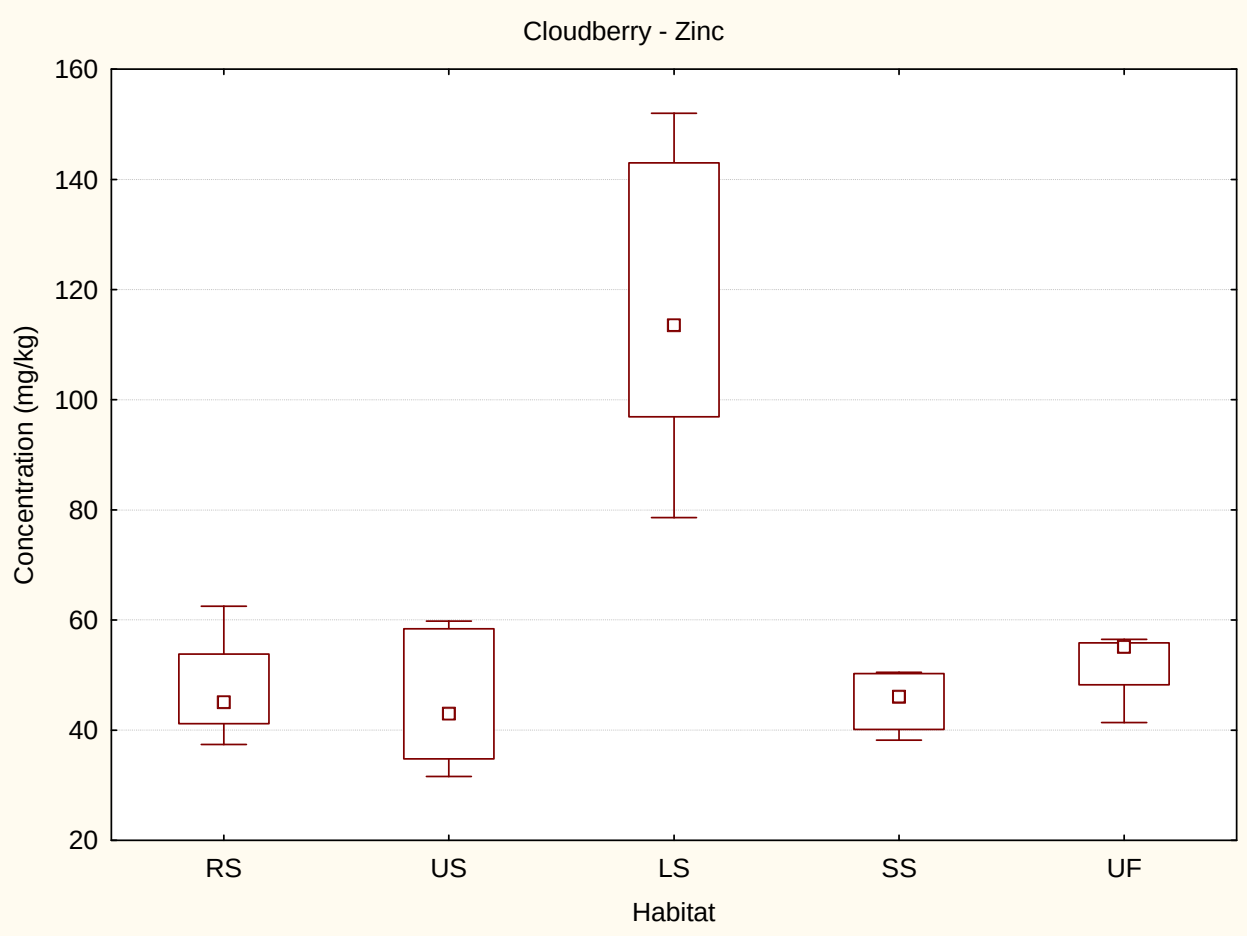

Feather Moss - Nickel
12
10
8
6
4
2
0
-2
Concentration (mg/kg)
US
UF
Habitat

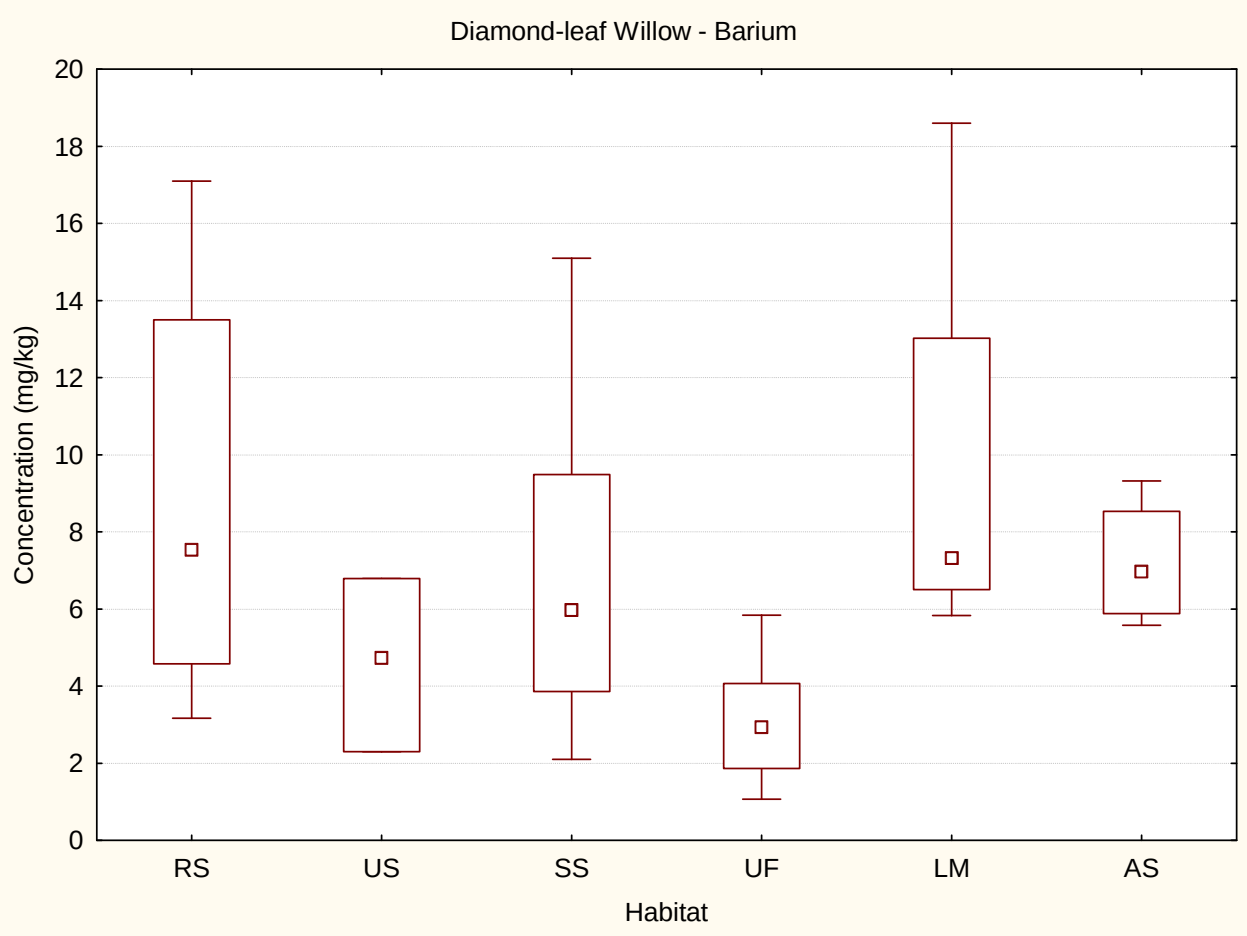

Cloudberry - Barium
Concentration (mg/kg)
0
1
2
3
4
5
6
7
8
RS
US
LS
SS
UF
Habitat

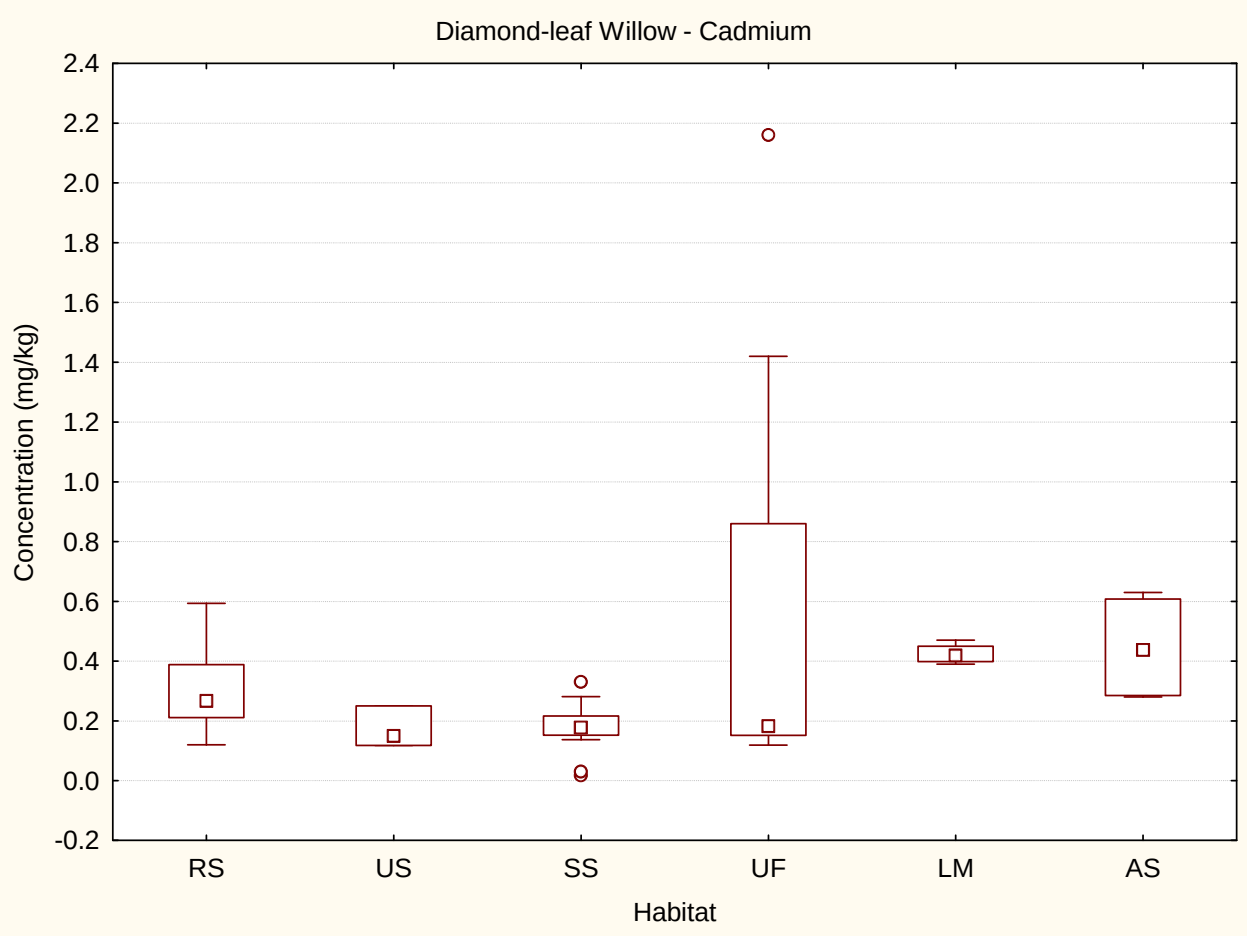

Cloudberry - Cadmium
Concentration (mg/kg)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
RS
US
LS
SS
UF
Habitat

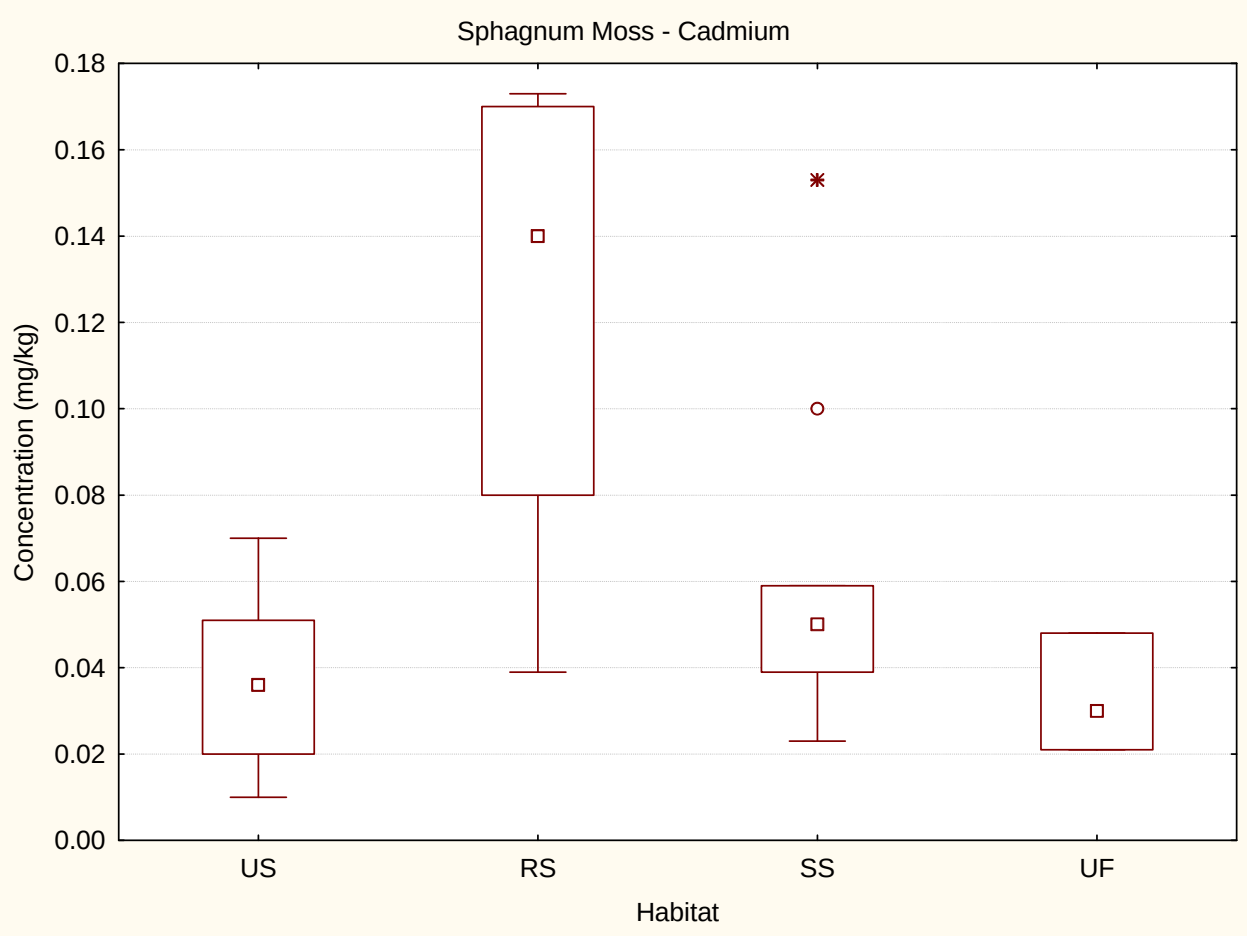

Cloudberry - Manganese
Concentration (mg/kg)
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
RS
US
LS
SS
UF
Habitat

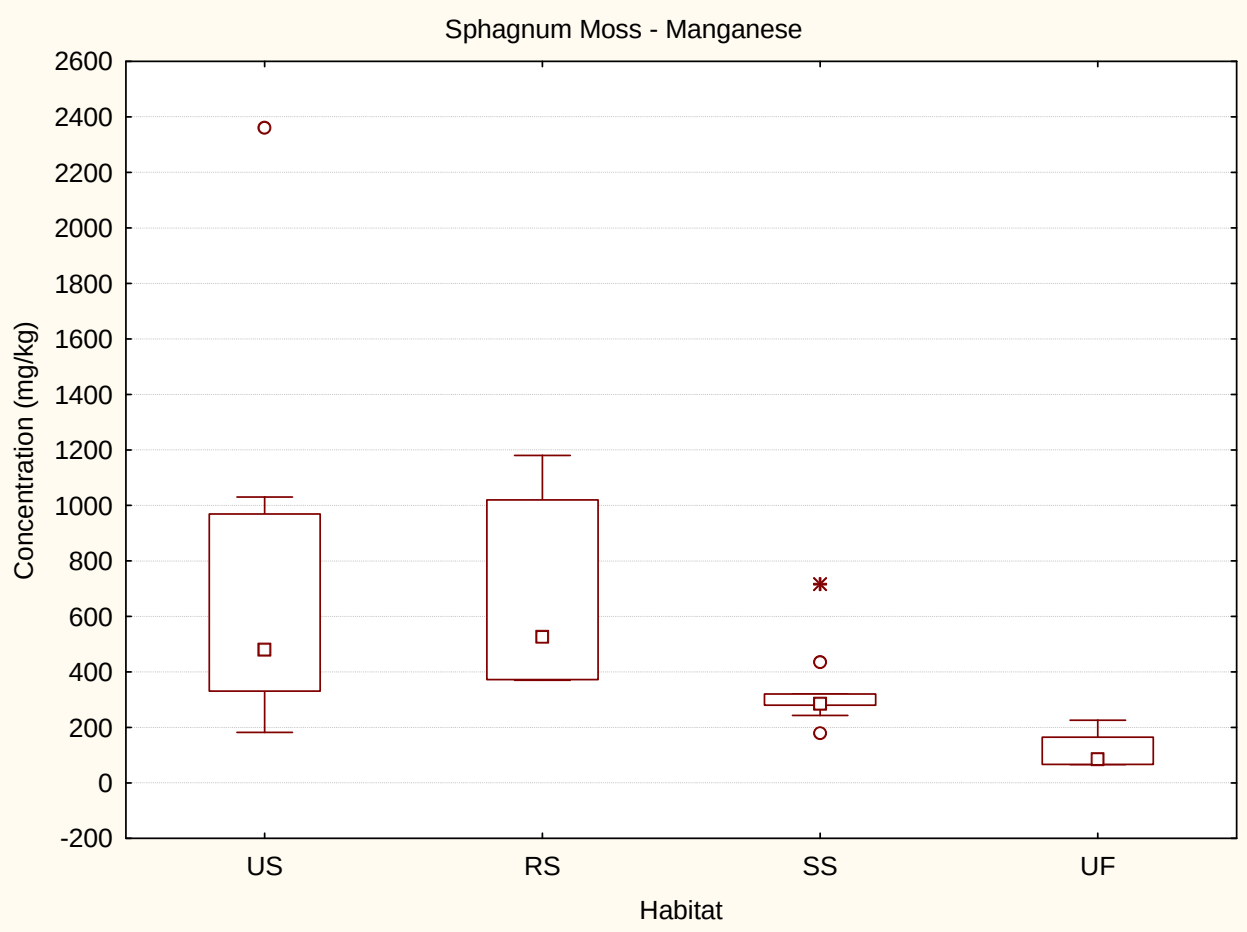

Cloudberry - Vanadium
Concentration (mg/kg)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
RS
LS
US
SS
UF
Habitat

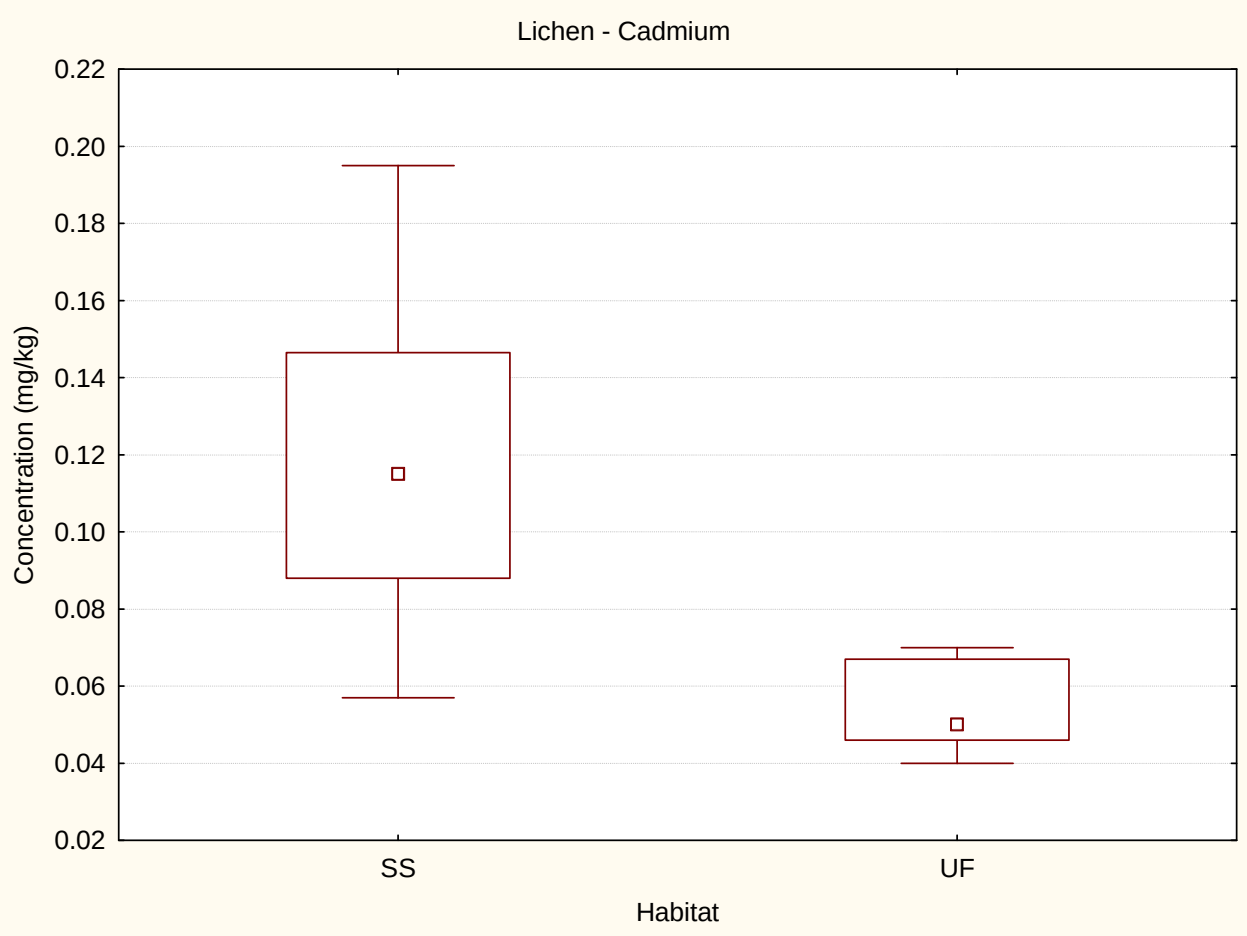

Cloudberry - Zinc
160
140
120
100
80
60
40
20
Concentration (mg/kg)
RS
US
LS
SS
UF
Habitat

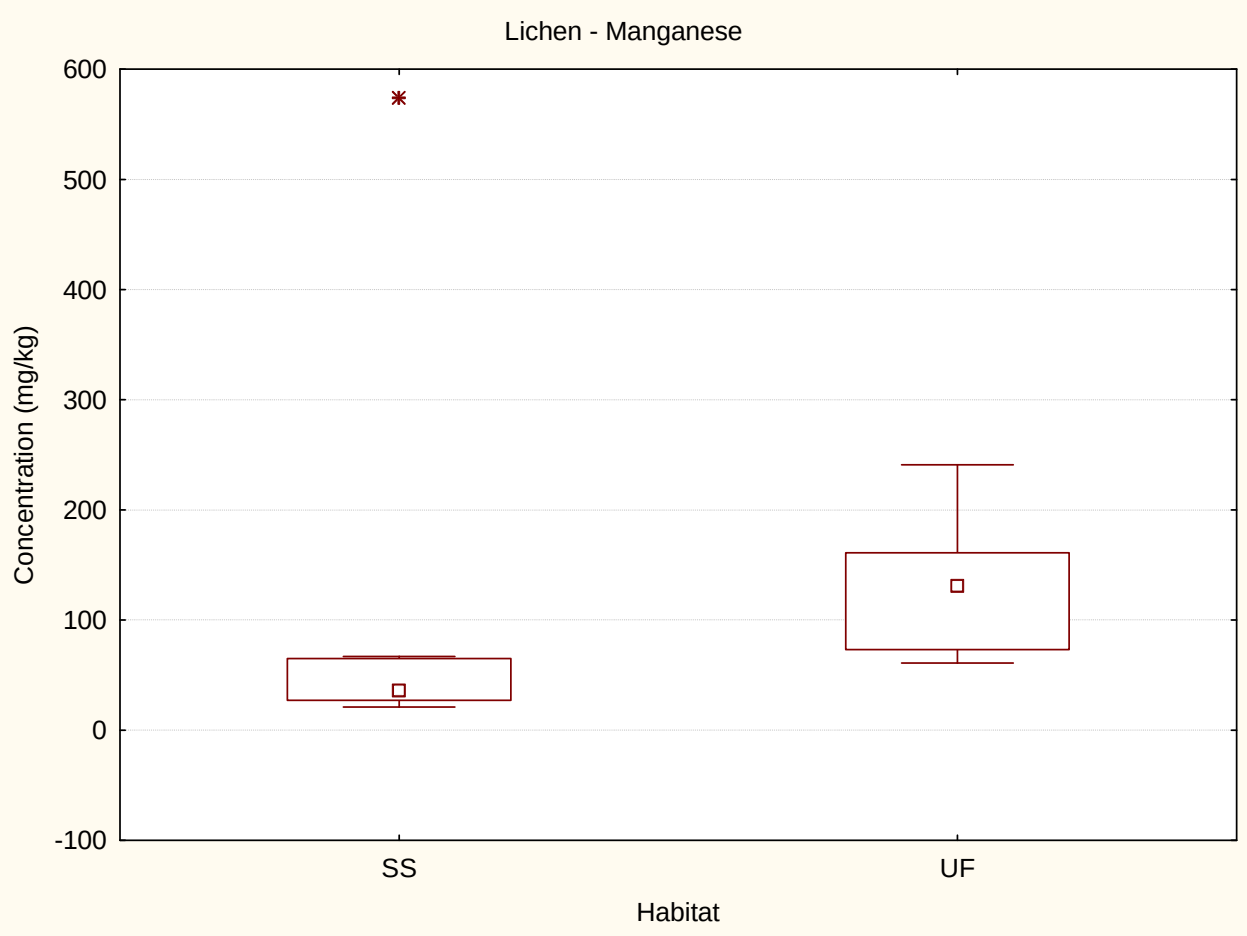

Diamond-leaf Willow - Barium
Concentration (mg/kg)
0
2
4
6
8
10
12
14
16
18
20
RS
US
SS
UF
LM
AS
Habitat

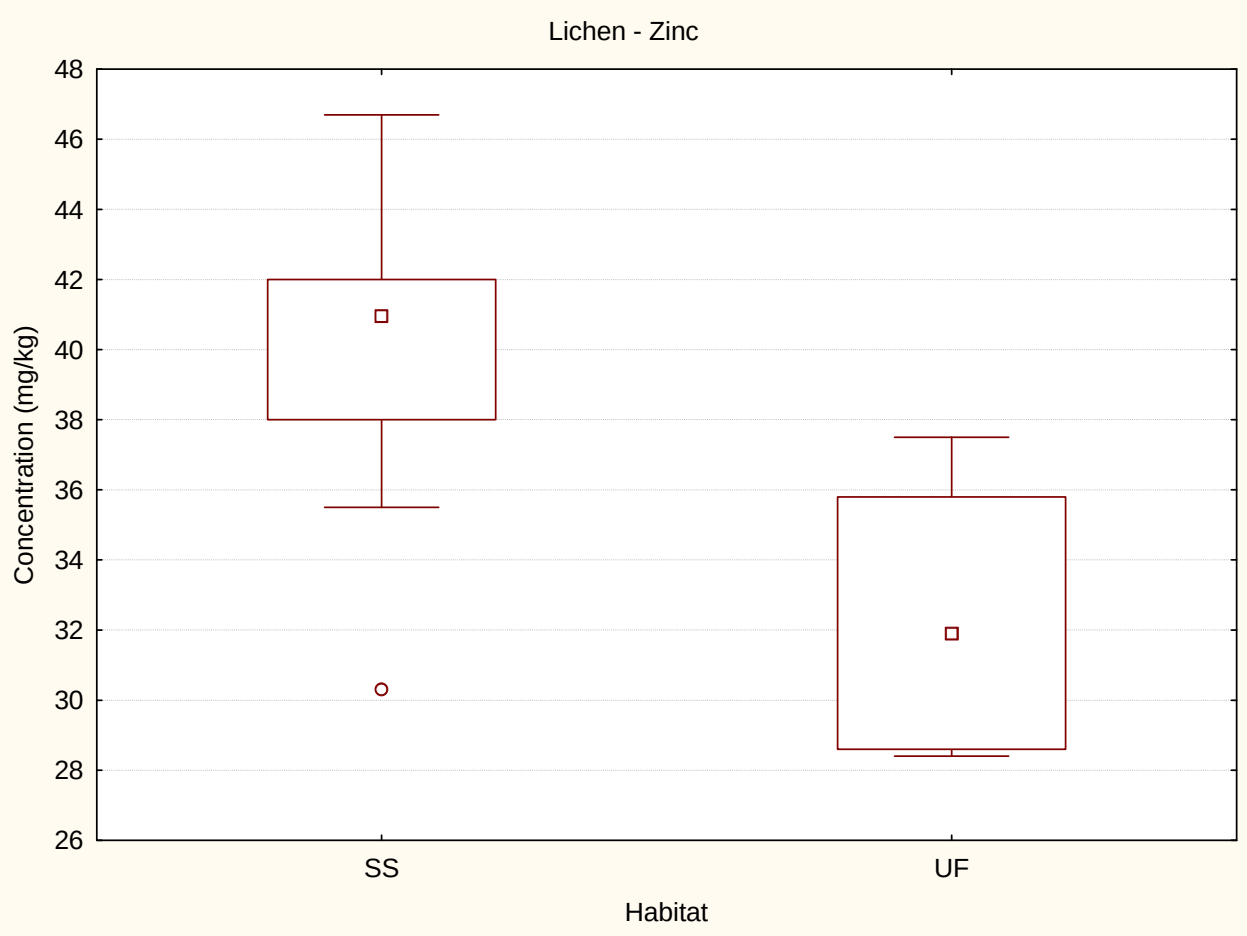

Diamond-leaf Willow - Cadmium
Concentration (mg/kg)
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
RS
US
SS
UF
LM
AS
Habitat

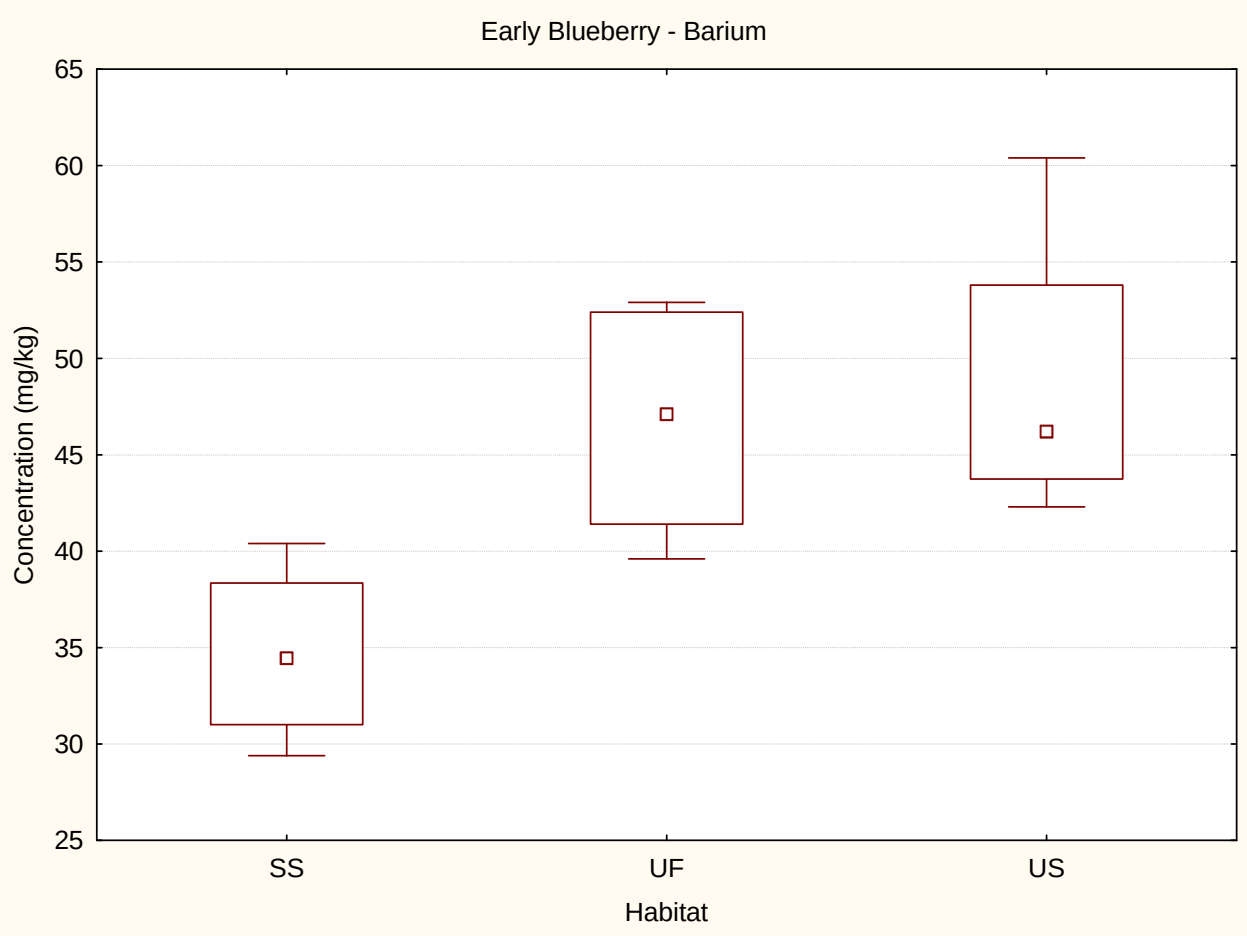

Sphagnum Moss - Cadmium
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Concentration (mg/kg)
US
RS
SS
UF
Habitat

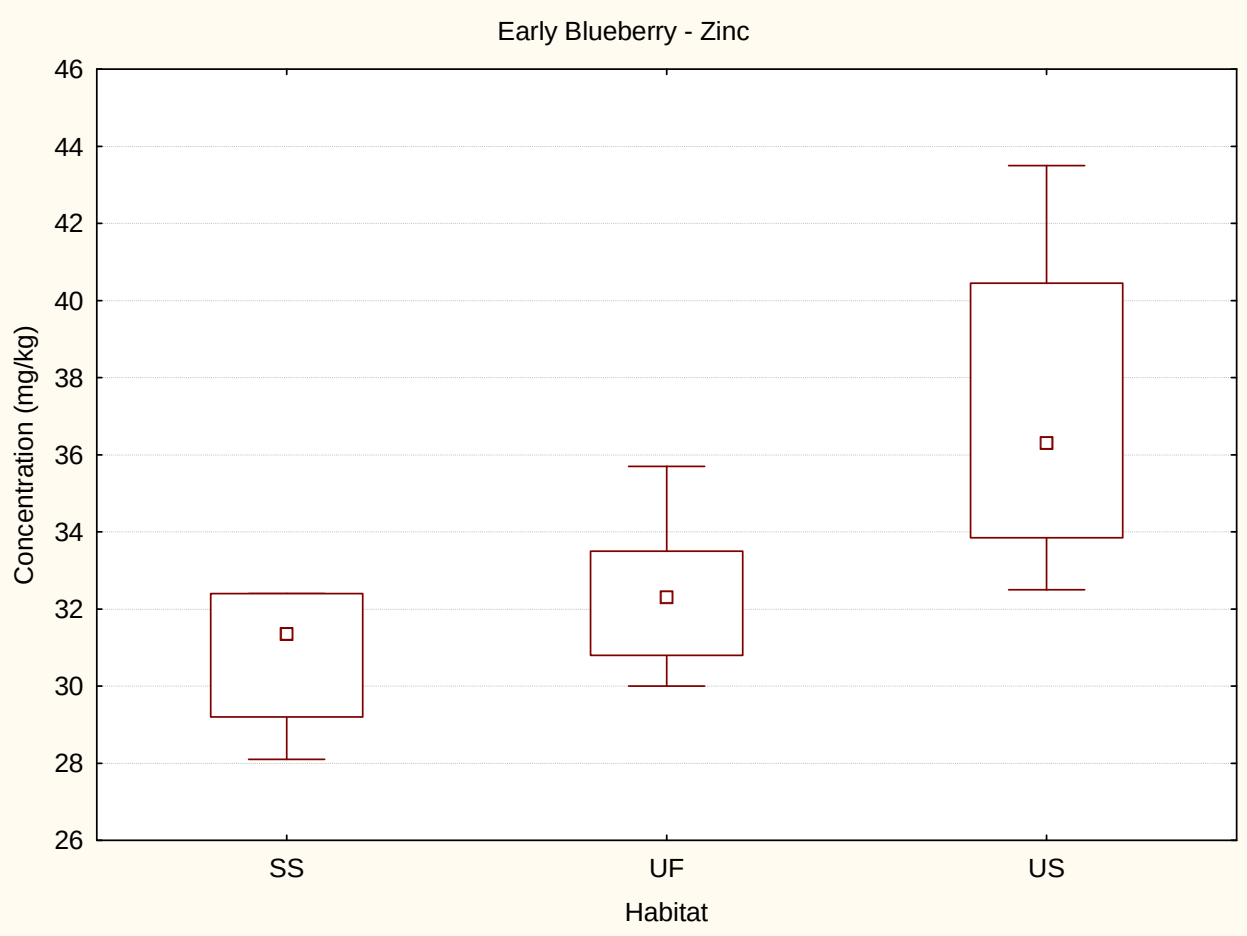

Sphagnum Moss - Manganese
Concentration (mg/kg)
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
-200
US
RS
SS
UF
Habitat

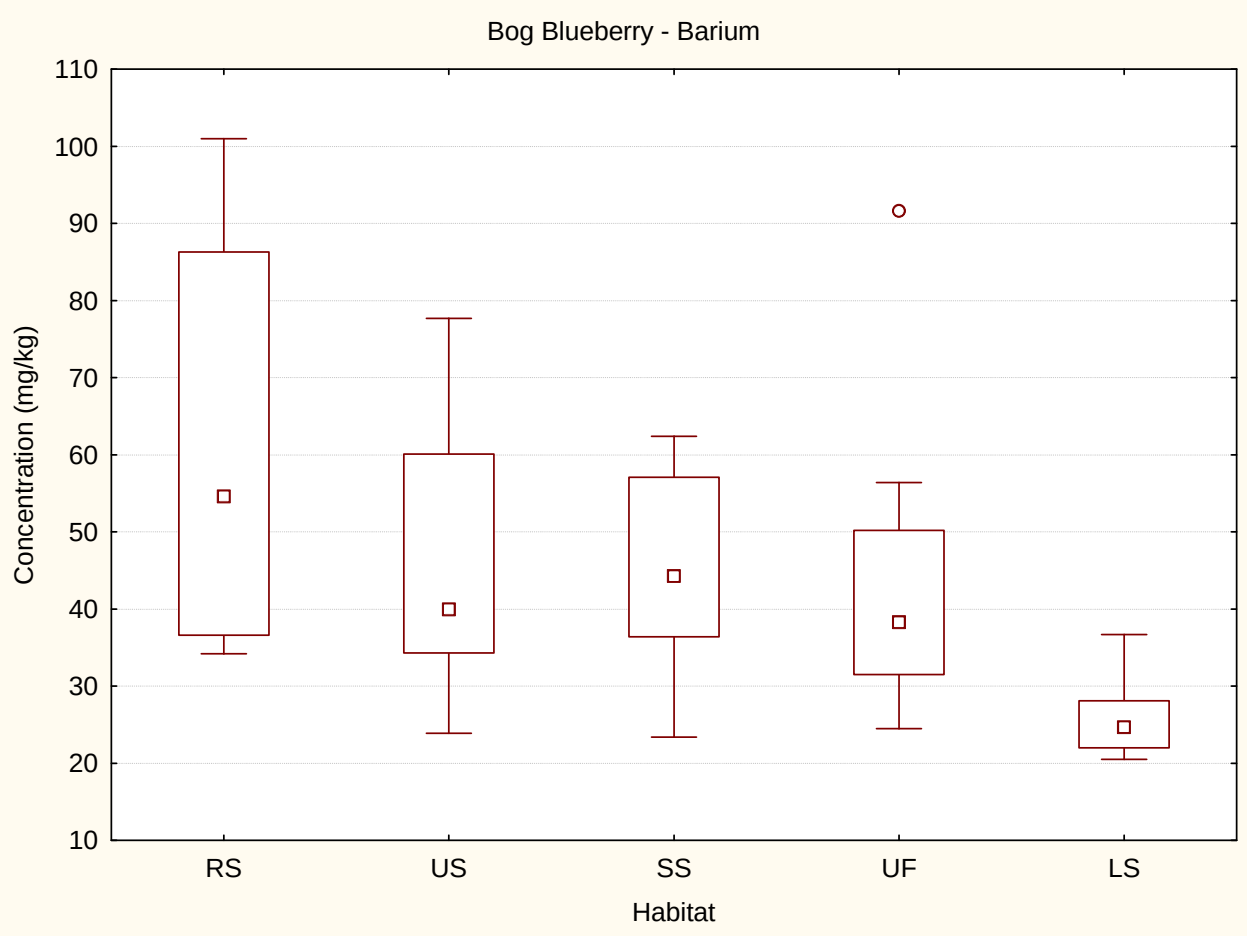

Lichen - Cadmium
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
Concentration (mg/kg)
SS
UF
Habitat

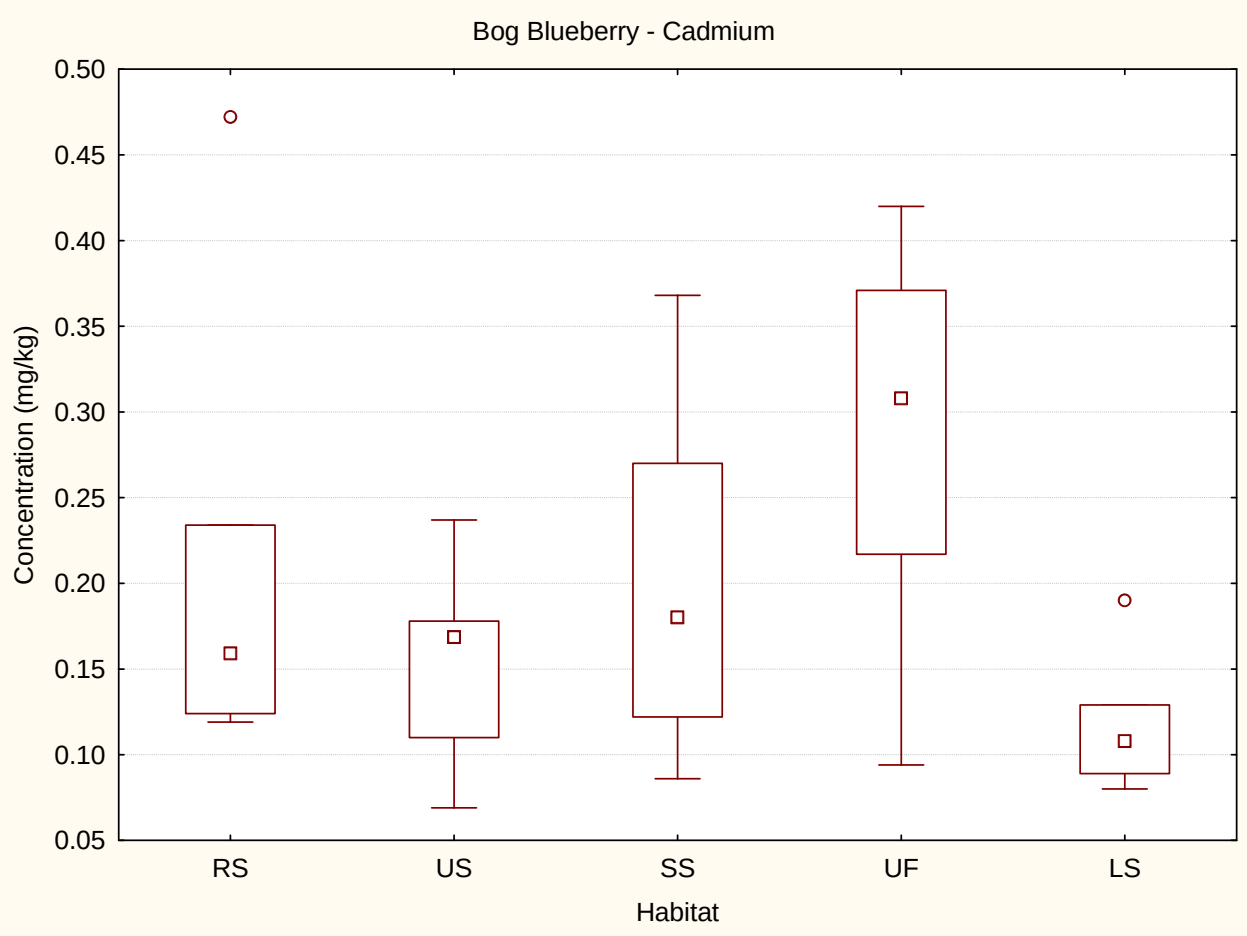

Lichen - Manganese
600
500
400
300
200
100
0
-100
Concentration (mg/kg)
SS
UF
Habitat

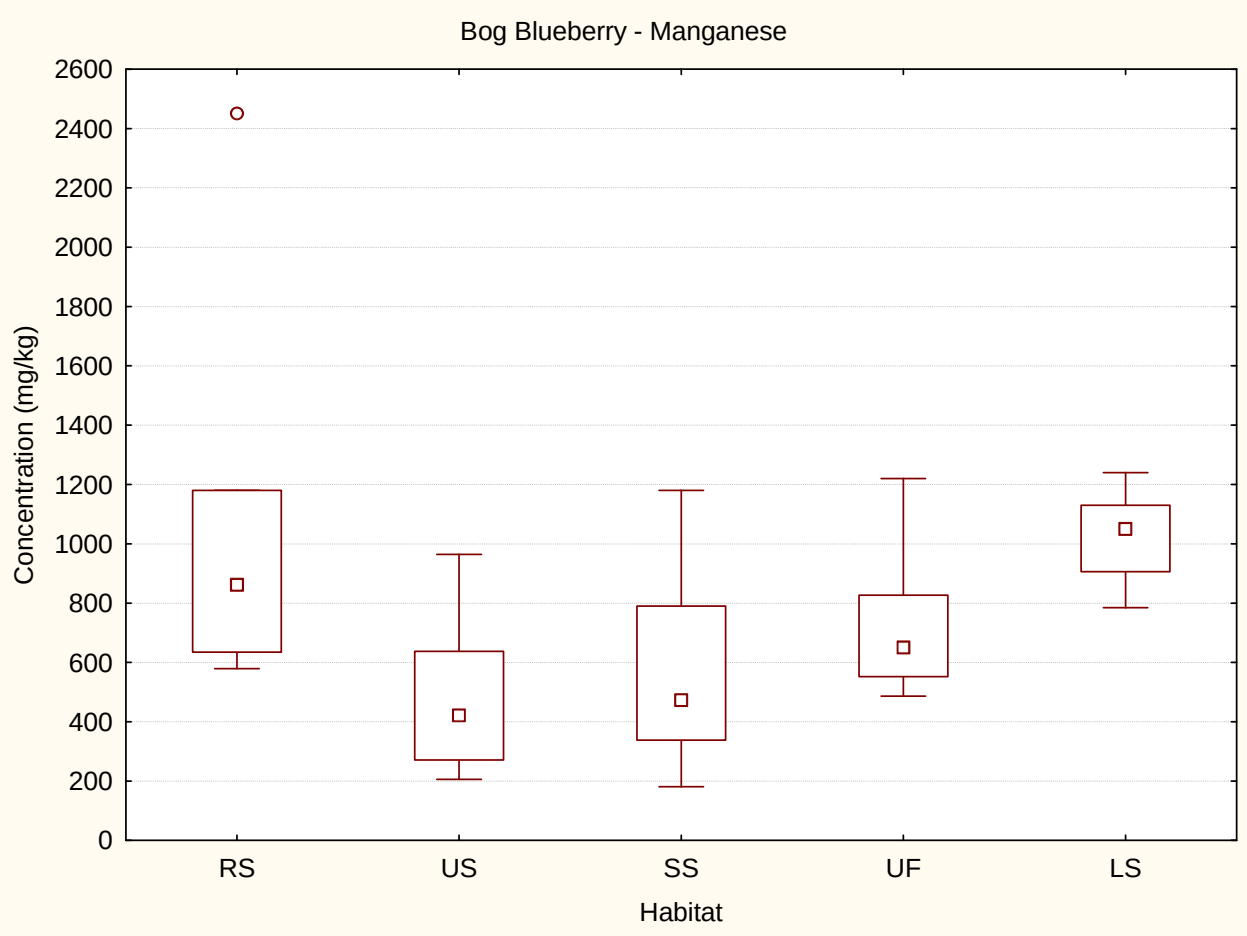

Lichen - Zinc
Concentration (mg/kg)
48
46
44
42
40
38
36
34
32
30
28
26
SS
UF
Habitat

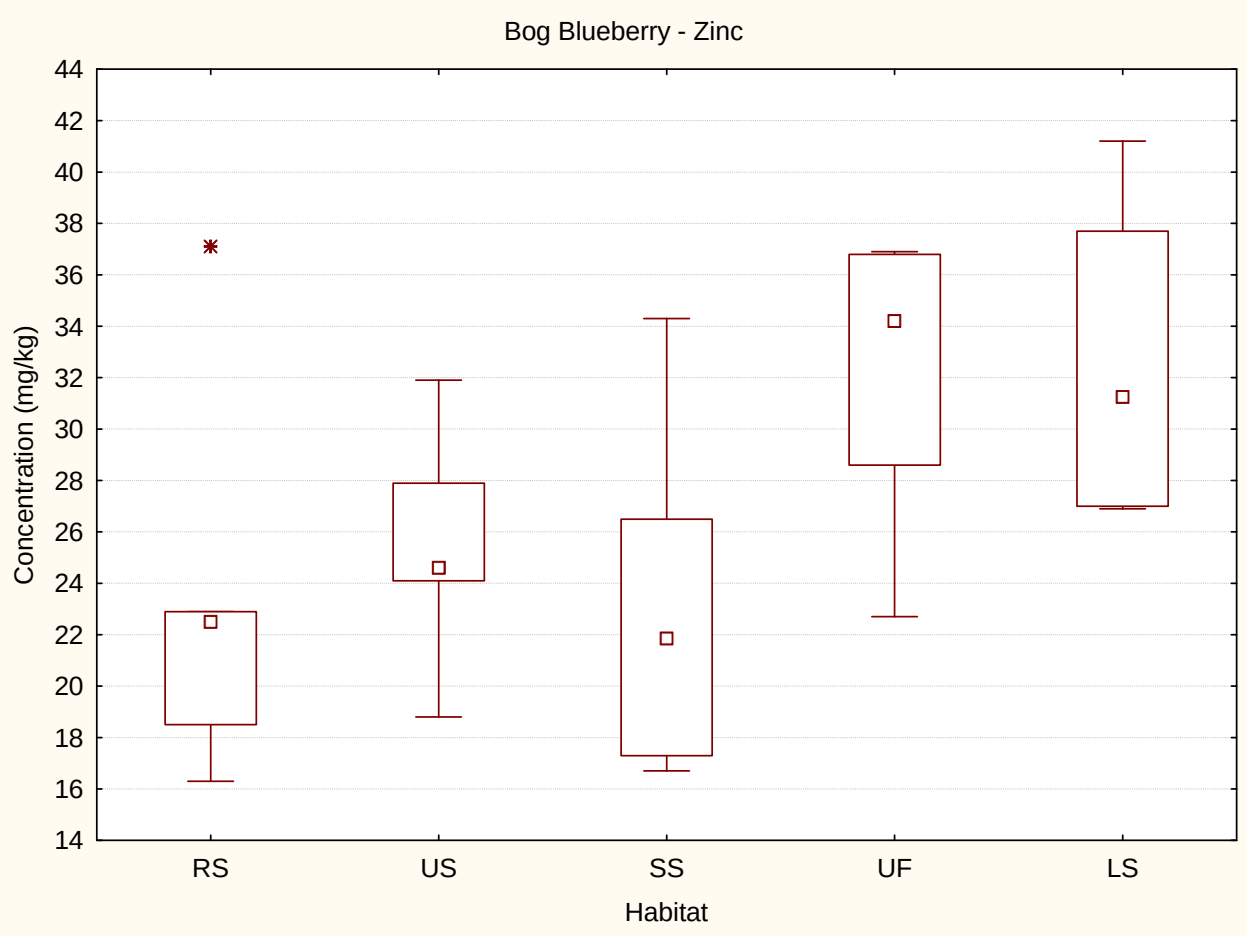

Early Blueberry - Barium
Concentration (mg/kg)
65
60
55
50
45
40
35
30
25
SS
UF
US
Habitat

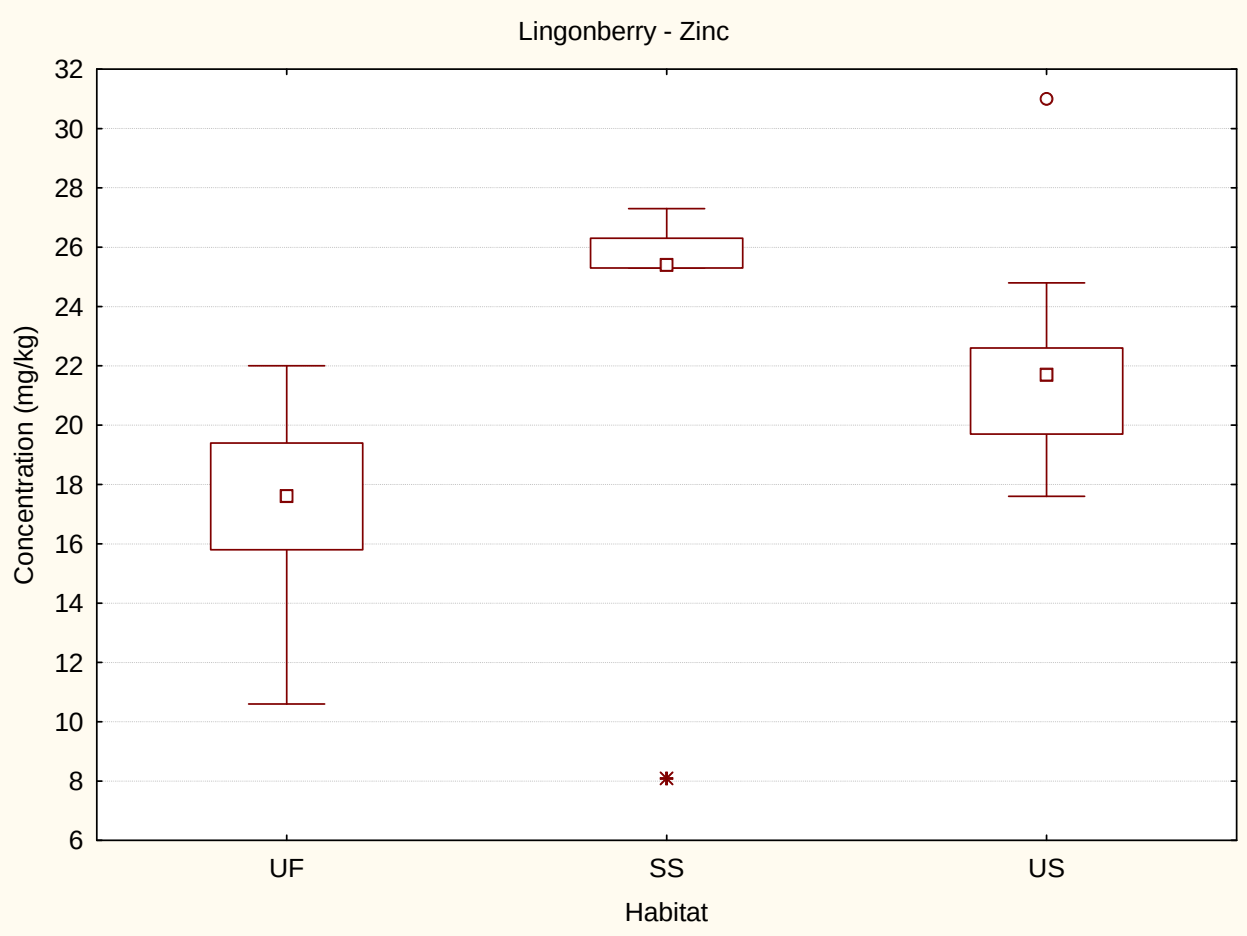

Early Blueberry - Zinc
Concentration (mg/kg)
46
44
42
40
38
36
34
32
30
28
26
SS
UF
US
Habitat


Bog Blueberry - Barium
Concentration (mg/kg)
110
100
90
80
70
60
50
40
30
20
10
RS
US
SS
UF
LS
Habitat


Bog Blueberry - Cadmium
Concentration (mg/kg)
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
RS
US
SS
UF
LS
Habitat


Bog Blueberry - Manganese
Concentration (mg/kg)
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
RS
US
SS
UF
LS
Habitat


Bog Blueberry - Zinc
Concentration (mg/kg)
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
RS
US
SS
UF
LS
Habitat


Lingonberry - Zinc
Concentration (mg/kg)
32
30
28
26
24
22
20
18
16
14
12
10
8
6
UF
SS
US
Habitat

APPENDIX 10.1I

Vegetation Sample Results Summary, Mine Study Area, 2004-2007

(Note: this appendix is available in electronic format only.)

APPENDIX 10.1J

Data Summary for Infrequently Sampled Plant Species, Mine Study Area, 2004-2007

Appendix 10.1J
Data Summary for Infreqently Sampled Plant Species

Red-fruit Bearberry (Ar) Vegetative Tissues

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]
Metals [c]								
Aluminum	4 / 4	100%	48.2 - 100	0.40 - 5.00	2.00 - 9.90	68.7	63.2	24.6
Antimony	3 / 4	75%	0.030 - 0.12	0.030 - 0.040	0.050 - 0.050	0.056	0.045	0.046
Arsenic	0 / 4	0%	NA - NA	0.050 - 0.10	0.50 - 1.01	NA	NA	NA
Barium	4 / 4	100%	51.5 - 106	0.020 - 0.060	0.050 - 0.10	77.6	76.5	26.0
Beryllium	0 / 4	0%	NA - NA	0.0060 - 0.040	0.020 - 0.040	NA	NA	NA
Bismuth	0 / 4	0%	NA - NA	0.0030 - 0.050	0.010 - 0.10	NA	NA	NA
Boron	2 / 4	50%	3.90 - 4.10	0.40 - 3.00	5.00 - 19.8	3.63	4.00	1.50
Cadmium	3 / 4	75%	0.018 - 0.020	0.0040 - 0.040	0.020 - 0.10	0.019	0.019	0.0012
Calcium	4 / 4	100%	4430 - 7150	1.00 - 2.00	5.00 - 10.0	5788	5785	1299
Chromium	0 / 4	0%	NA - NA	0.20 - 1.00	1.00 - 2.00	NA	NA	NA
Cobalt	3 / 4	75%	0.017 - 0.14	0.0030 - 0.0080	0.020 - 0.040	0.056	0.033	0.059
Copper	4 / 4	100%	1.58 - 2.07	0.020 - 0.10	0.10 - 0.20	1.74	1.66	0.22
Iron	4 / 4	100%	20.6 - 40.3	0.30 - 0.60	2.00 - 4.00	29.1	27.8	8.40
Lead	2 / 4	50%	0.050 - 0.060	0.020 - 0.040	0.050 - 0.10	0.046	0.050	0.015
Magnesium	4 / 4	100%	754 - 867	0.20 - 1.00	2.00 - 4.00	829	847	53.3
Manganese	4 / 4	100%	28.6 - 55.9	0.040 - 0.070	0.050 - 1.99	39.4	36.6	13.1
Mercury	4 / 4	100%	0.019 - 0.060	0.0040 - 0.0060	0.019 - 0.020	0.040	0.040	0.018
Molybdenum	0 / 4	0%	NA - NA	0.020 - 0.050	0.050 - 0.10	NA	NA	NA
Nickel	4 / 4	100%	0.31 - 0.70	0.020 - 0.10	0.20 - 0.40	0.53	0.56	0.19
Potassium	4 / 4	100%	6260 - 9220	10.0 - 199	101 - 398	7263	6785	1338
Selenium	2 / 4	50%	0.10 - 0.30	0.10 - 0.40	1.00 - 2.00	0.18	0.15	0.096
Silver	1 / 4	25%	0.014 - 0.014	0.0060 - 0.010	0.020 - 0.020	0.0064	0.0043	0.0052
Thallium	1 / 4	25%	0.0080 - 0.0080	0.0020 - 0.040	0.020 - 0.040	0.0098	0.0090	0.0078
Tin	1 / 4	25%	5.60 - 5.60	1.50 - 5.00	10.0 - 19.8	5.51	5.33	3.44
Vanadium	4 / 4	100%	0.080 - 0.63	0.020 - 0.040	0.20 - 0.40	0.24	0.13	0.26
Zinc	4 / 4	100%	24.0 - 39.3	0.20 - 0.70	0.50 - 2.00	32.2	32.7	7.46
Anions and Cations [c]								
Cyanide	2 / 4	50%	0.18 - 0.50	0.060 - 0.30	0.30 - 0.70	0.23	0.17	0.18
Sodium	3 / 4	75%	18.4 - 49.0	2.00 - 20.0	10.1 - 20.0	25.0	20.5	16.8

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

10.2 Sediment—Mine Study Area

10.2.1 Introduction

The sections below present the findings of the trace elements study for sediment in the mine study area. Sediment samples from streams were collected each year in 2004 through 2007 and analyzed to assess spatial and temporal variability of NOCs. Sediment samples from ponds also were collected in 2005 through 2007, and sediment samples from seeps were collected in 2005.

10.2.2 Study Objectives

The objective of this study was to establish baseline concentrations of NOCs in stream, lake, and seep sediments in the mine study area.

10.2.3 Study Area

The mine study area for sediment is the same as that for soil and vegetation (Section 10.1-3), except the study area for sediment also includes the full length of the North Fork Koktuli River, the South Fork Koktuli River, and Upper Talarik Creek. Kaskanak Creek is considered to be outside of the study area drainage; however, it was included in this study to confirm that this creek has no hydrological connection to the drainage area in which Pebble Deposit is located.

10.2.4 Scope of Work

The 2004 through 2007 field studies for sediment were conducted primarily by HDR Inc. according to the approach described in the consolidated study program for the Pebble Project (Appendix E of this environmental baseline document) and the annual quality assurance plans (Appendix G of this environmental baseline document). CH_2M Hill collected some of the sediment samples from the mine study area in 2004. The work described below was conducted for sediment in the mine study area in 2004 through 2007. In 2004 and 2005, sediment samples also were collected from Kaskanak Creek, which was included in the study to confirm that the creek has no hydrological connection to the drainage area in which Pebble Deposit is located. The samples from this creek are included below, but results for these samples are not considered part of the sediment data set for the mine study area.)

10.2.4.1 2004

- Collection of 50 sediment samples from 20 locations in tundra streams (locations coincide with monitoring stations used for the hydrology study), and analysis for trace elements, anions, and cations.
- Collection of 21 sediment samples from 15 locations in small tundra streams (not associated with monitoring stations used for the hydrology study), and analysis for trace elements, anions, and cations.
- Collection of three sediment samples from one location in Kaskanak Creek, and analysis for trace elements, anions, and cations.

10.2.4.2 2005

- Collection of 31 sediment samples from 17 locations in tundra streams (locations coincide with monitoring stations used for the hydrology study), and analysis for trace elements, anions, and cations.
- Collection of 14 sediment samples from six lakes and ponds, and analysis for trace elements, anions, and cations.
- Sampling at nine seeps, and analysis for trace elements, anions, and cations; seven seeps were sampled in July, and five seeps were sampled in October (three of the seeps were sampled in both months).
- Collection of two sediment samples from one location in Kaskanak Creek, and analysis for trace elements, anions, and cations.

10.2.4.3 2006

- Collection of 14 sediment samples from 14 locations in tundra streams (locations coincide with monitoring stations used for the hydrology study), and analysis for trace elements, anions, cations, acid-volatile sulfide (AVS), and simultaneously extractable metals (SEMs).
- Collection of 19 sediment samples from 14 lakes and ponds, and analysis for trace elements, anions, cations, AVS, SEMs, and organic carbon.
- Collection of one sediment sample from a different lake, and analysis only for sulfur, AVS, and SEMs.

10.2.4.4 2007

- Collection of 14 sediment samples from 14 locations in tundra streams (locations coincide with monitoring stations used for the hydrology study), and analysis for trace elements, anions, and cations.
- Collection of 21 sediment samples in August from 20 lakes and ponds, and analysis for trace elements, anions, and cations. One of these samples was also analyzed for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and gasoline-range organics (GRO).
- Collection of one lake-sediment sample in June, and analysis only for semivolatile organic compounds (SVOCs), DRO, RRO, trace elements, anions, and cations.

Except for the 21 samples collected by CH_2M Hill in 2004, all stream-sediment samples were collected at the same locations as surface water samples, and those locations coincide with fish sampling areas and monitoring stations used for the hydrology study. Stream sediments were collected at the same time as surface water samples. Sediment sampling by CH_2M Hill in 2004 was designed to evaluate variability of concentrations across similar areas from which soil and vegetation samples were collected. In 2005, seep and lake sampling was implemented, and the sediment sampling at soil and plant stations was discontinued. A photographic log of the sampling conducted in 2005 through 2007 is provided as Appendix 10.2A.

10.2.5 Methods

In general, methods for sample collection were consistent with those outlined in the consolidated study program (Appendix E of this environmental baseline document), and QA/QC protocols followed procedures outlined in the QAPPs (Appendix G of the environmental baseline document). The laboratory analyses for the sediment samples are listed in Table 10.2-1.

Stream sediment samples were composited from three locations across the channel at each sample location. For one stream in 2005, discrete samples were also collected from each of the sample locations used for compositing. The discrete samples were analyzed in parallel with the composite to evaluate cross-channel variations in sediment metals concentrations. Based on results of these discrete samples, the compositing of samples from three locations was maintained throughout the sampling program.

Composited samples were mixed and placed in sample containers and sealed, consistent with the QAPP (Appendix G).The samples were documented and packaged following the protocols in the consolidated study program (Appendix E) and QAPPs (Appendix G) and were submitted to Shaw in Iliamna for sample tracking and logging. Shaw sent the sediment samples to SGS in Anchorage, Alaska, for analysis in 2004, 2005, and 2006. In 2007 sediment samples were sent to SGS and to ACZ.

All sediment samples collected in 2006 were sent to SGS, which then passed samples on to CAS for total sulfur and AVS-SEM analyses. QA samples for the sulfur (total) and AVS-SEM analyses were sent to STL in Tacoma, Washington (now known as TestAmerica Laboratories, Inc.). CAS was the QA laboratory for all other analyses.

10.2.6 Data Reduction

Following is a summary of how the raw data for the sediment analyses were processed and used in data evaluation. Freshwater sediment data were collected in 2004 through 2007. The following general statistics were compiled for sediment samples across all years (Tables 10.2-2 and 10.2-3):

- The FOD.
- Minimum and maximum detected concentrations.
- Minimum and maximum MDLs and MRLs.
- Mean and median concentrations.
- Standard deviations and CVs.

In addition, sediment data were summarized by type of waterbody (i.e., pond or lake, stream, and seep). Data for each primary stream also were evaluated separately to enable comparison of trace element concentrations in the North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek.

Only data for primary samples were used for evaluation. For the data summaries and bar graphs, non-detect results were included as one-half the MDL; non-detect results flagged with a “U” or “UJ” qualifier were included as one-half the MRL.

The Mann-Whitney U-test was performed for 11 trace elements that have the highest toxicological significance to aquatic organisms—arsenic, barium, cadmium, copper, lead, mercury, manganese, nickel, silver, vanadium, and zinc—to compare concentrations among the three major drainages in the mine study area. For statistical tests and box-and-whisker plots, non-detect results were included as one-half the MDLs, and non-detect results flagged with a "U" or "UJ" qualifier were included as the MRL. Because the statistical tests are nonparametric, the relative magnitude of the values is more critical than their absolute magnitude; therefore, use of MRLs rather than surrogate values (e.g., one-half MRL) in the statistical tests should have no effect on the evaluation. The data set for the North Fork Koktuli River for these tests and box-and-whisker plots included two additional samples collected from the Koktuli River downstream of the confluence of the north and south forks. The two samples were grouped with the North Fork Koktuli River data for this evaluation based on the drainage patterns of the two river forks. These two samples were removed from the data set before calculation of summary statistics.

10.2.7 Results and Discussion

There were 197 sediment samples collected in the mine study area and analyzed for trace elements, anions, and cations between 2004 and 2007 (Table 10.2-2). (Summary tables present only validated data.) Of these, 71 samples were collected in 2004, 56 samples in 2005, 34 samples in 2006, and 36 samples in 2007. Data for these samples represent a compendium of 71 separate locations in the mine study area. All 197 samples were analyzed for all elements shown in Table 10.2-2, except boron, for which only 196 samples were tested. Analyses for various anions and cations were performed on between 183 and 197 samples: analysis for sodium was done on all 197 samples, ammonia (as nitrogen) on 196, total cyanide on 194, chloride and sulfate on 184 samples each, and fluoride on 183 samples. In addition, 12 samples were analyzed for WAD cyanide to allow comparison of results across analytical methods, and 34 samples were analyzed for AVS. Analyses for cadmium, copper, lead, mercury, nickel, and zinc by the SEM method were conducted on 34 samples (Table 10.2-3) to allow evaluation of the bioavailability and binding capacity of the sediments. Analyses for petroleum hydrocarbons (DRO, GRO, and RRO), PAHs, VOCs, and SVOCs were performed on one sample, and TOC was measured in 34 samples (Table 10.2-3; data for VOCs and SVOCs are not shown in Table 10.2-3 because all results were below detection limits).

All sediment data for 2004 through 2007 are provided in Appendix 10.2B. Sediment data are presented on a dry weight basis, except for total solids data, which are presented on a wet weight basis. Data for the minor drainages are summarized in Table 10.2-4; data for the primary streams are summarized in Tables 10.2-5 through 10.2-7; data for ponds and seeps are summarized in Tables 10.2-8 and 10.2-9, respectively. Concentrations of individual NOCs in these waterbodies are depicted in bar graphs in Figures 10.2-1 through 10.2-32. Data for Kaskanak Creek are summarized in Table 10.2-10 to provide a comparison with data from the primary rivers and creeks in the study area.

The discussions below are based on the results for primary samples across all locations (Tables 10.2-2 and 10.2-3). For ease of readability, concentrations greater than 1,000 mg/kg were rounded to the nearest hundred in the following discussion.

10.2.7.1 Trace Elements

All 26 trace elements for which samples were analyzed were detected above MDLs in at least some sediment samples (Table 10.2-2). Nine trace elements were present in all samples, and another four trace

elements were detected in 99 percent of samples. Three trace elements were detected in 96 to 98 percent of samples. Only four trace elements were detected in less than 50 percent of samples. Tin was detected with the lowest frequency (23 percent) of all the trace elements.

Aluminum and iron were present at the highest concentrations (mean concentrations of 11,200 and 21,600 mg/kg, respectively), with calcium (mean concentration of 3,800 mg/kg) and magnesium (mean concentration of 3,600 mg/kg) being next highest. All other trace elements were present at substantially lower concentrations. Manganese and potassium, with mean concentrations of 623 and 545 mg/kg, respectively, were the only other trace elements present at mean concentrations exceeding 100 mg/kg. As is evident from consideration of the data, concentrations of individual elements varied widely among sampling locations and, within a given location, concentrations of different trace elements varied widely. For example, the CVs for twelve trace elements in sediment samples were greater than 1.0. CVs ranged from 0.39 (aluminum) to 5.74 (bismuth). The average CV among all sediment data for trace elements was 1.27.

All six SEMs, as well as sulfur, were detected in at least some sediment samples, with FODs ranging from 3 percent for mercury to 100 percent for copper, sulfur, and zinc (Table 10.2-3). Mean concentrations were lower in the SEM analysis than in the total-metal analysis:

- Cadmium SEM 0.21 mg/kg compared to 0.26 mg/kg cadmium.
- Copper SEM 16.7 mg/kg compared to 27.3 mg/kg copper.
- Lead SEM 5.19 mg/kg compared to 6.90 mg/kg lead.
- Mercury SEM 0.018 mg/kg compared to 0.040 mg/kg mercury.
- Nickel SEM 3.95 mg/kg compared to 8.95 mg/kg nickel.
- Zinc SEM 37.1 mg/kg compared to 61.8 mg/kg zinc.

This difference is expected given the presence of sulfur molecules to bind to the metals, because this binding reduces the bioavailable metal concentrations reflected by the SEM method. In other words, for metals, bioavailable concentrations (i.e., those detected by SEM analyses) are lower than the concentrations detected by total-metal analyses.

10.2.7.2 Anions and Cations

The anions for which samples were analyzed were chloride, cyanide (total and WAD), fluoride, and sulfate, and the cations were ammonia (as nitrogen) and sodium. The FODs for these analytes ranged from 62 percent for fluoride to 97 percent for ammonia (as nitrogen) and sulfate, except for WAD cyanide, which was detected in all 12 samples (Table 10.2-2).

Ammonia (as nitrogen) and sodium were present at the highest concentrations (mean concentrations of 235 and 194 mg/kg, respectively) among these analytes, and sulfate had the next highest concentrations (mean of 51.8 mg/kg). Total cyanide had the lowest mean concentration (0.39 mg/kg). The mean concentration for WAD cyanide (0.54 mg/kg) was slightly higher than that for total cyanide. While higher WAD cyanide than total cyanide indicates that some analytical interference is occurring, it also likely indicates that cyanide present in sediments is largely in the bioavailable form for potential uptake by possible receptors.

10.2.7.3 Petroleum-range Hydrocarbons and Other Compounds

One sample was analyzed for GRO, VOCs, and PAHs, and another sample collected from the same location in a different month was analyzed for SVOCs, DRO, and RRO. Both samples were pond sediments. VOCs and SVOCs were not expected to be present because of the remote, undeveloped nature of the area. Neither VOCs nor SVOCs were detected in the samples. Analyses for GRO, DRO, RRO, and PAHs were performed because of the potential for naturally occurring hydrocarbons to be present in sediments. DRO, RRO, and 12 PAHs (acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, fluoranthene, indeno[1,2,3-c,d]pyrene, naphthalene, phenanthrene, and pyrene) were present above MDLs. Petroleum-range hydrocarbons identified in the DRO analysis were present at a concentration of 13.9 mg/kg, and petroleum-range hydrocarbons identified in the RRO analysis were present at a concentration of 48.7 mg/kg. The detected PAHs were present at concentrations ranging from 2.83 (naphthalene) to 28.3 mg/kg (benzo[b]fluoranthene). These results indicate that hydrocarbons are present in pond sediments in the mine study area, presumably as a result of the biogenic breakdown of aquatic plants and possibly animal matter.

10.2.7.4 Total Organic Carbon

TOC was detected in all 34 samples that were analyzed for TOC (Table 10.2-3). The mean concentration among the samples was 6.05 percent. TOC concentrations exhibited wide variability among samples (range of 0.13 to 32.3 percent). The presence and variability of TOC could affect the bioavailability and toxicity of some trace elements, because some trace elements tend to form complexes with organic materials.

10.2.7.5 Evaluation of Minor Drainages

Twenty-one sediment samples were collected in 2004 from various locations in the minor drainages in the mine study area. These locations were sampled only once and represent minor tributaries and ephemeral ponded water within the major drainages. All 26 trace elements for which samples were analyzed were detected above MDLs in at least some of the sediment samples from minor drainages (Table 10.2-4). Fifteen trace elements were present in all 21 samples, and another three trace elements were detected in at least 90 percent (but less than 100 percent) of the samples. Only boron and tin were detected in less than 50 percent of the samples. All of the anions and cations were detected in at least 70 percent of the samples.

Relative concentrations of trace elements, anions, and cations within the minor drainages were similar to those discussed above for all sediment samples combined. However, NOCs were more consistent in concentration among samples from within the minor drainages than among all sediment samples combined. For example, CVs for trace elements in the samples from the minor drainages ranged from 0.35 (for tin) to 1.41 (for molybdenum), and the CV exceeded 1.0 for only one other trace element (arsenic, at 1.39). The CVs for anions and cations within the minor drainages were higher than CVs for trace metals within the minor drainages, ranging from 0.34 (for sodium) to 2.49 (for sulfate), but these values were still much lower than the CV values for anions and cations in the overall sediment data set.

10.2.7.6 Evaluation of Major River Drainages

South Fork Koktuli Drainage

Forty samples were collected in 2004 through 2007 from the South Fork Koktuli River. The locations sampled in 2005 had also been sampled in 2004, with two exceptions—one new location sampled in 2005 and one 2004 location that was not sampled in 2005. A subset of the 2005 locations were sampled in 2006 and 2007.

All 26 trace elements analyzed (not including SEMs) were detected above MDLs in at least some sediment samples from this drainage (Table 10.2-5). Eighteen trace elements were present in all samples, and antimony was detected in 95 percent of the samples. Only boron and tin were detected in less than 50 percent of the samples. All of the anions and cations were detected in at least 77 percent of samples.

North Fork Koktuli Drainage

Twenty-seven samples were collected in 2004 through 2007 from the North Fork Koktuli River. The locations sampled in 2005 and 2007 had also been sampled in 2004, all but one of these locations was sampled in 2006.

All 26 trace elements for which samples were analyzed (not including SEMs) were detected above MDLs in at least some sediment samples from this drainage (Table 10.2-6). Seventeen trace elements were present in all samples. Six trace elements were detected in less than 50 percent of the samples—bismuth, boron, mercury, selenium, silver, and tin were detected in between 15 and 42 percent of samples. None of the anions and cations were detected in all samples analyzed for each respective constituent (except two samples for WAD cyanide and three samples for sulfur); fluoride and total cyanide were detected in 50 and 56 percent of samples, respectively. Chloride was detected in 65 percent of samples, and sodium was detected in 89 percent of samples. Ammonia (as nitrogen) and sulfate were detected in 93 and 96 percent of samples, respectively.

Upper Talarik Drainage

From Upper Talarik Creek, 42 samples were collected in 2004 through 2007. The locations sampled in 2005 were a subset of the locations sampled in 2004, plus one new location not sampled in 2004. Subsets of the 2004/2005 locations were sampled in 2006 and 2007.

All 26 trace elements for which samples were analyzed (not including SEMs) were detected above MDLs in at least some sediment samples from this drainage (Table 10.2-7). Sixteen trace elements were present in all samples, and another three elements were detected in 90 percent to 99 percent of samples. Bismuth, boron, silver, and tin were detected in less than 50 percent of the samples. All anions and cations except fluoride were detected in at least 85 percent of samples. Fluoride was detected in 66 percent of samples.

10.2.7.7 Evaluation of Ponds

Fifty-five sediment samples were collected in 2005 through 2007 from 25 ponds in the mine study area, five of which also were sampled for aquatic plants.

All 26 trace elements for which samples were analyzed (not including SEMs) were detected above MDLs in at least some sediment samples from ponds (Table 10.2-8). Only nine trace elements were present in all samples, and another five trace elements were detected in all but one (98 percent) of the samples. Six trace elements (bismuth, boron, cadmium, mercury, silver, and tin) were detected in less than 50 percent of samples. All anions and cations, except total cyanide, were detected in more than 50 percent of samples. Cyanide was detected in only 27 percent of samples, while sulfate was detected in all but one (98 percent) of the samples.

10.2.7.8 Evaluation of Seeps

Twelve sediment samples were collected in 2005 from nine seeps in the mine study area. These seeps represent locations where groundwater is flowing out into a surface waterbody (typically a creek).

All but one of the 26 trace elements for which samples were analyzed were detected above MDLs in at least some seep sediment samples (Table 10.2-9). Tin was not detected in any samples. Seventeen trace elements were present in all samples. Cadmium and thallium (83 and 92 percent of samples, respectively) were the only other trace elements detected in more than 50 percent of samples. The remaining six trace elements—bismuth, boron, mercury, molybdenum, selenium, and silver—were detected in 25 to 50 percent of the samples. Three anions and cations—chloride, ammonia (as nitrogen), and sodium—were detected in all seep sediment samples. Sulfate was detected in all but one sample (92 percent), and cyanide and fluoride were detected in 58 and 50 percent of samples, respectively.

10.2.7.9 Evaluation of Kaskanak Creek

Five sediment samples were collected from a single location in Kaskanak Creek in 2004 and 2005. The sampling location is approximately 20 miles southwest of the Pebble Deposit, 6 miles south of the North Fork Koktuli River, and 16 miles west of Upper Talarik Creek. Kaskanak Creek is not part of the mine study area sediments. Therefore, the results discussed below are not included in the sediment data set for the mine study area nor in evaluations of that data set, but are discussed separately.

Four of the samples were analyzed for chloride, fluoride, ammonia as nitrogen, and sulfate. One sample was analyzed for WAD cyanide. All five samples were analyzed for all other NOCs.

Of the 26 trace elements for which samples were analyzed, 24 were detected above MDLs in at least some sediment samples from this drainage (Table 10.2-10). Fifteen trace elements were present in all samples, and another three trace elements (antimony, beryllium, and molybdenum) were detected in all but one (80 percent) of the samples. Selenium and thallium were each detected in 60 percent of the samples, and mercury was detected in 40 percent of samples. Boron, cadmium, and silver were each detected in one sample (20 percent of samples). Bismuth and tin were not detected in any samples.

Three anions and cations (chloride, ammonia [as nitrogen], and sulfate) were detected in all sediment samples that were analyzed for them. Total cyanide and sodium were each detected in 80 percent of samples, and fluoride was detected in 75 percent of samples.

10.2.7.10 Comparison of Trace Element Concentrations by Waterbody

Among the various drainages and waterbody types within the mine study area (North Fork Koktuli River, South Fork Koktuli River and Upper Talarik Creek), trace element concentrations were least variable in samples from the North Fork Koktuli River (overall CV for trace elements of 0.52) and most variable in the pond waterbody type (overall CV for trace elements of 1.05). Variability in trace element concentrations was similar between samples from the South Fork Koktuli River and Upper Talarik Creek (overall CVs of 0.79 and 0.75, respectively). Variability in trace element concentrations was somewhat higher in the seep waterbody type (overall CV of 0.95) than in the rivers. Variability of concentrations of trace elements within individual drainages or waterbody types was generally lower than variability among all sediment samples (overall CV for trace elements of 1.27), and various patterns emerge from evaluation of element-specific concentrations across the drainages. The discussion below describes patterns observed among the major drainages (South Fork Koktuli, North Fork Koktuli, and Upper Talarik) and focuses on the 11 trace elements with the highest toxicological significance—arsenic, barium, cadmium, copper, lead, mercury, manganese, nickel, silver, vanadium, and zinc. The results of Mann-Whitney U-test comparisons of these elements between the three major drainages are presented in Table 10.2-11. Box-and-whisker plots showing median concentrations and other percentiles for these elements in the major drainages, as well as ponds, are presented in Appendix 10.2C.

Concentrations of manganese, nickel, and vanadium were generally consistent across the three major drainages. More commonly, however, significant differences in trace element concentrations between drainages were evident. Of the 11 trace elements included in the evaluation, only copper showed significant differences between all three major drainages (i.e., in all possible combinations of two drainages). Arsenic, cadmium, lead, mercury, silver, and zinc showed differences in at least two drainage combinations, and barium and nickel differed only between the North Fork Koktuli and Upper Talarik drainages.

For the 11 trace elements included in the cross-drainage evaluation, concentrations were generally lowest in samples from the North Fork Koktuli River. Only cadmium, copper, silver, and vanadium concentrations for the Upper Talarik drainage were lower than or equal to those for the North Fork Koktuli. Concentrations of arsenic, cadmium, copper, lead, manganese, silver, vanadium, and zinc were highest for the South Fork Koktuli drainage, whereas concentrations of barium, mercury, and nickel were highest for the Upper Talarik drainage.

For all 26 trace elements except chromium and potassium, mean concentrations for the South Fork Koktuli were higher than those for the North Fork Koktuli, although some elements had higher concentrations for Upper Talarik Creek than for the South Fork Koktuli. Potassium concentrations were highest in samples from the North Fork Koktuli drainage. Chromium concentrations were highest in samples from the Upper Talarik drainage. Concentrations of calcium, cobalt, and tin also were highest in samples from Upper Talarik Creek; for the remaining elements, the concentrations were highest in the South Fork Koktuli drainage sediments.

Trace element concentrations in samples from seeps and minor drainages were not statistically compared with those for ponds and major drainages, because seep and minor-drainage sediments were each sampled in only one year (minor drainages in 2004 and seeps in 2005), and the data sets for these two types of waterbodies are much smaller than those for ponds and major drainages, which were sampled in at least

three years. However, some general observations were made across all types of waterbodies, as discussed below.

Four trace elements (bismuth, boron, selenium, and thallium) were present at much higher mean concentrations in samples from ponds than in samples from rivers or seeps in the major drainages. Mean mercury and tin concentrations also were higher for pond sediments than for river or seep sediments, but the differences were less pronounced. Silver concentrations were much higher in samples from seep and pond sediments than in river samples; seep samples had slightly higher concentrations of this element than pond samples. Five trace elements (cobalt, iron, magnesium, manganese, and nickel) were present at higher mean concentrations in samples from all three main river drainages than in pond, seep, or minor-drainage samples. Arsenic, calcium, and chromium concentrations were higher for seeps than for ponds and for major and minor river drainages. Zinc concentrations were lower for minor drainages than for ponds, seeps, and major drainages. Among the trace elements, only aluminum concentrations were highest for minor drainages; aluminum concentrations for the three major drainages were comparable, while ponds and seeps had much lower concentrations of this element.

For anions and cations, sediment samples from ponds and minor drainages typically had higher concentrations than samples from other areas. This was most evident for fluoride and sulfate, which had mean concentrations for minor drainages that were about 5 to 18 times greater than those for the three major drainages, and chloride, which had mean concentrations for minor drainages that were about 6 to 13 times greater than those for the major drainages. This is most likely due to the higher solubility of anions and cations in water relative to the trace elements. This high solubility, combined with lack of water movement, allows for accumulation of anions and cations in still or slow-moving surface water as a result of the formation of metallic salts, which precipitate out of the water column and result in higher concentrations in sediment.

Mean concentrations of cyanide were highest in samples from ponds and minor drainages and were approximately 2 to 4 times higher in those samples than in samples from the major drainages. Another notable difference for this analyte was that seep samples contained much lower concentrations than samples from other areas. The cyanide results are consistent with the hypothesis that cyanide is being produced by bacteria in shallow soils. It is known that some common types of bacteria produce and release cyanide, and one of the genera known to include such cyanogenic bacteria (*Pseudomonas*) is present in southwestern Alaska. The 17-times-higher concentrations of cyanide in samples from minor drainages relative to samples of river, seep, or pond sediments occur in the sediment samples that are most closely associated with shallow soils. Shallow soils transported by runoff into standing or slow-moving water are more likely to settle out as sediment than they would if transported into fast-moving water flowing over scoured streambeds (such as in the Koktuli River and Upper Talarik Creek) Conditions in still or slow-moving water are therefore more conducive to the presence of cyanogenic bacteria in sediment because there is greater potential for deposition from the breakdown of vegetative matter. Since the cyanogenic bacteria or plants would be more abundant in these types of microhabitats, this likely explains the highest cyanide concentrations being detected in samples from ponds (excluding the minor drainages). Seep samples represent primarily groundwater, and thus there is no source of cyanide production in these sample locations.

This discussion illustrates that the different major drainages, ponds, seeps, and the minor drainages in the mine study area have different signatures of natural levels of trace elements and anions and cations.

10.2.8 Summary

The trace elements study for Pebble Project was initiated in 2004. Work on sediment in the mine study area focused on those portions of the South Fork Koktuli, North Fork Koktuli, and Upper Talarik watersheds that surround the Pebble West and Pebble East deposits.

The primary objective of the trace elements study for sediments was to collect baseline data to provide scientific documentation of the natural levels of naturally occurring constituents in sediment.

Each summer since the program began, teams have collected site-specific data within the three major watersheds (North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek). In 2004 through 2007, 109 samples were collected from 23 separate locations in these three watersheds. Minor drainages also were sampled in 2004—21 samples were collected from 15 locations selected as part of the trace element study for soil and vegetation. In 2005 through 2007, 43 specific locations in 25 ponds and lakes were sampled for sediment (aquatic plant samples were also collected from five of those ponds, plus three ponds not sampled for sediment). Nine seeps (12 total samples) were sampled in 2005. Kaskanak Creek was sampled in 2004 and 2005—five samples were collected from one location in this creek to compare and contrast with water chemistry in the three main watersheds, in the expectation that no hydrologic connection between the Creek and these watersheds is present.

Overall, 197 sediment samples were collected from the mine study area and analyzed for NOCs, including trace elements, anions, and cations. Subsets of samples from some locations also were analyzed for acid-volatile sulfide, SEMs, and organics. Evaluation of the results indicated a wide variability of NOC concentrations in sediment among drainages and different types of waterbodies. All trace elements, anions, and cations for which analyses were done were detected in sediment samples.

The results for samples from seep and minor drainages were not statistically compared with those for ponds and major drainages; however, some general observations were made. For anions and cations, sediment samples from ponds and minor drainages typically had higher concentrations than samples from other areas. Samples from seeps had lower concentrations of cyanide than other sediment samples.

The different major drainages, ponds, seeps, and minor drainages have different signatures of natural levels of trace elements and anions.

TABLES

TABLE 10.2-1
Analytical Methods for Sediment, Mine Study Area

Constituent	Method
Trace Elements [a]	SW6010B/6020
Mercury	SW7471A
Ammonia (as nitrogen), 2004-2006	SM4500NH3G
Ammonia (as nitrogen), 2007	E350.2
Chloride, Fluoride, and Sulfate	E300.0
Sodium	SW6020
Cyanide, Total	SM4500CN
Cyanide, Weak Acid Dissociable	A4500CN
Acid-volatile Sulfide	Draft E1991
Simultaneously Extractable Metals	SW6010B/E200.7
Total Organic Carbon	E415.1
Diesel-range Organics	AK102
Gasoline-range Organics	AK101
Residual-range Organics	AK103
Volatile Organic Compounds	SW8260
Semivolatile Organic Compounds	SW8270
Polynuclear Aromatic Hydrocarbons	8270 SIM

Notes:

a. Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Pb, K, Mg, Mn, Mo, Ni, S, Sb, Se, Sn, Tl, V, Zn (chemical abbreviations are defined in Appendix D of this environmental baseline document).

AK = Methods for Determination of Petroleum Hydrocarbons in Diesel and Residual Range Organics. Version 3-1-99.

E = Methods for Chemical Analysis of Inorganic Substances in Environmental Samples, EPA/600/R-93-100, August 1993, and Methods for the Determination of Trace elements in Environmental Samples, EPA/600/4-91-010, June 1991.

SIM = Selected Ion Monitoring.

SM = Standard Methods for the Examination of Water and Wastewater, 20th Edition.

SW = U.S. EPA Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Third edition, September 1986.

TABLE 10.2-2
Sediment, Data Summary and Descriptive Statistics for Inorganic Constituents, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	197 / 197	100%	1820 - 25200	0.60 - 350	1.92 - 1200	11218	10600	4400	0.39
Antimony	169 / 197	86%	0.030 - 2.30	0.0021 - 0.46	0.093 - 2.90	0.23	0.17	0.24	1.04
Arsenic	190 / 197	96%	1.23 - 270	0.0081 - 4.56	0.19 - 14.7	14.2	9.57	23.0	1.62
Barium	197 / 197	100%	12.3 - 239	0.00061 - 1.63	0.19 - 5.20	74.7	66.0	39.4	0.53
Beryllium	189 / 197	96%	0.079 - 0.97	0.017 - 0.46	0.093 - 2.90	0.35	0.33	0.16	0.45
Bismuth	58 / 197	29%	0.063 - 3.10	0.058 - 21.0	0.19 - 400	1.11	0.089	6.39	5.74
Boron	81 / 196	41%	0.59 - 11.5	0.34 - 81.0	1.11 - 1000	6.78	2.25	20.7	3.05
Cadmium	153 / 197	78%	0.068 - 2.60	0.00048 - 0.91	0.19 - 2.94	0.26	0.19	0.25	0.96
Calcium	197 / 197	100%	583 - 23400	0.61 - 855	27.8 - 2730	3773	3260	2302	0.61
Chromium	197 / 197	100%	0.43 - 105	0.0079 - 1.77	0.19 - 5.88	15.4	14.4	9.26	0.60
Cobalt	196 / 197	99%	0.51 - 49.1	0.00080 - 2.21	0.19 - 7.35	7.86	6.62	6.10	0.78
Copper	197 / 197	100%	1.30 - 200	0.0010 - 3.12	0.19 - 10.4	27.3	12.9	32.7	1.20
Iron	197 / 197	100%	2670 - 83400	0.53 - 697	9.66 - 2250	21617	20400	11737	0.54
Lead	196 / 197	99%	1.46 - 40.3	0.0011 - 0.91	0.19 - 2.94	6.90	5.28	5.84	0.85
Magnesium	196 / 197	99%	410 - 7970	3.90 - 163	27.8 - 2200	3586	3680	1470	0.41
Manganese	197 / 197	100%	28.7 - 6970	0.0015 - 8.94	0.19 - 28.8	623	414	746	1.20
Mercury	113 / 197	57%	0.011 - 0.42	0.0073 - 0.18	0.016 - 0.59	0.040	0.022	0.055	1.36
Molybdenum	160 / 197	81%	0.28 - 22.0	0.00065 - 4.56	0.19 - 14.7	2.02	0.87	3.13	1.55
Nickel	197 / 197	100%	0.64 - 46.9	0.0019 - 0.91	0.19 - 2.94	8.95	8.31	4.98	0.56
Potassium	196 / 197	99%	75.0 - 1770	5.50 - 537	92.7 - 6700	545	534	220	0.40
Selenium	134 / 197	68%	0.018 - 13.1	0.012 - 2.21	0.46 - 7.35	1.15	0.53	1.77	1.54
Silver	68 / 197	35%	0.034 - 2.54	0.00047 - 0.46	0.093 - 2.90	0.12	0.060	0.24	2.00
Thallium	133 / 197	68%	0.0079 - 0.45	0.0013 - 0.091	0.019 - 2.90	0.11	0.076	0.16	1.48
Tin	46 / 197	23%	0.16 - 46.2	0.0025 - 5.37	0.47 - 17.3	1.21	0.52	3.42	2.82
Vanadium	197 / 197	100%	2.20 - 143	0.0046 - 16.3	0.19 - 52.0	44.9	40.5	22.3	0.50
Zinc	193 / 197	98%	9.90 - 313	0.0086 - 5.37	0.47 - 17.3	61.8	52.6	45.4	0.73

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	191 / 196	97%	3.90 - 1730	2.12 - 156	2.20 - 497	235	74.2	316	1.34
Chloride	145 / 184	79%	0.33 - 223	0.25 - 10.0	0.81 - 31.0	5.31	1.75	18.4	3.47
Cyanide, Total	124 / 194	64%	0.030 - 2.10	0.025 - 13.0	0.051 - 13.0	0.39	0.078	0.82	2.12
Cyanide, WAD	12 / 12	100%	0.13 - 0.96	0.029 - 0.030	0.059 - 0.061	0.54	0.48	0.29	0.54
Fluoride	113 / 183	62%	0.11 - 118	0.089 - 15.0	0.59 - 48.3	2.24	0.51	9.37	4.18
Sodium	168 / 197	85%	18.0 - 630	14.0 - 537	92.7 - 4000	194	186	109	0.56
Sulfate	179 / 184	97%	0.50 - 2600	0.25 - 15.0	0.81 - 48.3	51.8	9.16	204	3.93
Miscellaneous Parameters[c]									
Acid Volatile Sulfide (AVS)	9 / 34	26%	2.10 - 1010	0.40 - 6.00	1.70 - 29.0	46.0	0.35	178	3.87

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

WAD = weak acid dissociable

TABLE 10.2-3
Sediment, Data Summary and Descriptive Statistics for SEMs and Organic Constituents, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Cadmium SEM	18 / 34	53%	0.080 - 0.83	0.060 - 0.90	0.060 - 0.90	0.21	0.14	0.19	0.91
Copper SEM	34 / 34	100%	0.60 - 115	0.10 - 1.70	0.10 - 1.70	16.7	5.25	26.3	1.57
Lead SEM	24 / 34	71%	1.40 - 23.4	1.20 - 17.0	1.20 - 17.0	5.19	4.40	3.88	0.75
Mercury SEM	1 / 34	3%	0.020 - 0.020	0.010 - 0.14	0.010 - 0.14	0.018	0.010	0.016	0.87
Nickel SEM	33 / 34	97%	0.70 - 8.70	0.20 - 3.50	0.20 - 3.50	3.95	3.85	2.46	0.62
Zinc SEM	34 / 34	100%	6.10 - 123	0.10 - 1.70	0.10 - 1.70	37.1	33.3	24.5	0.66
Sulfur	34 / 34	100%	84.6 - 10000	2.80 - 11.8	37.6 - 157	1248	249	2129	1.71
Petroleum Hydrocarbons [c]									
Diesel-range Organics	1 / 1	100%	13.9 - 13.9	2.24 - 2.24	22.4 - 22.4	NA	NA	NA	NA
Gasoline-range Organics	0 / 1	0%	NA - NA	0.48 - 0.48	2.38 - 2.38	NA	NA	NA	NA
Residual-range Organics	1 / 1	100%	48.7 - 48.7	2.24 - 2.24	22.4 - 22.4	NA	NA	NA	NA
PAHs [c]									
1-Methylnaphthalene	0 / 1	0%	NA - NA	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
2-Methylnaphthalene	0 / 1	0%	NA - NA	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Acenaphthene	0 / 1	0%	NA - NA	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Acenaphthylene	1 / 1	100%	5.78 - 5.78	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Anthracene	1 / 1	100%	4.88 - 4.88	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Benzo(a)anthracene	1 / 1	100%	12.5 - 12.5	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Benzo(a)pyrene	1 / 1	100%	21.0 - 21.0	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Benzo(b)fluoranthene	1 / 1	100%	28.3 - 28.3	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Benzo(g,h,i)perylene	0 / 1	0%	NA - NA	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Benzo(k)fluoranthene	1 / 1	100%	9.14 - 9.14	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Chrysene	1 / 1	100%	15.1 - 15.1	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0 / 1	0%	NA - NA	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Fluoranthene	1 / 1	100%	19.4 - 19.4	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Fluorene	0 / 1	0%	NA - NA	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1 / 1	100%	13.0 - 13.0	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Naphthalene	1 / 1	100%	2.83 - 2.83	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Phenanthrene	1 / 1	100%	13.7 - 13.7	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA
Pyrene	1 / 1	100%	19.1 - 19.1	2.80 - 2.80	9.33 - 9.33	NA	NA	NA	NA

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Chemical Properties [c]									
Total Organic Carbon[d]	34 / 34	100%	0.13% - 32.3%	0.021% - 0.34%	0.10% - 1.60%	6.05%	1.77%	8.41%	1.39%

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

d. Values reported for total organic carbon are expressed as percentages, rather than in mg/kg.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

PAHs = polynuclear aromatic hydrocarbons.

SEMs = simultaneously extractable metals

TABLE 10.2-4
Sediment—Minor Drainages, Data Summary and Descriptive Statistics, Mine Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	21 / 21	100%	1820 - 23100	0.60 - 30.9	1.93 - 99.5	12954	15200	6117	0.47
Antimony	20 / 21	95%	0.067 - 0.47	0.030 - 0.15	0.096 - 0.50	0.15	0.13	0.097	0.63
Arsenic	21 / 21	100%	1.23 - 40.7	0.55 - 0.57	1.73 - 1.80	6.13	3.99	8.51	1.39
Barium	21 / 21	100%	16.8 - 105	0.091 - 0.47	0.29 - 1.49	60.7	55.9	24.4	0.40
Beryllium	21 / 21	100%	0.079 - 0.52	0.030 - 0.031	0.096 - 0.10	0.29	0.26	0.13	0.43
Bismuth	13 / 21	62%	0.067 - 0.33	0.060 - 0.062	0.19 - 0.20	0.088	0.081	0.071	0.81
Boron	4 / 21	19%	4.21 - 6.38	2.99 - 3.10	9.63 - 9.99	2.21	1.53	1.50	0.68
Cadmium	17 / 21	81%	0.077 - 0.77	0.060 - 0.062	0.19 - 0.20	0.18	0.11	0.18	1.00
Calcium	21 / 21	100%	926 - 7180	9.05 - 46.8	28.9 - 149	2729	2160	1559	0.57
Chromium	21 / 21	100%	1.91 - 30.6	0.12 - 0.12	0.39 - 0.40	12.3	11.7	7.28	0.59
Cobalt	21 / 21	100%	1.00 - 10.3	0.14 - 0.15	0.48 - 0.50	3.99	3.43	2.53	0.64
Copper	21 / 21	100%	3.43 - 64.5	0.17 - 0.18	0.58 - 0.60	16.8	13.2	14.3	0.85
Iron	21 / 21	100%	2670 - 34500	2.99 - 154	9.66 - 498	13687	12300	9340	0.68
Lead	21 / 21	100%	1.46 - 7.37	0.060 - 0.062	0.19 - 0.20	5.09	5.25	1.89	0.37
Magnesium	21 / 21	100%	410 - 3940	9.05 - 45.4	28.9 - 145	2011	1930	1138	0.57
Manganese	21 / 21	100%	28.7 - 593	0.060 - 0.31	0.19 - 1.00	184	116	161	0.88
Mercury	19 / 21	90%	0.015 - 0.13	0.012 - 0.012	0.039 - 0.040	0.048	0.035	0.034	0.71
Molybdenum	20 / 21	95%	0.33 - 9.29	0.30 - 0.31	0.96 - 1.00	1.50	0.70	2.11	1.41
Nickel	21 / 21	100%	0.94 - 10.4	0.060 - 0.062	0.19 - 0.20	5.86	5.92	3.20	0.55
Potassium	21 / 21	100%	99.6 - 1770	29.9 - 154	96.3 - 498	430	338	349	0.81
Selenium	17 / 21	81%	0.15 - 5.18	0.14 - 0.15	0.48 - 0.50	1.19	0.95	1.14	0.96
Silver	16 / 21	76%	0.036 - 0.17	0.030 - 0.031	0.096 - 0.10	0.070	0.060	0.051	0.73
Thallium	14 / 21	67%	0.0079 - 0.23	0.0060 - 0.0062	0.019 - 0.020	0.073	0.047	0.073	0.99
Tin	2 / 21	10%	0.97 - 1.27	0.30 - 0.31	0.96 - 1.00	0.55	0.49	0.20	0.35
Vanadium	21 / 21	100%	7.22 - 78.3	0.91 - 4.68	2.89 - 14.9	37.1	36.1	21.6	0.58
Zinc	18 / 21	86%	14.1 - 66.2	0.30 - 3.10	0.96 - 9.99	28.9	23.8	18.9	0.65

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	21 / 21	100%	40.2 - 1730	2.12 - 61.7	6.73 - 196	544	461	483	0.89
Chloride	20 / 21	95%	1.75 - 80.8	0.29 - 2.99	0.93 - 9.65	15.0	7.26	21.7	1.45
Cyanide	21 / 21	100%	0.099 - 1.90	0.027 - 0.30	0.055 - 0.59	0.65	0.57	0.54	0.84
Fluoride	15 / 21	71%	0.29 - 118	0.29 - 15.0	0.93 - 48.3	11.4	2.62	26.0	2.28
Sodium	20 / 21	95%	74.9 - 230	29.9 - 150	96.3 - 483	141	126	47.8	0.34
Sulfate	21 / 21	100%	9.34 - 2600	0.29 - 15.0	0.93 - 48.3	222	67.2	554	2.49

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.2-5
Sediment—South Fork Koktuli River, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	40 / 40	100%	7840 - 25200	0.61 - 350	1.98 - 1200	12399	11250	4239	0.34
Antimony	38 / 40	95%	0.090 - 0.85	0.0024 - 0.27	0.093 - 0.86	0.26	0.22	0.15	0.58
Arsenic	40 / 40	100%	5.08 - 73.3	0.0094 - 2.80	0.22 - 8.84	15.6	12.0	11.7	0.75
Barium	40 / 40	100%	32.0 - 190	0.00071 - 0.80	0.22 - 2.56	76.4	61.8	34.6	0.45
Beryllium	40 / 40	100%	0.22 - 0.82	0.020 - 0.076	0.093 - 0.81	0.41	0.37	0.14	0.35
Bismuth	20 / 40	50%	0.073 - 1.26	0.058 - 21.0	0.19 - 400	0.71	0.098	1.85	2.60
Boron	19 / 40	48%	0.94 - 11.4	0.43 - 81.0	1.38 - 1000	8.4	3.01	22.38	2.65
Cadmium	40 / 40	100%	0.10 - 2.60	0.00056 - 0.15	0.19 - 0.81	0.43	0.26	0.43	1.01
Cadmium SEM	5 / 5	100%	0.090 - 0.83	0.070 - 0.19	0.070 - 0.19	0.34	0.21	0.30	0.91
Calcium	40 / 40	100%	1860 - 8300	6.00 - 80.3	27.8 - 2200	3614	3170	1350	0.37
Chromium	40 / 40	100%	5.72 - 33.4	0.0092 - 0.59	0.22 - 1.96	13.7	12.6	5.43	0.40
Cobalt	40 / 40	100%	4.01 - 33.0	0.00093 - 1.28	0.22 - 4.27	9.87	7.44	5.76	0.58
Copper	40 / 40	100%	7.73 - 144	0.0012 - 1.54	0.22 - 5.13	58.3	53.9	37.8	0.65
Copper SEM	5 / 5	100%	2.90 - 72.8	0.10 - 0.40	0.10 - 0.40	23.9	13.5	28.7	1.20
Iron	40 / 40	100%	14200 - 83400	2.00 - 447	47.9 - 1440	28798	26900	12250	0.43
Lead	40 / 40	100%	3.46 - 40.3	0.0013 - 0.30	0.19 - 0.98	12.4	8.37	9.50	0.77
Lead SEM	5 / 5	100%	3.20 - 23.4	1.40 - 3.80	1.40 - 3.80	10.5	7.70	7.79	0.74
Magnesium	40 / 40	100%	1550 - 7490	8.71 - 97.0	27.8 - 2200	4486	4180	1165	0.26
Manganese	40 / 40	100%	256 - 6970	0.0017 - 8.94	0.19 - 28.8	963	545	1217	1.26
Mercury	21 / 40	53%	0.015 - 0.080	0.0093 - 0.029	0.021 - 0.098	0.022	0.016	0.020	0.91
Mercury SEM	0 / 5	0%	NA - NA	0.010 - 0.030	0.010 - 0.030	NA	NA	NA	NA
Molybdenum	40 / 40	100%	0.54 - 20.5	0.00075 - 2.65	0.22 - 8.55	3.88	2.85	3.64	0.94
Nickel	40 / 40	100%	5.20 - 18.1	0.0022 - 0.30	0.19 - 0.98	9.55	8.56	3.33	0.35
Nickel SEM	5 / 5	100%	0.70 - 3.60	0.30 - 0.80	0.30 - 0.80	1.78	1.20	1.18	0.66
Potassium	40 / 40	100%	330 - 1180	28.7 - 265	92.7 - 6700	563	549	176	0.31
Selenium	31 / 40	78%	0.17 - 2.76	0.014 - 1.28	0.46 - 4.27	0.81	0.63	0.67	0.83
Silver	22 / 40	55%	0.034 - 0.45	0.00055 - 0.27	0.093 - 0.86	0.11	0.084	0.10	0.90
Thallium	30 / 40	75%	0.032 - 0.45	0.0015 - 0.053	0.019 - 0.81	0.10	0.084	0.097	0.96
Tin	9 / 40	23%	0.44 - 1.66	0.0028 - 2.65	0.55 - 8.55	0.69	0.50	0.33	0.49
Vanadium	40 / 40	100%	20.5 - 143	0.0053 - 8.03	0.22 - 25.6	60.6	56.7	27.7	0.46
Zinc	40 / 40	100%	40.7 - 304	0.0099 - 3.09	0.55 - 9.98	107	86.4	63.3	0.59
Zinc SEM	5 / 5	100%	15.8 - 123	0.10 - 0.40	0.10 - 0.40	51.3	34.6	43.6	1.26

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	39 / 40	98%	4.15 - 665	2.20 - 156	2.20 - 497	155	84.7	183	1.17
Chloride	28 / 35	80%	0.53 - 15.3	0.26 - 4.20	0.83 - 12.0	2.49	1.83	2.84	1.14
Cyanide, Total	31 / 39	79%	0.031 - 2.10	0.025 - 0.39	0.051 - 0.39	0.26	0.091	0.42	1.59
Cyanide, WAD	5 / 5	100%	0.23 - 0.96	0.030 - 0.030	0.059 - 0.061	0.49	0.46	0.28	0.58
Fluoride	27 / 35	77%	0.24 - 9.63	0.12 - 0.76	0.80 - 2.45	1.43	0.46	2.28	1.59
Sodium	34 / 40	85%	86.9 - 407	28.7 - 530	92.7 - 4000	169	156	72.4	0.43
Sulfate	35 / 35	100%	1.27 - 197	0.26 - 3.80	0.83 - 11.0	36.4	19.1	48.5	1.33
Sulfur	5 / 5	100%	84.6 - 1230	2.90 - 3.50	38.8 - 47.1	513	189	524	1.02
Miscellaneous Parameters[c]									
Acid Volatile Sulfide	1 / 5	20%	22.3 - 22.3	0.70 - 0.70	1.70 - 1.70	4.74	0.35	9.82	2.07

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

d. Values reported for total organic carbon are expressed as percentages, rather than in mg/kg.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.2-6
Sediment—North Fork Koktuli River, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	27 / 27	100%	6100 - 20900	0.60 - 160	1.94 - 540	10556	10000	3402	0.32
Antimony	25 / 27	93%	0.088 - 0.26	0.0021 - 0.059	0.096 - 0.36	0.15	0.13	0.044	0.30
Arsenic	27 / 27	100%	4.86 - 15.4	0.0081 - 0.59	0.19 - 1.89	8.76	8.77	1.91	0.22
Barium	27 / 27	100%	38.2 - 136	0.00061 - 0.18	0.19 - 0.57	65.7	60.0	23.6	0.36
Beryllium	27 / 27	100%	0.15 - 0.67	0.017 - 0.059	0.096 - 0.36	0.30	0.28	0.10	0.34
Bismuth	6 / 27	22%	0.067 - 0.21	0.059 - 9.10	0.19 - 180	0.52	0.044	1.18	2.27
Boron	11 / 26	42%	1.39 - 5.31	0.41 - 36.0	1.31 - 450	4.17	2.18	4.13	0.99
Cadmium	27 / 27	100%	0.068 - 0.44	0.00048 - 0.12	0.19 - 0.38	0.21	0.18	0.11	0.54
Cadmium SEM	1 / 3	33%	0.13 - 0.13	0.060 - 0.10	0.060 - 0.10	0.063	0.030	0.058	0.91
Calcium	27 / 27	100%	1780 - 5710	5.20 - 17.7	28.7 - 980	2974	2800	889	0.30
Chromium	27 / 27	100%	7.64 - 31.8	0.0079 - 0.23	0.19 - 0.76	15.4	15.0	4.49	0.29
Cobalt	27 / 27	100%	4.25 - 12.1	0.00080 - 0.28	0.19 - 0.94	7.37	6.76	2.26	0.31
Copper	27 / 27	100%	5.57 - 54.6	0.0010 - 0.34	0.19 - 1.13	18.9	12.3	14.1	0.74
Copper SEM	3 / 3	100%	1.60 - 3.80	0.10 - 0.20	0.10 - 0.20	2.37	1.70	1.24	0.52
Iron	27 / 27	100%	13700 - 44500	1.70 - 81.3	47.9 - 262	22781	22000	5993	0.26
Lead	27 / 27	100%	2.83 - 10.1	0.0011 - 0.12	0.19 - 0.38	4.71	4.53	1.58	0.33
Lead SEM	3 / 3	100%	1.40 - 2.20	1.20 - 2.00	1.20 - 2.00	1.87	2.00	0.42	0.22
Magnesium	27 / 27	100%	1890 - 5990	9.00 - 43.0	28.7 - 980	4078	4160	885	0.22
Manganese	27 / 27	100%	232 - 1320	0.0015 - 0.92	0.19 - 2.97	685	711	248	0.36
Mercury	10 / 27	37%	0.016 - 0.053	0.0080 - 0.022	0.018 - 0.073	0.016	0.0092	0.013	0.84
Mercury SEM	0 / 3	0%	NA - NA	0.010 - 0.020	0.010 - 0.020	NA	NA	NA	NA
Molybdenum	22 / 27	81%	0.39 - 1.80	0.00065 - 0.59	0.19 - 1.89	0.69	0.67	0.38	0.55
Nickel	27 / 27	100%	5.50 - 15.6	0.0019 - 0.12	0.19 - 0.38	9.16	8.68	2.55	0.28
Nickel SEM	3 / 3	100%	0.90 - 2.10	0.20 - 0.40	0.20 - 0.40	1.70	2.10	0.69	0.41
Potassium	27 / 27	100%	310 - 1050	29.7 - 89.0	95.8 - 2900	627	587	178	0.28
Selenium	11 / 27	41%	0.16 - 1.12	0.012 - 0.28	0.47 - 0.94	0.36	0.25	0.32	0.89
Silver	8 / 27	30%	0.035 - 0.12	0.00047 - 0.059	0.096 - 0.36	0.055	0.035	0.046	0.83
Thallium	20 / 27	74%	0.027 - 0.23	0.0013 - 0.012	0.019 - 0.36	0.077	0.061	0.059	0.77
Tin	4 / 27	15%	0.46 - 1.11	0.0025 - 0.59	0.47 - 1.89	0.58	0.50	0.22	0.38
Vanadium	27 / 27	100%	28.0 - 92.2	0.0046 - 1.77	0.19 - 5.66	48.8	42.4	16.8	0.34
Zinc	27 / 27	100%	32.8 - 74.7	0.0086 - 3.10	0.47 - 10.0	50.7	51.0	11.7	0.23
Zinc SEM	3 / 3	100%	6.10 - 21.3	0.10 - 0.20	0.10 - 0.20	13.6	13.4	7.60	0.57

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	25 / 27	93%	3.90 - 497	2.20 - 29.8	2.20 - 94.6	111	43.3	154	1.39
Chloride	15 / 23	65%	0.33 - 2.17	0.27 - 2.60	0.88 - 7.90	1.15	1.00	0.91	0.79
Cyanide, Total	14 / 25	56%	0.031 - 1.50	0.026 - 0.23	0.052 - 0.23	0.17	0.045	0.35	2.01
Cyanide, WAD	2 / 2	100%	0.65 - 0.83	0.030 - 0.030	0.059 - 0.060	0.74	0.74	0.13	0.18
Fluoride	11 / 22	50%	0.14 - 8.56	0.11 - 0.59	0.71 - 1.90	0.80	0.30	1.80	2.26
Sodium	24 / 27	89%	133 - 397	29.7 - 230	95.8 - 1800	184	180	68.8	0.37
Sulfate	22 / 23	96%	0.65 - 74.2	0.27 - 2.40	0.88 - 7.20	12.5	3.30	18.8	1.51
Sulfur	3 / 3	100%	119 - 320	3.00 - 3.60	39.6 - 47.8	198	155	107	0.54
Miscellaneous Parameters[c]									
Acid Volatile Sulfide	0 / 3	0%	NA - NA	0.70 - 0.70	1.70 - 1.70	NA	NA	NA	NA

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

d. Values reported for total organic carbon are expressed as percentages, rather than in mg/kg.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.2-7
Sediment—Upper Talarik Creek, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	42 / 42	100%	6710 - 24200	0.60 - 130	1.92 - 440	11701	10850	3846	0.33
Antimony	40 / 42	95%	0.10 - 0.39	0.0024 - 0.16	0.095 - 0.50	0.18	0.16	0.070	0.38
Arsenic	42 / 42	100%	5.29 - 38.9	0.0095 - 0.64	0.22 - 2.08	13.6	13.6	6.69	0.49
Barium	42 / 42	100%	39.7 - 239	0.00072 - 0.20	0.22 - 0.62	95.0	88.2	47.2	0.50
Beryllium	42 / 42	100%	0.18 - 0.97	0.020 - 0.064	0.095 - 0.29	0.40	0.36	0.17	0.44
Bismuth	6 / 42	14%	0.063 - 0.16	0.059 - 7.40	0.19 - 150	0.43	0.040	1.07	2.47
Boron	20 / 42	48%	0.59 - 8.47	0.40 - 29.0	1.3 - 360	4.07	2.17	3.74	0.92
Cadmium	41 / 42	98%	0.068 - 0.64	0.00056 - 0.13	0.19 - 0.42	0.20	0.16	0.14	0.69
Cadmium SEM	4 / 6	67%	0.080 - 0.14	0.060 - 0.11	0.060 - 0.11	0.087	0.085	0.035	0.40
Calcium	42 / 42	100%	2120 - 10400	6.10 - 46.9	28.4 - 800	4135	3785	1757	0.42
Chromium	42 / 42	100%	8.40 - 46.5	0.0093 - 0.25	0.22 - 0.83	17.7	16.6	8.20	0.46
Cobalt	42 / 42	100%	3.26 - 49.1	0.00094 - 0.31	0.22 - 1.04	11.4	8.47	9.11	0.80
Copper	42 / 42	100%	5.62 - 84.0	0.0012 - 2.25	0.22 - 7.51	13.0	8.24	14.3	1.10
Copper SEM	6 / 6	100%	0.60 - 2.90	0.10 - 0.20	0.10 - 0.20	1.80	1.70	0.90	0.50
Iron	42 / 42	100%	9810 - 48600	2.00 - 92.1	48.0 - 297	25660	24000	9072	0.35
Lead	42 / 42	100%	3.40 - 11.1	0.0013 - 0.13	0.19 - 0.42	5.15	4.50	1.91	0.37
Lead SEM	6 / 6	100%	1.60 - 4.60	1.20 - 2.30	1.20 - 2.30	3.22	2.95	1.12	0.35
Magnesium	42 / 42	100%	2080 - 7970	8.91 - 46.9	28.4 - 800	4473	4195	1201	0.27
Manganese	42 / 42	100%	267 - 3640	0.0018 - 0.31	0.19 - 1.00	925	702	764	0.83
Mercury	35 / 42	83%	0.011 - 0.18	0.0073 - 0.026	0.016 - 0.085	0.044	0.025	0.045	1.01
Mercury SEM	0 / 6	0%	NA - NA	0.010 - 0.020	0.010 - 0.020	NA	NA	NA	NA
Molybdenum	40 / 42	95%	0.42 - 6.64	0.00076 - 0.64	0.22 - 2.08	0.90	0.64	0.98	1.09
Nickel	42 / 42	100%	4.68 - 46.9	0.0022 - 0.13	0.19 - 0.42	12.3	10.7	7.88	0.64
Nickel SEM	6 / 6	100%	0.70 - 4.60	0.20 - 0.50	0.20 - 0.50	2.40	2.00	1.63	0.68
Potassium	42 / 42	100%	240 - 1120	29.4 - 73.0	94.8 - 2400	557	539	164	0.29
Selenium	23 / 42	55%	0.18 - 2.36	0.014 - 0.31	0.47 - 1.04	0.43	0.28	0.46	1.06
Silver	13 / 42	31%	0.036 - 0.13	0.00055 - 0.064	0.095 - 0.29	0.052	0.047	0.041	0.78
Thallium	29 / 42	69%	0.019 - 0.24	0.0015 - 0.030	0.019 - 0.29	0.060	0.048	0.051	0.85
Tin	12 / 42	29%	0.51 - 46.2	0.0029 - 0.64	0.55 - 2.08	1.75	0.51	7.03	4.01
Vanadium	42 / 42	100%	29.5 - 100	0.0054 - 1.95	0.22 - 6.23	46.5	43.6	15.6	0.34
Zinc	42 / 42	100%	30.1 - 138	0.010 - 3.09	0.55 - 9.97	60.3	56.2	24.4	0.40
Zinc SEM	6 / 6	100%	8.60 - 28.7	0.10 - 0.20	0.10 - 0.20	17.8	16.6	6.90	0.42

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	40 / 41	98%	4.00 - 665	2.20 - 38.5	2.20 - 122	90.2	45.0	136	1.51
Chloride	34 / 38	89%	0.42 - 4.01	0.25 - 2.10	0.81 - 6.40	1.29	1.16	0.89	0.69
Cyanide, Total	36 / 42	86%	0.032 - 0.97	0.026 - 0.18	0.052 - 0.18	0.16	0.076	0.21	1.26
Cyanide, WAD	5 / 5	100%	0.13 - 0.93	0.029 - 0.030	0.059 - 0.060	0.51	0.40	0.35	0.69
Fluoride	25 / 38	66%	0.14 - 3.72	0.11 - 0.64	0.71 - 2.08	0.67	0.51	0.78	1.16
Sodium	37 / 42	88%	144 - 630	29.4 - 190	94.8 - 1500	270	260	131	0.49
Sulfate	36 / 38	95%	0.93 - 148	0.25 - 1.90	0.81 - 5.80	18.9	4.97	31.8	1.68
Sulfur	6 / 6	100%	149 - 262	3.10 - 3.60	40.8 - 48.5	182	158	44.6	0.25
Miscellaneous Parameters[c]									
Acid Volatile Sulfide	0 / 6	0%	NA - NA	0.70 - 0.70	1.70 - 1.70	NA	NA	NA	NA

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

d. Values reported for total organic carbon are expressed as percentages, rather than in mg/kg.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.2-8
Sediment—Ponds, Data Summary and Descriptive Statistics, Mine Study Area, 2005-2007

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	55 / 55	100%	3500 - 21000	1.87 - 120	6.04 - 430	9934	9070	4191	0.42
Antimony	34 / 55	62%	0.030 - 2.30	0.0024 - 0.46	0.11 - 2.90	0.30	0.18	0.39	1.31
Arsenic	48 / 55	87%	2.00 - 270	0.0095 - 4.56	0.22 - 14.7	16.0	8.40	37.7	2.35
Barium	55 / 55	100%	16.0 - 193	0.00072 - 1.63	0.22 - 5.20	74.4	71.6	43.5	0.58
Beryllium	47 / 55	85%	0.084 - 0.61	0.020 - 0.46	0.11 - 2.90	0.29	0.29	0.14	0.46
Bismuth	9 / 55	16%	0.081 - 3.10	0.069 - 7.30	0.22 - 140	2.82	0.21	11.8	4.19
Boron	22 / 55	40%	0.95 - 11.5	0.34 - 30.2	1.11 - 360	11.4	2.67	33.4	2.92
Cadmium	18 / 55	33%	0.10 - 0.61	0.00056 - 0.91	0.22 - 2.94	0.26	0.18	0.19	0.74
Cadmium SEM	8 / 20	40%	0.10 - 0.60	0.10 - 0.90	0.10 - 0.90	0.23	0.20	0.17	0.73
Calcium	55 / 55	100%	583 - 12000	0.61 - 855	33.3 - 2730	4096	3680	2351	0.57
Chromium	55 / 55	100%	0.43 - 29.3	0.0092 - 1.77	0.22 - 5.88	15.0	14.7	6.73	0.45
Cobalt	54 / 55	98%	0.51 - 20.0	0.00094 - 2.21	0.22 - 7.35	6.01	5.10	4.13	0.69
Copper	55 / 55	100%	1.30 - 200	0.0012 - 3.12	0.22 - 10.4	26.0	12.0	37.8	1.46
Copper SEM	20 / 20	100%	1.90 - 115	0.20 - 1.70	0.20 - 1.70	21.6	6.75	29.8	1.38
Iron	55 / 55	100%	3000 - 81000	0.53 - 697	11.0 - 2250	16607	14100	12839	0.77
Lead	54 / 55	98%	1.70 - 11.0	0.0013 - 0.91	0.22 - 2.94	5.58	5.80	2.26	0.40
Lead SEM	10 / 20	50%	3.30 - 8.00	2.00 - 17.0	2.00 - 17.0	4.97	4.60	1.66	0.33
Magnesium	54 / 55	98%	580 - 6200	3.90 - 163	33.3 - 790	2637	2660	1150	0.44
Manganese	55 / 55	100%	65.0 - 2280	0.0018 - 2.74	0.22 - 8.83	338	260	353	1.04
Mercury	23 / 55	42%	0.012 - 0.42	0.0098 - 0.18	0.022 - 0.59	0.059	0.029	0.084	1.43
Mercury SEM	1 / 20	5%	0.020 - 0.020	0.020 - 0.14	0.020 - 0.14	0.025	0.020	0.017	0.68
Molybdenum	32 / 55	58%	0.28 - 22.0	0.00076 - 4.56	0.22 - 14.7	2.50	0.92	4.24	1.70
Nickel	55 / 55	100%	0.64 - 18.0	0.0022 - 0.91	0.22 - 2.94	7.65	7.30	3.29	0.43
Nickel SEM	19 / 20	95%	2.00 - 8.70	0.40 - 3.50	0.40 - 3.50	5.29	5.80	2.18	0.41
Potassium	54 / 55	98%	75.0 - 1000	5.50 - 537	111 - 2400	512	510	195	0.38
Selenium	47 / 55	85%	0.018 - 13.1	0.014 - 2.21	0.55 - 7.35	2.25	1.22	2.60	1.15
Silver	6 / 55	11%	0.041 - 0.35	0.00055 - 0.46	0.11 - 2.90	0.20	0.11	0.28	1.38
Thallium	29 / 55	53%	0.023 - 0.45	0.0015 - 0.091	0.022 - 2.90	0.19	0.12	0.26	1.43
Tin	19 / 55	35%	0.16 - 7.02	0.0029 - 5.37	0.55 - 17.3	1.77	0.73	1.85	1.04
Vanadium	55 / 55	100%	2.20 - 72.0	0.0054 - 16.3	0.22 - 52.0	32.2	28.5	14.9	0.46
Zinc	54 / 55	98%	9.90 - 93.0	0.010 - 5.37	0.55 - 17.3	48.3	44.5	21.0	0.43
Zinc SEM	20 / 20	100%	14.5 - 86.7	0.20 - 1.70	0.20 - 1.70	42.9	39.7	18.2	0.46

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	54 / 55	98%	7.34 - 1600	2.60 - 53.9	2.60 - 171	367	230	355	0.97
Chloride	36 / 55	65%	0.58 - 223	0.35 - 10.0	1.12 - 31.0	8.46	3.15	29.9	3.53
Cyanide	15 / 55	27%	0.030 - 0.12	0.027 - 13.0	0.054 - 13.0	0.72	0.069	1.36	1.88
Fluoride	29 / 55	53%	0.11 - 5.72	0.089 - 4.60	0.59 - 14.8	1.16	0.56	1.47	1.27
Sodium	41 / 55	75%	18.0 - 550	14.0 - 537	110 - 1730	179	182	125	0.70
Sulfate	54 / 55	98%	0.80 - 700	0.35 - 9.40	1.12 - 28.0	45.6	8.97	107	2.35
Sulfur	20 / 20	100%	100 - 10000	2.80 - 11.8	37.6 - 157	1910	828	2584	1.35
Miscellaneous Parameters[c]									
Acid Volatile Sulfide	8 / 20	40%	2.10 - 1010	0.40 - 6.00	1.70 - 29.0	76.9	0.35	230	NA

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

d. Values reported for total organic carbon are expressed as percentages, rather than in mg/kg.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.2-9
Sediment—Seeps, Data Summary and Descriptive Statistics, Mine Study Area, 2005

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	12 / 12	100%	4280 - 18800	8.20 - 61.3	26.4 - 198	9934	8170	4644	0.47
Antimony	12 / 12	100%	0.15 - 1.04	0.041 - 0.31	0.13 - 0.99	0.33	0.19	0.32	0.96
Arsenic	12 / 12	100%	8.64 - 130	0.41 - 3.07	1.32 - 9.89	29.5	17.4	34.6	1.17
Barium	12 / 12	100%	12.3 - 73.0	0.12 - 0.93	0.40 - 2.97	44.7	49.3	18.6	0.42
Beryllium	12 / 12	100%	0.16 - 0.89	0.041 - 0.31	0.13 - 0.99	0.40	0.31	0.23	0.57
Bismuth	4 / 12	33%	0.095 - 0.31	0.082 - 0.61	0.26 - 1.98	0.11	0.057	0.099	0.93
Boron	5 / 12	42%	2.08 - 9.57	0.44 - 6.69	1.42 - 21.6	2.99	2.20	2.13	0.71
Cadmium	10 / 12	83%	0.14 - 0.60	0.082 - 0.61	0.26 - 1.98	0.25	0.22	0.14	0.57
Calcium	12 / 12	100%	1480 - 23400	12.4 - 129	39.7 - 410	5176	3225	6010	1.16
Chromium	12 / 12	100%	5.69 - 105	0.16 - 1.19	0.53 - 3.96	21.3	14.3	26.8	1.26
Cobalt	12 / 12	100%	2.47 - 15.4	0.20 - 1.48	0.66 - 4.95	5.34	4.10	3.61	0.68
Copper	12 / 12	100%	5.67 - 90.5	0.24 - 1.78	0.79 - 5.93	17.0	8.95	23.5	1.38
Iron	12 / 12	100%	9320 - 30200	30.7 - 66.9	98.9 - 216	17752	15350	6927	0.39
Lead	12 / 12	100%	4.79 - 37.8	0.082 - 0.61	0.26 - 1.98	8.83	6.05	9.21	1.04
Magnesium	12 / 12	100%	2130 - 6800	12.4 - 93.0	39.7 - 297	3488	3310	1355	0.39
Manganese	12 / 12	100%	162 - 1100	0.082 - 0.85	0.26 - 2.74	369	301	253	0.69
Mercury	5 / 12	42%	0.032 - 0.17	0.016 - 0.12	0.055 - 0.40	0.047	0.021	0.052	1.10
Molybdenum	6 / 12	50%	0.58 - 6.26	0.41 - 3.07	1.32 - 9.89	1.53	0.64	1.88	1.23
Nickel	12 / 12	100%	2.97 - 11.1	0.082 - 0.61	0.26 - 1.98	6.17	5.68	2.34	0.38
Potassium	12 / 12	100%	378 - 1640	41.0 - 307	132 - 989	610	517	343	0.56
Selenium	5 / 12	42%	0.93 - 9.92	0.20 - 1.48	0.66 - 4.95	1.45	0.38	2.73	1.88
Silver	3 / 12	25%	0.061 - 2.54	0.041 - 0.31	0.13 - 0.99	0.25	0.023	0.72	2.84
Thallium	11 / 12	92%	0.027 - 0.28	0.0082 - 0.061	0.026 - 0.20	0.085	0.043	0.089	1.05
Tin	0 / 12	0%	NA - NA	0.41 - 3.07	1.32 - 9.89	NA	NA	NA	NA
Vanadium	12 / 12	100%	29.7 - 129	1.24 - 9.30	3.97 - 29.7	50.1	42.8	26.3	0.52
Zinc	12 / 12	100%	24.7 - 313	0.41 - 3.07	1.32 - 9.89	60.8	40.6	79.9	1.31

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	12 / 12	100%	18.1 - 946	4.32 - 29.7	13.7 - 94.1	130	41.9	262	2.02
Chloride	12 / 12	100%	0.76 - 14.8	0.42 - 3.07	1.35 - 9.91	2.88	1.52	3.85	1.34
Cyanide	7 / 12	58%	0.031 - 0.12	0.027 - 0.031	0.054 - 0.062	0.039	0.032	0.032	0.83
Fluoride	6 / 12	50%	0.48 - 1.98	0.42 - 3.07	1.35 - 9.91	1.15	0.75	1.28	1.11
Sodium	12 / 12	100%	76.9 - 366	41.0 - 307	132 - 989	196	199	82.8	0.42
Sulfate	11 / 12	92%	0.50 - 42.7	0.42 - 3.07	1.35 - 9.91	7.80	3.99	12.2	1.57

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

d. Values reported for total organic carbon are expressed as percentages, rather than in mg/kg.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.2-10

Sediment—Kaskanak Creek, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2005

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]									
Aluminum	5 / 5	100%	4270 - 8570	0.62 - 30.3	1.99 - 97.6	6042	5700	1683	0.28
Antimony	4 / 5	80%	0.063 - 0.15	0.030 - 0.15	0.097 - 0.49	0.099	0.092	0.035	0.36
Arsenic	5 / 5	100%	8.15 - 53.3	0.30 - 0.57	0.98 - 1.79	24.1	17.9	17.7	0.73
Barium	5 / 5	100%	26.7 - 53.1	0.092 - 0.46	0.29 - 1.46	38.1	36.9	10.1	0.26
Beryllium	4 / 5	80%	0.10 - 0.16	0.030 - 0.15	0.097 - 0.49	0.12	0.11	0.033	0.28
Bismuth	0 / 5	0%	NA - NA	0.060 - 0.085	0.20 - 0.27	NA	NA	NA	NA
Boron	1 / 5	20%	3.27 - 3.27	3.02 - 4.22	9.74 - 13.6	1.98	1.52	0.76	0.39
Cadmium	1 / 5	20%	0.17 - 0.17	0.060 - 0.085	0.20 - 0.27	0.058	0.030	0.062	1.07
Calcium	5 / 5	100%	1920 - 3510	9.16 - 45.9	29.2 - 146	2554	2380	613	0.24
Chromium	5 / 5	100%	6.87 - 13.5	0.12 - 0.16	0.39 - 0.55	9.00	7.31	2.86	0.32
Cobalt	5 / 5	100%	2.54 - 3.60	0.15 - 0.20	0.49 - 0.68	3.03	3.10	0.47	0.15
Copper	5 / 5	100%	3.66 - 5.50	0.18 - 0.25	0.59 - 0.82	4.33	3.93	0.78	0.18
Iron	5 / 5	100%	8790 - 26300	15.1 - 151	48.7 - 488	14562	12400	7097	0.49
Lead	5 / 5	100%	2.38 - 3.75	0.060 - 0.085	0.20 - 0.27	2.89	2.71	0.54	0.19
Magnesium	5 / 5	100%	1420 - 2260	9.16 - 45.9	29.2 - 146	1966	2220	395	0.20
Manganese	5 / 5	100%	154 - 323	0.061 - 0.30	0.20 - 0.98	202	167	70.7	0.35
Mercury	2 / 5	40%	0.019 - 0.034	0.012 - 0.016	0.039 - 0.054	0.015	0.0081	0.012	0.83
Molybdenum	4 / 5	80%	0.34 - 1.10	0.30 - 0.42	0.97 - 1.36	0.59	0.53	0.36	0.60
Nickel	5 / 5	100%	3.26 - 3.93	0.060 - 0.085	0.20 - 0.27	3.63	3.63	0.24	0.066
Potassium	5 / 5	100%	215 - 519	30.2 - 151	97.4 - 488	351	330	109	0.31
Selenium	3 / 5	60%	0.16 - 0.85	0.15 - 0.20	0.49 - 0.68	0.41	0.34	0.32	0.80
Silver	1 / 5	20%	0.038 - 0.038	0.030 - 0.042	0.097 - 0.14	0.028	0.021	0.015	0.55
Thallium	3 / 5	60%	0.030 - 0.042	0.0060 - 0.030	0.020 - 0.098	0.026	0.030	0.017	0.64
Tin	0 / 5	0%	NA - NA	0.30 - 1.51	0.97 - 4.88	NA	NA	NA	NA
Vanadium	5 / 5	100%	22.3 - 53.8	0.92 - 1.28	2.92 - 4.09	32.2	28.0	12.6	0.39
Zinc	5 / 5	100%	22.3 - 28.7	0.30 - 3.03	0.97 - 9.76	25.1	24.2	3.03	0.12

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	4 / 4	100%	38.4 - 135	3.09 - 8.68	9.82 - 27.6	65.7	44.7	46.3	0.71
Chloride	4 / 4	100%	1.12 - 7.44	0.30 - 2.64	0.98 - 8.50	3.23	2.18	2.96	0.92
Cyanide, Total	4 / 5	80%	0.078 - 0.87	0.027 - 0.030	0.054 - 0.060	0.25	0.082	0.35	1.41
Cyanide, WAD	1 / 1	100%	0.93 - 0.93	0.030 - 0.030	0.060 - 0.060	NA	NA	NA	NA
Fluoride	3 / 4	75%	0.38 - 30.2	0.26 - 0.42	0.85 - 1.37	7.87	0.46	14.9	1.89
Sodium	4 / 5	80%	141 - 359	30.2 - 151	97.4 - 488	175	147	107	0.61
Sulfate	4 / 4	100%	4.83 - 195	0.26 - 0.42	0.85 - 1.37	83.5	67.1	94.6	1.13

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

d. Values reported for total organic carbon are expressed as percentages, rather than in mg/kg.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.2-11

Mann-Whitney U-Test Results for Sediment, Comparisons between Major River Drainages, Mine Study Area

Trace Elements [a]	Rank Sum SK	Rank Sum UT	U	Z Adjusted	p-level	Z Adjusted	p-level	Valid N SK	Valid N UT	2*1 Sided Exact p
SOUTH FORK KOKTULI AND UPPER TALARIK										
Arsenic	1707	1696	793	0.44	0.66	0.44	0.66	40	42	0.67
Barium	1462	1942	642	-1.84	0.066	-1.84	0.066	40	42	0.065
Cadmium	2078	1325	422	3.88	0.00011	3.88	**0.00011**	40	42	7.2E-05
Copper	2370	1033	130	6.59	4.5E-11	6.59	**4.5E-11**	40	42	2.2E-13
Lead	2203	1201	298	5.03	4.8E-07	5.03	**4.8E-07**	40	42	1.2E-07
Manganese	1623	1781	803	-0.35	0.73	-0.35	0.73	40	42	0.73
Mercury	1388	2016	568	-2.53	0.011	-2.53	**0.011**	40	42	0.011
Nickel	1478	1926	658	-1.69	0.090	-1.69	0.090	40	42	0.091
Silver	1908	1496	593	2.30	0.022	2.30	**0.022**	40	42	0.021
Vanadium	1856	1547	644	1.82	0.069	1.82	0.069	40	42	0.070
Zinc	2127	1277	374	4.33	1.5E-05	4.33	**1.5E-05**	40	42	7.7E-06
NORTH FORK KOKTULI AND UPPER TALARIK										
Arsenic	763	1794	328	-3.29	0.00099	-3.29	**0.00099**	29	42	0.00079
Barium	774	1783	339	-3.16	0.0016	-3.16	**0.0016**	29	42	0.0013
Cadmium	1069	1487	584	0.29	0.77	0.29	0.77	29	42	0.78
Copper	1264	1292	389	2.57	0.010	2.57	**0.010**	29	42	0.0096
Lead	943	1614	508	-1.19	0.24	-1.19	0.24	29	42	0.24
Manganese	978	1578	543	-0.77	0.44	-0.77	0.44	29	42	0.45
Mercury	725	1832	290	-3.74	0.00019	-3.74	**0.00018**	29	42	0.00012
Nickel	873	1684	438	-2.01	0.045	-2.01	**0.045**	29	42	0.044
Silver	1016	1540	581	-0.33	0.74	-0.33	0.74	29	42	0.75
Vanadium	1042	1515	607	-0.029	0.98	-0.029	0.98	29	42	0.98
Zinc	899	1657	464	-1.70	0.090	-1.70	0.090	29	42	0.091

Trace Elements [a]	Rank Sum SK	Rank Sum UT	U	Z Adjusted	p-level	Z Adjusted	p-level	Valid N SK	Valid N UT	2*1 Sided Exact p
NORTH FORK KOKTULI AND SOUTH FORK KOKTULI										
Arsenic	690	1726	255	-3.96	7.6E-05	-3.96	**7.6E-05**	29	40	4.3E-05
Barium	911	1504	476	-1.26	0.21	-1.26	0.21	29	40	0.21
Cadmium	766	1650	331	-3.03	0.0024	-3.03	**0.0024**	29	40	0.0021
Copper	606	1809	171	-4.97	6.6E-07	-4.97	**6.6E-07**	29	40	1.3E-07
Lead	599	1816	164	-5.06	4.3E-07	-5.06	**4.3E-07**	29	40	7.1E-08
Manganese	1000	1416	565	-0.19	0.85	-0.19	0.85	29	40	0.85
Mercury	911	1505	476	-1.27	0.20	-1.28	0.20	29	40	0.21
Nickel	974	1441	539	-0.50	0.62	-0.50	0.62	29	40	0.62
Silver	837	1579	402	-2.17	0.030	-2.17	**0.030**	29	40	0.029
Vanadium	879	1537	444	-1.66	0.097	-1.66	0.097	29	40	0.097
Zinc	578	1838	143	-5.32	1.0E-07	-5.32	**1.0E-07**	29	40	9.8E-09

Notes:

a. Trace elements with significant differences are shown in bold font.

N = Sample size.

NK = North Fork Koktuli River.

p = Probability.

SK = South Fork Koktuli River.

U = Mann-Whitney test result.

UT = Upper Talarik River.

FIGURES

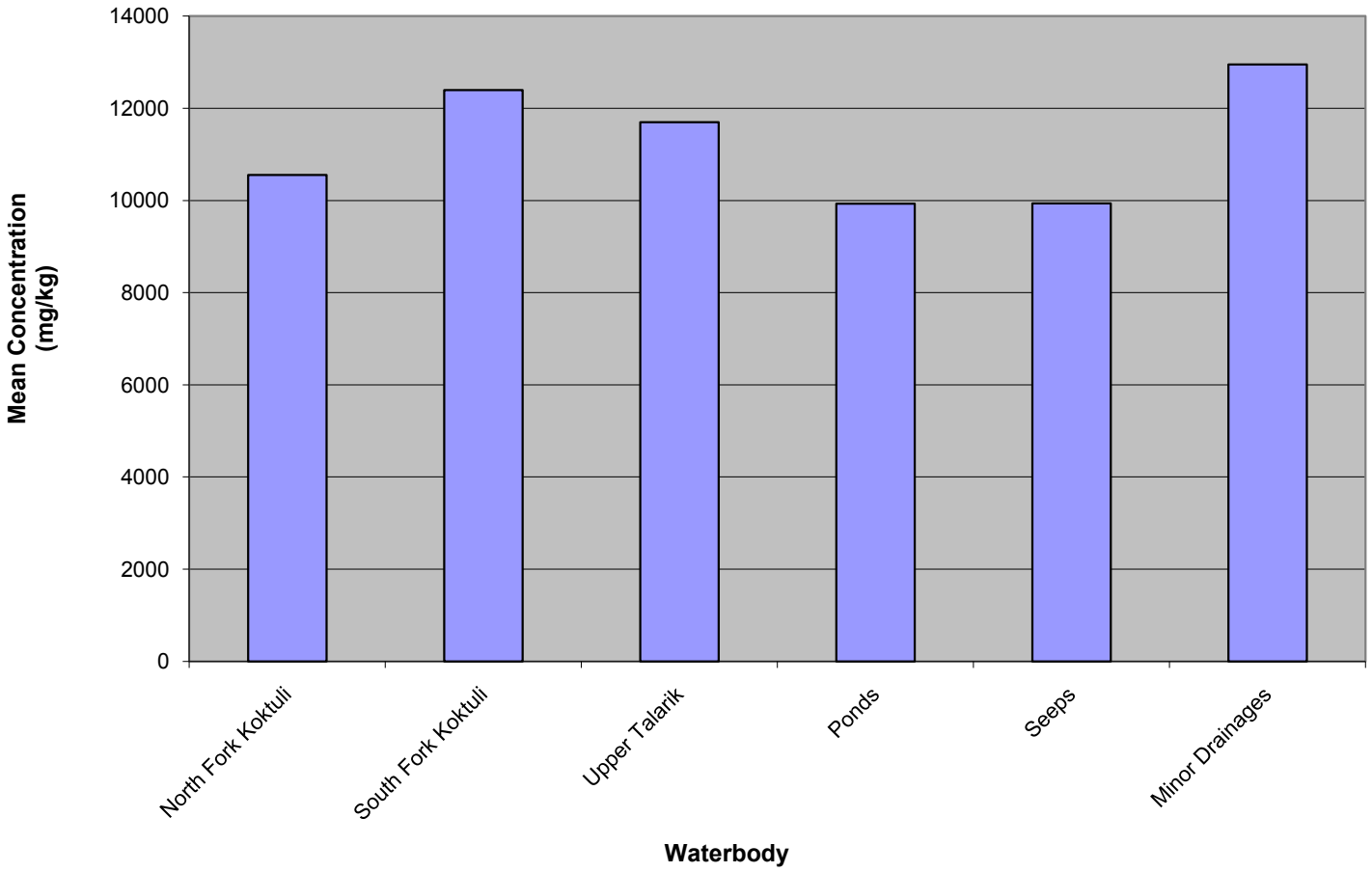


FIGURE 10.2-1
Mean Aluminum Concentrations in Sediments, Mine Study Area, 2004-2007

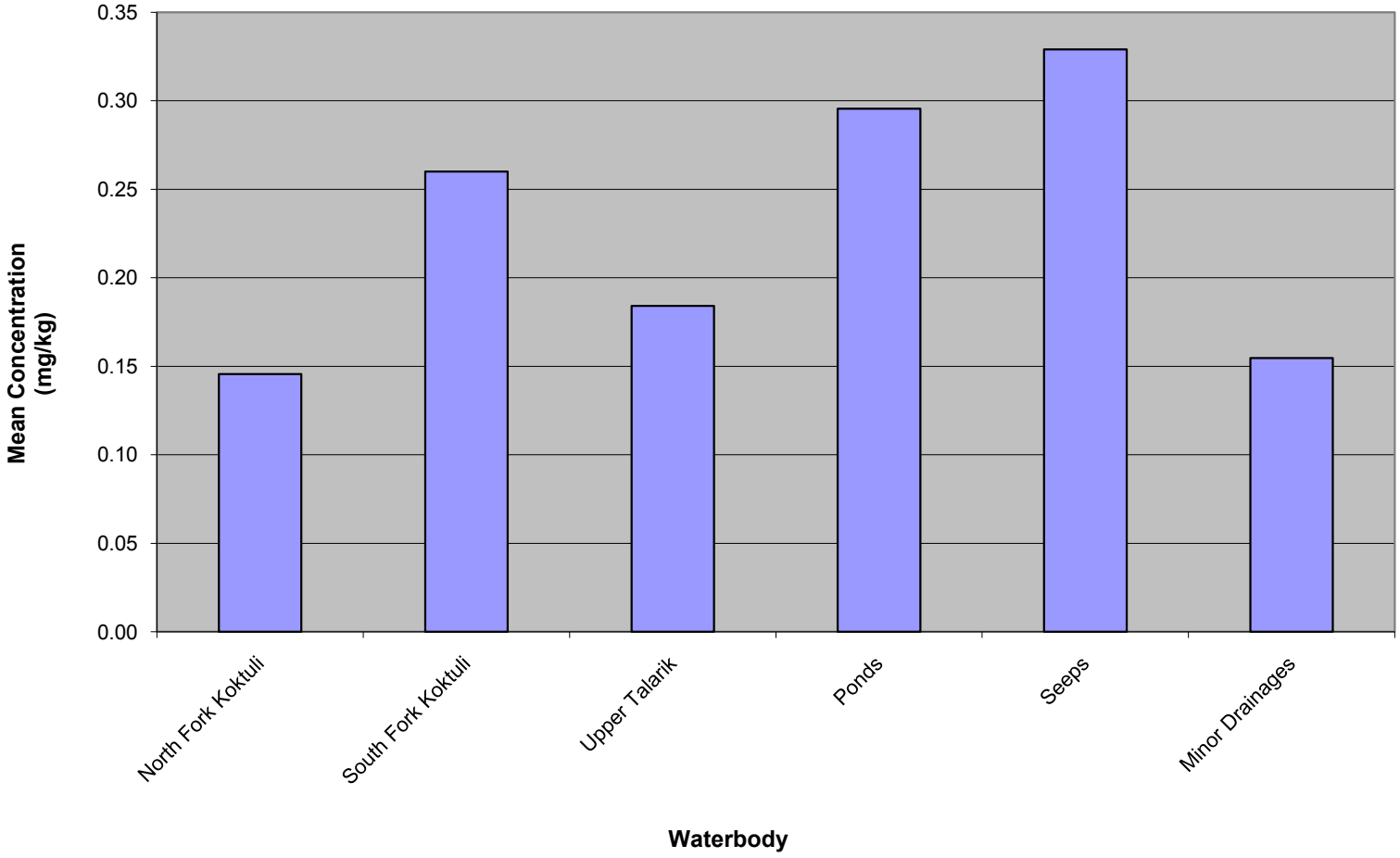


FIGURE 10.2-2
Mean Antimony Concentrations in Sediments, Mine Study Area, 2004-2007

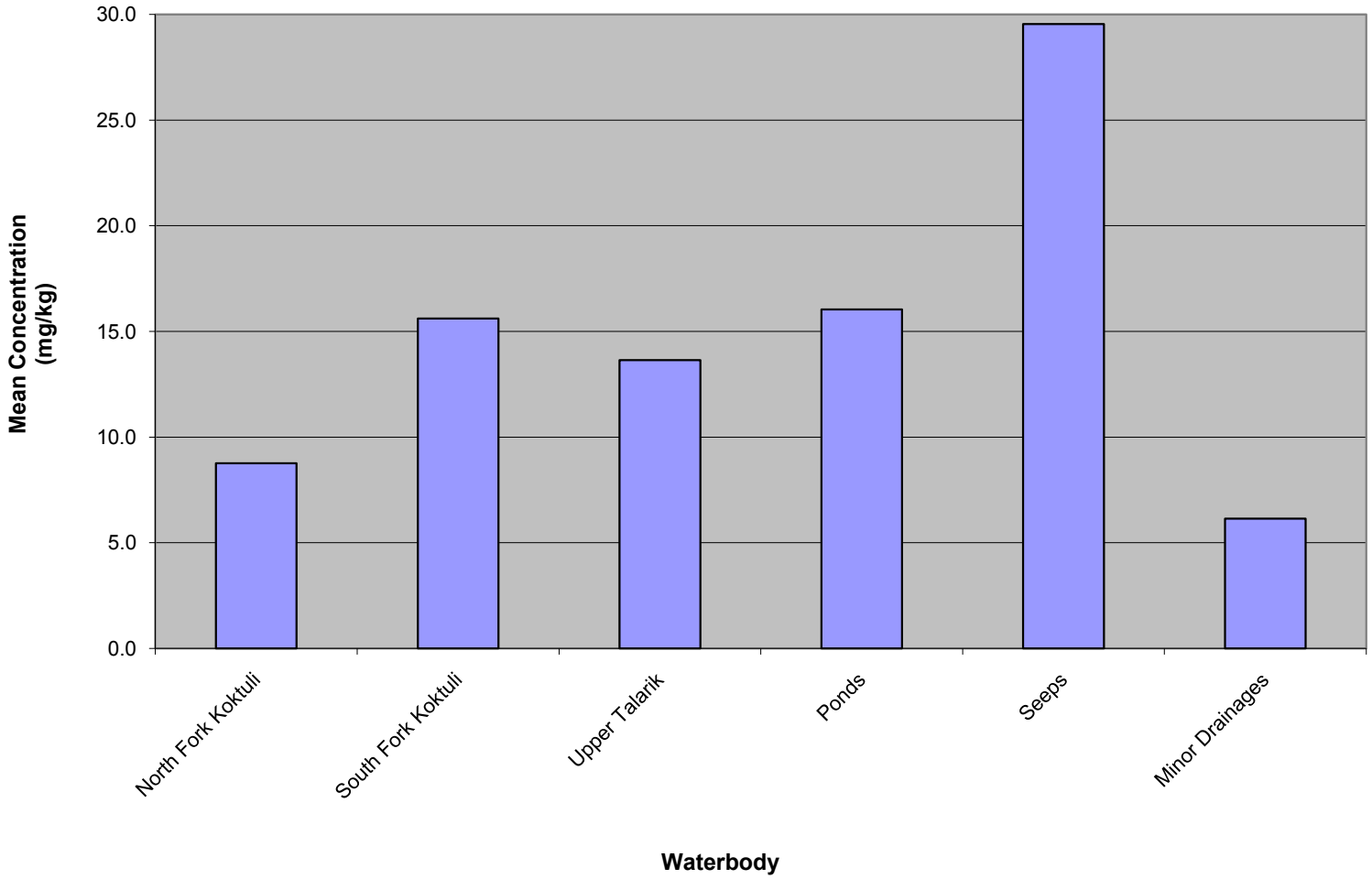


FIGURE 10.2-3
Mean Arsenic Concentrations in Sediments, Mine Study Area, 2004-2007

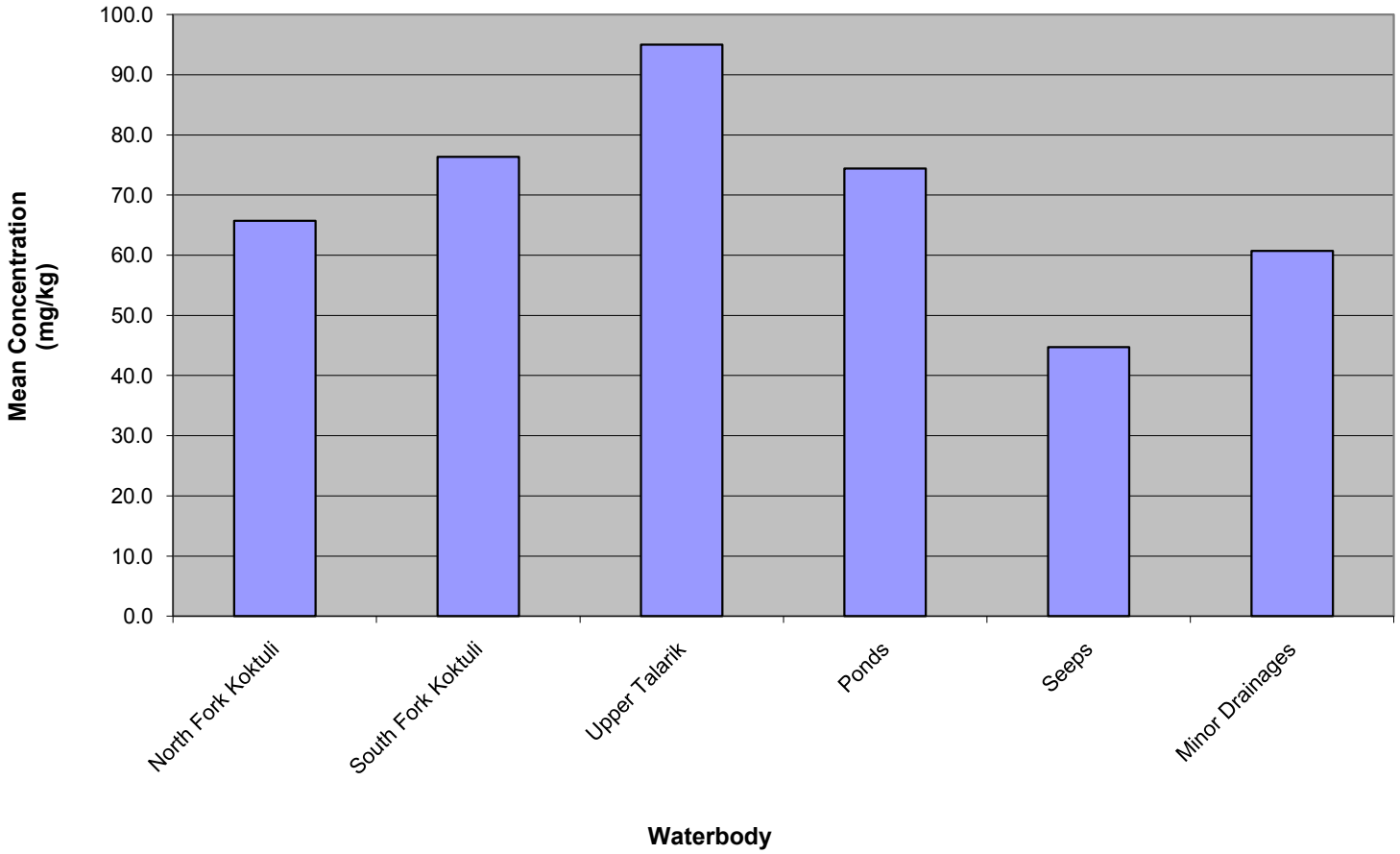


FIGURE 10.2-4
Mean Barium Concentrations in Sediments, Mine Study Area, 2004-2007

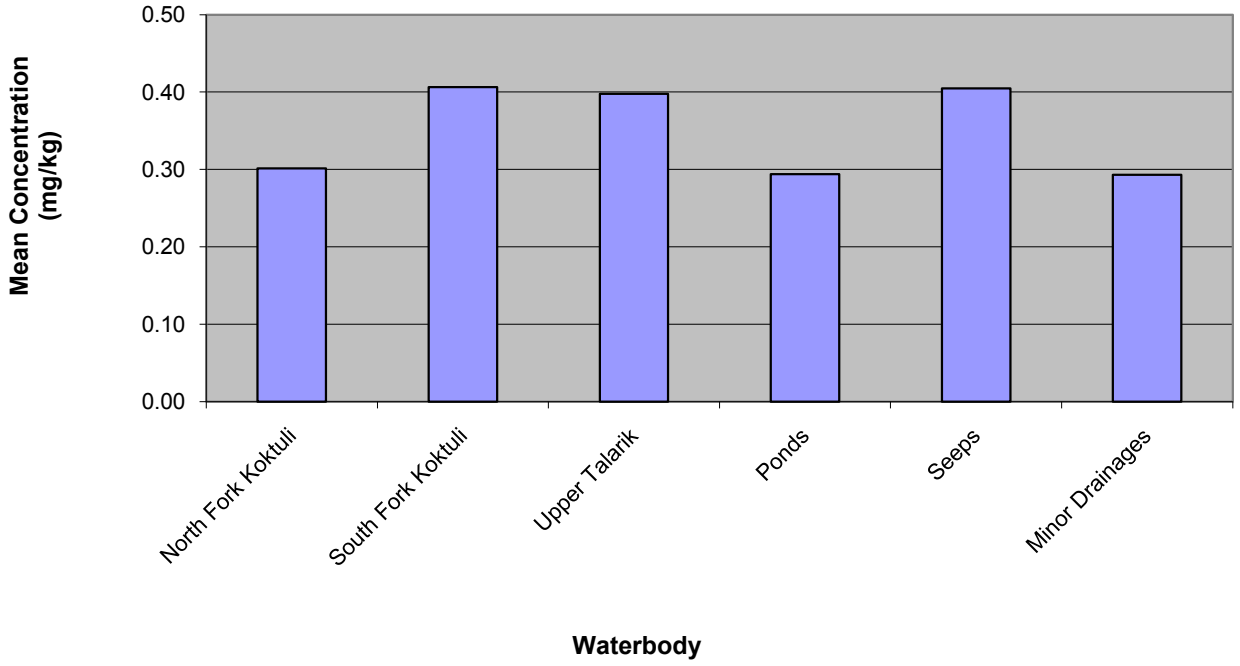


FIGURE 10.2-5
Mean Beryllium Concentrations in Sediments, Mine Study Area, 2004-2007

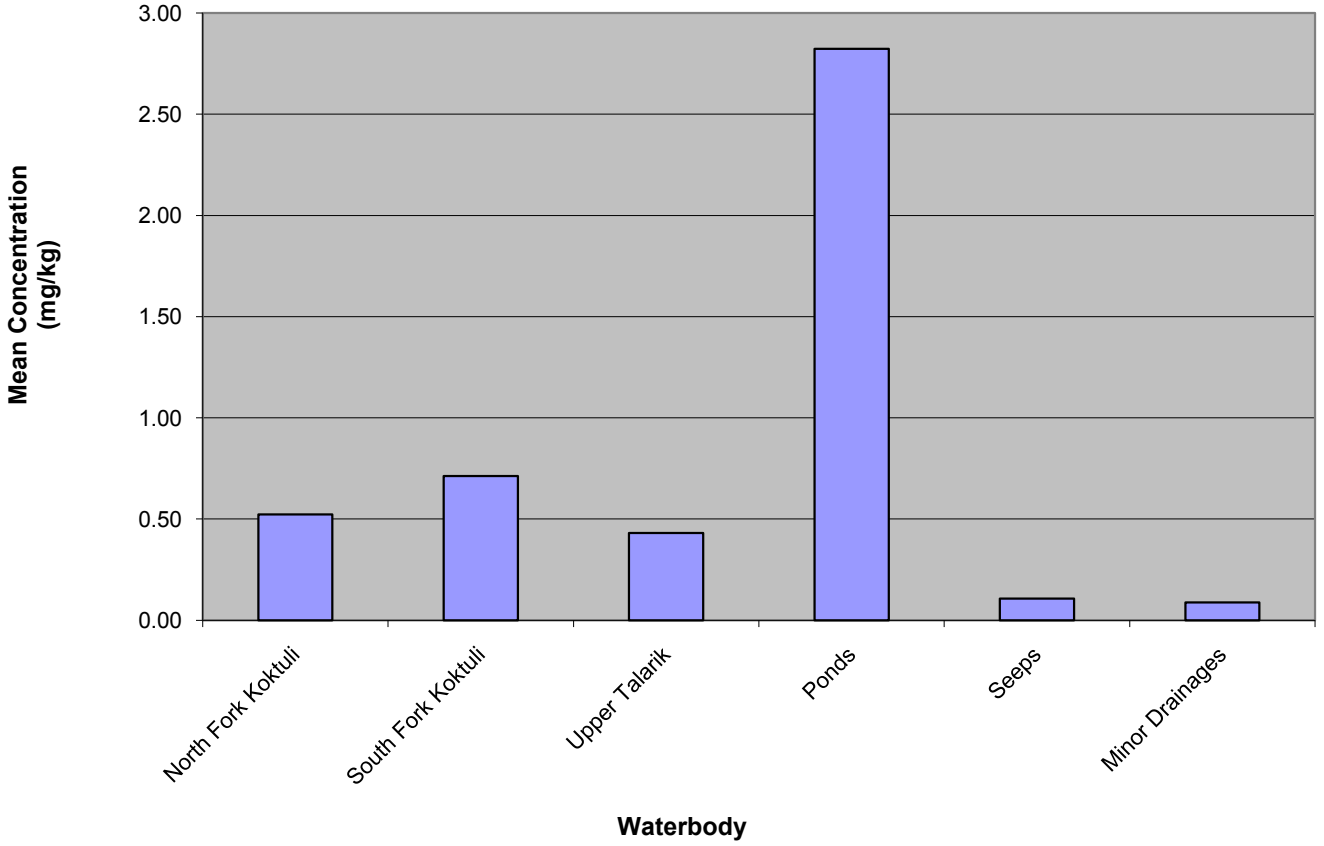


FIGURE 10.2-6
Mean Bismuth Concentrations in Sediments, Mine Study Area, 2004-2007

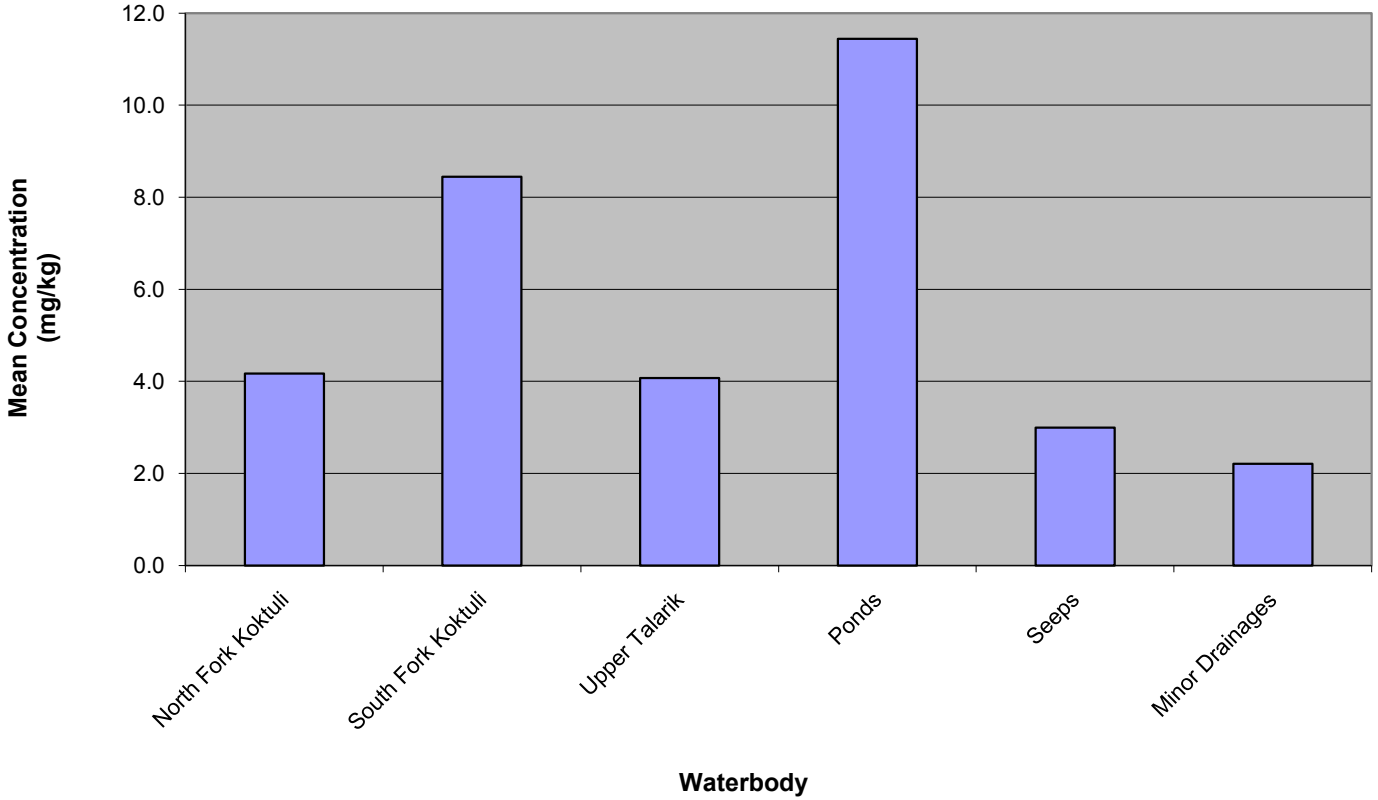


FIGURE 10.2-7
Mean Boron Concentrations in Sediments, Mine Study Area, 2004-2007

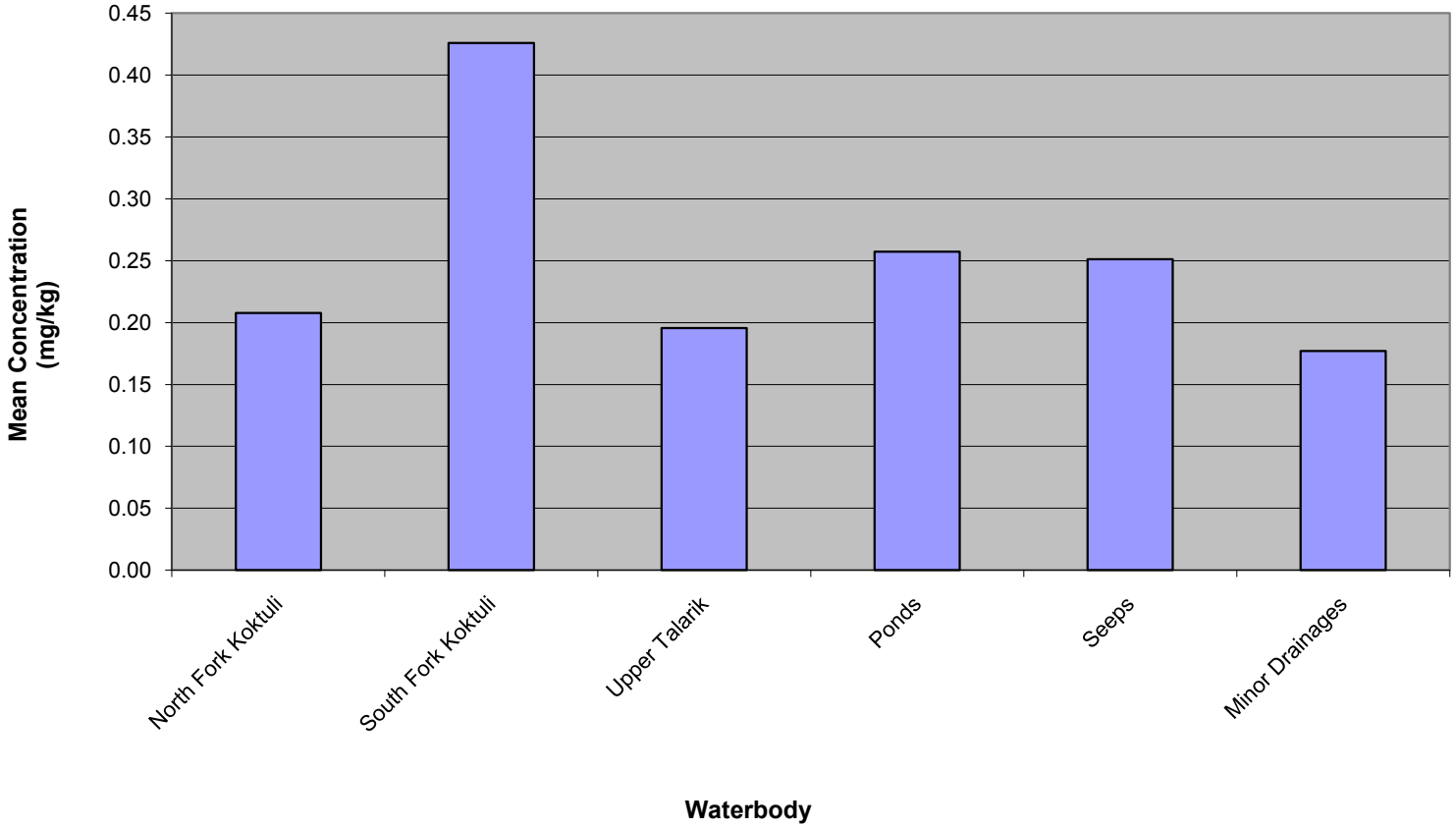


FIGURE 10.2-8
Mean Cadmium Concentrations in Sediments, Mine Study Area, 2004-2007

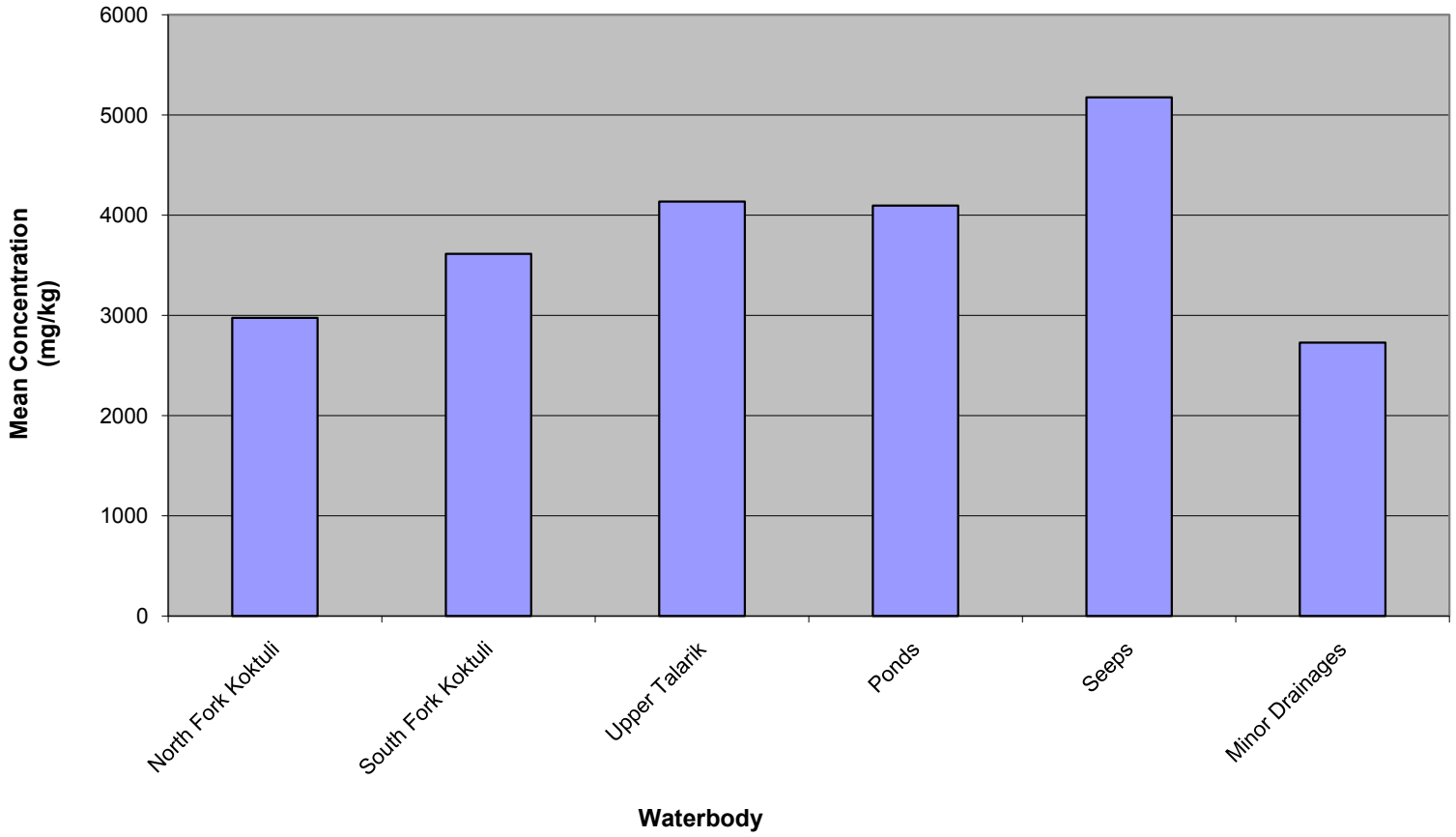


FIGURE 10.2-9
Mean Calcium Concentrations in Sediments, Mine Study Area, 2004-2007

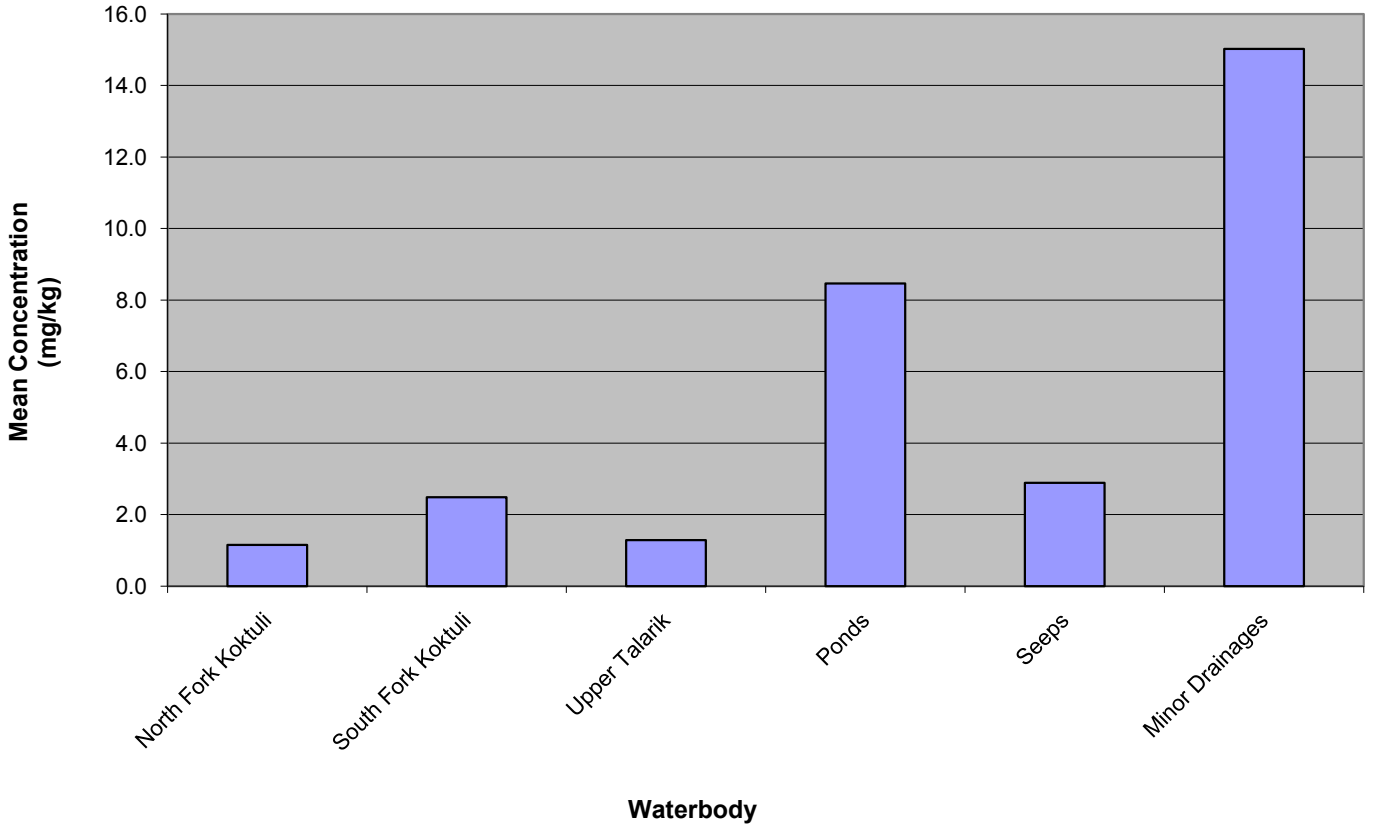


FIGURE 10.2-10
Mean Chloride Concentrations in Sediments, Mine Study Area, 2004-2007

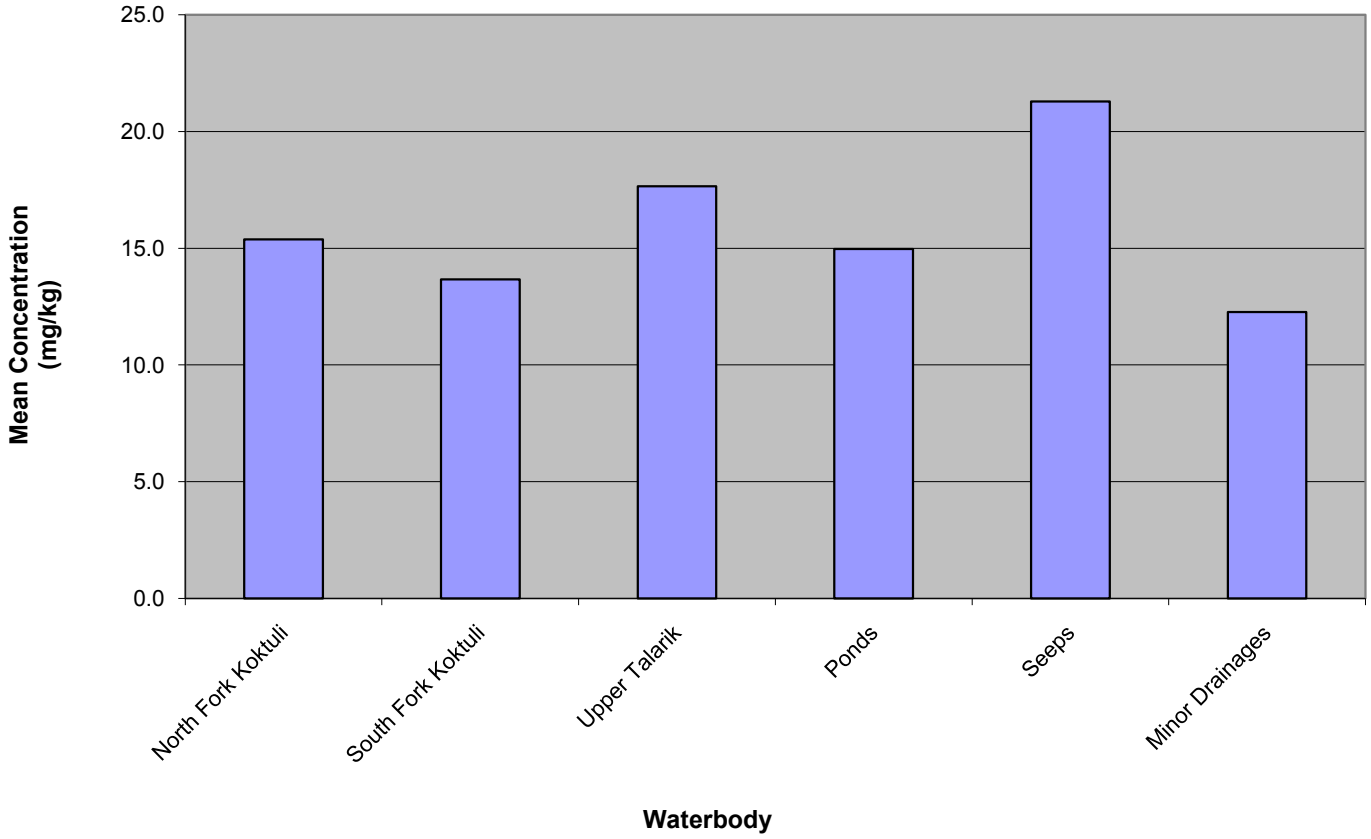


FIGURE 10.2-11
Mean Chromium Concentrations in Sediments, Mine Study Area, 2004-2007

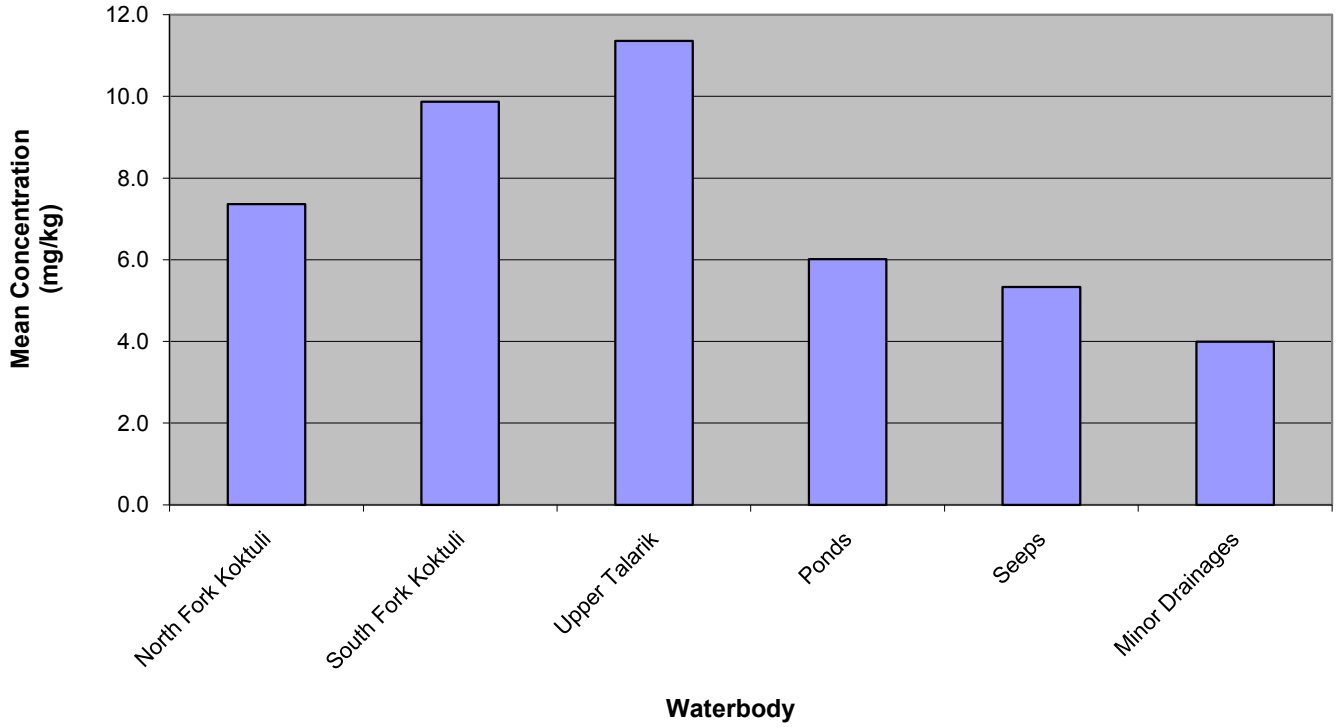


FIGURE 10.2-12
Mean Cobalt Concentrations in Sediments, Mine Study Area, 2004-2007

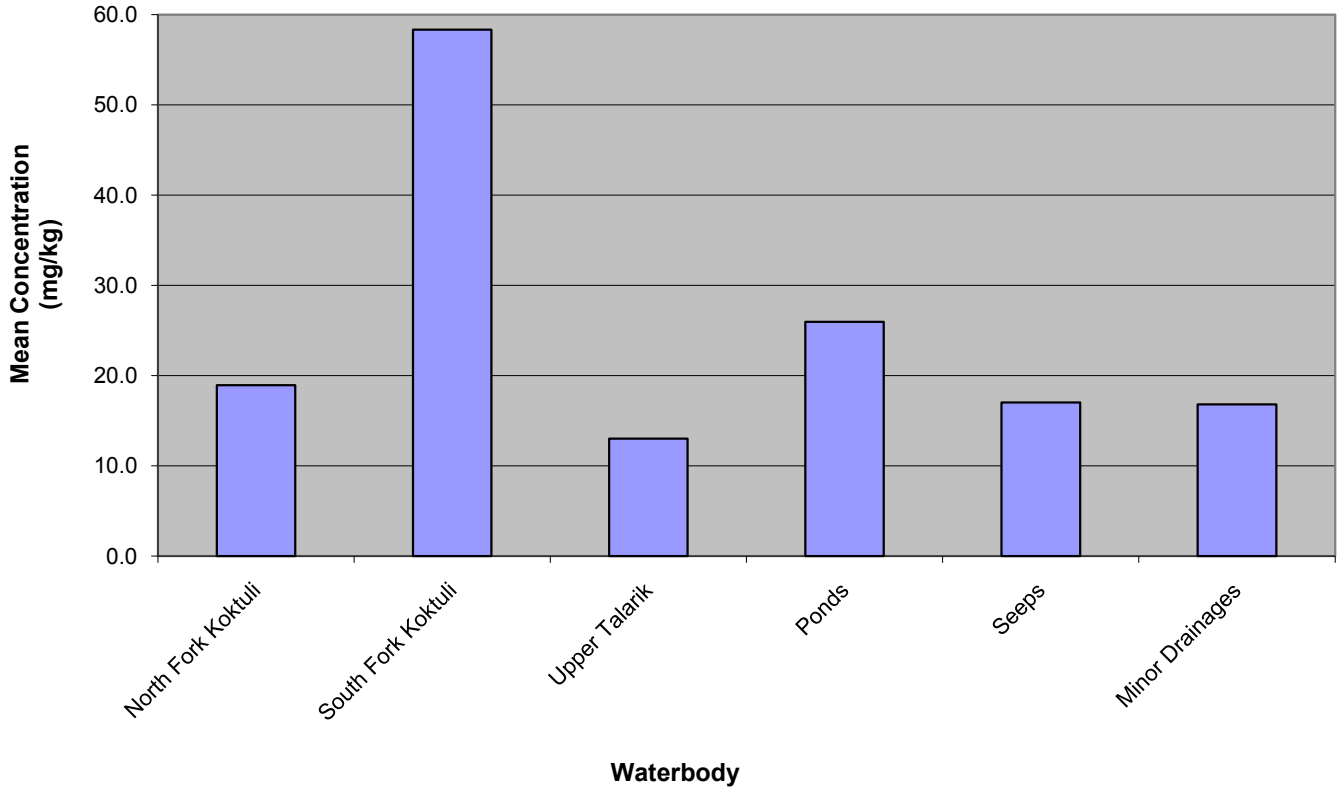


FIGURE 10.2-13
Mean Copper Concentrations in Sediments, Mine Study Area, 2004-2007

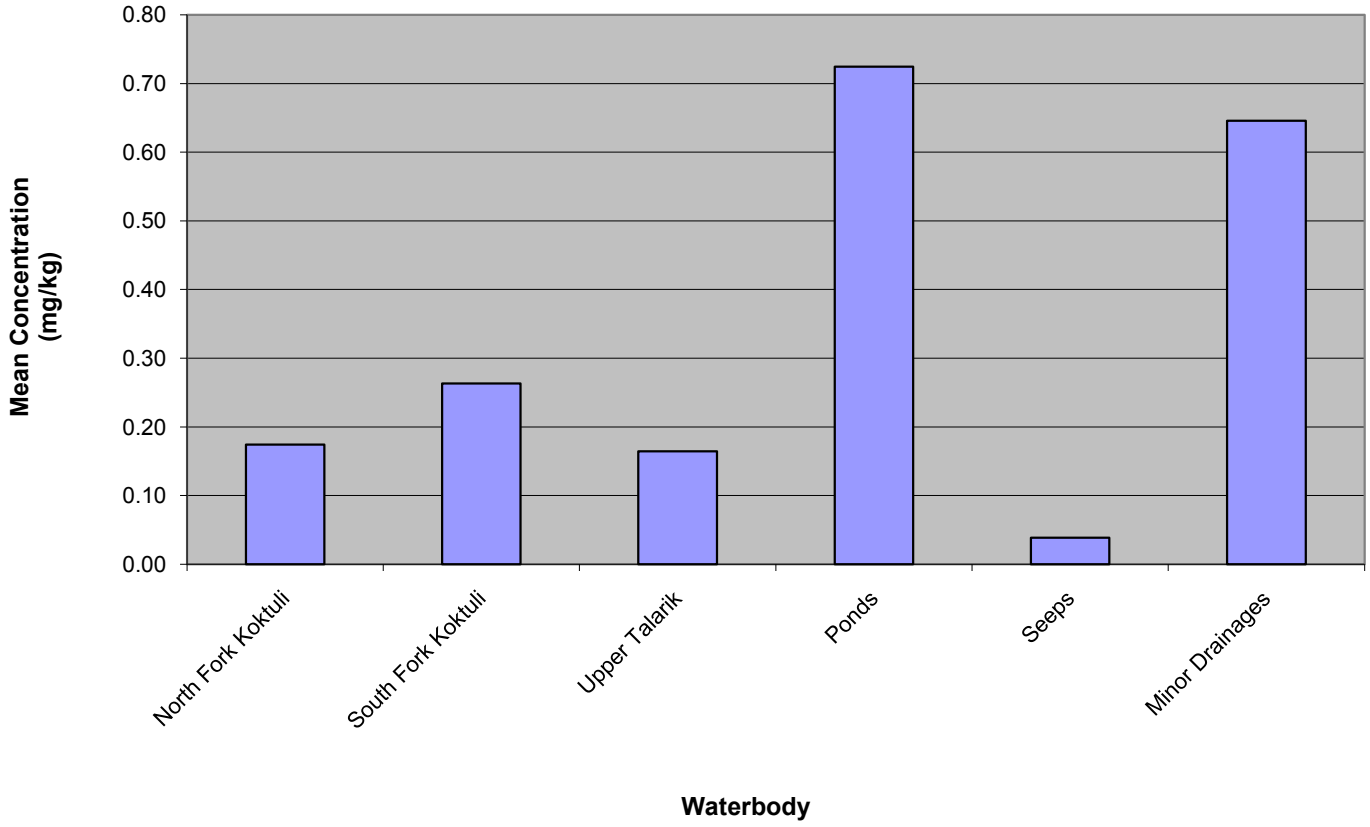


FIGURE 10.2-14
Mean Cyanide Concentrations in Sediments, Mine Study Area, 2004-2007

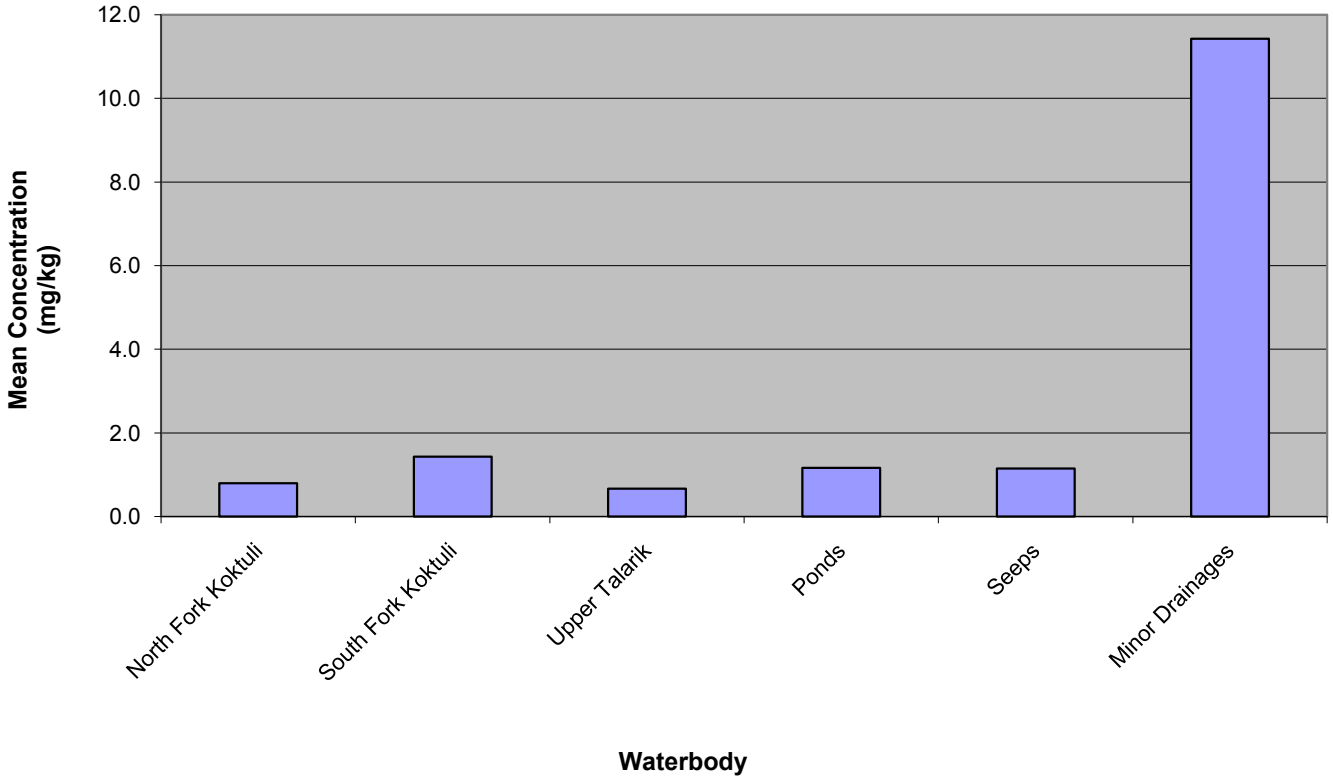


FIGURE 10.2-15
Mean Fluoride Concentrations in Sediments, Mine Study Area, 2004-2007

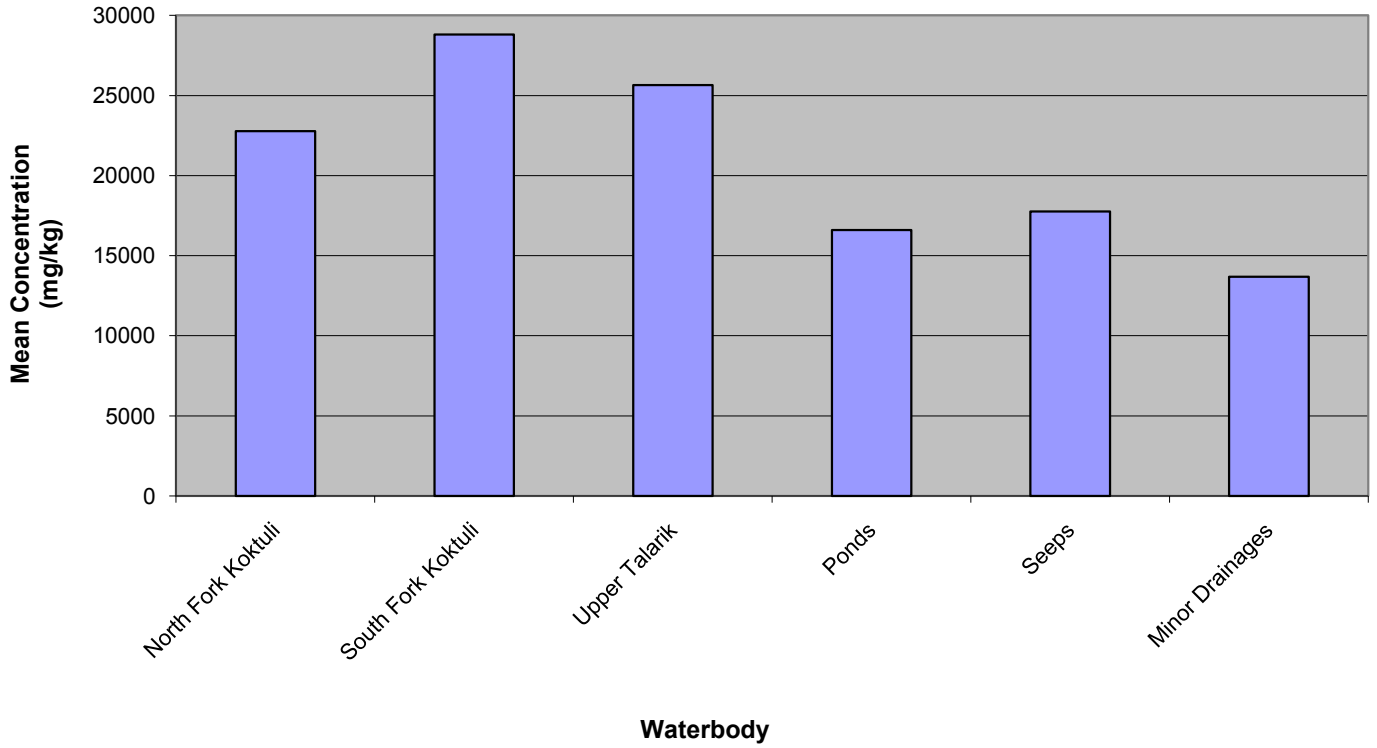


FIGURE 10.2-16
Mean Iron Concentrations in Sediments, Mine Study Area, 2004-2007

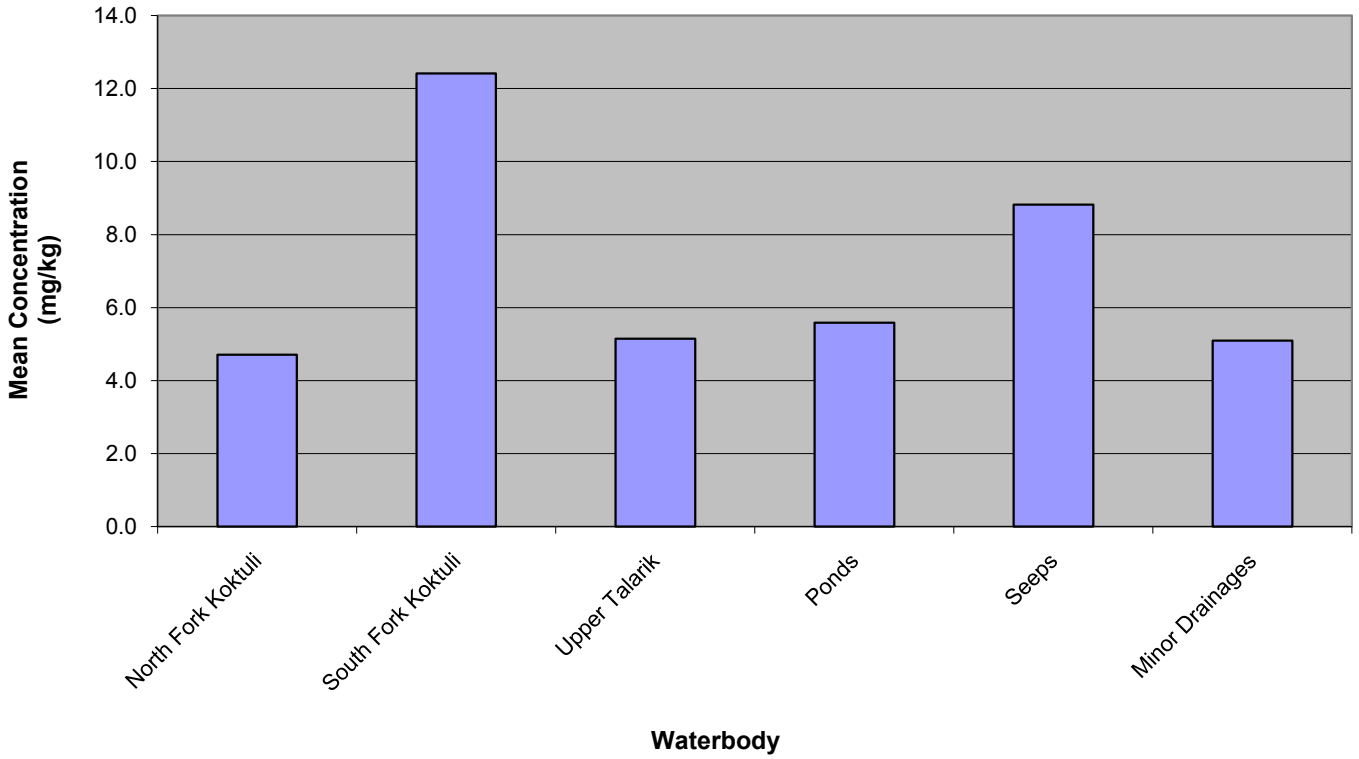


FIGURE 10.2-17
Mean Lead Concentrations in Sediments, Mine Study Area, 2004-2007

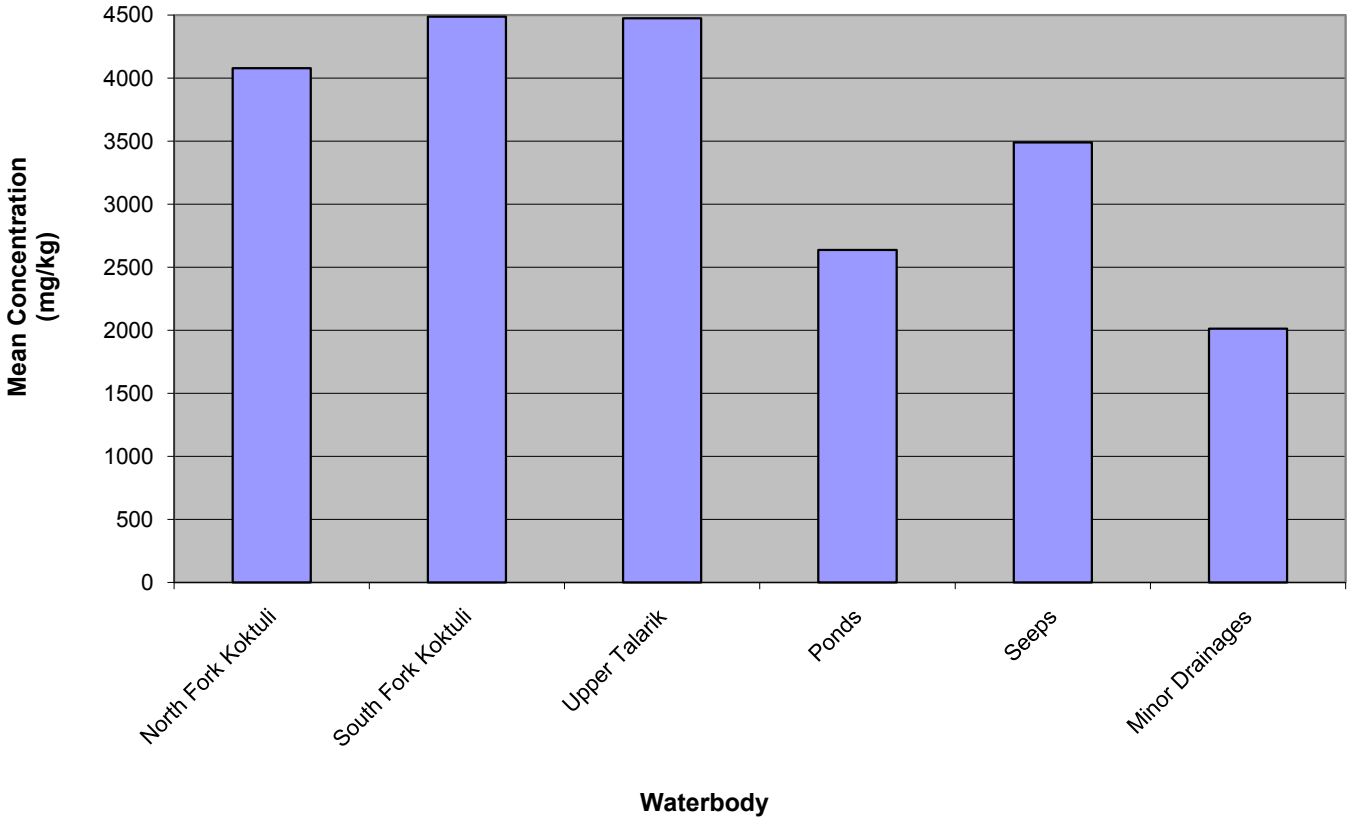


FIGURE 10.2-18
Mean Magnesium Concentrations in Sediments, Mine Study Area, 2004-2007

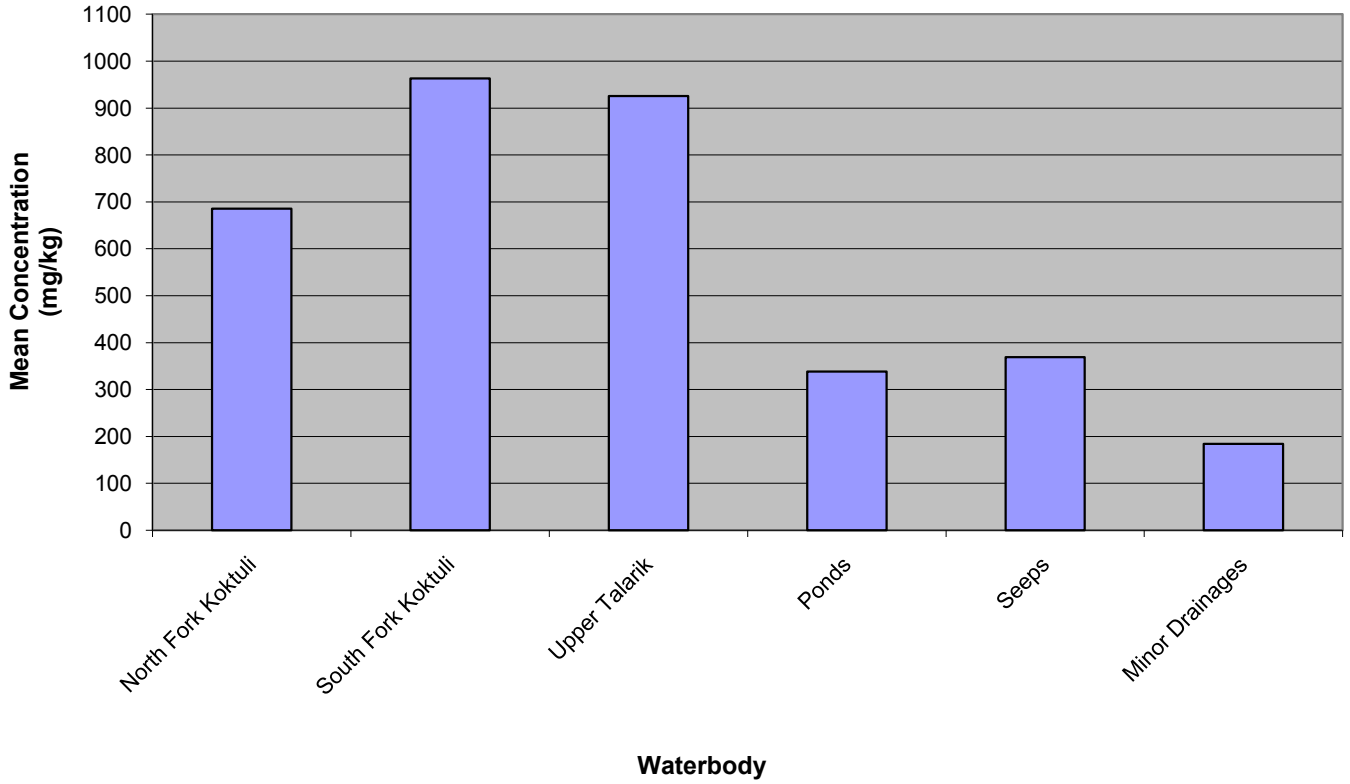


FIGURE 10.2-19
Mean Manganese Concentrations in Sediments, Mine Study Area, 2004-2007

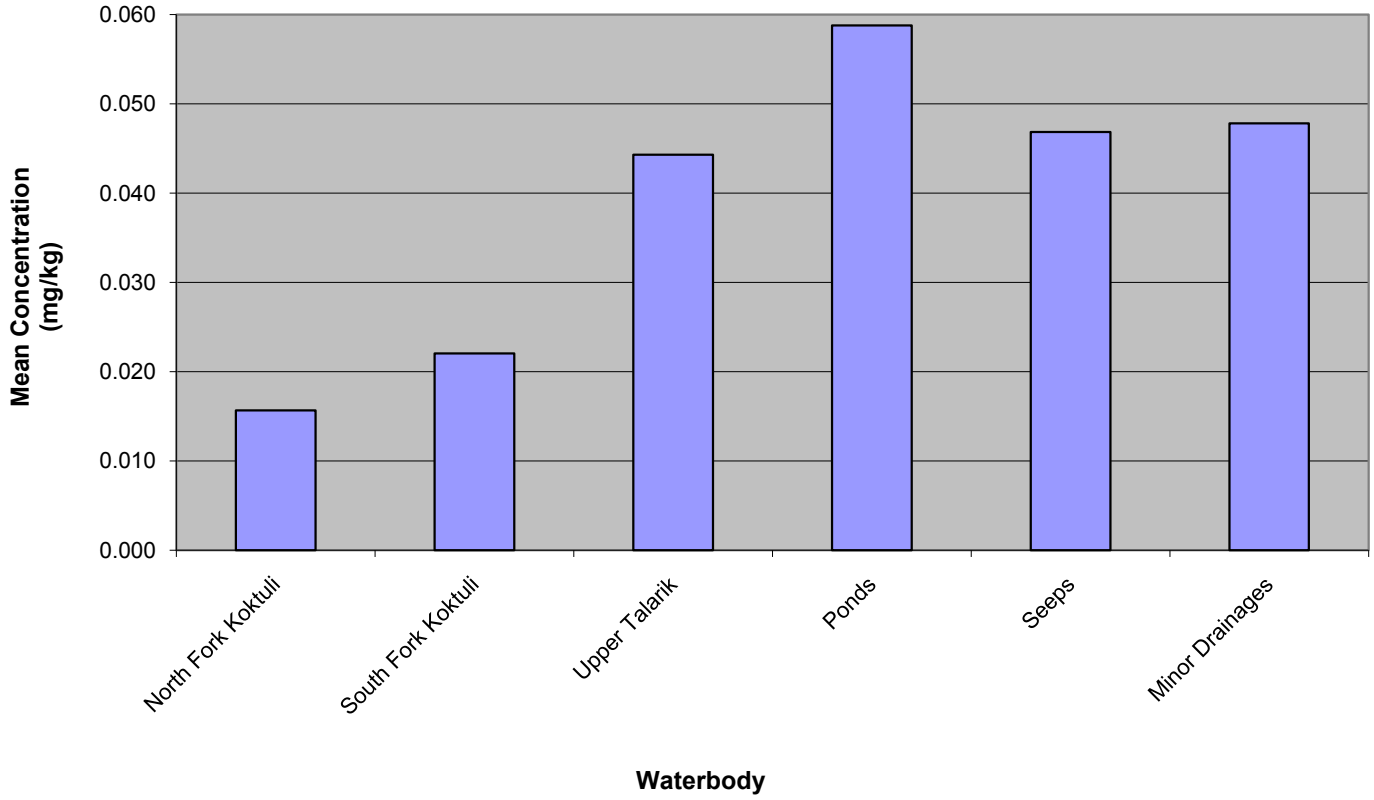


FIGURE 10.2-20
Mean Mercury Concentrations in Sediments, Mine Study Area, 2004-2007

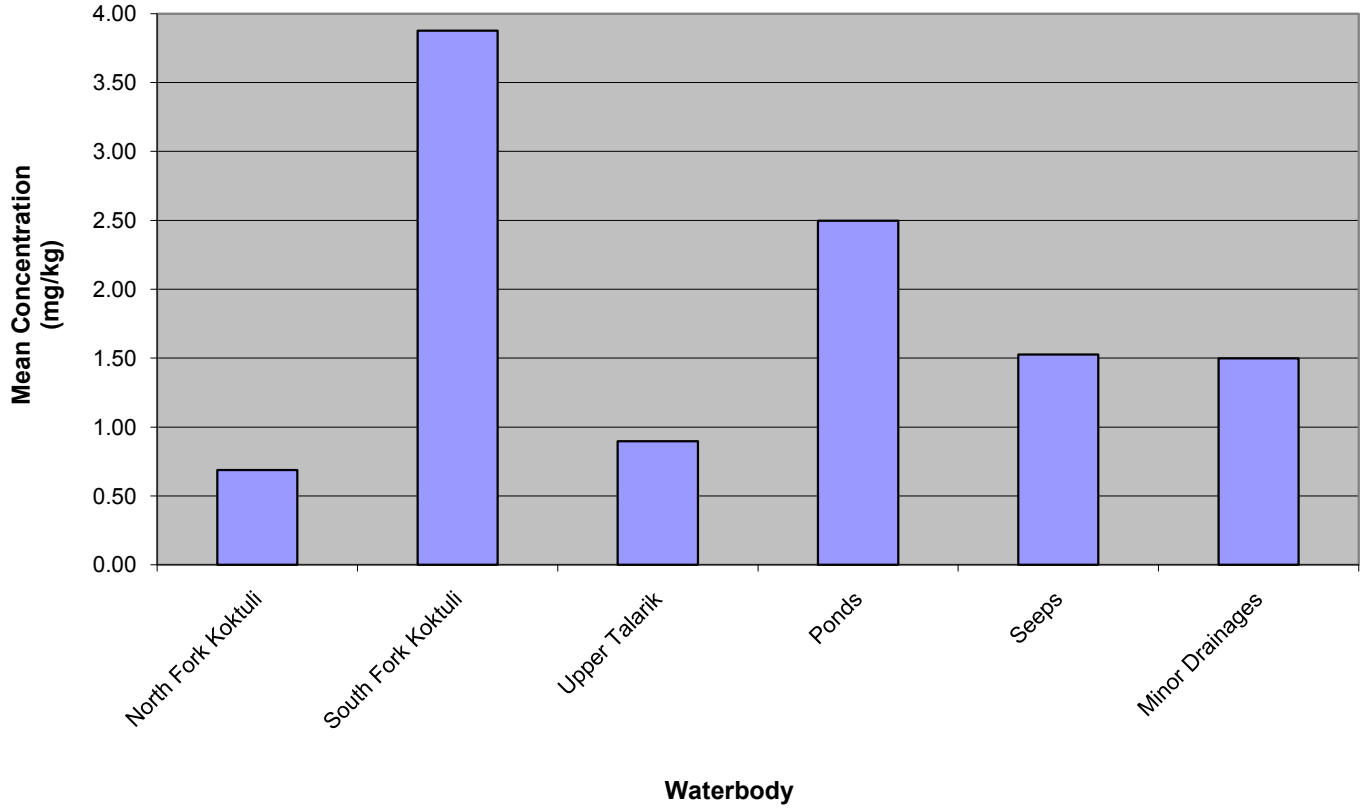


FIGURE 10.2-21
Mean Molybdenum Concentrations in Sediments, Mine Study Area, 2004-2007

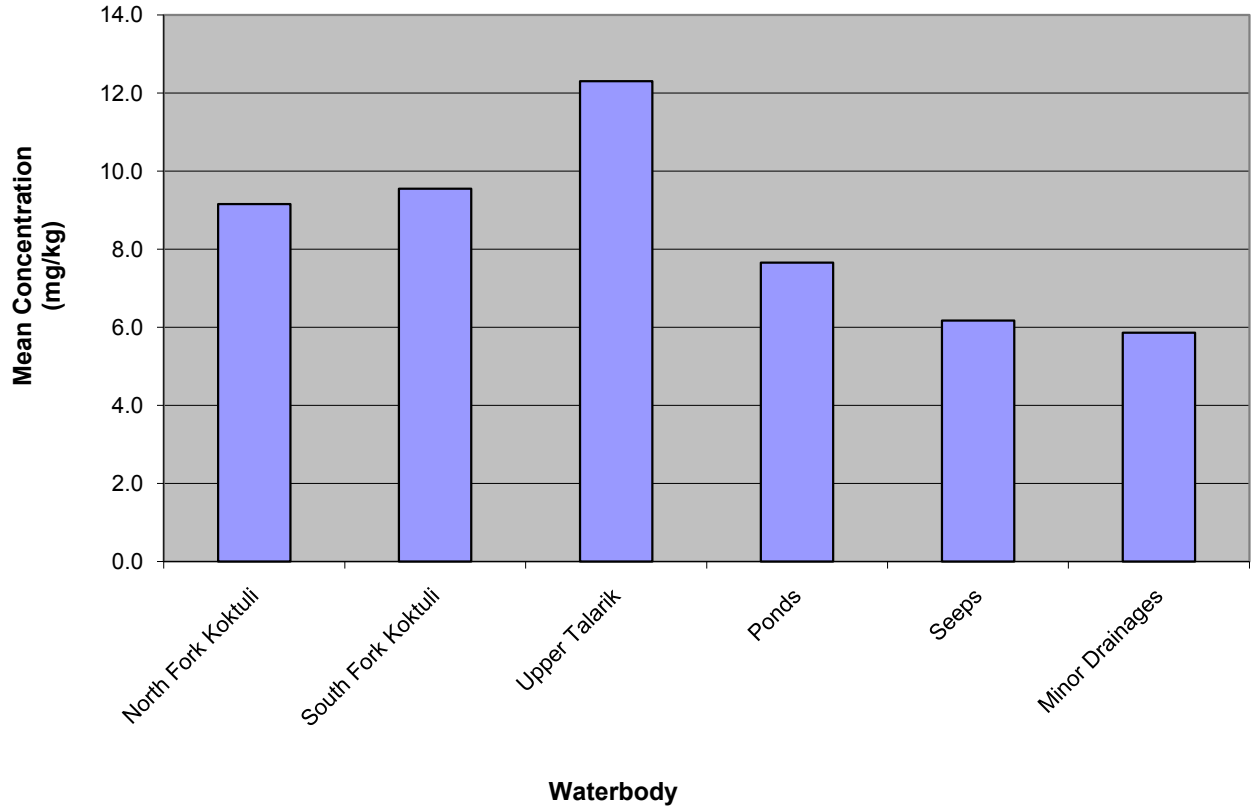


FIGURE 10.2-22
Mean Nickel Concentrations in Sediments, Mine Study Area, 2004-2007

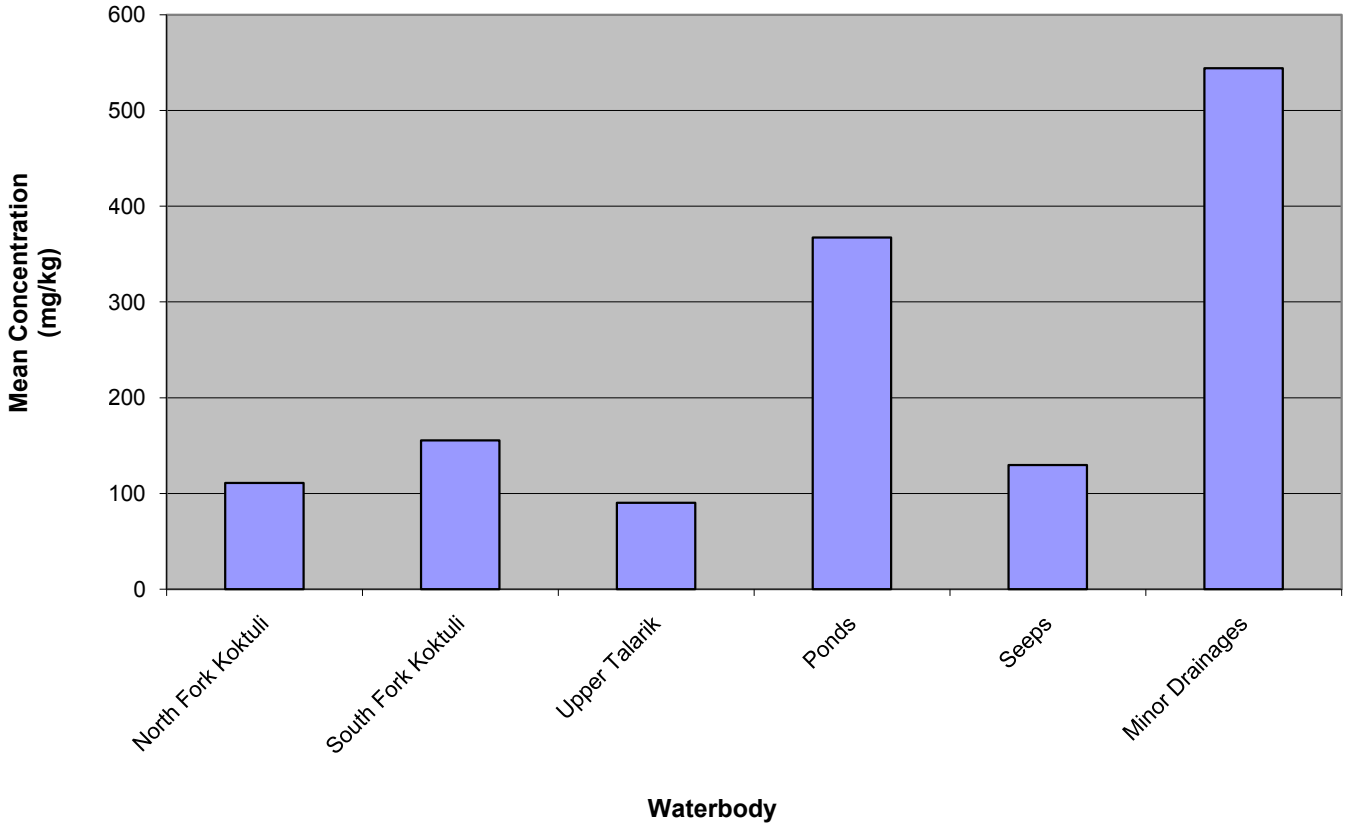


FIGURE 10.2-23
Mean Ammonia (as Nitrogen) Concentrations in Sediments, Mine Study Area, 2004-2007

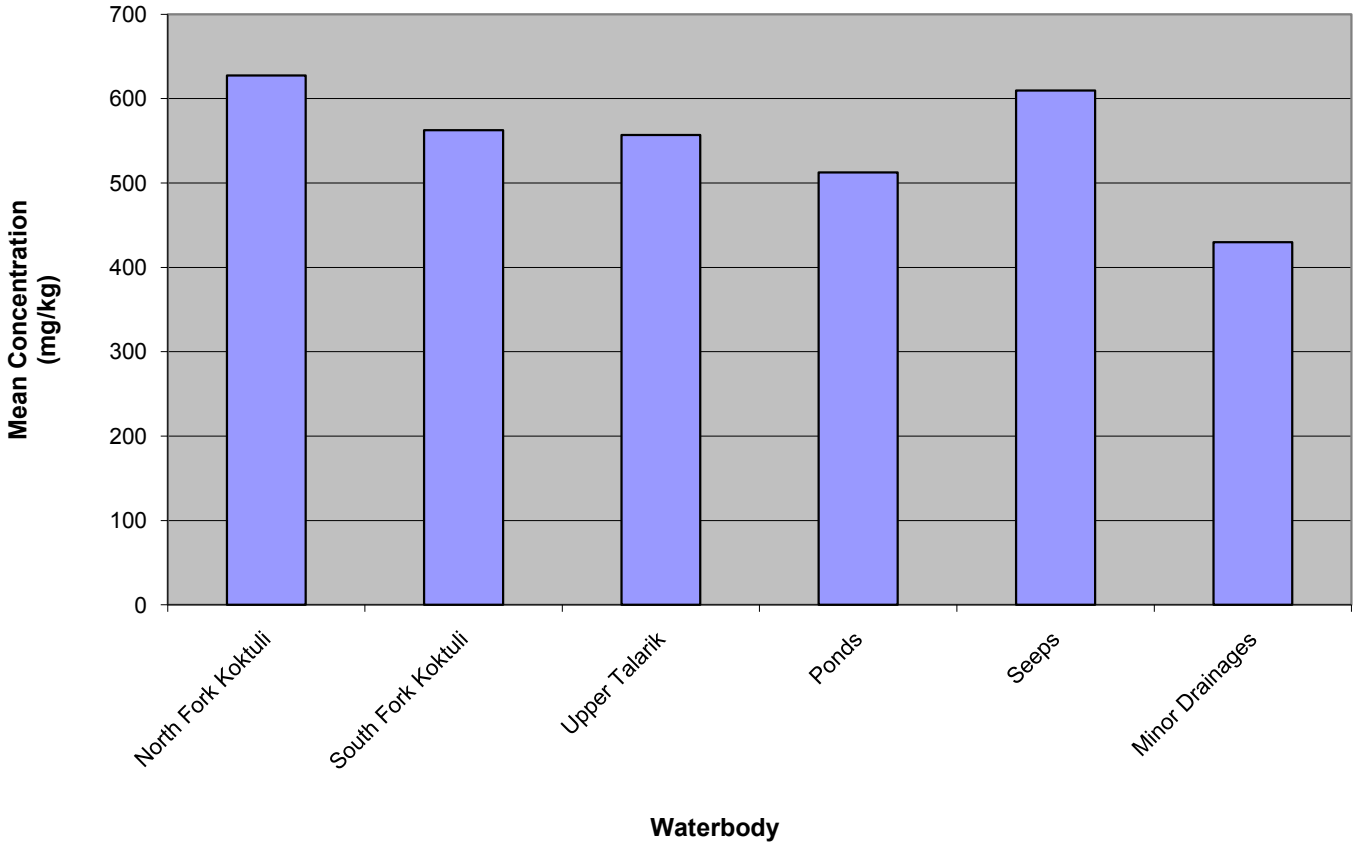


FIGURE 10.2-24
Mean Potassium Concentrations in Sediments, Mine Study Area, 2004-2007

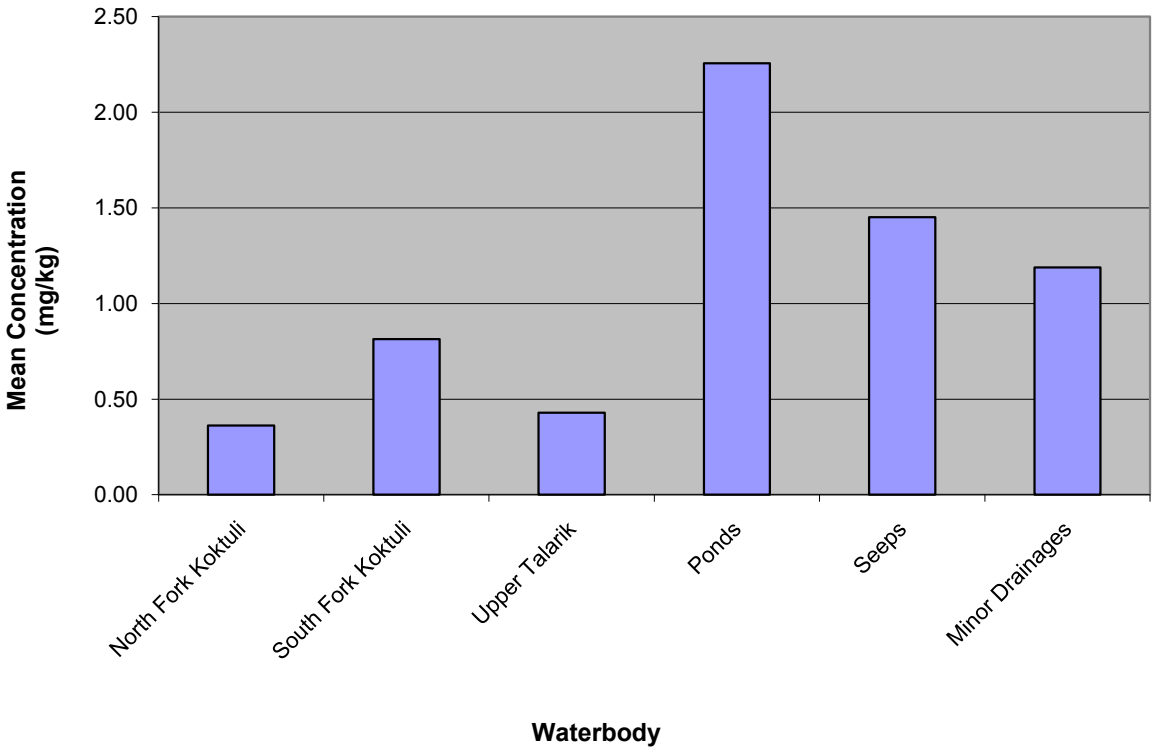


FIGURE 10.2-25
Mean Selenium Concentrations in Sediments, Mine Study Area, 2004-2007

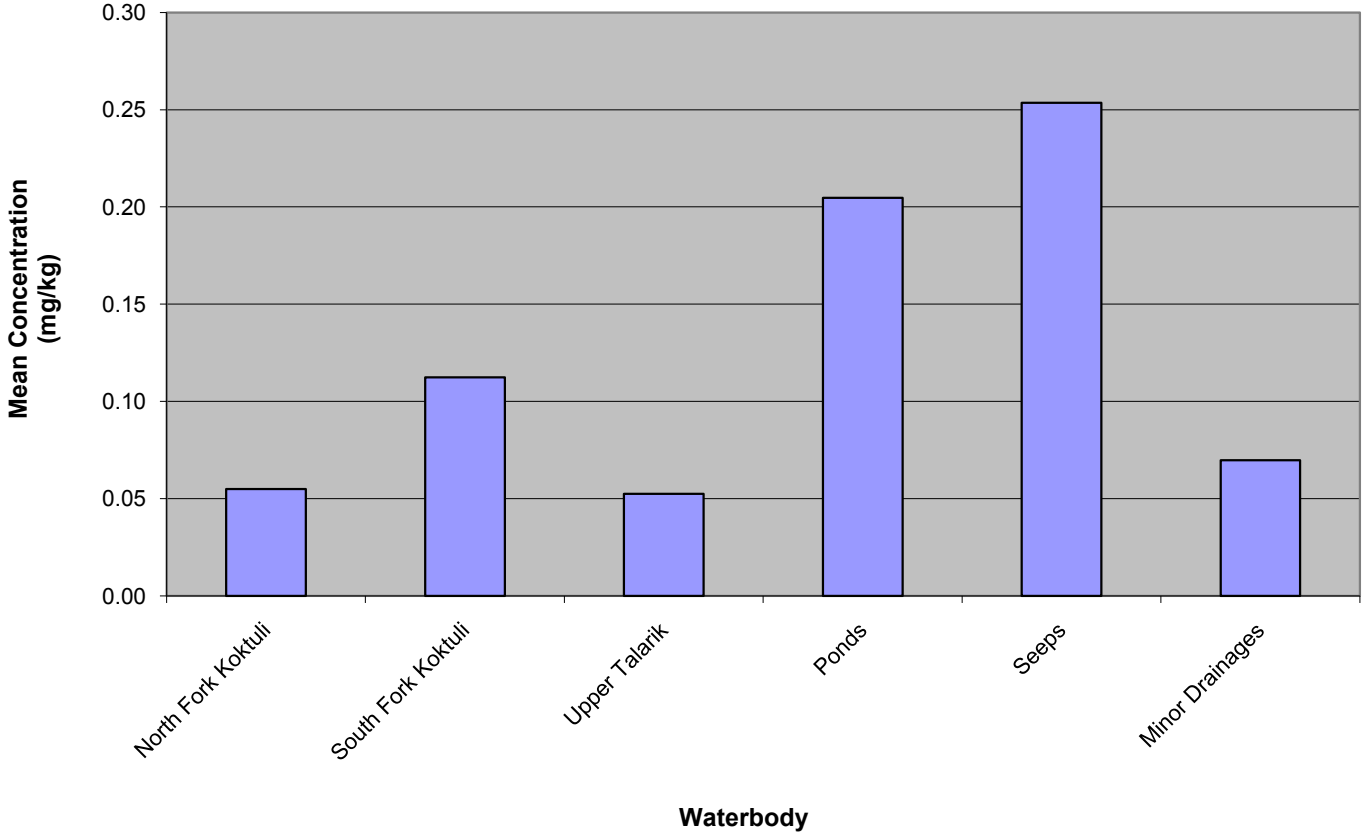


FIGURE 10.2-26
Mean Silver Concentrations in Sediments, Mine Study Area, 2004-2007

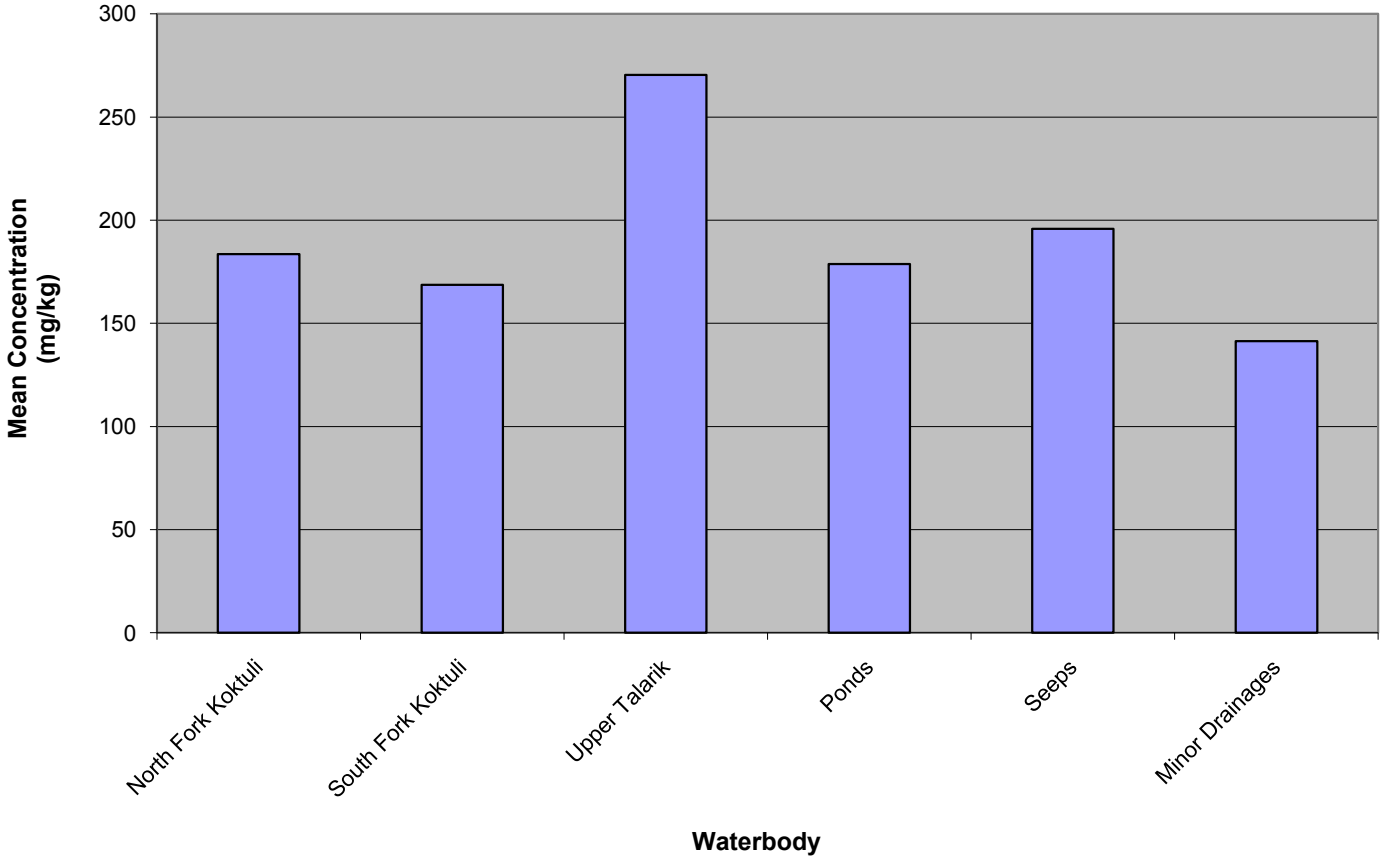


FIGURE 10.2-27
Mean Sodium Concentrations in Sediments, Mine Study Area, 2004-2007

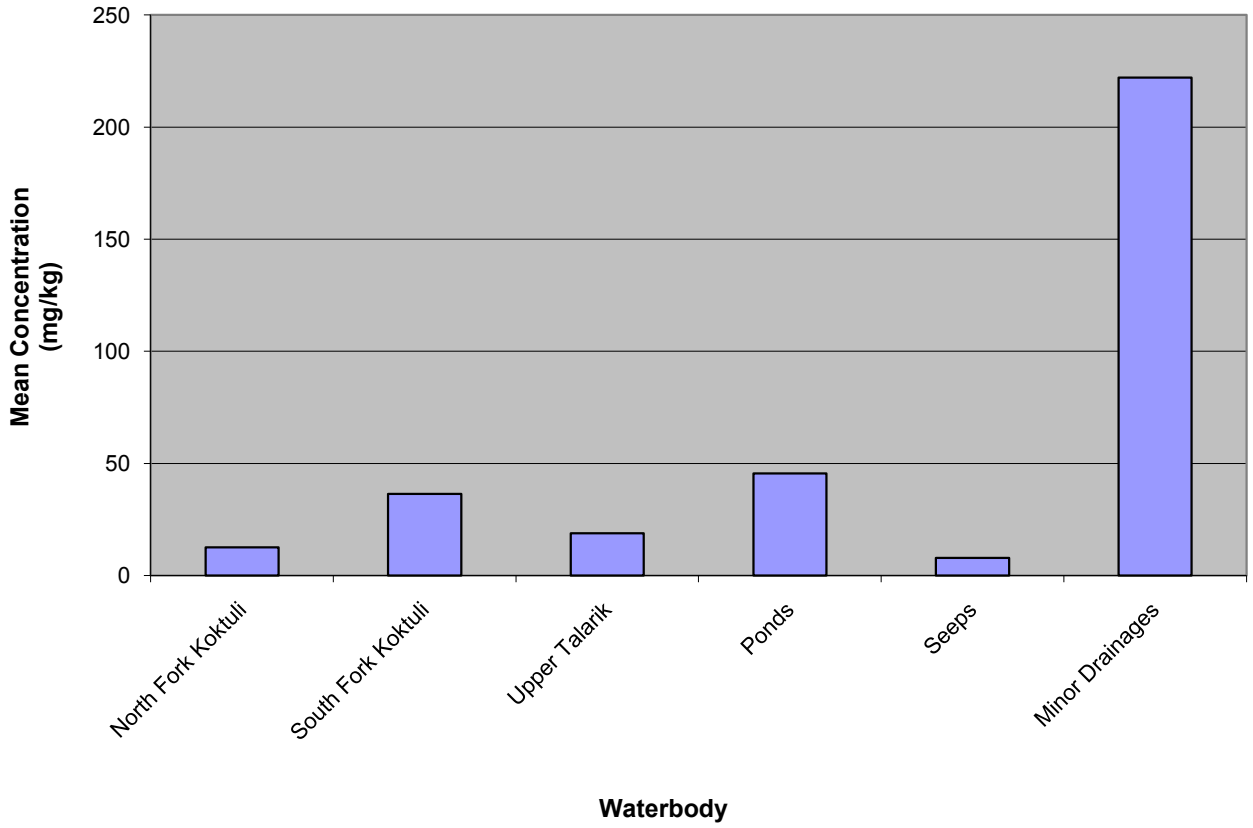


FIGURE 10.2-28
Mean Sulfate Concentrations in Sediments, Mine Study Area, 2004-2007

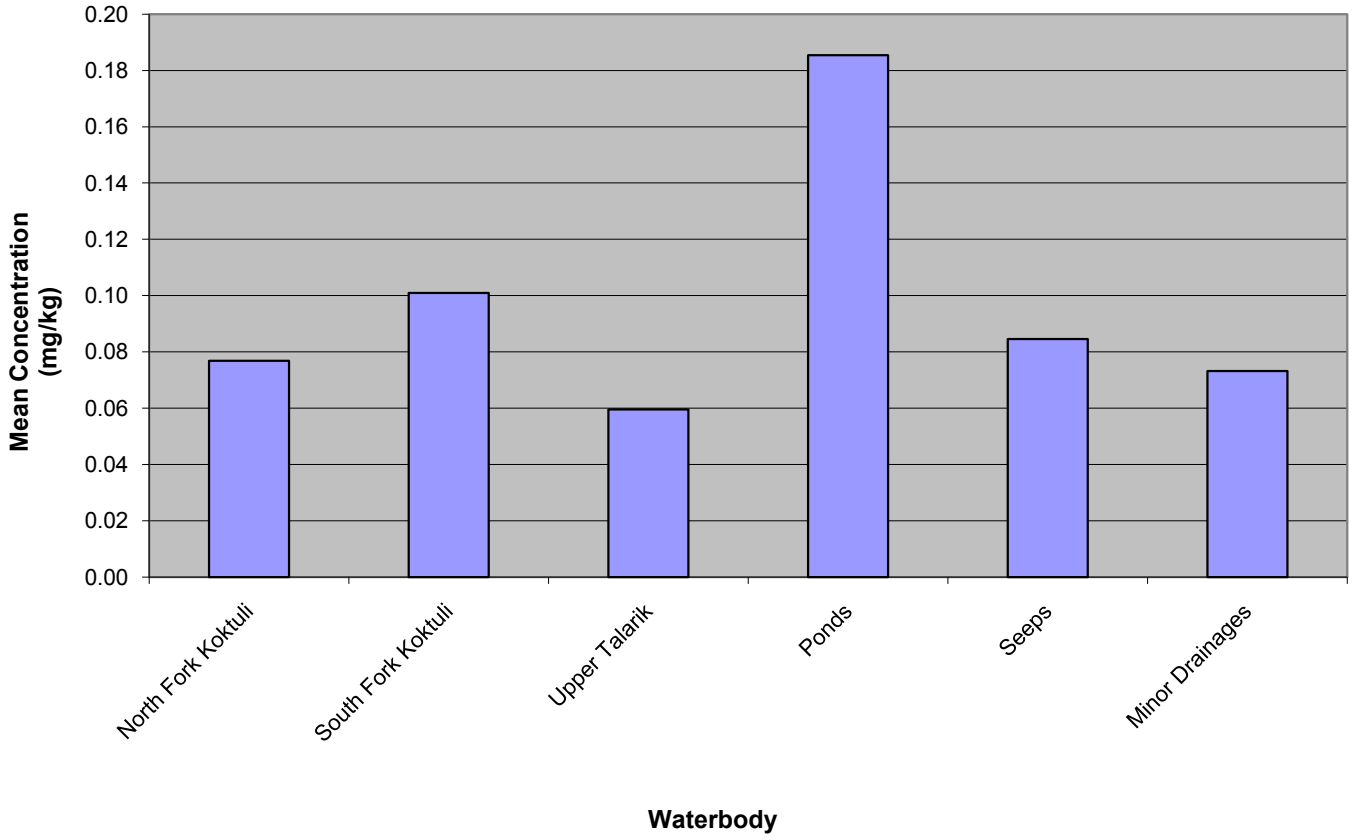


FIGURE 10.2-29
Mean Thallium Concentrations in Sediments, Mine Study Area, 2004-2007

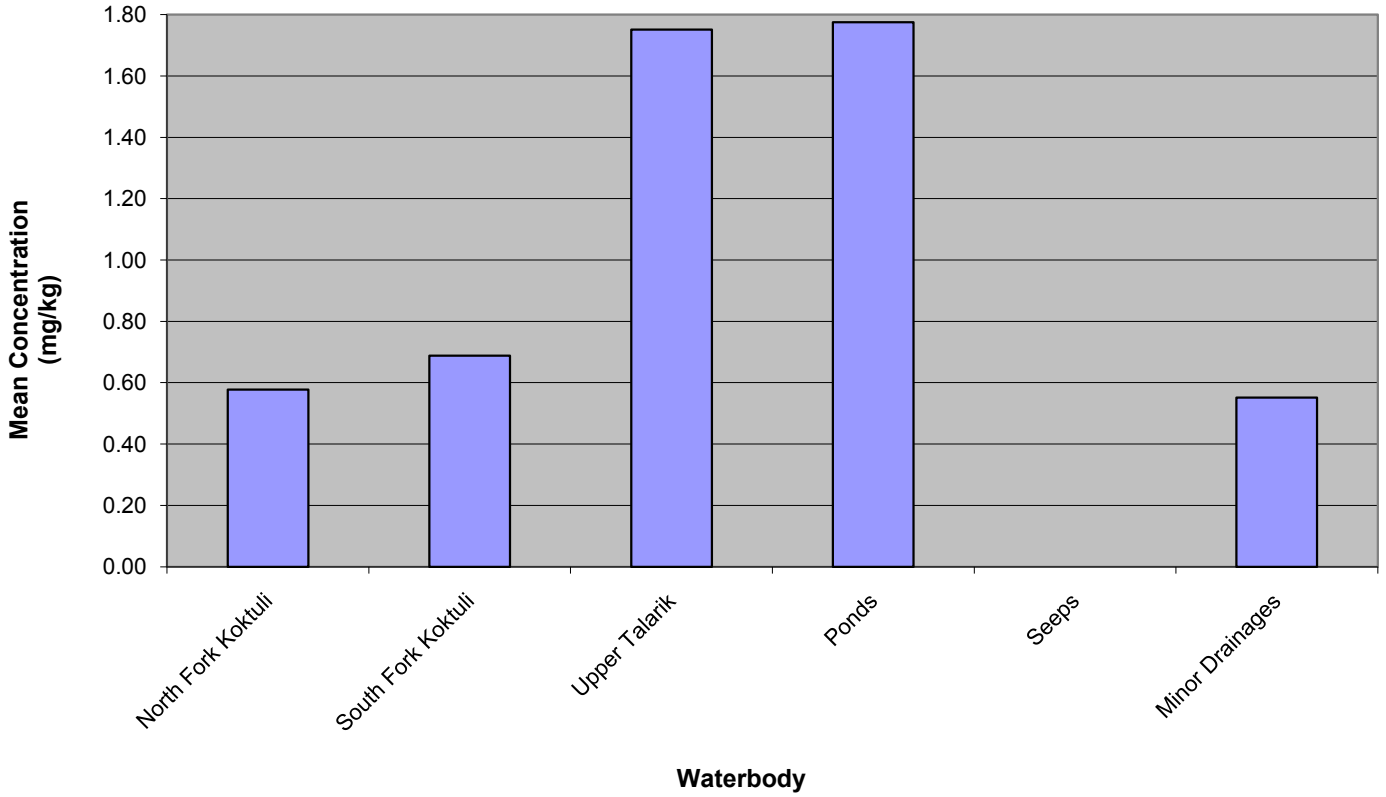


FIGURE 10.2-30
Mean Tin Concentrations in Sediments, Mine Study Area, 2004-2007

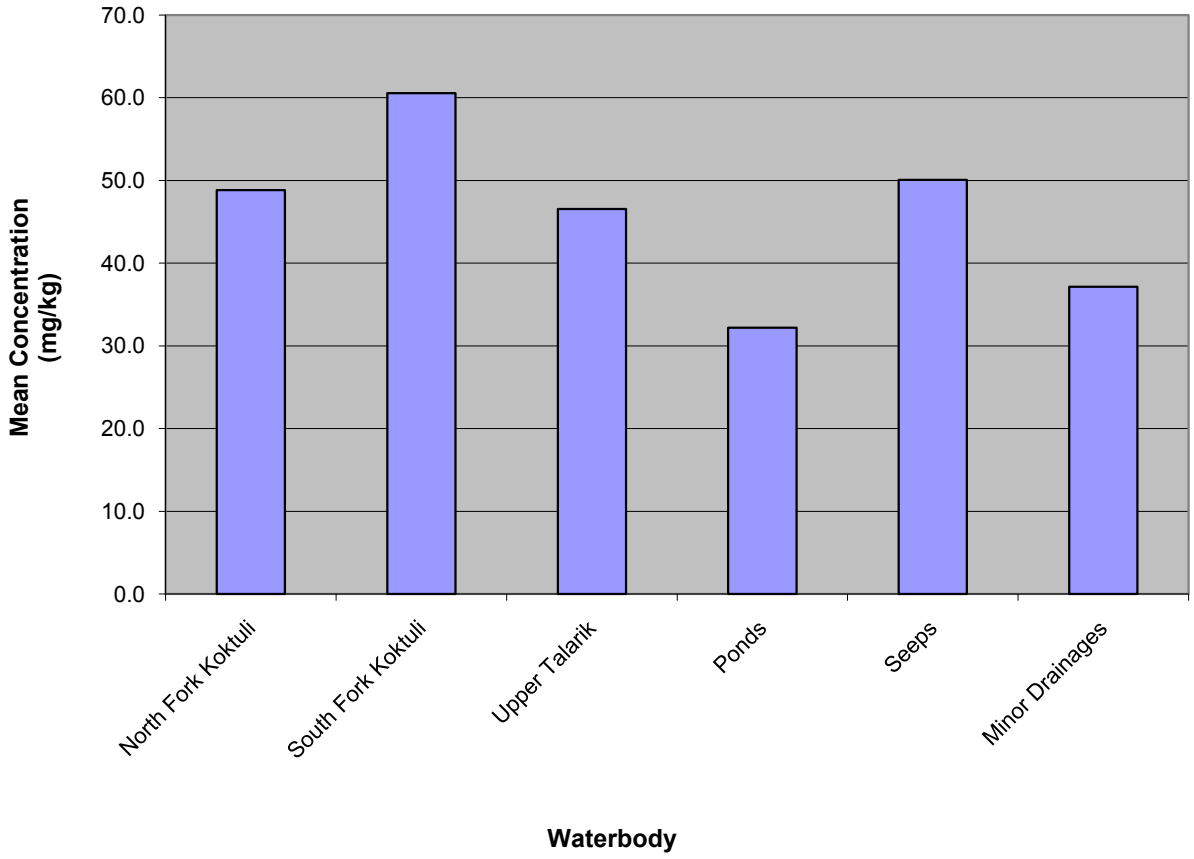


FIGURE 10.2-31
Mean Vanadium Concentrations in Sediments, Mine Study Area, 2004-2007

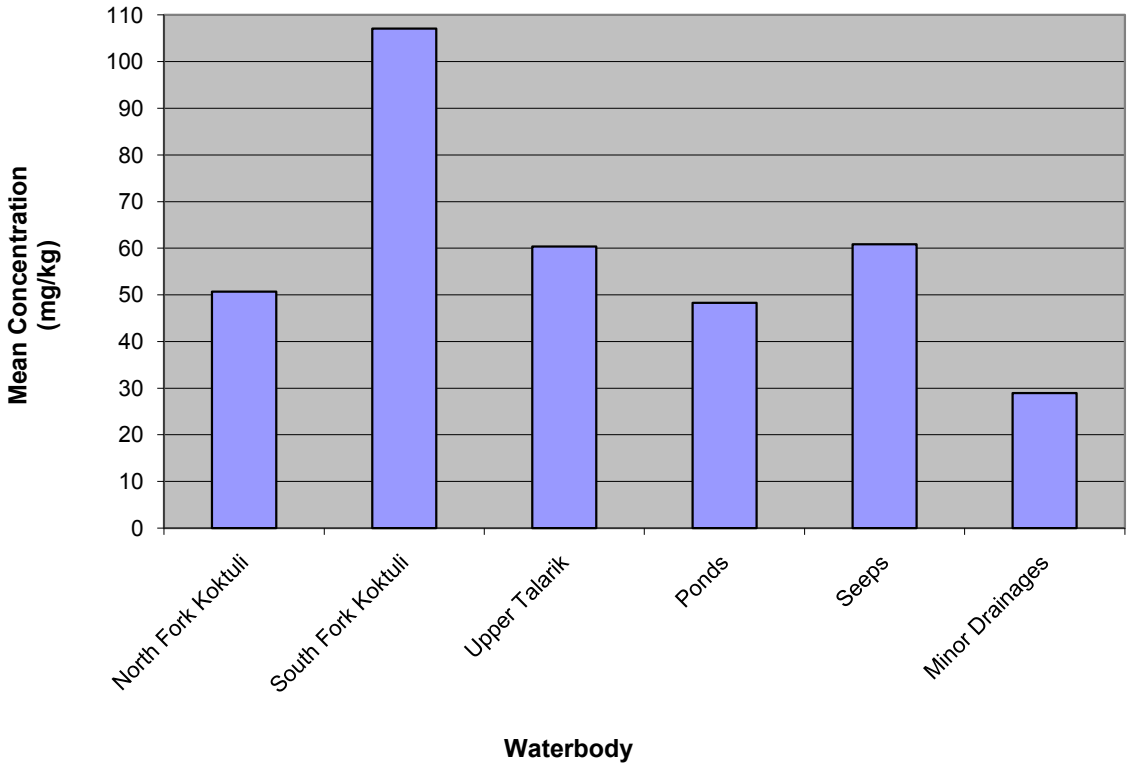


FIGURE 10.2-32
Mean Zinc Concentrations in Sediments, Mine Study Area, 2004-2007

APPENDICES

APPENDIX 10.2A

Photographic Log, Sediment and Aquatic Vegetation Sampling, Mine Study Area

APPENDIX 10.2A

Photo Log for Sediment and Aquatic Vegetation Sampling: Mine Study Area



2006 Sediment and Aquatic Vegetation
Sample Site 236221



2006 Sediment and Aquatic Vegetation
Sample Site 236221



2006 Sediment and Aquatic Vegetation
Sample Site 235282



2006 Sediment and Aquatic Vegetation
Sample Site 235282

APPENDIX 10.2A



2006 Sediment and Aquatic Vegetation
Sample Site 335051



2007 Sediment and Aquatic Vegetation
Sample Site 335051



2006 Sediment and Aquatic Vegetation
Sample Site 335133



2007 Sediment and Aquatic Vegetation
Sample Site 335133



2007 Sediment and Aquatic Vegetation
Sample Site 536051



2007 Sediment and Aquatic Vegetation
Sample Site 536051

APPENDIX 10.2A



2006 Sediment and Aquatic Vegetation
Sample Site WL-P01



2006 Sediment and Aquatic Vegetation
Sample Site WL-S04D



2006 Sediment and Aquatic Vegetation
Sample Site 28B1



2007 Sediment and Aquatic Vegetation
Sample Site 28B2



2007 Sediment and Aquatic Vegetation
Sample Site TPS-01

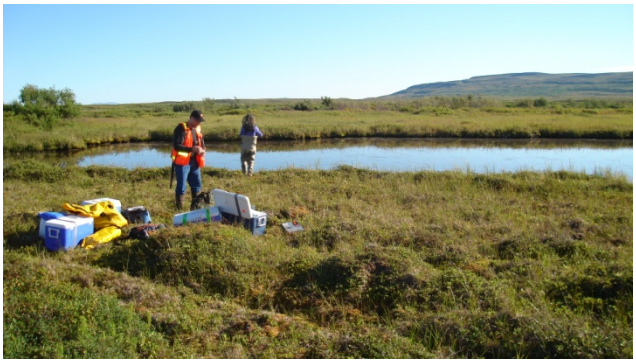


2007 Sediment and Aquatic Vegetation
Sample Site TPS-02

APPENDIX 10.2A



2007 Sediment and Aquatic Vegetation
Sample Site TPS-03



2007 Sediment and Vegetation
Sample Site TPS-04



2006 Sediment and Aquatic Vegetation
Sample Site TPS-05



2006 Sediment and Aquatic Vegetation
Sample Site TPS-06



2007 Sediment and Aquatic Vegetation
Sample Site TPS-07



2007 Sediment and Aquatic Vegetation
Sample Site TPS-08

APPENDIX 10.2B

Sediment Samples Results Summary, Mine Study Area, 2004-2007

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
236221														
Sample Date														
08/25/06	75.7		3.55	**0.461**	**0.804**	**0.030**		59.6	**0.2**	7820	**0.0197**	10.0	74.7	0.294
Mean	75.7	NA	3.55	0.461	0.804	0.03	NA	59.6	0.2	7820	0.0197	10	74.7	0.294
Median	75.7	NA	3.55	0.461	0.804	0.03	NA	59.6	0.2	7820	0.0197	10	74.7	0.294
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	75.7	NA	3.55	0.461	0.804	0.03	NA	59.6	0.2	7820	0.0197	10	74.7	0.294
Maximum	75.7	NA	3.55	0.461	0.804	0.03	NA	59.6	0.2	7820	0.0197	10	74.7	0.294
% of values undetected									100%		100%			
# of values between MDL and MRL				1	1	1								
28B1														
Sample Date														
07/27/06	21.3		4.83	**5.72**	41.0	0.10		631	1010	9390	**0.229**	8.30	130	**0.452**
08/11/07	20	12.9	**9.6**	**2.8**	300	**2.25**		290		21000	**0.45**	15.0	170	**0.58**
Mean	21	12.9	7.2	4.3	170	1.2	NA	460	1010	15000	0.34	12	150	0.52
Median	21	12.9	7.2	4.3	170	1.2	NA	460	1010	15000	0.34	12	150	0.52
St. Deviation	1	NA	3.4	2.1	180	1.5	NA	240	NA	8000	0.16	5	30	0.09
# of values	2	1	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	20	12.9	4.83	2.8	41	0.1	NA	290	1010	9390	0.229	8.3	130	0.452
Maximum	21.3	12.9	9.6	5.72	300	2.25	NA	631	1010	21000	0.45	15	170	0.58
% of values undetected						50%								
# of values between MDL and MRL			1	2							2			2
28B2														
Sample Date														
08/10/07	14	19.1	**18**	**0.80**	700	**3.35**		1000		13000	**0.47**	16	190	**0.39**
Mean	14	19.1	18	0.8	700	3.35	NA	1000	NA	13000	0.47	16	190	0.39
Median	14	19.1	18	0.8	700	3.35	NA	1000	NA	13000	0.47	16	190	0.39
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	14	19.1	18	0.8	700	3.35	NA	1000	NA	13000	0.47	16	190	0.39
Maximum	14	19.1	18	0.8	700	3.35	NA	1000	NA	13000	0.47	16	190	0.39
% of values undetected						100%								
# of values between MDL and MRL			1	1							1			1

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
236221														
Sample Date														
08/25/06	**0.0393**	2.67	**0.154**	0.2	2750	7.50	4.21	5.71	1.9	14000	3.95	4	2720	284
Mean	0.0393	2.67	0.154	0.2	2750	7.5	4.21	5.71	1.9	14000	3.95	4	2720	284
Median	0.0393	2.67	0.154	0.2	2750	7.5	4.21	5.71	1.9	14000	3.95	4	2720	284
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0393	2.67	0.154	0.2	2750	7.5	4.21	5.71	1.9	14000	3.95	4	2720	284
Maximum	0.0393	2.67	0.154	0.2	2750	7.5	4.21	5.71	1.9	14000	3.95	4	2720	284
% of values undetected	100%													
# of values between MDL and MRL			1											
28B1														
Sample Date														
07/27/06	**0.141**	**2.67**	**0.609**	**0.45**	6780	19.9	8.19	74.8	51.6	13600	5.94	**8.5**	2730	464
08/11/07	**1.20**	**4.75**	**0.475**		8000	26.0	20.0	110		36000	8.30		6200	1200
Mean	0.7	3.71	0.542	0.45	7400	23	14	90	51.60	25000	7.1	8.5	4500	800
Median	0.7	3.71	0.542	0.45	7400	23	14	90	51.60	25000	7.1	8.5	4500	800
St. Deviation	0.7	1.47	0.095	NA	900	4	8	20	NA	16000	1.7	NA	2500	500
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.141	2.67	0.475	0.45	6780	19.9	8.19	74.8	51.6	13600	5.94	8.5	2730	464
Maximum	1.2	4.75	0.609	0.45	8000	26	20	110	51.6	36000	8.3	8.5	6200	1200
% of values undetected	100%	50%	50%	100%								100%		
# of values between MDL and MRL		1	1											
28B2														
Sample Date														
08/10/07	**1.7**	**6.5**	**0.65**		7000	15	20	81		81000	6.5		2700	950
Mean	1.7	6.5	0.65	NA	7000	15	20	81	NA	81000	6.5	NA	2700	950
Median	1.7	6.5	0.65	NA	7000	15	20	81	NA	81000	6.5	NA	2700	950
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	1.7	6.5	0.65	NA	7000	15	20	81	NA	81000	6.5	NA	2700	950
Maximum	1.7	6.5	0.65	NA	7000	15	20	81	NA	81000	6.5	NA	2700	950
% of values undetected	100%	100%	100%											
# of values between MDL and MRL														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
236221															
Sample Date															
08/25/06	**0.0077**	**0.01**	**0.403**	4.79	2.7	791	0.947	**0.0197**	271	183	0.0420	**0.635**	26.2	49.8	37.1
Mean	0.0077	0.01	0.403	4.79	2.7	791	0.947	0.01965	271	183	0.042	0.635	26.2	49.8	37.1
Median	0.0077	0.01	0.403	4.79	2.7	791	0.947	0.01965	271	183	0.042	0.635	26.2	49.8	37.1
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0077	0.01	0.403	4.79	2.7	791	0.947	0.01965	271	183	0.042	0.635	26.2	49.8	37.1
Maximum	0.0077	0.01	0.403	4.79	2.7	791	0.947	0.01965	271	183	0.042	0.635	26.2	49.8	37.1
% of values undetected	100%	100%						100%				100%			
# of values between MDL and MRL			1												
28B1															
Sample Date															
07/27/06	**0.0278**	**0.07**	14.2	10.3	5.9	**400**	13.1	**0.158**	**257**	10000	**0.0141**	**2.275**	26.5	49.3	40.6
08/11/07	**0.0830**		14.0	18.0		**700**	4.7	**0.475**	**100**		**0.475**	**0.620**	72	93	
Mean	0.055	0.07	14	14	5.9	550	9	0.317	180	10000	0.245	1.45	49	71	40.6
Median	0.055	0.07	14	14	5.9	550	9	0.317	180	10000	0.245	1.45	49	71	40.6
St. Deviation	0.039	NA	0	5	NA	210	6	0.224	110	NA	0.326	1.17	32	31	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.0278	0.07	14	10.3	5.9	400	4.7	0.158	100	10000	0.0141	0.62	26.5	49.3	40.6
Maximum	0.083	0.07	14.2	18	5.9	700	13.1	0.475	257	10000	0.475	2.275	72	93	40.6
% of values undetected	50%	100%						50%			100%	50%			
# of values between MDL and MRL	1					2		1	2			1			
28B2															
Sample Date															
08/10/07	**0.085**		22	11		**870**	3.5	**0.65**	**120**		**0.65**	**0.45**	48	75	
Mean	0.085	NA	22	11	NA	870	3.5	0.65	120	NA	0.65	0.45	48	75	NA
Median	0.085	NA	22	11	NA	870	3.5	0.65	120	NA	0.65	0.45	48	75	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.085	NA	22	11	NA	870	3.5	0.65	120	NA	0.65	0.45	48	75	NA
Maximum	0.085	NA	22	11	NA	870	3.5	0.65	120	NA	0.65	0.45	48	75	NA
% of values undetected								100%			100%				
# of values between MDL and MRL	1					1			1			1			

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335051														
Sample Date														
08/25/06	32.5		22.1	**0.477**	**2.34**	**0.031**		230	**0.2**	9420	**0.0468**	4.76	77.4	0.393
Mean	32.5	NA	22.1	0.477	2.34	0.031	NA	230	0.2	9420	0.0468	4.76	77.4	0.393
Median	32.5	NA	22.1	0.477	2.34	0.031	NA	230	0.2	9420	0.0468	4.76	77.4	0.393
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	32.5	NA	22.1	0.477	2.34	0.031	NA	230	0.2	9420	0.0468	4.76	77.4	0.393
Maximum	32.5	NA	22.1	0.477	2.34	0.031	NA	230	0.2	9420	0.0468	4.76	77.4	0.393
% of values undetected				100%					100%		100%			
# of values between MDL and MRL					1	1								
335132														
Sample Date														
08/25/06	43.7		**1.60**	**0.355**	**1.12**	0.066		204	9.3	12900	**0.0349**	3.89	119	0.508
Mean	43.7	NA	1.6	0.355	1.12	0.066	NA	204	9.3	12900	0.0349	3.89	119	0.508
Median	43.7	NA	1.6	0.355	1.12	0.066	NA	204	9.3	12900	0.0349	3.89	119	0.508
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	43.7	NA	1.6	0.355	1.12	0.066	NA	204	9.3	12900	0.0349	3.89	119	0.508
Maximum	43.7	NA	1.6	0.355	1.12	0.066	NA	204	9.3	12900	0.0349	3.89	119	0.508
% of values undetected				100%							100%			
# of values between MDL and MRL			1		1									
335133														
Sample Date														
08/12/07	26	7.9	**2.0**	**0.16**	13	**1.8**		140		11000	**0.45**	6.6	150	**0.48**
Mean	26	7.9	2	0.16	13	1.8	NA	140	NA	11000	0.45	6.6	150	0.48
Median	26	7.9	2	0.16	13	1.8	NA	140	NA	11000	0.45	6.6	150	0.48
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	26	7.9	2	0.16	13	1.8	NA	140	NA	11000	0.45	6.6	150	0.48
Maximum	26	7.9	2	0.16	13	1.8	NA	140	NA	11000	0.45	6.6	150	0.48
% of values undetected			100%	100%		100%								
# of values between MDL and MRL											1			1

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335051														
Sample Date														
08/25/06	**0.0935**	3.24	**0.0935**	**0.2**	4670	17.1	7.30	7.10	2.9	19100	3.88	**3.7**	3900	360
Mean	0.0935	3.24	0.0935	0.2	4670	17.1	7.3	7.1	2.9	19100	3.88	3.7	3900	360
Median	0.0935	3.24	0.0935	0.2	4670	17.1	7.3	7.1	2.9	19100	3.88	3.7	3900	360
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0935	3.24	0.0935	0.2	4670	17.1	7.3	7.1	2.9	19100	3.88	3.7	3900	360
Maximum	0.0935	3.24	0.0935	0.2	4670	17.1	7.3	7.1	2.9	19100	3.88	3.7	3900	360
% of values undetected	100%		100%	100%								100%		
# of values between MDL and MRL														
335132														
Sample Date														
08/25/06	**0.0695**	4.17	**0.304**	**0.1**	4780	22.5	11.5	17.3	10.9	19200	6.46	5.8	3810	353
Mean	0.0695	4.17	0.304	0.1	4780	22.5	11.5	17.3	10.9	19200	6.46	5.8	3810	353
Median	0.0695	4.17	0.304	0.1	4780	22.5	11.5	17.3	10.9	19200	6.46	5.8	3810	353
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0695	4.17	0.304	0.1	4780	22.5	11.5	17.3	10.9	19200	6.46	5.8	3810	353
Maximum	0.0695	4.17	0.304	0.1	4780	22.5	11.5	17.3	10.9	19200	6.46	5.8	3810	353
% of values undetected	100%			100%										
# of values between MDL and MRL			1											
335133														
Sample Date														
08/12/07	**0.95**	**3.8**	**0.38**		5400	25	12	20		28000	7.4		4000	350
Mean	0.95	3.8	0.38	NA	5400	25	12	20	NA	28000	7.4	NA	4000	350
Median	0.95	3.8	0.38	NA	5400	25	12	20	NA	28000	7.4	NA	4000	350
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.95	3.8	0.38	NA	5400	25	12	20	NA	28000	7.4	NA	4000	350
Maximum	0.95	3.8	0.38	NA	5400	25	12	20	NA	28000	7.4	NA	4000	350
% of values undetected	100%	100%	100%											
# of values between MDL and MRL														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
335051															
Sample Date															
08/25/06	**0.0182**	**0.03**	**0.468**	9.98	5.9	736	3.08	**0.0468**	352	922	**0.0404**	**1.51**	37.5	55.0	37.3
Mean	0.0182	0.03	0.468	9.98	5.9	736	3.08	0.04675	352	922	0.0404	1.51	37.5	55	37.3
Median	0.0182	0.03	0.468	9.98	5.9	736	3.08	0.04675	352	922	0.0404	1.51	37.5	55	37.3
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0182	0.03	0.468	9.98	5.9	736	3.08	0.04675	352	922	0.0404	1.51	37.5	55	37.3
Maximum	0.0182	0.03	0.468	9.98	5.9	736	3.08	0.04675	352	922	0.0404	1.51	37.5	55	37.3
% of values undetected	100%	100%	100%					100%				100%			
# of values between MDL and MRL											1				
335132															
Sample Date															
08/25/06	0.408	**0.02**	**0.349**	14.2	8.4	562	1.49	**0.0349**	403	734	0.0710	**1.13**	55.7	68.8	56.1
Mean	0.408	0.02	0.349	14.2	8.4	562	1.49	0.03485	403	734	0.071	1.13	55.7	68.8	56.1
Median	0.408	0.02	0.349	14.2	8.4	562	1.49	0.03485	403	734	0.071	1.13	55.7	68.8	56.1
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.408	0.02	0.349	14.2	8.4	562	1.49	0.03485	403	734	0.071	1.13	55.7	68.8	56.1
Maximum	0.408	0.02	0.349	14.2	8.4	562	1.49	0.03485	403	734	0.071	1.13	55.7	68.8	56.1
% of values undetected		100%	100%					100%				100%			
# of values between MDL and MRL															
335133															
Sample Date															
08/12/07	0.22		**0.38**	15		**550**	**0.33**	**0.38**	**230**		**0.38**	**0.52**	60	76	
Mean	0.22	NA	0.38	15	NA	550	0.33	0.38	230	NA	0.38	0.52	60	76	NA
Median	0.22	NA	0.38	15	NA	550	0.33	0.38	230	NA	0.38	0.52	60	76	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.22	NA	0.38	15	NA	550	0.33	0.38	230	NA	0.38	0.52	60	76	NA
Maximum	0.22	NA	0.38	15	NA	550	0.33	0.38	230	NA	0.38	0.52	60	76	NA
% of values undetected			100%					100%			100%				
# of values between MDL and MRL						1	1		1			1			

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BEARLAKE1														
Sample Date														
09/16/05	7.84		223	**6.35**	221	**0.014**		**19.9**		7160	**0.9**	**1.97**	29.3	**0.197**
Mean	7.84	NA	223	6.35	221	0.014	NA	19.9	NA	7160	0.9	1.97	29.3	0.197
Median	7.84	NA	223	6.35	221	0.014	NA	19.9	NA	7160	0.9	1.97	29.3	0.197
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	7.84	NA	223	6.35	221	0.014	NA	19.9	NA	7160	0.9	1.97	29.3	0.197
Maximum	7.84	NA	223	6.35	221	0.014	NA	19.9	NA	7160	0.9	1.97	29.3	0.197
% of values undetected				100%		100%		100%				100%		100%
# of values between MDL and MRL											1			
BEARLAKE2														
Sample Date														
09/16/05	8.94		17.5	**5.6**	122	**0.0145**		666		6640	**0.169**	**1.69**	24.7	**0.169**
Mean	8.94	NA	17.5	5.6	122	0.0145	NA	666	NA	6640	0.169	1.69	24.7	0.169
Median	8.94	NA	17.5	5.6	122	0.0145	NA	666	NA	6640	0.169	1.69	24.7	0.169
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	8.94	NA	17.5	5.6	122	0.0145	NA	666	NA	6640	0.169	1.69	24.7	0.169
Maximum	8.94	NA	17.5	5.6	122	0.0145	NA	666	NA	6640	0.169	1.69	24.7	0.169
% of values undetected				100%		100%					100%	100%		100%
# of values between MDL and MRL														
BEARLAKE3														
Sample Date														
09/16/05	6.72		**12.6**	**2.3**	91.4	**0.014**		616		7100	**0.228**	**2.28**	25.2	**0.228**
Mean	6.72	NA	12.6	2.3	91.4	0.014	NA	616	NA	7100	0.228	2.28	25.2	0.228
Median	6.72	NA	12.6	2.3	91.4	0.014	NA	616	NA	7100	0.228	2.28	25.2	0.228
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	6.72	NA	12.6	2.3	91.4	0.014	NA	616	NA	7100	0.228	2.28	25.2	0.228
Maximum	6.72	NA	12.6	2.3	91.4	0.014	NA	616	NA	7100	0.228	2.28	25.2	0.228
% of values undetected				100%		100%					100%	100%		100%
# of values between MDL and MRL			1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BEARLAKE1														
Sample Date														
09/16/05	**0.393**	**1.65**	**0.393**		5520	16	**2.07**	**7.13**		3830	5.43		1580	84.8
Mean	0.393	1.65	0.393	NA	5520	16	2.07	7.13	NA	3830	5.43	NA	1580	84.8
Median	0.393	1.65	0.393	NA	5520	16	2.07	7.13	NA	3830	5.43	NA	1580	84.8
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.393	1.65	0.393	NA	5520	16	2.07	7.13	NA	3830	5.43	NA	1580	84.8
Maximum	0.393	1.65	0.393	NA	5520	16	2.07	7.13	NA	3830	5.43	NA	1580	84.8
% of values undetected	100%	100%	100%											
# of values between MDL and MRL							1	1						
BEARLAKE2														
Sample Date														
09/16/05	**0.338**	**1.48**	**0.338**		4740	12.8	**1.91**	**6.24**		3890	5.55		1200	85.1
Mean	0.338	1.48	0.338	NA	4740	12.8	1.91	6.24	NA	3890	5.55	NA	1200	85.1
Median	0.338	1.48	0.338	NA	4740	12.8	1.91	6.24	NA	3890	5.55	NA	1200	85.1
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.338	1.48	0.338	NA	4740	12.8	1.91	6.24	NA	3890	5.55	NA	1200	85.1
Maximum	0.338	1.48	0.338	NA	4740	12.8	1.91	6.24	NA	3890	5.55	NA	1200	85.1
% of values undetected	100%	100%	100%											
# of values between MDL and MRL							1	1						
BEARLAKE3														
Sample Date														
09/16/05	**0.456**	**2.28**	**0.456**		5160	13.6	**1.105**	**6.82**		4120	6.26		1420	74.6
Mean	0.456	2.28	0.456	NA	5160	13.6	1.105	6.82	NA	4120	6.26	NA	1420	74.6
Median	0.456	2.28	0.456	NA	5160	13.6	1.105	6.82	NA	4120	6.26	NA	1420	74.6
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.456	2.28	0.456	NA	5160	13.6	1.105	6.82	NA	4120	6.26	NA	1420	74.6
Maximum	0.456	2.28	0.456	NA	5160	13.6	1.105	6.82	NA	4120	6.26	NA	1420	74.6
% of values undetected	100%	100%	100%				100%							
# of values between MDL and MRL								1						

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BEARLAKE1															
Sample Date															
09/16/05	**0.075**		**1.965**	5.53		**883**	**5.72**	**0.197**	**197**		**0.115**	**6.35**	**18.2**	32.6	
Mean	0.075	NA	1.965	5.53	NA	883	5.72	0.197	196.5	NA	0.115	6.35	18.2	32.6	NA
Median	0.075	NA	1.965	5.53	NA	883	5.72	0.197	196.5	NA	0.115	6.35	18.2	32.6	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.075	NA	1.965	5.53	NA	883	5.72	0.197	196.5	NA	0.115	6.35	18.2	32.6	NA
Maximum	0.075	NA	1.965	5.53	NA	883	5.72	0.197	196.5	NA	0.115	6.35	18.2	32.6	NA
% of values undetected	100%		100%					100%	100%			100%			
# of values between MDL and MRL						1	1				1		1		
BEARLAKE2															
Sample Date															
09/16/05	**0.067**		**1.69**	4.21		**581**	**0.82**	**0.169**	**345**		**0.0338**	**5.45**	**17.8**	25	
Mean	0.067	NA	1.69	4.21	NA	581	0.82	0.169	345	NA	0.0338	5.45	17.8	25	NA
Median	0.067	NA	1.69	4.21	NA	581	0.82	0.169	345	NA	0.0338	5.45	17.8	25	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.067	NA	1.69	4.21	NA	581	0.82	0.169	345	NA	0.0338	5.45	17.8	25	NA
Maximum	0.067	NA	1.69	4.21	NA	581	0.82	0.169	345	NA	0.0338	5.45	17.8	25	NA
% of values undetected	100%		100%				100%	100%			100%	100%			
# of values between MDL and MRL						1			1				1		
BEARLAKE3															
Sample Date															
09/16/05	**0.088**		**2.28**	4.65		**560**	**1.11**	**0.228**	**228**		**0.0456**	**7.35**	**17.5**	26.8	
Mean	0.088	NA	2.28	4.65	NA	560	1.11	0.228	228	NA	0.0456	7.35	17.5	26.8	NA
Median	0.088	NA	2.28	4.65	NA	560	1.11	0.228	228	NA	0.0456	7.35	17.5	26.8	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.088	NA	2.28	4.65	NA	560	1.11	0.228	228	NA	0.0456	7.35	17.5	26.8	NA
Maximum	0.088	NA	2.28	4.65	NA	560	1.11	0.228	228	NA	0.0456	7.35	17.5	26.8	NA
% of values undetected	100%		100%				100%	100%	100%		100%	100%			
# of values between MDL and MRL						1							1		

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BLACK														
Sample Date														
08/18/07	81	0.51	**0.55**	**0.50**	22	**0.55**		34		5900	**0.12**	8.5	62	**0.20**
Mean	81	0.51	0.55	0.5	22	0.55	NA	34	NA	5900	0.12	8.5	62	0.2
Median	81	0.51	0.55	0.5	22	0.55	NA	34	NA	5900	0.12	8.5	62	0.2
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	81	0.51	0.55	0.5	22	0.55	NA	34	NA	5900	0.12	8.5	62	0.2
Maximum	81	0.51	0.55	0.5	22	0.55	NA	34	NA	5900	0.12	8.5	62	0.2
% of values undetected			100%			100%					100%			
# of values between MDL and MRL				1										1
BLKLK1														
Sample Date														
08/21/05	19.5		**4.8**	**2.17**	73.5	**0.015**		357		6890	**0.077**	8.49	40.4	**0.287**
Mean	19.5	NA	4.8	2.17	73.5	0.015	NA	357	NA	6890	0.077	8.49	40.4	0.287
Median	19.5	NA	4.8	2.17	73.5	0.015	NA	357	NA	6890	0.077	8.49	40.4	0.287
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	19.5	NA	4.8	2.17	73.5	0.015	NA	357	NA	6890	0.077	8.49	40.4	0.287
Maximum	19.5	NA	4.8	2.17	73.5	0.015	NA	357	NA	6890	0.077	8.49	40.4	0.287
% of values undetected						100%					100%			
# of values between MDL and MRL			1	1										1
BLKLK2														
Sample Date														
08/21/05	27.3		3.9	**1.83**	43.9	**0.014**		198		4910	**0.0555**	7.66	43.6	0.404
Mean	27.3	NA	3.9	1.83	43.9	0.014	NA	198	NA	4910	0.0555	7.66	43.6	0.404
Median	27.3	NA	3.9	1.83	43.9	0.014	NA	198	NA	4910	0.0555	7.66	43.6	0.404
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	27.3	NA	3.9	1.83	43.9	0.014	NA	198	NA	4910	0.0555	7.66	43.6	0.404
Maximum	27.3	NA	3.9	1.83	43.9	0.014	NA	198	NA	4910	0.0555	7.66	43.6	0.404
% of values undetected						100%					100%			
# of values between MDL and MRL				1										

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BLACK														
Sample Date														
08/18/07	**6**	**1.25**	**0.0003**		2000	5.7	3.0	3.9		16000	2.7		2300	170
Mean	6	1.25	0.0003	NA	2000	5.7	3	3.9	NA	16000	2.7	NA	2300	170
Median	6	1.25	0.0003	NA	2000	5.7	3	3.9	NA	16000	2.7	NA	2300	170
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	6	1.25	0.0003	NA	2000	5.7	3	3.9	NA	16000	2.7	NA	2300	170
Maximum	6	1.25	0.0003	NA	2000	5.7	3	3.9	NA	16000	2.7	NA	2300	170
% of values undetected	100%	100%	100%											
# of values between MDL and MRL														
BLKLK1														
Sample Date														
08/21/05	**0.154**	6.7	**0.154**		2950	11	3.6	9.2		8350	4.7		1500	122
Mean	0.154	6.7	0.154	NA	2950	11	3.6	9.2	NA	8350	4.7	NA	1500	122
Median	0.154	6.7	0.154	NA	2950	11	3.6	9.2	NA	8350	4.7	NA	1500	122
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.154	6.7	0.154	NA	2950	11	3.6	9.2	NA	8350	4.7	NA	1500	122
Maximum	0.154	6.7	0.154	NA	2950	11	3.6	9.2	NA	8350	4.7	NA	1500	122
% of values undetected	100%		100%											
# of values between MDL and MRL														
BLKLK2														
Sample Date														
08/21/05	**0.111**	3.71	**0.273**		3260	11.1	4.26	8.47		8160	4.09		1580	117
Mean	0.111	3.71	0.273	NA	3260	11.1	4.26	8.47	NA	8160	4.09	NA	1580	117
Median	0.111	3.71	0.273	NA	3260	11.1	4.26	8.47	NA	8160	4.09	NA	1580	117
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.111	3.71	0.273	NA	3260	11.1	4.26	8.47	NA	8160	4.09	NA	1580	117
Maximum	0.111	3.71	0.273	NA	3260	11.1	4.26	8.47	NA	8160	4.09	NA	1580	117
% of values undetected	100%													
# of values between MDL and MRL			1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BLACK															
Sample Date															
08/18/07	**0.0055**		0.29	3.5		450	**0.22**	**0.12**	**77**		**0.12**	**0.30**	13	28	
Mean	0.0055	NA	0.29	3.5	NA	450	0.22	0.12	77	NA	0.12	0.3	13	28	NA
Median	0.0055	NA	0.29	3.5	NA	450	0.22	0.12	77	NA	0.12	0.3	13	28	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0055	NA	0.29	3.5	NA	450	0.22	0.12	77	NA	0.12	0.3	13	28	NA
Maximum	0.0055	NA	0.29	3.5	NA	450	0.22	0.12	77	NA	0.12	0.3	13	28	NA
% of values undetected	100%							100%			100%	100%			
# of values between MDL and MRL							1		1						
BLKLK1															
Sample Date															
08/21/05	**0.0306**		**0.77**	4.88		635	**2.06**	**0.077**	**188**		**0.0154**	**2.49**	22.7	44.5	
Mean	0.0306	NA	0.77	4.88	NA	635	2.06	0.077	188	NA	0.0154	2.49	22.7	44.5	NA
Median	0.0306	NA	0.77	4.88	NA	635	2.06	0.077	188	NA	0.0154	2.49	22.7	44.5	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0306	NA	0.77	4.88	NA	635	2.06	0.077	188	NA	0.0154	2.49	22.7	44.5	NA
Maximum	0.0306	NA	0.77	4.88	NA	635	2.06	0.077	188	NA	0.0154	2.49	22.7	44.50	NA
% of values undetected	100%		100%					100%			100%	100%			
# of values between MDL and MRL							1		1						
BLKLK2															
Sample Date															
08/21/05	**0.0217**		**1.84**	5.63		621	1.91	**0.0555**	**228**		**0.0522**	**1.80**	20.5	46.6	
Mean	0.0217	NA	1.84	5.63	NA	621	1.91	0.0555	228	NA	0.0522	1.80	20.5	46.6	NA
Median	0.0217	NA	1.84	5.63	NA	621	1.91	0.0555	228	NA	0.0522	1.80	20.5	46.6	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0217	NA	1.84	5.63	NA	621	1.91	0.0555	228	NA	0.0522	1.80	20.5	46.6	NA
Maximum	0.0217	NA	1.84	5.63	NA	621	1.91	0.0555	228	NA	0.0522	1.80	20.5	46.6	NA
% of values undetected	100%							100%				100%			
# of values between MDL and MRL			1						1		1				

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BUL														
Sample Date														
06/13/07	89.2		1.86	**0.569**	5.27	**0.035**		20.5		5500	**0.0172**	4.78	72.5	0.131
07/17/07	67.5													
08/18/07	53.3													
Mean	70.0	NA	1.86	0.569	5.27	0.035	NA	20.5	NA	5500	0.0172	4.78	72.5	0.131
Median	67.5	NA	1.86	0.569	5.27	0.035	NA	20.5	NA	5500	0.0172	4.78	72.5	0.131
St. Deviation	18.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	3	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	53.3	NA	1.86	0.569	5.27	0.035	NA	20.5	NA	5500	0.0172	4.78	72.5	0.131
Maximum	89.2	NA	1.86	0.569	5.27	0.035	NA	20.5	NA	5500	0.0172	4.78	72.5	0.131
% of values undetected											100%			
# of values between MDL and MRL				1		1								
CHIQ														
Sample Date														
08/12/07	81	1.38	5.7	**0.14**	**1.6**	**0.6**		43		4200	**0.085**	3.8	16	**0.11**
Mean	81	1.38	5.7	0.14	1.6	0.6	NA	43	NA	4200	0.085	3.8	16	0.11
Median	81	1.38	5.7	0.14	1.6	0.6	NA	43	NA	4200	0.085	3.8	16	0.11
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	81	1.38	5.7	0.14	1.6	0.6	NA	43	NA	4200	0.085	3.8	16	0.11
Maximum	81	1.38	5.7	0.14	1.6	0.6	NA	43	NA	4200	0.085	3.8	16	0.11
% of values undetected						100%								
# of values between MDL and MRL				1	1						1			1
CR199A														
Sample Date														
06/05/04			2.24	1.29	15.4	**0.015**	0.216	441		20200	0.174	13.9	128	0.359
Mean	NA	NA	2.24	1.29	15.4	0.015	0.216	441	NA	20200	0.174	13.9	128	0.359
Median	NA	NA	2.24	1.29	15.4	0.015	0.216	441	NA	20200	0.174	13.9	128	0.359
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	1	1	0	1	1	1	1	1
Minimum	NA	NA	2.24	1.29	15.4	0.015	0.216	441	NA	20200	0.174	13.9	128	0.359
Maximum	NA	NA	2.24	1.29	15.4	0.015	0.216	441	NA	20200	0.174	13.9	128	0.359
% of values undetected						100%								
# of values between MDL and MRL														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BUL														
Sample Date														
06/13/07	**0.0807**	**0.946**	**0.176**		2490	13.6	6.45	15.5		11000	6.37		2660	284
07/17/07														
08/18/07														
Mean	0.0807	0.946	0.176	NA	2490	13.6	6.45	15.5	NA	11000	6.37	NA	2660	284
Median	0.0807	0.946	0.176	NA	2490	13.6	6.45	15.5	NA	11000	6.37	NA	2660	284
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0807	0.946	0.176	NA	2490	13.6	6.45	15.5	NA	11000	6.37	NA	2660	284
Maximum	0.0807	0.946	0.176	NA	2490	13.6	6.45	15.5	NA	11000	6.37	NA	2660	284
% of values undetected														
# of values between MDL and MRL	1	1	1											
CHIQ														
Sample Date														
08/12/07	**0.305**	**1.2**	**0.12**		1100	9.2	2.9	3.9		8800	2.6		2500	190
Mean	0.305	1.2	0.12	NA	1100	9.2	2.9	3.9	NA	8800	2.6	NA	2500	190
Median	0.305	1.2	0.12	NA	1100	9.2	2.9	3.9	NA	8800	2.6	NA	2500	190
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.305	1.2	0.12	NA	1100	9.2	2.9	3.9	NA	8800	2.6	NA	2500	190
Maximum	0.305	1.2	0.12	NA	1100	9.2	2.9	3.9	NA	8800	2.6	NA	2500	190
% of values undetected	100%	100%	100%											
# of values between MDL and MRL														
CR199A														
Sample Date														
06/05/04	**0.0818**	**5.02**	**0.0863**		4720	22.1	9.51	15.1		32500	8.44		3880	1030
Mean	0.0818	5.02	0.0863	NA	4720	22.1	9.51	15.1	NA	32500	8.44	NA	3880	1030
Median	0.0818	5.02	0.0863	NA	4720	22.1	9.51	15.1	NA	32500	8.44	NA	3880	1030
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0818	5.02	0.0863	NA	4720	22.1	9.51	15.1	NA	32500	8.44	NA	3880	1030
Maximum	0.0818	5.02	0.0863	NA	4720	22.1	9.51	15.1	NA	32500	8.44	NA	3880	1030
% of values undetected														
# of values between MDL and MRL	1	1	1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BUL															
Sample Date															
06/13/07	**0.00655**		**0.448**	4.68		593	**0.083**	**0.0412**	550		0.0234	**0.555**	26.6	32.3	
07/17/07															
08/18/07															
Mean	0.00655	NA	0.448	4.68	NA	593	0.083	0.0412	550	NA	0.0234	0.555	26.6	32.3	NA
Median	0.00655	NA	0.448	4.68	NA	593	0.083	0.0412	550	NA	0.0234	0.555	26.6	32.3	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.00655	NA	0.448	4.68	NA	593	0.083	0.0412	550	NA	0.0234	0.555	26.6	32.3	NA
Maximum	0.00655	NA	0.448	4.68	NA	593	0.083	0.0412	550	NA	0.0234	0.555	26.6	32.3	NA
% of values undetected	100%						100%					100%			
# of values between MDL and MRL			1					1							
CHIQ															
Sample Date															
08/12/07	**0.0055**		**0.12**	3.9		**150**	**0.13**	**0.12**	**18**		**0.12**	**0.16**	15	27	
Mean	0.0055	NA	0.12	3.9	NA	150	0.13	0.12	18	NA	0.12	0.16	15	27	NA
Median	0.0055	NA	0.12	3.9	NA	150	0.13	0.12	18	NA	0.12	0.16	15	27	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0055	NA	0.12	3.9	NA	150	0.13	0.12	18	NA	0.12	0.16	15	27	NA
Maximum	0.0055	NA	0.12	3.9	NA	150	0.13	0.12	18	NA	0.12	0.16	15	27	NA
% of values undetected	100%		100%					100%			100%				
# of values between MDL and MRL						1	1		1			1			
CR199A															
Sample Date															
06/05/04	0.0499		**0.605**	12.9		687	0.626	**0.0817**	285		0.0660	**0.50**	55.8	59.5	
Mean	0.0499	NA	0.605	12.9	NA	687	0.626	0.0817	285	NA	0.066	0.5	55.8	59.5	NA
Median	0.0499	NA	0.605	12.9	NA	687	0.626	0.0817	285	NA	0.066	0.5	55.8	59.5	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0499	NA	0.605	12.9	NA	687	0.626	0.0817	285	NA	0.066	0.5	55.8	59.5	NA
Maximum	0.0499	NA	0.605	12.9	NA	687	0.626	0.0817	285	NA	0.066	0.5	55.8	59.5	NA
% of values undetected												100%			
# of values between MDL and MRL			1					1							

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
FRYPAN														
Sample Date														
08/13/07	68	0.45	**0.8**	**0.065**	14	**0.65**		81		12000	0.68	14	83	0.43
Mean	68	0.45	0.8	0.065	14	0.65	NA	81	NA	12000	0.68	14	83	0.43
Median	68	0.45	0.8	0.065	14	0.65	NA	81	NA	12000	0.68	14	83	0.43
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	68	0.45	0.8	0.065	14	0.65	NA	81	NA	12000	0.68	14	83	0.43
Maximum	68	0.45	0.8	0.065	14	0.65	NA	81	NA	12000	0.68	14	83	0.43
Lowest fifth percentile	68.00	0.450	0.800	0.0650	14.00	0.65000	NA	81.00000	NA	12000.00	0.6800	14.000	83.00	0.4300
% of values undetected			100%	100%		100%								
# of values between MDL and MRL														
FRYPAN1														
Sample Date														
07/14/05	28.6		6.7	**1.29**	11.6	**0.0145**		176		12600	**0.289**	9.42	92.9	0.422
Mean	28.6	NA	6.7	1.29	11.6	0.0145	NA	176	NA	12600	0.289	9.42	92.9	0.422
Median	28.6	NA	6.7	1.29	11.6	0.0145	NA	176	NA	12600	0.289	9.42	92.9	0.422
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	28.6	NA	6.7	1.29	11.6	0.0145	NA	176	NA	12600	0.289	9.42	92.9	0.422
Maximum	28.6	NA	6.7	1.29	11.6	0.0145	NA	176	NA	12600	0.289	9.42	92.9	0.422
% of values undetected						100%								
# of values between MDL and MRL				1							1			
FRYPAN10														
Sample Date														
07/26/06	68.0		**0.821**	**0.484**	8.42	0.063		40.6	**0.25**	9070	0.167	9.57	53.5	0.214
Mean	68	NA	0.821	0.484	8.42	0.063	NA	40.6	0.25	9070	0.167	9.57	53.5	0.214
Median	68	NA	0.821	0.484	8.42	0.063	NA	40.6	0.25	9070	0.167	9.57	53.5	0.214
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	68	NA	0.821	0.484	8.42	0.063	NA	40.6	0.25	9070	0.167	9.57	53.5	0.214
Maximum	68	NA	0.821	0.484	8.42	0.063	NA	40.6	0.25	9070	0.167	9.57	53.5	0.214
% of values undetected									100%					
# of values between MDL and MRL			1	1										

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
FRYPAN														
Sample Date														
08/13/07	2.1	**1.45**	**0.145**		2700	16	8.0	16		26000	5.9		5000	320
Mean	2.1	1.45	0.145	NA	2700	16	8	16	NA	26000	5.9	NA	5000	320
Median	2.1	1.45	0.145	NA	2700	16	8	16	NA	26000	5.9	NA	5000	320
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	2.1	1.45	0.145	NA	2700	16	8	16	NA	26000	5.9	NA	5000	320
Maximum	2.1	1.45	0.145	NA	2700	16	8	16	NA	26000	5.9	NA	5000	320
Lowest fifth percentile	2.1000	1.5	0.1450	NA	2700	16.000	8.0000	16.00	NA	######	5.900	NA	5000	320.00
% of values undetected		100%	100%											
# of values between MDL and MRL	1													
FRYPAN1														
Sample Date														
07/14/05	**0.108**	**5.35**	**0.108**		3710	18.1	8.78	62.2		17100	6.2		2840	306
Mean	0.108	5.35	0.108	NA	3710	18.1	8.78	62.2	NA	17100	6.2	NA	2840	306
Median	0.108	5.35	0.108	NA	3710	18.1	8.78	62.2	NA	17100	6.2	NA	2840	306
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.108	5.35	0.108	NA	3710	18.1	8.78	62.2	NA	17100	6.2	NA	2840	306
Maximum	0.108	5.35	0.108	NA	3710	18.1	8.78	62.2	NA	17100	6.2	NA	2840	306
% of values undetected	100%	100%	100%											
# of values between MDL and MRL														
FRYPAN10														
Sample Date														
07/26/06	**0.0451**	2.05	**0.154**	0.2	2050	5.94	4.46	14.8	12.8	22200	3.50	4.4	2880	370
Mean	0.0451	2.05	0.154	0.2	2050	5.94	4.46	14.8	12.8	22200	3.5	4.4	2880	370
Median	0.0451	2.05	0.154	0.2	2050	5.94	4.46	14.8	12.8	22200	3.5	4.4	2880	370
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0451	2.05	0.154	0.2	2050	5.94	4.46	14.8	12.8	22200	3.5	4.4	2880	370
Maximum	0.0451	2.05	0.154	0.2	2050	5.94	4.46	14.8	12.8	22200	3.5	4.4	2880	370
% of values undetected	100%													
# of values between MDL and MRL			1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
FRYPAN															
Sample Date															
08/13/07	**0.0065**		0.92	11		680	**0.21**	0.35	**33**		**0.145**	**0.54**	45	63	
Mean	0.0065	NA	0.92	11	NA	680	0.21	0.35	33	NA	0.145	0.54	45	63	NA
Median	0.0065	NA	0.92	11	NA	680	0.21	0.35	33	NA	0.145	0.54	45	63	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0065	NA	0.92	11	NA	680	0.21	0.35	33	NA	0.145	0.54	45	63	NA
Maximum	0.0065	NA	0.92	11	NA	680	0.21	0.35	33	NA	0.145	0.54	45	63	NA
Lowest fifth percentile	0.006500	NA	0.920	11.000	NA	680	0.21	0.3500	33	NA	0.1450	0.540	45.000	63.00	NA
% of values undetected	100%										100%				
# of values between MDL and MRL							1		1			1			
FRYPAN1															
Sample Date															
07/14/05	**0.0844**		**2.95**	9.86		**268.5**	**0.865**	**0.0535**	**268.5**		0.124	**2.69**	**25.7**	81.3	
Mean	0.0844	NA	2.95	9.86	NA	268.5	0.865	0.0535	268.5	NA	0.124	2.69	25.7	81.3	NA
Median	0.0844	NA	2.95	9.86	NA	268.5	0.865	0.0535	268.5	NA	0.124	2.69	25.7	81.3	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0844	NA	2.95	9.86	NA	268.5	0.865	0.0535	268.5	NA	0.124	2.69	25.7	81.3	NA
Maximum	0.0844	NA	2.95	9.86	NA	268.5	0.865	0.0535	268.5	NA	0.124	2.69	25.7	81.3	NA
% of values undetected						100%	100%	100%	100%			100%			
# of values between MDL and MRL	1		1										1		
FRYPAN10															
Sample Date															
07/26/06	**0.0086**	**0.01**	**0.997**	6.14	6	525	0.800	**0.0226**	182	235	0.0883	**0.725**	25.3	48.4	49
Mean	0.0086	0.01	0.997	6.14	6	525	0.8	0.02255	182	235	0.0883	0.725	25.3	48.4	49
Median	0.0086	0.01	0.997	6.14	6	525	0.8	0.02255	182	235	0.0883	0.725	25.3	48.4	49
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0086	0.01	0.997	6.14	6	525	0.8	0.02255	182	235	0.0883	0.725	25.3	48.4	49
Maximum	0.0086	0.01	0.997	6.14	6	525	0.8	0.02255	182	235	0.0883	0.725	25.3	48.4	49
% of values undetected	100%	100%						100%				100%			
# of values between MDL and MRL			1												

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
FRYPAN11														
Sample Date														
07/26/06	70.1		**0.221**	**0.221**	**1.18**	0.090		**7.34**	**0.25**	5760	0.168	13.4	29.3	0.197
Mean	70.1	NA	0.221	0.221	1.18	0.09	NA	7.34	0.25	5760	0.168	13.4	29.3	0.197
Median	70.1	NA	0.221	0.221	1.18	0.09	NA	7.34	0.25	5760	0.168	13.4	29.3	0.197
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	70.1	NA	0.221	0.221	1.18	0.09	NA	7.34	0.25	5760	0.168	13.4	29.3	0.197
Maximum	70.1	NA	0.221	0.221	1.18	0.09	NA	7.34	0.25	5760	0.168	13.4	29.3	0.197
% of values undetected			100%	100%					100%					
# of values between MDL and MRL					1			1						
FRYPAN13														
Sample Date														
07/26/06	23.5		**3.15**	**0.66**	30.2	**0.030**		402	60.3	11700	**0.256**	9.74	112	0.450
Mean	23.5	NA	3.15	0.66	30.2	0.03	NA	402	60.3	11700	0.256	9.74	112	0.45
Median	23.5	NA	3.15	0.66	30.2	0.03	NA	402	60.3	11700	0.256	9.74	112	0.45
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	23.5	NA	3.15	0.66	30.2	0.03	NA	402	60.3	11700	0.256	9.74	112	0.45
Maximum	23.5	NA	3.15	0.66	30.2	0.03	NA	402	60.3	11700	0.256	9.74	112	0.45
% of values undetected				100%										
# of values between MDL and MRL			1			1					1			
FRYPAN16														
Sample Date														
07/26/06	67.1		**0.231**	**0.231**	1.62	**0.015**		31.4	**0.25**	8700	0.361	14.1	72.9	0.389
Mean	67.1	NA	0.231	0.231	1.62	0.015	NA	31.4	0.25	8700	0.361	14.1	72.9	0.389
Median	67.1	NA	0.231	0.231	1.62	0.015	NA	31.4	0.25	8700	0.361	14.1	72.9	0.389
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	67.1	NA	0.231	0.231	1.62	0.015	NA	31.4	0.25	8700	0.361	14.1	72.9	0.389
Maximum	67.1	NA	0.231	0.231	1.62	0.015	NA	31.4	0.25	8700	0.361	14.1	72.9	0.389
% of values undetected			100%	100%		100%			100%					
# of values between MDL and MRL														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
FRYPAN11														
Sample Date														
07/26/06	**0.0443**	2.43	**0.144**	**0.05**	1630	6.23	4.08	9.86	5.7	20700	3.00	3.3	2830	232
Mean	0.0443	2.43	0.144	0.05	1630	6.23	4.08	9.86	5.7	20700	3	3.3	2830	232
Median	0.0443	2.43	0.144	0.05	1630	6.23	4.08	9.86	5.7	20700	3	3.3	2830	232
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0443	2.43	0.144	0.05	1630	6.23	4.08	9.86	5.7	20700	3	3.3	2830	232
Maximum	0.0443	2.43	0.144	0.05	1630	6.23	4.08	9.86	5.7	20700	3	3.3	2830	232
% of values undetected	100%			100%										
# of values between MDL and MRL			1											
FRYPAN13														
Sample Date														
07/26/06	**0.128**	**3.34**	**0.552**	0.6	3160	13.2	9.77	94.6	75	19600	5.98	**4.7**	2980	549
Mean	0.128	3.34	0.552	0.6	3160	13.2	9.77	94.6	75	19600	5.98	4.7	2980	549
Median	0.128	3.34	0.552	0.6	3160	13.2	9.77	94.6	75	19600	5.98	4.7	2980	549
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.128	3.34	0.552	0.6	3160	13.2	9.77	94.6	75	19600	5.98	4.7	2980	549
Maximum	0.128	3.34	0.552	0.6	3160	13.2	9.77	94.6	75	19600	5.98	4.7	2980	549
% of values undetected	100%											100%		
# of values between MDL and MRL		1	1											
FRYPAN16														
Sample Date														
07/26/06	**0.109**	1.96	**0.113**	0.1	3000	9.42	6.20	7.64	3.9	15800	5.28	4.5	4540	376
Mean	0.109	1.96	0.113	0.1	3000	9.42	6.2	7.64	3.9	15800	5.28	4.5	4540	376
Median	0.109	1.96	0.113	0.1	3000	9.42	6.2	7.64	3.9	15800	5.28	4.5	4540	376
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.109	1.96	0.113	0.1	3000	9.42	6.2	7.64	3.9	15800	5.28	4.5	4540	376
Maximum	0.109	1.96	0.113	0.1	3000	9.42	6.2	7.64	3.9	15800	5.28	4.5	4540	376
% of values undetected														
# of values between MDL and MRL	1		1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
FRYPAN11															
Sample Date															
07/26/06	**0.00845**	**0.01**	1.08	5.55	3.9	441	1.02	**0.0221**	110	99.8	0.0621	**0.715**	26.7	42.6	33.4
Mean	0.00845	0.01	1.08	5.55	3.9	441	1.02	0.0221	110	99.8	0.0621	0.715	26.7	42.6	33.4
Median	0.00845	0.01	1.08	5.55	3.9	441	1.02	0.0221	110	99.8	0.0621	0.715	26.7	42.6	33.4
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.00845	0.01	1.08	5.55	3.9	441	1.02	0.0221	110	99.8	0.0621	0.715	26.7	42.6	33.4
Maximum	0.00845	0.01	1.08	5.55	3.9	441	1.02	0.0221	110	99.8	0.0621	0.715	26.7	42.6	33.4
% of values undetected	100%	100%						100%				100%			
# of values between MDL and MRL			1						1						
FRYPAN13															
Sample Date															
07/26/06	**0.025**	**0.04**	2.21	9.77	6.5	751	5.15	**0.064**	235	6090	0.169	7.02	28.5	91.9	86.7
Mean	0.025	0.04	2.21	9.77	6.5	751	5.15	0.064	235	6090	0.169	7.02	28.5	91.9	86.7
Median	0.025	0.04	2.21	9.77	6.5	751	5.15	0.064	235	6090	0.169	7.02	28.5	91.9	86.7
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.025	0.04	2.21	9.77	6.5	751	5.15	0.064	235	6090	0.169	7.02	28.5	91.9	86.7
Maximum	0.025	0.04	2.21	9.77	6.5	751	5.15	0.064	235	6090	0.169	7.02	28.5	91.9	86.7
% of values undetected	100%	100%						100%							
# of values between MDL and MRL			1						1						
FRYPAN16															
Sample Date															
07/26/06	**0.0088**	**0.01**	0.692	8.43	5.6	699	1.17	**0.0228**	280	219	0.0648	**0.735**	40.0	45.7	31.7
Mean	0.0088	0.01	0.692	8.43	5.6	699	1.17	0.0228	280	219	0.0648	0.735	40	45.7	31.7
Median	0.0088	0.01	0.692	8.43	5.6	699	1.17	0.0228	280	219	0.0648	0.735	40	45.7	31.7
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0088	0.01	0.692	8.43	5.6	699	1.17	0.0228	280	219	0.0648	0.735	40	45.7	31.7
Maximum	0.0088	0.01	0.692	8.43	5.6	699	1.17	0.0228	280	219	0.0648	0.735	40	45.7	31.7
% of values undetected	100%	100%						100%				100%			
# of values between MDL and MRL			1												

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
FRYPAN18														
Sample Date														
07/26/06	35.5		**2.59**	**0.985**	62.6	**0.0145**		127	192	11800	**0.209**	5.90	93.1	0.296
Mean	35.5	NA	2.59	0.985	62.6	0.0145	NA	127	192	11800	0.209	5.9	93.1	0.296
Median	35.5	NA	2.59	0.985	62.6	0.0145	NA	127	192	11800	0.209	5.9	93.1	0.296
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	35.5	NA	2.59	0.985	62.6	0.0145	NA	127	192	11800	0.209	5.9	93.1	0.296
Maximum	35.5	NA	2.59	0.985	62.6	0.0145	NA	127	192	11800	0.209	5.9	93.1	0.296
% of values undetected						100%								
# of values between MDL and MRL			1	1							1			
FRYPAN19														
Sample Date														
07/27/06	68.9		**0.225**	**0.225**	3.59	0.069		41.8	**0.25**	10500	0.175	7.96	81.3	0.381
Mean	68.9	NA	0.225	0.225	3.59	0.069	NA	41.8	0.25	10500	0.175	7.96	81.3	0.381
Median	68.9	NA	0.225	0.225	3.59	0.069	NA	41.8	0.25	10500	0.175	7.96	81.3	0.381
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	68.9	NA	0.2245	0.2245	3.59	0.069	NA	41.8	0.25	10500	0.175	7.96	81.3	0.381
Maximum	68.9	NA	0.2245	0.2245	3.59	0.069	NA	41.8	0.25	10500	0.175	7.96	81.3	0.381
% of values undetected			100%	100%					100%					
# of values between MDL and MRL														
FRYPAN2														
Sample Date														
07/14/05	32.8		3.32	**0.464**	8.97	**0.014**		188		12500	**0.269**	8.9	98.5	0.357
Mean	32.8	NA	3.32	0.464	8.97	0.014	NA	188	NA	12500	0.269	8.9	98.5	0.357
Median	32.8	NA	3.32	0.464	8.97	0.014	NA	188	NA	12500	0.269	8.9	98.5	0.357
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	32.8	NA	3.32	0.464	8.97	0.014	NA	188	NA	12500	0.269	8.9	98.5	0.357
Maximum	32.8	NA	3.32	0.464	8.97	0.014	NA	188	NA	12500	0.269	8.9	98.5	0.357
% of values undetected				100%		100%								
# of values between MDL and MRL											1			

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
FRYPAN18														
Sample Date														
07/26/06	**0.0865**	**1.40**	**0.349**	0.3	3030	10.2	6.78	54.2	44.2	17600	4.98	**2.75**	2730	261
Mean	0.0865	1.4	0.349	0.3	3030	10.2	6.78	54.2	44.2	17600	4.98	2.75	2730	261
Median	0.0865	1.4	0.349	0.3	3030	10.2	6.78	54.2	44.2	17600	4.98	2.75	2730	261
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0865	1.4	0.349	0.3	3030	10.2	6.78	54.2	44.2	17600	4.98	2.75	2730	261
Maximum	0.0865	1.4	0.349	0.3	3030	10.2	6.78	54.2	44.2	17600	4.98	2.75	2730	261
% of values undetected	100%											100%		
# of values between MDL and MRL		1	1											
FRYPAN19														
Sample Date														
07/27/06	**0.151**	3.00	**0.184**	0.3	2140	14.7	9.58	43.9	35.8	21800	6.23	7.2	4100	738
Mean	0.151	3	0.184	0.3	2140	14.7	9.58	43.9	35.8	21800	6.23	7.2	4100	738
Median	0.151	3	0.184	0.3	2140	14.7	9.58	43.9	35.8	21800	6.23	7.2	4100	738
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.151	3	0.184	0.3	2140	14.7	9.58	43.9	35.8	21800	6.23	7.2	4100	738
Maximum	0.151	3	0.184	0.3	2140	14.7	9.58	43.9	35.8	21800	6.23	7.2	4100	738
% of values undetected														
# of values between MDL and MRL	1		1											
FRYPAN2														
Sample Date														
07/14/05	**0.0905**	**4.515**	**0.0905**		3900	16.6	7.61	61.7		17200	5.35		3160	301
Mean	0.0905	4.515	0.0905	NA	3900	16.6	7.61	61.7	NA	17200	5.35	NA	3160	301
Median	0.0905	4.515	0.0905	NA	3900	16.6	7.61	61.7	NA	17200	5.35	NA	3160	301
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0905	4.515	0.0905	NA	3900	16.6	7.61	61.7	NA	17200	5.35	NA	3160	301
Maximum	0.0905	4.515	0.0905	NA	3900	16.6	7.61	61.7	NA	17200	5.35	NA	3160	301
% of values undetected	100%	100%	100%											
# of values between MDL and MRL														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
FRYPAN18															
Sample Date															
07/26/06	**0.0168**	**0.02**	**2.24**	7.51	5.7	621	2.81	**0.0433**	**235**	3940	0.0978	**1.395**	44.5	75.1	77.4
Mean	0.0168	0.02	2.24	7.51	5.7	621	2.81	0.04325	235	3940	0.0978	1.395	44.5	75.1	77.4
Median	0.0168	0.02	2.24	7.51	5.7	621	2.81	0.04325	235	3940	0.0978	1.395	44.5	75.1	77.4
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0168	0.02	2.24	7.51	5.7	621	2.81	0.04325	235	3940	0.0978	1.395	44.5	75.1	77.4
Maximum	0.0168	0.02	2.24	7.51	5.7	621	2.81	0.04325	235	3940	0.0978	1.395	44.5	75.1	77.4
% of values undetected	100%	100%						100%				100%			
# of values between MDL and MRL			1						1						
FRYPAN19															
Sample Date															
07/27/06	**0.00855**	0.02	2.84	10.5	8.5	573	1.54	**0.0690**	**140**	412	0.0784	**0.705**	50.2	59.3	48.8
Mean	0.00855	0.02	2.84	10.5	8.5	573	1.54	0.069	140	412	0.0784	0.705	50.2	59.3	48.8
Median	0.00855	0.02	2.84	10.5	8.5	573	1.54	0.069	140	412	0.0784	0.705	50.2	59.3	48.8
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.00855	0.02	2.84	10.5	8.5	573	1.54	0.069	140	412	0.0784	0.705	50.2	59.3	48.8
Maximum	0.00855	0.02	2.84	10.5	8.5	573	1.54	0.069	140	412	0.0784	0.705	50.2	59.3	48.8
% of values undetected	100%											100%			
# of values between MDL and MRL								1	1						
FRYPAN2															
Sample Date															
07/14/05	**0.0408**		3.44	8.71		680	1.65	**0.0452**	349		0.143	**1.46**	33.2	86.2	
Mean	0.0408	NA	3.44	8.71	NA	680	1.65	0.04515	349	NA	0.143	1.46	33.2	86.2	NA
Median	0.0408	NA	3.44	8.71	NA	680	1.65	0.04515	349	NA	0.143	1.46	33.2	86.2	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0408	NA	3.44	8.71	NA	680	1.65	0.04515	349	NA	0.143	1.46	33.2	86.2	NA
Maximum	0.0408	NA	3.44	8.71	NA	680	1.65	0.04515	349	NA	0.143	1.46	33.2	86.2	NA
% of values undetected								100%				100%			
# of values between MDL and MRL	1														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
KC100A														
Sample Date														
06/05/04						0.87	0.926			8570	0.153	53.3	53.1	0.159
07/13/04			1.12	**0.382**	195	0.078		43.1		4940	**0.0915**	8.15	32.1	0.106
09/15/04			**3.15**	**0.425**	5.14	0.082		38.4		6730	0.113	27.1	41.9	0.141
06/13/05			7.44	30.2	129	0.21		135		5700	**0.0755**	17.9	36.9	**0.0755**
07/12/05	71.7		**1.2**	**0.492**	4.83	**0.0135**		46.2		4270	**0.063**	14.1	26.7	**0.102**
Mean	#NUM!	NA	3.23	7.9	83	0.25	0.926	66	NA	6040	0.099	24.1	38.1	0.117
Median	71.7	NA	2.18	0.5	67	0.08	0.926	45	NA	5700	0.092	17.9	36.9	0.106
St. Deviation	#DIV/0!	NA	3.0	14.9	95.0	0.4	NA	46.0	NA	1680.0	0.0	17.7	10.1	0.0
# of values	1	0	4	4	4	5	1	4	0	5	5	5	5	5
Minimum	71.7	NA	1.12	0.382	4.83	0.0135	0.926	38.4	NA	4270	0.063	8.15	26.7	0.0755
Maximum	71.7	NA	7.44	30.2	195	0.87	0.926	135	NA	8570	0.153	53.3	53.1	0.159
% of values undetected				25%		20%					20%			20%
# of values between MDL and MRL			2	2							2			1
KR100A														
Sample Date														
07/14/04			**0.57**		20	**0.014**		**8.44**		5570	0.135	5.98	37.8	0.228
09/25/04			6.03	**0.151**	14.6	0.057		37.2		6340	**0.0745**	6.87	41.7	0.226
Mean	NA	NA	3.3	0.151	17	0.036	NA	22.8	NA	5960	0.105	6.43	39.8	0.227
Median	NA	NA	3.3	0.151	17	0.036	NA	22.8	NA	5960	0.105	6.43	39.8	0.227
St. Deviation	NA	NA	3.9	#DIV/0!	4	0.03	NA	20.3	NA	540	0.043	0.63	2.8	0.001
# of values	0	0	2	1	2	2	0	2	0	2	2	2	2	2
Minimum	NA	NA	0.57	0.151	14.6	0.014	NA	8.44	NA	5570	0.0745	5.98	37.8	0.226
Maximum	NA	NA	6.03	0.151	20	0.057	NA	37.2	NA	6340	0.135	6.87	41.7	0.228
% of values undetected				100%		50%					50%			
# of values between MDL and MRL			1					1						
LAKE2														
Sample Date														
08/13/07	89		**0.6**	**0.05**	**1.8**	**0.48**		26		3500	**0.030**	2.0	170	**0.091**
08/13/07	44	3.98	**1.2**	**0.44**	14	**1.0**		420		7300	**0.12**	3.1	29	**0.084**
Mean	67	3.98	0.9	0.25	8	0.7	NA	220	NA	5400	0.08	2.6	100	0.088
Median	67	3.98	0.9	0.25	8	0.7	NA	220	NA	5400	0.08	2.6	100	0.088
St. Deviation	32	NA	0.4	0.28	9	0.4	NA	280	NA	2700	0.06	0.8	100	0.005
# of values	2	1	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	44	3.98	0.6	0.05	1.8	0.48	NA	26	NA	3500	0.03	2	29	0.084
Maximum	89	3.98	1.2	0.44	14	1	NA	420	NA	7300	0.12	3.1	170	0.091
% of values undetected			100%	50%		100%								
# of values between MDL and MRL				1	1						2			2
LILLY														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
KC100A														
Sample Date														
06/05/04	**0.0309**	**3.27**	**0.0309**		3510	13.5	3.60	5.50		26300	3.75		1420	323
07/13/04	**0.0302**	**1.51**	**0.0302**		2210	6.87	3.32	3.93		8790	2.55		2220	160
09/15/04	**0.0303**	**1.515**	**0.0303**		2380	7.12	3.1	3.66		15700	2.71		2260	208
06/13/05	**0.0303**	**1.515**	**0.0303**		2750	10.2	2.57	4.76		12400	3.05		1670	154
07/12/05	**0.0423**	**2.11**	**0.17**		1920	7.31	2.54	3.81		9620	2.38		2260	167
Mean	0.0328	1.98	0.058	NA	2550	9	3.03	4.33	NA	14600	2.89	NA	1970	202
Median	0.0303	1.52	0.03	NA	2380	7.3	3.1	3.93	NA	12400	2.71	NA	2220	167
St. Deviation	0.0	0.8	0.1	NA	610.0	2.9	0.5	0.8	NA	7100.0	0.5	NA	390.0	71.0
# of values	5	5	5	0	5	5	5	5	0	5	5	0	5	5
Minimum	0.0302	1.51	0.0302	NA	1920	6.87	2.54	3.66	NA	8790	2.38	NA	1420	154
Maximum	0.0423	3.27	0.17	NA	3510	13.5	3.6	5.5	NA	26300	3.75	NA	2260	323
% of values undetected	100%	80%	80%											
# of values between MDL and MRL		1	1											
KR100A														
Sample Date														
07/14/04	**0.0305**	**1.52**	**0.0799**		2170	9.81	4.54	9.83		14100	3.39		2970	331
09/25/04	**0.0298**	**1.49**	**0.0642**		2080	11	4.69	10.5		15000	3.59		3000	305
Mean	0.0301	1.51	0.0721	NA	2130	10	4.62	10.2	NA	15000	3.49	NA	3000	318
Median	0.0301	1.51	0.0721	NA	2130	10	4.62	10.2	NA	15000	3.49	NA	3000	318
St. Deviation	0.0005	0.02	0.0111	NA	60	1	0.11	0.5	NA	1000	0.14	NA	0	18
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.0298	1.49	0.0642	NA	2080	9.81	4.54	9.83	NA	14100	3.39	NA	2970	305
Maximum	0.0305	1.52	0.0799	NA	2170	11	4.69	10.5	NA	15000	3.59	NA	3000	331
% of values undetected	100%	100%												
# of values between MDL and MRL			2											
LAKE2														
Sample Date														
08/13/07	**0.28**	**1.1**	**0.11**		1300	0.43	0.51	1.3		3000	1.7		580	90
08/13/07	**1.3**	**2.2**	**0.22**		1800	6.0	1.9	3.1		6900	3.7		1700	98
Mean	0.8	1.7	0.17	NA	1600	3.2	1.2	2.2	NA	5000	2.7	NA	1100	94
Median	0.8	1.7	0.17	NA	1600	3.2	1.2	2.2	NA	5000	2.7	NA	1100	94
St. Deviation	0.7	0.8	0.08	NA	400	3.9	1	1.3	NA	2800	1.4	NA	800	6
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.28	1.1	0.11	NA	1300	0.43	0.51	1.3	NA	3000	1.7	NA	580	90
Maximum	1.3	2.2	0.22	NA	1800	6	1.9	3.1	NA	6900	3.7	NA	1700	98
% of values undetected	50%	100%	100%											
# of values between MDL and MRL	1													
LILLY														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
KC100A															
Sample Date															
06/05/04	**0.0341**		1.10	3.93		519	0.849	**0.0378**	359		0.0300	**0.497**	53.8	24.2	
07/13/04	**0.0059**		**0.337**	3.69		327	**0.073**	**0.0151**	153		**0.0030**	**0.487**	22.3	28	
09/15/04	**0.0059**		**0.526**	3.62		362	**0.155**	**0.0488**	147		0.0408	**0.488**	28	22.5	
06/13/05	**0.0192**		**0.789**	3.26		**215**	0.623	**0.0152**	**75.5**		**0.0152**	**0.755**	32	22.3	
07/12/05	**0.00805**		**0.211**	3.63		330	**0.3405**	**0.0211**	141		0.0422	**0.680**	24.7	28.7	
Mean	0.0146	NA	0.59	3.63	NA	351	0.408	0.0276	175	NA	0.0262	0.581	32.2	25.1	NA
Median	0.0081	NA	0.53	3.63	NA	330	0.341	0.0211	147	NA	0.03	0.497	28	24.2	NA
St. Deviation	0.0	NA	0.4	0.2	NA	109.0	0.3	0.0	107.0	NA	0.0	0.1	12.6	3.0	NA
# of values	5	0	5	5	0	5	5	5	5	0	5	5	5	5	0
Minimum	0.0059	NA	0.211	3.26	NA	215	0.073	0.0151	75.5	NA	0.003	0.487	22.3	22.3	NA
Maximum	0.0341	NA	1.1	3.93	NA	519	0.849	0.0488	359	NA	0.0422	0.755	53.8	28.7	NA
% of values undetected	60%		20%				40%	80%	20%		40%	100%			
# of values between MDL and MRL	2		3			1	1	1							
KR100A															
Sample Date															
07/14/04	**0.00595**		**0.439**	5.71		483	**0.0735**	**0.0152**	157		**0.00305**	**0.491**	31.1	41.1	
09/25/04	**0.00595**		**0.452**	7.34		431	**0.166**	**0.0307**	140		**0.00300**	**0.481**	33.8	42.8	
Mean	0.00595	NA	0.446	6.53	NA	457	0.12	0.023	150	NA	0.003	0.486	32.5	42	NA
Median	0.00595	NA	0.446	6.53	NA	457	0.12	0.023	150	NA	0.003	0.486	32.5	42	NA
St. Deviation	0	NA	0.009	1.15	NA	37	0.065	0.011	10	NA	0	0.007	1.9	1.2	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.00595	NA	0.439	5.71	NA	431	0.0735	0.0152	140	NA	0.003	0.481	31.1	41.1	NA
Maximum	0.00595	NA	0.452	7.34	NA	483	0.166	0.0307	157	NA	0.00305	0.491	33.8	42.8	NA
% of values undetected	100%						50%	50%			100%	100%			
# of values between MDL and MRL			2				1	1							
LAKE2															
Sample Date															
08/13/07	**0.0049**		**0.11**	0.64		210	**0.018**	**0.11**	**66**		**0.00075**	**0.17**	2.2	9.9	
08/13/07	**0.010**		**0.22**	3.1		**210**	**0.28**	**0.22**	**86**		**0.00155**	**0.27**	15	25	
Mean	0.007	NA	0.17	1.9	NA	210	0.15	0.17	76	NA	0.0012	0.22	9	17	NA
Median	0.007	NA	0.17	1.9	NA	210	0.15	0.17	76	NA	0.0012	0.22	9	17	NA
St. Deviation	0.004	NA	0.08	1.7	NA	0	0.19	0.08	14	NA	0.0006	0.07	9	11	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.0049	NA	0.11	0.64	NA	210	0.018	0.11	66	NA	0.00075	0.17	2.2	9.9	NA
Maximum	0.01	NA	0.22	3.1	NA	210	0.28	0.22	86	NA	0.00155	0.27	15	25	NA
% of values undetected	100%		100%					100%			100%				
# of values between MDL and MRL						1	2		2			2			
LILLY															

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample Date														
08/18/07	8.9	29.6	**0.55**	0.11	3.6	**4.75**		370		18000	2.3	**1.1**	100	0.28
08/18/07	6.8	32.3	**0.55**	0.41	2.0	**6.5**		940		6200	**1.45**	**1.45**	80	0.29
Mean	7.9	31	0.55	0.26	2.8	5.6	NA	660	NA	12000	1.9	1.3	90	0.29
Median	7.9	31	0.55	0.26	2.8	5.6	NA	660	NA	12000	1.9	1.3	90	0.29
St. Deviation	1.5	1.9	0	0.21	1.1	1.2	NA	400	NA	8000	0.6	0.2	10	0.01
# of values	2	2	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	6.8	29.6	0.55	0.11	2	4.75	NA	370	NA	6200	1.45	1.1	80	0.28
Maximum	8.9	32.3	0.55	0.41	3.6	6.5	NA	940	NA	18000	2.3	1.45	100	0.29
% of values undetected			100%			100%					50%	100%		
# of values between MDL and MRL				2	1									2
LK20105														
Sample Date														
08/24/05	10		9.81	**4.12**	158	**0.015**		681		8600	**0.151**	14.1	53.4	**0.562**
Mean	10	NA	9.81	4.12	158	0.015	NA	681	NA	8600	0.151	14.1	53.4	0.562
Median	10	NA	9.81	4.12	158	0.015	NA	681	NA	8600	0.151	14.1	53.4	0.562
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	10	NA	9.81	4.12	158	0.015	NA	681	NA	8600	0.151	14.1	53.4	0.562
Maximum	10	NA	9.81	4.12	158	0.015	NA	681	NA	8600	0.151	14.1	53.4	0.562
% of values undetected						100%					100%			
# of values between MDL and MRL				1										1
LK20205														
Sample Date														
08/24/05	11.1		15.2	**3.22**	92.7	**0.015**		776		8840	**0.139**	13	44.1	**0.139**
Mean	11.1	NA	15.2	3.22	92.7	0.015	NA	776	NA	8840	0.139	13	44.1	0.139
Median	11.1	NA	15.2	3.22	92.7	0.015	NA	776	NA	8840	0.139	13	44.1	0.139
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	11.1	NA	15.2	3.22	92.7	0.015	NA	776	NA	8840	0.139	13	44.1	0.139
Maximum	11.1	NA	15.2	3.22	92.7	0.015	NA	776	NA	8840	0.139	13	44.1	0.139
% of values undetected						100%					100%			100%
# of values between MDL and MRL				1										

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
08/18/07	**55**	**140**	**0.12**		6100	22	**2.1**	23		9100	3.30		1900	65
08/18/07	**70**	**180**	**0.41**		6500	16	**2.1**	14		3700	**1.45**		**395**	73
Mean	63	160	0.27	NA	6300	19	2.1	19	NA	6400	2.4	NA	1100	69
Median	63	160	0.27	NA	6300	19	2.1	19	NA	6400	2.4	NA	1100	69
St. Deviation	11	30	0.21	NA	300	4	0	6	NA	3800	1.3	NA	1100	6
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	55	140	0.12	NA	6100	16	2.1	14	NA	3700	1.45	NA	395	65
Maximum	70	180	0.41	NA	6500	22	2.1	23	NA	9100	3.3	NA	1900	73
% of values undetected	100%	100%									50%		50%	
# of values between MDL and MRL			2				2							
LK20105														
Sample Date														
08/24/05	**0.301**	10.6	**0.301**		8810	29.3	**4.64**	13.8		14300	9.8		2590	217
Mean	0.301	10.6	0.301	NA	8810	29.3	4.64	13.8	NA	14300	9.8	NA	2590	217
Median	0.301	10.6	0.301	NA	8810	29.3	4.64	13.8	NA	14300	9.8	NA	2590	217
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.301	10.6	0.301	NA	8810	29.3	4.64	13.8	NA	14300	9.8	NA	2590	217
Maximum	0.301	10.6	0.301	NA	8810	29.3	4.64	13.8	NA	14300	9.8	NA	2590	217
% of values undetected	100%		100%											
# of values between MDL and MRL							1							
LK20205														
Sample Date														
08/24/05	**0.278**	11.5	**0.278**		6580	23.8	**4.01**	11.3		11600	8.3		2160	186
Mean	0.278	11.5	0.278	NA	6580	23.8	4.01	11.3	NA	11600	8.3	NA	2160	186
Median	0.278	11.5	0.278	NA	6580	23.8	4.01	11.3	NA	11600	8.3	NA	2160	186
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.278	11.5	0.278	NA	6580	23.8	4.01	11.3	NA	11600	8.3	NA	2160	186
Maximum	0.278	11.5	0.278	NA	6580	23.8	4.01	11.3	NA	11600	8.3	NA	2160	186
% of values undetected	100%		100%											
# of values between MDL and MRL							1							

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
08/18/07	**0.05**		**1.10**	9.5		**490**	**1.2**	**1.10**	**70**		**1.10**	**2.75**	17	17	
08/18/07	**0.065**		**1.45**	6.8		**75**	**1.8**	**1.45**	**95**		**1.45**	**3.65**	39	**3.65**	
Mean	0.058	NA	1.3	8.2	NA	280	1.5	1.3	83	NA	1.3	3.2	28	10	NA
Median	0.058	NA	1.3	8.2	NA	280	1.5	1.3	83	NA	1.3	3.2	28	10	NA
St. Deviation	0.011	NA	0.2	1.9	NA	290	0.4	0.2	18	NA	0.2	0.64	16	9	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.05	NA	1.1	6.8	NA	75	1.2	1.1	70	NA	1.1	2.75	17	3.65	NA
Maximum	0.065	NA	1.45	9.5	NA	490	1.8	1.45	95	NA	1.45	3.65	39	17	NA
% of values undetected	100%		100%					100%	100%		100%	100%		50%	
# of values between MDL and MRL						2	2								
LK20105															
Sample Date															
08/24/05	**0.0595**		**4.74**	7.26		**628**	6.23	**0.151**	**441**		**0.127**	**4.86**	48.1	55.9	
Mean	0.0595	NA	4.74	7.26	NA	628	6.23	0.151	441	NA	0.127	4.86	48.1	55.9	NA
Median	0.0595	NA	4.74	7.26	NA	628	6.23	0.151	441	NA	0.127	4.86	48.1	55.9	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0595	NA	4.74	7.26	NA	628	6.23	0.151	441	NA	0.127	4.86	48.1	55.9	NA
Maximum	0.0595	NA	4.74	7.26	NA	628	6.23	0.151	441	NA	0.127	4.86	48.1	55.9	NA
% of values undetected	100%							100%				100%			
# of values between MDL and MRL			1			1			1		1				
LK20205															
Sample Date															
08/24/05	**0.053**		**4.09**	6.27		**417**	7.8	**0.139**	**373**		**0.102**	**4.49**	39.9	44.4	
Mean	0.053	NA	4.09	6.27	NA	417	7.8	0.139	373	NA	0.102	4.49	39.9	44.4	NA
Median	0.053	NA	4.09	6.27	NA	417	7.8	0.139	373	NA	0.102	4.49	39.9	44.4	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.053	NA	4.09	6.27	NA	417	7.8	0.139	373	NA	0.102	4.49	39.9	44.4	NA
Maximum	0.053	NA	4.09	6.27	NA	417	7.8	0.139	373	NA	0.102	4.49	39.9	44.4	NA
% of values undetected	100%							100%				100%			
# of values between MDL and MRL			1			1			1		1				

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LK20305														
Sample Date														
08/24/05	18.3		12.7	3.04	45.6	**0.015**		475		12700	0.177	7.99	62.7	0.606
Mean	18.3	NA	12.7	3.04	45.6	0.015	NA	475	NA	12700	0.177	7.99	62.7	0.606
Median	18.3	NA	12.7	3.04	45.6	0.015	NA	475	NA	12700	0.177	7.99	62.7	0.606
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	18.3	NA	12.7	3.04	45.6	0.015	NA	475	NA	12700	0.177	7.99	62.7	0.606
Maximum	18.3	NA	12.7	3.04	45.6	0.015	NA	475	NA	12700	0.177	7.99	62.7	0.606
% of values undetected						100%								
# of values between MDL and MRL				1							1			
MUDLAKE1														
Sample Date														
09/16/05	14.5		**5.99**	**1.065**	**6.68**	**0.0145**		523		11200	**0.103**	**1.03**	71.6	**0.274**
Mean	14.5	NA	5.99	1.065	6.68	0.0145	NA	523	NA	11200	0.103	1.03	71.6	0.274
Median	14.5	NA	5.99	1.065	6.68	0.0145	NA	523	NA	11200	0.103	1.03	71.6	0.274
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	14.5	NA	5.99	1.065	6.68	0.0145	NA	523	NA	11200	0.103	1.03	71.6	0.274
Maximum	14.5	NA	5.99	1.065	6.68	0.0145	NA	523	NA	11200	0.103	1.03	71.6	0.274
% of values undetected				100%		100%					100%	100%		
# of values between MDL and MRL			1		1									1
NK100A														
Sample Date														
06/02/04						0.48	0.831	428		20900	0.237	15.4	136	0.667
07/14/04			**0.327**		10.2	**0.014**		**5**		6580	0.205	7.5	41.2	0.238
09/15/04			**0.152**	**0.152**	**0.648**	**0.013**		**1.535**		8180	0.173	8.11	38.4	0.292
06/03/05			0.996	**0.155**	7.14	**0.015**		**8.05**		6900	0.172	9.25	48.9	0.236
07/09/05	75.4		**0.513**	**0.397**	**0.1985**	**0.047**		27.5		7500	0.148	8.01	39.6	0.22
06/15/06	75.9		**0.204**	**0.204**	1.61	**0.015**		**7.11**	**0.35**	13000	0.164	8.54	51.6	0.289
06/18/07	80	0.27	**0.650**	**0.150**	**3.1**	**0.06**		200		6100	0.22	9.7	47	0.26
Mean	77.1	0.27	0.474	0.212	3.8	0.09	0.831	97	0.35	10000	0.188	9.5	58	0.315
Median	75.9	0.27	0.42	0.155	2.4	0.02	0.831	8	0.35	8000	0.173	8.5	47	0.26
St. Deviation	2.5	NA	0.317	0.106	4	0.17	NA	163	NA	5000	0.033	2.7	35	0.158
# of values	3	1	6	5	6	7	1	7	1	7	7	7	7	7
Minimum	75.4	0.27	0.152	0.15	0.1985	0.013	0.831	1.535	0.35	6100	0.148	7.5	38.4	0.22
Maximum	80	0.27	0.996	0.397	10.2	0.48	0.831	428	0.35	20900	0.237	15.4	136	0.667
% of values undetected			50%	60%	17%	71%		14%	100%					
# of values between MDL and MRL			2	2	2	1		3						

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LK20305														
Sample Date														
08/24/05	**0.163**	6.87	**0.373**		6510	23.9	5.56	10.5		14400	10.1		4260	238
Mean	0.163	6.87	0.373	NA	6510	23.9	5.56	10.5	NA	14400	10.1	NA	4260	238
Median	0.163	6.87	0.373	NA	6510	23.9	5.56	10.5	NA	14400	10.1	NA	4260	238
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.163	6.87	0.373	NA	6510	23.9	5.56	10.5	NA	14400	10.1	NA	4260	238
Maximum	0.163	6.87	0.373	NA	6510	23.9	5.56	10.5	NA	14400	10.1	NA	4260	238
% of values undetected	100%													
# of values between MDL and MRL			1											
MUDLAKE1														
Sample Date														
09/16/05	**0.207**	**2.03**	**0.433**		3680	11.4	**2.67**	12.7		5680	2.88		841	129
Mean	0.207	2.03	0.433	NA	3680	11.4	2.67	12.7	NA	5680	2.88	NA	841	129
Median	0.207	2.03	0.433	NA	3680	11.4	2.67	12.7	NA	5680	2.88	NA	841	129
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.207	2.03	0.433	NA	3680	11.4	2.67	12.7	NA	5680	2.88	NA	841	129
Maximum	0.207	2.03	0.433	NA	3680	11.4	2.67	12.7	NA	5680	2.88	NA	841	129
% of values undetected	100%													
# of values between MDL and MRL		1	1				1							
NK100A														
Sample Date														
06/02/04	**0.132**	**1.505**	**0.178**		5710	31.8	11.5	24.8		30600	10.1		5350	1160
07/14/04	**0.0297**	**1.485**	**0.0676**		2190	13.6	5.37	11.9		18100	3.51		3680	379
09/15/04	**0.0688**	**5.16**	**0.0806**		2140	12.8	5.39	11.5		20500	3.46		3560	359
06/03/05	0.208	**1.485**	0.443		2200	11.7	5.39	12.3		17700	5.27		3820	436
07/09/05	**0.0399**	**1.995**	**0.255**		2190	11.2	4.84	11.5		18300	3.37		4210	465
06/15/06	**0.0407**	1.42	**0.184**	**0.03**	2470	14.6	6.61	15.4	1.6	31100	3.96	1.4	4620	624
06/18/07	**2.65**	**10.5**	**0.13**		2300	8.10	5.60	11		17000	3.9		3100	560
Mean	0.45	3.4	0.191	0.03	2740	14.8	6.4	14.1	1.6	21900	4.8	1.4	4050	570
Median	0.07	1.5	0.178	0.03	2200	12.8	5.4	11.9	1.6	18300	3.9	1.4	3820	470
St. Deviation	0.97	3.4	0.128	NA	1310	7.8	2.3	5	NA	6200	2.4	NA	750	280
# of values	7	7	7	1	7	7	7	7	1	7	7	1	7	7
Minimum	0.0297	1.42	0.0676	0.03	2140	8.1	4.84	11	1.6	17000	3.37	1.4	3100	359
Maximum	2.65	10.5	0.443	0.03	5710	31.8	11.5	24.8	1.6	31100	10.1	1.4	5350	1160
% of values undetected	57%	71%		100%										
# of values between MDL and MRL	2	1	6											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LK20305															
Sample Date															
08/24/05	**0.103**		**2.2**	9.32		617	4.24	**0.081**	**307**		0.119	**2.62**	39.7	59.7	
Mean	0.103	NA	2.2	9.32	NA	617	4.24	0.081	307	NA	0.119	2.62	39.7	59.7	NA
Median	0.103	NA	2.2	9.32	NA	617	4.24	0.081	307	NA	0.119	2.62	39.7	59.7	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.103	NA	2.2	9.32	NA	617	4.24	0.081	307	NA	0.119	2.62	39.7	59.7	NA
Maximum	0.103	NA	2.2	9.32	NA	617	4.24	0.081	307	NA	0.119	2.62	39.7	59.7	NA
% of values undetected								100%				100%			
# of values between MDL and MRL	1		1						1						
MUDLAKE1															
Sample Date															
09/16/05	**0.041**		**1.03**	8.18		**207**	**0.499**	**0.103**	**238**		**0.02065**	**3.33**	22.5	28.5	
Mean	0.041	NA	1.03	8.18	NA	207	0.499	0.103	238	NA	0.02065	3.33	22.5	28.5	NA
Median	0.041	NA	1.03	8.18	NA	207	0.499	0.103	238	NA	0.02065	3.33	22.5	28.5	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.041	NA	1.03	8.18	NA	207	0.499	0.103	238	NA	0.02065	3.33	22.5	28.5	NA
Maximum	0.041	NA	1.03	8.18	NA	207	0.499	0.103	238	NA	0.02065	3.33	22.5	28.5	NA
% of values undetected	100%		100%				100%	100%			100%	100%			
# of values between MDL and MRL						1			1						
NK100A															
Sample Date															
06/02/04	0.0422		1.80	15.6		826	0.940	0.122	397		0.0882	1.07	92.2	74.7	
07/14/04	**0.00595**		**0.525**	7.47		608	**0.072**	**0.0149**	137		**0.00295**	**0.479**	40.5	43.9	
09/15/04	**0.0239**		**0.787**	8.24		559	**0.075**	**0.05**	138		0.234	**0.5**	47.3	32.8	
06/03/05	**0.0059**		**0.531**	8.36		476	**0.240**	**0.0149**	136		0.0265	**0.479**	34.1	43.2	
07/09/05	**0.0078**		**0.815**	7.92		636	**0.0965**	**0.0200**	172		0.0439	**0.503**	37.7	43.8	
06/15/06	**0.0077**	**0.005**	**0.593**	10.4	0.9	580	**0.0985**	**0.0204**	133	119	0.0351	**0.655**	39.3	53.4	6.1
06/18/07	**0.016**		0.74	5.70		**500**	**0.26**	**0.105**	**70**		**0.105**	**0.26**	30	40	
Mean	0.016	0.005	0.83	9.1	0.9	598	0.25	0.05	169	119	0.077	0.56	45.9	47.4	6.1
Median	0.008	0.005	0.74	8.2	0.9	580	0.1	0.02	137	119	0.044	0.5	39.3	43.8	6.1
St. Deviation	0.013	NA	0.45	3.2	NA	115	0.31	0.046	105	NA	0.078	0.25	21.1	13.5	NA
# of values	7	1	7	7	1	7	7	7	7	1	7	7	7	7	1
Minimum	0.0059	0.005	0.525	5.7	0.9	476	0.072	0.01485	70	119	0.00295	0.26	30	32.8	6.1
Maximum	0.0422	0.005	1.8	15.6	0.9	826	0.94	0.122	397	119	0.234	1.07	92.2	74.7	6.1
% of values undetected	57%	100%					86%	86%	14%		29%	71%			
# of values between MDL and MRL	2		5			1						1			

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NK100B														
Sample Date														
06/02/04								497		11600	0.122	9.78	55.6	0.319
06/04/05			1.32	**0.154**	14.8	**0.015**		42.5		9270	0.126	8.56	55.7	0.234
07/10/05	73.4		**0.652**	**0.625**	**0.984**	**0.014**		43.3		7120	**0.119**	9.11	38.2	0.206
09/13/05	69.4		**0.223**	**0.72**	**1.08**	**0.031**		**7.75**		10400	**0.105**	8.89	58.5	0.385
06/15/06	71.3		**0.587**	**0.217**	1.79	**0.058**		41.3	**0.35**	12600	0.158	9.68	64.4	0.404
06/18/07	68	0.84	**2.4**	**0.30**	7.6	0.76		82		11000	**0.125**	10	77	0.34
Mean	70.5	0.84	1.04	0.403	5.3	0.18	NA	119	0.35	10300	0.126	9.3	58.2	0.315
Median	70.4	0.84	0.65	0.3	1.8	0.03	NA	43	0.35	10700	0.124	9.4	57.1	0.33
St. Deviation	2.3	NA	0.86	0.254	6	0.33	NA	187	NA	1900	0.017	0.6	12.7	0.08
# of values	4	1	5	5	5	5	0	6	1	6	6	6	6	6
Minimum	68	0.84	0.2225	0.1535	0.984	0.014	NA	7.75	0.35	7120	0.105	8.56	38.2	0.206
Maximum	73.4	0.84	2.4	0.72	14.8	0.76	NA	497	0.35	12600	0.158	10	77	0.404
% of values undetected			40%	60%		40%			100%		17%			
# of values between MDL and MRL			2	2	2	2		1			2			
NK100C														
Sample Date														
06/02/04						0.76	0.647	435		9430	**0.0876**	5.73	66.0	0.231
07/14/04			1.14	**0.437**	56.5	0.078		40.3		7590	0.121	7.94	54	0.25
09/15/04			**0.608**	**0.137**	1.85	**0.045**		**3.9**		8250	0.123	9.56	50.5	0.281
06/05/05			1.8	8.56	74.2	**0.045**		116		9440	**0.0893**	5.88	64.8	0.273
07/11/05	52.1		2.17	**0.295**	3.9	**0.0135**		108		11400	**0.12**	8.64	75.5	0.354
09/13/05	62.4		1.66	**0.8**	24.9	**0.015**		65.4		12300	**0.106**	4.86	91.3	0.355
06/15/06	60.7		**1.33**	**0.560**	3.24	0.060		64.2	**0.35**	12300	**0.118**	8.77	91.9	0.307
06/18/07	38	2.68	**3.95**	**0.35**	17	1.5		150		14000	**0.18**	10	120	0.39
Mean	53.3	2.68	1.81	1.59	25.9	0.3	0.647	123	0.35	10600	0.118	7.7	77	0.305
Median	56.4	2.68	1.66	0.44	17	0.1	0.647	87	0.35	10400	0.119	8.3	71	0.294
St. Deviation	11.2	NA	1.07	3.08	28.7	0.5	NA	134	NA	2200	0.029	1.9	23	0.056
# of values	4	1	7	7	7	8	1	8	1	8	8	8	8	8
Minimum	38	2.68	0.608	0.1365	1.85	0.0135	0.647	3.9	0.35	7590	0.0876	4.86	50.5	0.231
Maximum	62.4	2.68	3.95	8.56	74.2	1.5	0.647	435	0.35	14000	0.18	10	120	0.39
% of values undetected			14%	43%		25%			100%		13%			
# of values between MDL and MRL			2	3		2		1			5			
NK119A														
Sample Date														
06/02/04								465		18500	0.129	10.3	87.7	0.467
07/15/04			1.55	**0.348**	28.5	0.084		43.8		9370	0.113	7.15	60	0.217
09/15/04			**0.141**	**0.141**	0.942	0.11		**1.4**		11900	0.138	7.78	60.3	0.227
06/04/05			1.45	2.46	20.6	**0.015**		24.8		8790	0.128	8.41	55.7	0.15
07/11/05	64.9		1.9	**0.232**	2.6	**0.043**		61.3		10600	**0.143**	9.05	74.8	0.301
06/18/07	72	0.72	**0.75**	**0.14**	**3.3**	**0.06**		29		10000	0.26	10	70	0.24
Mean	68.5	0.72	1.16	0.66	11.2	0.06	NA	104	NA	11500	0.152	8.8	68.1	0.267
Median	68.5	0.72	1.45	0.23	3.3	0.06	NA	36	NA	10300	0.134	8.7	65.2	0.234
St. Deviation	5.020458	NA	0.71	1.01	12.5	0.04	NA	178	NA	3600	0.054	1.2	11.9	0.109
# of values	2	1	5	5	5	5	0	6	0	6	6	6	6	6
Minimum	64.9	0.72	0.1405	0.14	0.942	0.015	NA	1.4	NA	8790	0.113	7.15	55.7	0.15
Maximum	72	0.72	1.9	2.46	28.5	0.11	NA	465	NA	18500	0.26	10.3	87.7	0.467
% of values undetected			40%	40%		40%		17%						
# of values between MDL and MRL				2	1	1					1			

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NK100B														
Sample Date														
06/02/04	**0.0667**	**4.59**	**0.0775**		2090	14.1	4.98	11.7		22000	5.24		2350	445
06/04/05	**0.0309**	**1.54**	0.299		2800	16.3	6.77	18		21600	4.47		4490	599
07/10/05	**0.0413**	**2.065**	**0.212**		1780	7.64	4.25	17		13700	5.33		3230	232
09/13/05	**0.0436**	2.92	0.37		2990	13.5	8.49	17.7		24700	4.66		4230	796
06/15/06	**0.0416**	1.74	**0.236**	**0.03**	3310	15.1	7.82	18.2	3.8	23300	5.11	2	4540	657
06/18/07	**3.2**	**12.5**	**0.17**		4100	15	8.4	20		23000	4.9		4100	970
Mean	0.57	4.2	0.227	0.03	2850	13.6	6.79	17	3.8	21400	4.95	2	3820	617
Median	0.04	2.5	0.224	0.03	2900	14.6	7.3	18	3.8	22500	5.01	2	4170	628
St. Deviation	1.29	4.2	0.102	NA	840	3.1	1.8	3	NA	3900	0.34	NA	860	259
# of values	6	6	6	1	6	6	6	6	1	6	6	1	6	6
Minimum	0.03085	1.54	0.0775	0.03	1780	7.64	4.25	11.7	3.8	13700	4.47	2	2350	232
Maximum	3.2	12.5	0.37	0.03	4100	16.3	8.49	20	3.8	24700	5.33	2	4540	970
% of values undetected	83%	50%		100%										
# of values between MDL and MRL	1	1	4											
NK100C														
Sample Date														
06/02/04	**0.0301**	**4.88**	**0.0718**		2490	14.8	4.27	5.57		25000	4.53		1890	655
07/14/04	**0.0301**		**0.0754**		2550	14.9	6.65	6.45		19100	3.21		3640	865
09/15/04	**0.0309**	**5.31**	**0.0832**		2500	12.7	6.76	6.3		20400	3.01		3570	761
06/05/05	**0.0308**	**1.54**	0.356		2860	15.2	5.32	5.71		16600	4.45		3650	449
07/11/05	**0.0585**	**2.925**	**0.364**		3160	16.8	6.14	7.97		19600	5.7		4090	728
09/13/05	**0.0487**	1.66	**0.263**		3210	15.2	6.61	6.27		18900	5.02		4160	497
06/15/06	**0.051**	**1.39**	**0.285**	0.13	3460	17.1	7.61	7.96	1.7	22200	5.20	2.2	4490	966
06/18/07	**4.55**	**18**	**0.22**		4700	23	8.0	8.7		20000	8.2		4100	890
Mean	0.6	#NUM!	0.215	NA	3120	16.2	6.42	6.87	1.7	20200	4.92	2.2	3700	726
Median	0.04	#NUM!	0.242	NA	3010	15.2	6.63	6.38	1.7	19800	4.78	2.2	3870	745
St. Deviation	1.59	#NUM!	0.123	NA	740	3.1	1.2	1.17	NA	2500	1.62	NA	800	185
# of values	8	7	8	1	8	8	8	8	1	8	8	1	8	8
Minimum	0.03005	1.39	0.0718	0.13	2490	12.7	4.27	5.57	1.7	16600	3.01	2.2	1890	449
Maximum	4.55	18	0.364	0.13	4700	23	8	8.7	1.7	25000	8.2	2.2	4490	966
% of values undetected	100%	43%												
# of values between MDL and MRL		3	7											
NK119A														
Sample Date														
06/02/04	**0.0984**	**5.30**	**0.162**		4350	19.8	12.1	33.0		44500	5.86		5990	1320
07/15/04	**0.0302**	**1.51**	**0.109**		3080	16.1	9.66	40.2		24600	3.64		4200	719
09/15/04	**0.0308**	**3.73**	**0.126**		3020	16.7	10.9	54.6		26800	3.25		4620	788
06/04/05	**0.0304**	**1.52**	0.377		2540	15.7	10.5	41.1		23800	2.83		4350	757
07/11/05	**0.0977**	**2.3**	**0.293**		3320	16.8	9.35	42.6		26000	5.33		5870	711
06/18/07	**2.4**	**9.5**	**0.12**		2800	15	9.6	44		26000	3.7		4200	720
Mean	0.45	4	0.198	NA	3190	16.7	10.4	42.6	NA	28600	4.1	NA	4870	840
Median	0.06	3	0.144	NA	3050	16.4	10.1	41.9	NA	26000	3.67	NA	4490	740
St. Deviation	0.96	3.1	0.111	NA	630	1.7	1	7	NA	7900	1.21	NA	830	240
# of values	6	6	6	0	6	6	6	6	0	6	6	0	6	6
Minimum	0.0302	1.51	0.109	NA	2540	15	9.35	33	NA	23800	2.83	NA	4200	711
Maximum	2.4	9.5	0.377	NA	4350	19.8	12.1	54.6	NA	44500	5.86	NA	5990	1320
% of values undetected	67%	67%												
# of values between MDL and MRL	2	2	5											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NK100B															
Sample Date															
06/02/04	0.0419		**0.855**	7.23		493	0.661	**0.0574**	148		0.0496	**0.497**	39.1	38.3	
06/04/05	**0.00585**		**0.603**	8.67		570	**0.249**	**0.0154**	168		0.0432	**0.498**	51.4	52.4	
07/10/05	**0.00785**		**1.02**	5.50		461	**0.100**	**0.0207**	147		0.0368	**0.456**	32	68.5	
09/13/05	**0.00855**		**0.634**	10.1		679	**0.264**	**0.0904**	180		0.0604	**0.705**	47.7	63.3	
06/15/06	**0.00835**	**0.005**	**0.696**	10.8	2.1	647	**0.101**	**0.0208**	243	155	0.0787	**0.67**	52.3	61.4	13.4
06/18/07	0.028		0.74	8.9		**580**	**0.31**	**0.125**	**300**		**0.125**	**0.31**	47	51	
Mean	0.0168	0.005	0.76	8.5	2.1	572	0.281	0.055	198	155	0.066	0.523	44.9	55.8	13.4
Median	0.0085	0.005	0.72	8.8	2.1	575	0.256	0.039	174	155	0.055	0.497	47.4	56.9	13.4
St. Deviation	0.0148	NA	0.16	1.9	NA	85	0.206	0.045	61	NA	0.033	0.146	7.9	10.9	NA
# of values	6	1	6	6	1	6	6	6	6	1	6	6	6	6	1
Minimum	0.00585	0.005	0.603	5.5	2.1	461	0.1	0.0154	147	155	0.0368	0.31	32	38.3	13.4
Maximum	0.0419	0.005	1.02	10.8	2.1	679	0.661	0.125	300	155	0.125	0.705	52.3	68.5	13.4
% of values undetected	67%	100%					67%	67%			17%	83%			
# of values between MDL and MRL			5			1	1	2	1			1			
NK100C															
Sample Date															
06/02/04	**0.0313**		**0.151**	5.60		348	**0.243**	**0.0358**	149		0.0375	**0.485**	28.0	35.6	
07/14/04	**0.00595**		**0.392**	7.6		612	**0.159**	**0.015**	198		**0.003**	**0.485**	40.6	55.4	
09/15/04	**0.00595**		**0.457**	6.76		652	**0.355**	0.124	202		0.219	1.11	38.6	49.9	
06/05/05	**0.0059**		**0.154**	6.67		484	1.12	**0.0348**	191		0.0431	**0.497**	33.4	46.5	
07/11/05	**0.011**		**0.293**	7.03		587	1.02	**0.0293**	246		0.0748	**0.945**	41.7	61.2	
09/13/05	**0.00955**		**0.244**	8.68		582	**0.118**	**0.0733**	254		0.0609	**0.785**	36.5	59.1	
06/15/06	**0.0097**	**0.01**	**0.256**	9.65	2.1	623	**0.124**	**0.0256**	234	320	0.0592	**0.825**	42.4	70.3	21.3
06/18/07	**0.023**		0.49	9.2		**310**	**0.445**	**0.18**	**115**		**0.18**	**0.445**	44	57	
Mean	0.013	0.01	0.304	7.65	2.1	525	0.45	0.065	199	320	0.085	0.7	38.2	54.4	21.3
Median	0.01	0.01	0.274	7.32	2.1	585	0.3	0.035	200	320	0.06	0.64	39.6	56.2	21.3
St. Deviation	0.009	NA	0.13	1.4	NA	131	0.4	0.058	48	NA	0.075	0.25	5.3	10.5	NA
# of values	8	1	8	8	1	8	8	8	8	1	8	8	8	8	1
Minimum	0.0059	0.01	0.1505	5.6	2.1	310	0.118	0.015	115	320	0.003	0.445	28	35.6	21.3
Maximum	0.0313	0.01	0.49	9.65	2.1	652	1.12	0.18	254	320	0.219	1.11	44	70.3	21.3
% of values undetected	75%	100%	63%				50%	50%	13%		25%	88%			
# of values between MDL and MRL	2		2			1	2	3							
NK119A															
Sample Date															
06/02/04	0.0526		1.53	13.6		805	0.975	**0.0907**	200		0.0915	**0.499**	77.6	58.4	
07/15/04	**0.0212**		**0.672**	11.2		737	**0.3**	**0.0151**	187		**0.003**	**0.488**	69.7	43	
09/15/04	**0.0157**		**0.789**	13.7		1050	**0.217**	**0.0497**	186		0.108	**0.497**	66.9	35.5	
06/04/05	**0.0058**		**0.722**	11.4		984	**0.245**	**0.0152**	150		0.067	**0.490**	67.5	37	
07/11/05	**0.0092**		**1.09**	11.6		983	0.748	**0.023**	216		0.103	**0.740**	81.1	55.5	
06/18/07	**0.0055**		1.0	9.7		**570**	**0.235**	**0.095**	**60**		**0.095**	**0.235**	60	37	
Mean	0.018	NA	0.97	11.9	NA	850	0.453	0.0481	170	NA	0.08	0.491	70.5	44	NA
Median	0.012	NA	0.89	11.5	NA	890	0.273	0.0364	190	NA	0.09	0.494	68.6	40	NA
St. Deviation	0.018	NA	0.32	1.5	NA	180	0.325	0.0369	60	NA	0.04	0.16	7.7	10	NA
# of values	6	0	6	6	0	6	6	6	6	0	6	6	6	6	0
Minimum	0.0055	NA	0.672	9.7	NA	570	0.217	0.0151	60	NA	0.003	0.235	60	35.5	NA
Maximum	0.0526	NA	1.53	13.7	NA	1050	0.975	0.095	216	NA	0.108	0.74	81.1	58.4	NA
% of values undetected	50%						33%	83%	17%		33%	100%			
# of values between MDL and MRL	2		4			1	2	1							

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC03														
Sample Date														
09/02/04			9.63	12.8	50.3	0.28		344		11700	0.126	5.62	44.6	0.309
09/03/04			3.21	**0.152**	20	0.099		40.2		19600	0.153	6.21	105	0.513
Mean	NA	NA	6.42	6.5	35	0.19	NA	192	NA	15700	0.14	5.92	75	0.411
Median	NA	NA	6.42	6.5	35	0.19	NA	192	NA	15700	0.14	5.92	75	0.411
St. Deviation	NA	NA	4.54	8.9	21	0.13	NA	215	NA	5600	0.019	0.42	43	0.144
# of values	0	0	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	NA	NA	3.21	0.1515	20	0.099	NA	40.2	NA	11700	0.126	5.62	44.6	0.309
Maximum	NA	NA	9.63	12.8	50.3	0.28	NA	344	NA	19600	0.153	6.21	105	0.513
% of values undetected				50%										
# of values between MDL and MRL														
SEC04														
Sample Date														
09/02/04			25.1	14.3	356	0.57		495		17400	0.178	6.84	91.9	0.324
Mean	NA	NA	25.1	14.3	356	0.57	NA	495	NA	17400	0.178	6.84	91.9	0.324
Median	NA	NA	25.1	14.3	356	0.57	NA	495	NA	17400	0.178	6.84	91.9	0.324
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	25.1	14.3	356	0.57	NA	495	NA	17400	0.178	6.84	91.9	0.324
Maximum	NA	NA	25.1	14.3	356	0.57	NA	495	NA	17400	0.178	6.84	91.9	0.324
% of values undetected														
# of values between MDL and MRL														
SEC11														
Sample Date														
09/04/04			80.8	118	274	1.1		924		1820	**0.0714**	6.46	36.8	**0.0791**
09/04/04			6.07	12.5	108	1.9		1290		7020	0.229	2.23	48.6	0.185
Mean	NA	NA	43.4	65	191	1.5	NA	1110	NA	4420	0.15	4.35	42.7	0.132
Median	NA	NA	43.4	65	191	1.5	NA	1110	NA	4420	0.15	4.35	42.7	0.132
St. Deviation	NA	NA	52.8	75	117	0.6	NA	260	NA	3680	0.111	2.99	8.3	0.075
# of values	0	0	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	NA	NA	6.07	12.5	108	1.1	NA	924	NA	1820	0.0714	2.23	36.8	0.0791
Maximum	NA	NA	80.8	118	274	1.9	NA	1290	NA	7020	0.229	6.46	48.6	0.185
% of values undetected														
# of values between MDL and MRL											1			1

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC03														
Sample Date														
09/02/04	**0.0809**	**1.5**	**0.0773**		2380	11.7	4.08	5.71		17000	5.01		3630	323
09/03/04	**0.0306**	**6.38**	**0.0773**		3570	30.6	10.3	13.9		34500	5.56		3780	282
Mean	0.0558	3.9	0.0773	NA	2980	21.2	7.2	9.8	NA	26000	5.29	NA	3710	303
Median	0.0558	3.9	0.0773	NA	2980	21.2	7.2	9.8	NA	26000	5.29	NA	3710	303
St. Deviation	0.0356	3.5	0	NA	840	13.4	4.4	5.8	NA	12000	0.39	NA	110	29
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.0306	1.5	0.0773	NA	2380	11.7	4.08	5.71	NA	17000	5.01	NA	3630	282
Maximum	0.0809	6.38	0.0773	NA	3570	30.6	10.3	13.9	NA	34500	5.56	NA	3780	323
% of values undetected	50%	50%												
# of values between MDL and MRL	1	1	2											
SEC04														
Sample Date														
09/02/04	**0.156**	**1.51**	**0.181**		2910	18.5	9.11	36.8		30600	7.36		3220	593
Mean	0.156	1.51	0.181	NA	2910	18.5	9.11	36.8	NA	30600	7.36	NA	3220	593
Median	0.156	1.51	0.181	NA	2910	18.5	9.11	36.8	NA	30600	7.36	NA	3220	593
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.156	1.51	0.181	NA	2910	18.5	9.11	36.8	NA	30600	7.36	NA	3220	593
Maximum	0.156	1.51	0.181	NA	2910	18.5	9.11	36.8	NA	30600	7.36	NA	3220	593
% of values undetected		100%												
# of values between MDL and MRL	1		1											
SEC11														
Sample Date														
09/04/04	**0.0305**	**1.53**	**0.187**		3570	1.91	1.2	6.63		13000	1.9		461	68.8
09/04/04	**0.0307**	**1.53**	0.505		4120	6.17	1	12.7		4640	2.83		410	35.7
Mean	0.0306	1.53	0.346	NA	3850	4.04	1.1	9.7	NA	9000	2.4	NA	440	52.3
Median	0.0306	1.53	0.346	NA	3850	4.04	1.1	9.7	NA	9000	2.4	NA	440	52.3
St. Deviation	0.0001	0	0.225	NA	390	3.01	0.1	4.3	NA	6000	0.7	NA	40	23.4
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.0305	1.525	0.187	NA	3570	1.91	1	6.63	NA	4640	1.9	NA	410	35.7
Maximum	0.03065	1.53	0.505	NA	4120	6.17	1.2	12.7	NA	13000	2.83	NA	461	68.8
% of values undetected	100%	100%												
# of values between MDL and MRL			1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC03															
Sample Date															
09/02/04	**0.006**		**0.704**	5.58		387	**0.242**	**0.0387**	135		0.044	**0.484**	39.2	39.5	
09/03/04	**0.0241**		**0.66**	10.3		552	**0.371**	**0.0153**	193		0.0474	1.27	66.5	66.2	
Mean	0.015	NA	0.68	7.9	NA	470	0.307	0.027	164	NA	0.046	0.88	52.9	52.9	NA
Median	0.015	NA	0.68	7.9	NA	470	0.307	0.027	164	NA	0.046	0.88	52.9	52.9	NA
St. Deviation	0.013	NA	0.03	3.3	NA	117	0.091	0.0165	41	NA	0.002	0.56	19.3	18.9	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.006	NA	0.66	5.58	NA	387	0.242	0.0153	135	NA	0.044	0.484	39.2	39.5	NA
Maximum	0.0241	NA	0.704	10.3	NA	552	0.371	0.0387	193	NA	0.0474	1.27	66.5	66.2	NA
% of values undetected	50%						50%	50%				50%			
# of values between MDL and MRL	1		2				1	1							
SEC04															
Sample Date															
09/02/04	0.0765		4.66	9.03		532	2.07	**0.0915**	216		0.231	**0.486**	46.3	45.9	
Mean	0.0765	NA	4.66	9.03	NA	532	2.07	0.0915	216	NA	0.231	0.486	46.3	45.9	NA
Median	0.0765	NA	4.66	9.03	NA	532	2.07	0.0915	216	NA	0.231	0.486	46.3	45.9	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0765	NA	4.66	9.03	NA	532	2.07	0.0915	216	NA	0.231	0.486	46.3	45.9	NA
Maximum	0.0765	NA	4.66	9.03	NA	532	2.07	0.0915	216	NA	0.231	0.486	46.3	45.9	NA
% of values undetected												100%			
# of values between MDL and MRL								1							
SEC11															
Sample Date															
09/04/04	0.0472		**0.684**	1.68		1770	**0.246**	**0.0616**	162		**0.00305**	**0.492**	17.7	**1.53**	
09/04/04	0.096		1.18	0.944		172	1.27	**0.0153**	126		**0.00305**	**0.495**	15	14.1	
Mean	0.072	NA	0.93	1.31	NA	970	0.76	0.0385	144	NA	0.00305	0.493	16	7.8	NA
Median	0.072	NA	0.93	1.31	NA	970	0.76	0.0385	144	NA	0.00305	0.493	16	7.8	NA
St. Deviation	0.035	NA	0.35	0.52	NA	1130	0.72	0.0327	25	NA	0	0.002	2	8.9	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.0472	NA	0.684	0.944	NA	172	0.246	0.0153	126	NA	0.00305	0.492	15	1.525	NA
Maximum	0.096	NA	1.18	1.68	NA	1770	1.27	0.0616	162	NA	0.00305	0.495	17.7	14.1	NA
% of values undetected							50%	50%			100%	100%		50%	
# of values between MDL and MRL			1					1							

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC12														
Sample Date														
09/03/04			13	39.4	67.2	0.74		613		11300	0.151	2.39	79.6	0.221
Mean	NA	NA	13	39.4	67.2	0.74	NA	613	NA	11300	0.151	2.39	79.6	0.221
Median	NA	NA	13	39.4	67.2	0.74	NA	613	NA	11300	0.151	2.39	79.6	0.221
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	13	39.4	67.2	0.74	NA	613	NA	11300	0.151	2.39	79.6	0.221
Maximum	NA	NA	13	39.4	67.2	0.74	NA	613	NA	11300	0.151	2.39	79.6	0.221
% of values undetected														
# of values between MDL and MRL														
SEC16														
Sample Date														
09/04/04			2.4	**0.311**	45.1	0.2		111		16600	0.184	12.8	54.6	0.255
Mean	NA	NA	2.4	0.311	45.1	0.2	NA	111	NA	16600	0.184	12.8	54.6	0.255
Median	NA	NA	2.4	0.311	45.1	0.2	NA	111	NA	16600	0.184	12.8	54.6	0.255
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	2.4	0.311	45.1	0.2	NA	111	NA	16600	0.184	12.8	54.6	0.255
Maximum	NA	NA	2.4	0.311	45.1	0.2	NA	111	NA	16600	0.184	12.8	54.6	0.255
% of values undetected														
# of values between MDL and MRL				1										
SEC17														
Sample Date														
09/04/04			13.5	10.3	288	0.83		517		15200	**0.0852**	1.93	70.8	0.385
09/04/04			7.26	9.93	120	1		610		15700	**0.092**	2.28	74.9	0.353
09/04/04			6.69	**0.872**	142	1		461		23100	0.122	2.18	69	0.416
Mean	NA	NA	9.2	7	183	0.9	NA	529	NA	18000	0.1	2.13	71.6	0.385
Median	NA	NA	7.3	9.9	142	1	NA	517	NA	15700	0.092	2.18	70.8	0.385
St. Deviation	NA	NA	3.8	5.3	91	0.1	NA	75	NA	4400	0.02	0.18	3	0.032
# of values	0	0	3	3	3	3	0	3	0	3	3	3	3	3
Minimum	NA	NA	6.69	0.872	120	0.83	NA	461	NA	15200	0.0852	1.93	69	0.353
Maximum	NA	NA	13.5	10.3	288	1	NA	610	NA	23100	0.122	2.28	74.9	0.416
% of values undetected														
# of values between MDL and MRL				1							2			
SEC19														
Sample Date														
09/02/04			3.59	**0.154**	11.9	0.11		68.8		12500	0.206	10.7	34.3	0.203
Mean	NA	NA	3.59	0.154	11.9	0.11	NA	68.8	NA	12500	0.206	10.7	34.3	0.203
Median	NA	NA	3.59	0.154	11.9	0.11	NA	68.8	NA	12500	0.206	10.7	34.3	0.203
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	3.59	0.154	11.9	0.11	NA	68.8	NA	12500	0.206	10.7	34.3	0.203
Maximum	NA	NA	3.59	0.154	11.9	0.11	NA	68.8	NA	12500	0.206	10.7	34.3	0.203
% of values undetected				100%										
# of values between MDL and MRL														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC12														
Sample Date														
09/03/04	**0.0859**	**1.54**	**0.187**		2640	14.1	3.69	9.12		9240	4.75		1720	92
Mean	0.0859	1.54	0.187	NA	2640	14.1	3.69	9.12	NA	9240	4.75	NA	1720	92
Median	0.0859	1.54	0.187	NA	2640	14.1	3.69	9.12	NA	9240	4.75	NA	1720	92
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0859	1.54	0.187	NA	2640	14.1	3.69	9.12	NA	9240	4.75	NA	1720	92
Maximum	0.0859	1.54	0.187	NA	2640	14.1	3.69	9.12	NA	9240	4.75	NA	1720	92
% of values undetected		100%												
# of values between MDL and MRL	1		1											
SEC16														
Sample Date														
09/04/04	**0.0668**	**1.52**	**0.0304**		1160	14.9	6.39	16.7		19100	7.12		3000	361
Mean	0.0668	1.52	0.0304	NA	1160	14.9	6.39	16.7	NA	19100	7.12	NA	3000	361
Median	0.0668	1.52	0.0304	NA	1160	14.9	6.39	16.7	NA	19100	7.12	NA	3000	361
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0668	1.52	0.0304	NA	1160	14.9	6.39	16.7	NA	19100	7.12	NA	3000	361
Maximum	0.0668	1.52	0.0304	NA	1160	14.9	6.39	16.7	NA	19100	7.12	NA	3000	361
% of values undetected		100%	100%											
# of values between MDL and MRL	1													
SEC17														
Sample Date														
09/04/04	**0.101**	**1.53**	**0.194**		2030	10.9	3.43	15.3		6540	5.25		1300	49.8
09/04/04	**0.109**	**1.55**	**0.189**		1790	11.3	3.92	15.7		6710	5.44		1430	49.9
09/04/04	**0.15**	**1.50**	**0.0915**		1350	14.8	3.27	21.1		7740	6.93		1780	59.7
Mean	0.12	1.52	0.158	NA	1720	12.3	3.54	17.4	NA	7000	5.87	NA	1500	53.1
Median	0.109	1.53	0.189	NA	1790	11.3	3.43	15.7	NA	6710	5.44	NA	1430	49.9
St. Deviation	0.026	0.03	0.058	NA	340	2.1	0.34	3.2	NA	650	0.92	NA	250	5.7
# of values	3	3	3	0	3	3	3	3	0	3	3	0	3	3
Minimum	0.101	1.495	0.0915	NA	1350	10.9	3.27	15.3	NA	6540	5.25	NA	1300	49.8
Maximum	0.15	1.55	0.194	NA	2030	14.8	3.92	21.1	NA	7740	6.93	NA	1780	59.7
% of values undetected		100%												
# of values between MDL and MRL	3		3											
SEC19														
Sample Date														
09/02/04	**0.0307**	**1.54**	**0.0307**		926	11.5	5.04	12.6		19700	6.77		2970	203
Mean	0.0307	1.54	0.0307	NA	926	11.5	5.04	12.6	NA	19700	6.77	NA	2970	203
Median	0.0307	1.54	0.0307	NA	926	11.5	5.04	12.6	NA	19700	6.77	NA	2970	203
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0307	1.54	0.0307	NA	926	11.5	5.04	12.6	NA	19700	6.77	NA	2970	203
Maximum	0.0307	1.54	0.0307	NA	926	11.5	5.04	12.6	NA	19700	6.77	NA	2970	203
% of values undetected	100%	100%	100%											
# of values between MDL and MRL														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC12															
Sample Date															
09/03/04	0.0928		**0.78**	5.73		212	**0.248**	**0.0598**	176		0.136	**0.495**	30.5	25	
Mean	0.0928	NA	0.78	5.73	NA	212	0.248	0.0598	176	NA	0.136	0.495	30.5	25	NA
Median	0.0928	NA	0.78	5.73	NA	212	0.248	0.0598	176	NA	0.136	0.495	30.5	25	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0928	NA	0.78	5.73	NA	212	0.248	0.0598	176	NA	0.136	0.495	30.5	25	NA
Maximum	0.0928	NA	0.78	5.73	NA	212	0.248	0.0598	176	NA	0.136	0.495	30.5	25	NA
% of values undetected							100%					100%			
# of values between MDL and MRL			1					1							
SEC16															
Sample Date															
09/04/04	**0.0212**		**0.865**	7.71		701	0.704	0.0981	115		**0.00305**	**0.4905**	49.3	53.3	
Mean	0.0212	NA	0.865	7.71	NA	701	0.704	0.0981	115	NA	0.00305	0.491	49.3	53.3	NA
Median	0.0212	NA	0.865	7.71	NA	701	0.704	0.0981	115	NA	0.00305	0.491	49.3	53.3	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0212	NA	0.865	7.71	NA	701	0.704	0.0981	115	NA	0.00305	0.491	49.3	53.3	NA
Maximum	0.0212	NA	0.865	7.71	NA	701	0.704	0.0981	115	NA	0.00305	0.491	49.3	53.3	NA
% of values undetected											100%	100%			
# of values between MDL and MRL	1		1												
SEC17															
Sample Date															
09/04/04	0.0504		**0.496**	10.1		338	1.41	**0.0524**	117		0.0958	**0.492**	22.6	18.5	
09/04/04	0.0485		**0.544**	10.4		326	1.55	**0.0555**	129		0.0953	**0.500**	25.3	18.3	
09/04/04	0.0537		**0.670**	8.97		331	2.68	**0.0833**	124		0.134	**0.483**	27.1	14.8	
Mean	0.0509	NA	0.57	9.8	NA	332	1.88	0.0637	123.33333	NA	0.108	0.491	25	17.2	NA
Median	0.0504	NA	0.544	10.1	NA	331	1.55	0.0555	124	NA	0.096	0.492	25.3	18.3	NA
St. Deviation	0.0026	NA	0.09	0.8	NA	6	0.7	0.017	6.0277138	NA	0.022	0.009	2.3	2.1	NA
# of values	3	0	3	3	0	3	3	3	3	0	3	3	3	3	0
Minimum	0.0485	NA	0.496	8.97	NA	326	1.41	0.0524	117	NA	0.0953	0.483	22.6	14.8	NA
Maximum	0.0537	NA	0.67	10.4	NA	338	2.68	0.0833	129	NA	0.134	0.5	27.1	18.5	NA
% of values undetected												100%			
# of values between MDL and MRL			3					3							
SEC19															
Sample Date															
09/02/04	**0.0146**		**0.603**	5.81		518	0.759	**0.0414**	110		**0.00305**	**0.495**	50.3	47.3	
Mean	0.0146	NA	0.603	5.81	NA	518	0.759	0.0414	110	NA	0.00305	0.495	50.3	47.3	NA
Median	0.0146	NA	0.603	5.81	NA	518	0.759	0.0414	110	NA	0.00305	0.495	50.3	47.3	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0146	NA	0.603	5.81	NA	518	0.759	0.0414	110	NA	0.00305	0.495	50.3	47.3	NA
Maximum	0.0146	NA	0.603	5.81	NA	518	0.759	0.0414	110	NA	0.00305	0.495	50.3	47.3	NA
% of values undetected											100%	100%			
# of values between MDL and MRL	1		1					1							

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC21														
Sample Date														
09/03/04			2.22	**0.15**	14	0.1		76.4		18200	**0.312**	4.77	82.8	0.371
Mean	NA	NA	2.22	0.15	14	0.1	NA	76.4	NA	18200	0.312	4.77	82.8	0.371
Median	NA	NA	2.22	0.15	14	0.1	NA	76.4	NA	18200	0.312	4.77	82.8	0.371
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	2.22	0.15	14	0.1	NA	76.4	NA	18200	0.312	4.77	82.8	0.371
Maximum	NA	NA	2.22	0.15	14	0.1	NA	76.4	NA	18200	0.312	4.77	82.8	0.371
% of values undetected				100%										
# of values between MDL and MRL											1			
SEC22														
Sample Date														
09/03/04			11.9	1.95	62.5	0.57		1730		5460	**0.0847**	**1.59**	35.7	0.199
Mean	NA	NA	11.9	1.95	62.5	0.57	NA	1730	NA	5460	0.0847	1.59	35.7	0.199
Median	NA	NA	11.9	1.95	62.5	0.57	NA	1730	NA	5460	0.0847	1.59	35.7	0.199
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	11.9	1.95	62.5	0.57	NA	1730	NA	5460	0.0847	1.59	35.7	0.199
Maximum	NA	NA	11.9	1.95	62.5	0.57	NA	1730	NA	5460	0.0847	1.59	35.7	0.199
% of values undetected														
# of values between MDL and MRL											1	1		
SEC23														
Sample Date														
09/02/04			7.92	2.62	25.6	1.1		1150		15700	0.468	40.7	79.2	0.403
Mean	NA	NA	7.92	2.62	25.6	1.1	NA	1150	NA	15700	0.468	40.7	79.2	0.403
Median	NA	NA	7.92	2.62	25.6	1.1	NA	1150	NA	15700	0.468	40.7	79.2	0.403
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	7.92	2.62	25.6	1.1	NA	1150	NA	15700	0.468	40.7	79.2	0.403
Maximum	NA	NA	7.92	2.62	25.6	1.1	NA	1150	NA	15700	0.468	40.7	79.2	0.403
% of values undetected														
# of values between MDL and MRL														
SEC26														
Sample Date														
09/02/04			**1.50**	**0.367**	121	0.77		336		19300	0.231	6.16	84.9	0.453
Mean	NA	NA	1.50	0.367	121	0.77	NA	336	NA	19300	0.231	6.16	84.9	0.453
Median	NA	NA	1.50	0.367	121	0.77	NA	336	NA	19300	0.231	6.16	84.9	0.453
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	1.50	0.367	121	0.77	NA	336	NA	19300	0.231	6.16	84.9	0.453
Maximum	NA	NA	1.50	0.367	121	0.77	NA	336	NA	19300	0.231	6.16	84.9	0.453
% of values undetected			100%											
# of values between MDL and MRL				1										

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC21														
Sample Date														
09/03/04	**0.114**	**4.59**	**0.0981**		1670	9.07	6.96	19.1		26700	4.99		2810	553
Mean	0.114	4.59	0.0981	NA	1670	9.07	6.96	19.1	NA	26700	4.99	NA	2810	553
Median	0.114	4.59	0.0981	NA	1670	9.07	6.96	19.1	NA	26700	4.99	NA	2810	553
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.114	4.59	0.0981	NA	1670	9.07	6.96	19.1	NA	26700	4.99	NA	2810	553
Maximum	0.114	4.59	0.0981	NA	1670	9.07	6.96	19.1	NA	26700	4.99	NA	2810	553
% of values undetected														
# of values between MDL and MRL	1	1	1											
SEC22														
Sample Date														
09/03/04	**0.0665**	**1.54**	**0.0995**		4950	4.81	1.22	5.49		3400	3		567	238
Mean	0.0665	1.54	0.0995	NA	4950	4.81	1.22	5.49	NA	3400	3	NA	567	238
Median	0.0665	1.54	0.0995	NA	4950	4.81	1.22	5.49	NA	3400	3	NA	567	238
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0665	1.54	0.0995	NA	4950	4.81	1.22	5.49	NA	3400	3	NA	567	238
Maximum	0.0665	1.54	0.0995	NA	4950	4.81	1.22	5.49	NA	3400	3	NA	567	238
% of values undetected		100%												
# of values between MDL and MRL	1		1											
SEC23														
Sample Date														
09/02/04	**0.157**	**1.5**	**0.186**		4720	21.7	3.32	12.9		22700	7.26		1930	106
Mean	0.157	1.5	0.186	NA	4720	21.7	3.32	12.9	NA	22700	7.26	NA	1930	106
Median	0.157	1.5	0.186	NA	4720	21.7	3.32	12.9	NA	22700	7.26	NA	1930	106
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.157	1.5	0.186	NA	4720	21.7	3.32	12.9	NA	22700	7.26	NA	1930	106
Maximum	0.157	1.5	0.186	NA	4720	21.7	3.32	12.9	NA	22700	7.26	NA	1930	106
% of values undetected		100%												
# of values between MDL and MRL	1		1											
SEC26														
Sample Date														
09/02/04	0.33	**1.54**	0.355		1730	23.3	2.56	64.5		6070	4.91		2500	76.8
Mean	0.33	1.54	0.355	NA	1730	23.3	2.56	64.5	NA	6070	4.91	NA	2500	76.8
Median	0.33	1.54	0.355	NA	1730	23.3	2.56	64.5	NA	6070	4.91	NA	2500	76.8
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.33	1.54	0.355	NA	1730	23.3	2.56	64.5	NA	6070	4.91	NA	2500	76.8
Maximum	0.33	1.54	0.355	NA	1730	23.3	2.56	64.5	NA	6070	4.91	NA	2500	76.8
% of values undetected		100%												
# of values between MDL and MRL														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC21															
Sample Date															
09/03/04	**0.0289**		1.88	5.01		**397**	**0.249**	**0.0358**	**74.9**		0.0745	**0.498**	74.4	41.9	
Mean	0.0289	NA	1.88	5.01	NA	397	0.249	0.0358	74.9	NA	0.0745	0.498	74.4	41.9	NA
Median	0.0289	NA	1.88	5.01	NA	397	0.249	0.0358	74.9	NA	0.0745	0.498	74.4	41.9	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0289	NA	1.88	5.01	NA	397	0.249	0.0358	74.9	NA	0.0745	0.498	74.4	41.9	NA
Maximum	0.0289	NA	1.88	5.01	NA	397	0.249	0.0358	74.9	NA	0.0745	0.498	74.4	41.9	NA
% of values undetected							100%					100%			
# of values between MDL and MRL	1					1		1	1						
SEC22															
Sample Date															
09/03/04	0.0826		**0.629**	1.91		102	0.95	**0.0751**	101		0.111	**0.497**	7.22	**1.54**	
Mean	0.0826	NA	0.629	1.91	NA	102	0.95	0.0751	101	NA	0.111	0.497	7.22	1.54	NA
Median	0.0826	NA	0.629	1.91	NA	102	0.95	0.0751	101	NA	0.111	0.497	7.22	1.54	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0826	NA	0.629	1.91	NA	102	0.95	0.0751	101	NA	0.111	0.497	7.22	1.54	NA
Maximum	0.0826	NA	0.629	1.91	NA	102	0.95	0.0751	101	NA	0.111	0.497	7.22	1.54	NA
% of values undetected												100%		100%	
# of values between MDL and MRL			1					1							
SEC23															
Sample Date															
09/02/04	0.128		3.94	6.11		301	1.58	0.152	222		0.151	0.971	78.3	23.8	
Mean	0.128	NA	3.94	6.11	NA	301	1.58	0.152	222	NA	0.151	0.971	78.3	23.8	NA
Median	0.128	NA	3.94	6.11	NA	301	1.58	0.152	222	NA	0.151	0.971	78.3	23.8	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.128	NA	3.94	6.11	NA	301	1.58	0.152	222	NA	0.151	0.971	78.3	23.8	NA
Maximum	0.128	NA	3.94	6.11	NA	301	1.58	0.152	222	NA	0.151	0.971	78.3	23.8	NA
% of values undetected															
# of values between MDL and MRL															
SEC26															
Sample Date															
09/02/04	**0.0323**		9.29	7.81		256	5.18	0.153	108		**0.0031**	**0.498**	55.3	20.3	
Mean	0.0323	NA	9.29	7.81	NA	256	5.18	0.153	108	NA	0.0031	0.498	55.3	20.3	NA
Median	0.0323	NA	9.29	7.81	NA	256	5.18	0.153	108	NA	0.0031	0.498	55.3	20.3	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0323	NA	9.29	7.81	NA	256	5.18	0.153	108	NA	0.0031	0.498	55.3	20.3	NA
Maximum	0.0323	NA	9.29	7.81	NA	256	5.18	0.153	108	NA	0.0031	0.498	55.3	20.3	NA
% of values undetected											100%	100%			
# of values between MDL and MRL	1														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC27														
Sample Date														
09/03/04			2.77	4.62	69.3	0.38		62.1		17600	0.137	5.68	91.4	0.522
Mean	NA	NA	2.77	4.62	69.3	0.38	NA	62.1	NA	17600	0.137	5.68	91.4	0.522
Median	NA	NA	2.77	4.62	69.3	0.38	NA	62.1	NA	17600	0.137	5.68	91.4	0.522
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	2.77	4.62	69.3	0.38	NA	62.1	NA	17600	0.137	5.68	91.4	0.522
Maximum	NA	NA	2.77	4.62	69.3	0.38	NA	62.1	NA	17600	0.137	5.68	91.4	0.522
% of values undetected														
# of values between MDL and MRL														
SEC28														
Sample Date														
08/25/04			26.3	**0.287**	31.4	0.1		166		7020	**0.0666**	**1.68**	37.4	0.184
09/03/04			4.17	**0.152**	9.34	0.2		192		9730	**0.075**	1.87	30.7	0.193
Mean	NA	NA	15.2	0.219	20.4	0.15	NA	179	NA	8380	0.071	1.78	34.1	0.189
Median	NA	NA	15.2	0.219	20.4	0.15	NA	179	NA	8380	0.071	1.78	34.1	0.189
St. Deviation	NA	NA	15.6	0.096	15.6	0.07	NA	18	NA	1920	0.006	0.13	4.7	0.006
# of values	0	0	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	NA	NA	4.17	0.1515	9.34	0.1	NA	166	NA	7020	0.0666	1.68	30.7	0.184
Maximum	NA	NA	26.3	0.287	31.4	0.2	NA	192	NA	9730	0.075	1.87	37.4	0.193
% of values undetected				50%							50%			
# of values between MDL and MRL				1							1	1		
SEC32														
Sample Date														
09/02/04			1.75	**0.151**	33.2	0.21		157		18900	0.106	3.99	55.9	0.193
09/02/04			12.7	**7.5**	2600	1.9		882		3400	**0.0941**	**1.48**	50.3	0.263
Mean	NA	NA	7.2	3.8	1300	1.1	NA	520	NA	11000	0.1	2.74	53.1	0.228
Median	NA	NA	7.2	3.8	1300	1.1	NA	520	NA	11000	0.1	2.74	53.1	0.228
St. Deviation	NA	NA	7.7	5.2	1800	1.2	NA	513	NA	11000	0.008	1.77	4	0.049
# of values	0	0	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	NA	NA	1.75	0.151	33.2	0.21	NA	157	NA	3400	0.0941	1.48	50.3	0.193
Maximum	NA	NA	12.7	7.5	2600	1.9	NA	882	NA	18900	0.106	3.99	55.9	0.263
% of values undetected				100%										
# of values between MDL and MRL											1	1		
SEC34														
Sample Date														
09/03/04			73	3.36	214	0.4		1200		4790	**0.0761**	**1.23**	16.8	0.132
Mean	NA	NA	73	3.36	214	0.4	NA	1200	NA	4790	0.0761	1.23	16.8	0.132
Median	NA	NA	73	3.36	214	0.4	NA	1200	NA	4790	0.0761	1.23	16.8	0.132
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	73	3.36	214	0.4	NA	1200	NA	4790	0.0761	1.23	16.8	0.132
Maximum	NA	NA	73	3.36	214	0.4	NA	1200	NA	4790	0.0761	1.23	16.8	0.132
% of values undetected														
# of values between MDL and MRL											1	1		

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC27														
Sample Date														
09/03/04	**0.0308**	**4.21**	0.209		1750	12.2	3.06	13.2		12300	7.37		2190	142
Mean	0.0308	4.21	0.209	NA	1750	12.2	3.06	13.2	NA	12300	7.37	NA	2190	142
Median	0.0308	4.21	0.209	NA	1750	12.2	3.06	13.2	NA	12300	7.37	NA	2190	142
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0308	4.21	0.209	NA	1750	12.2	3.06	13.2	NA	12300	7.37	NA	2190	142
Maximum	0.0308	4.21	0.209	NA	1750	12.2	3.06	13.2	NA	12300	7.37	NA	2190	142
% of values undetected	100%													
# of values between MDL and MRL		1												
SEC28														
Sample Date														
08/25/04	**0.0300**	**1.495**	**0.0788**		2160	13.4	3.56	4.89		7970	4.13		1980	116
09/03/04	**0.0300**	**5.33**	**0.0300**		1500	5.35	3.17	7.91		18500	2.28		1230	188
Mean	0.03	3.41	0.0544	NA	1800	9.4	3.37	6.4	NA	13200	3.21	NA	1610	152
Median	0.03	3.41	0.0544	NA	1800	9.4	3.37	6.4	NA	13200	3.21	NA	1610	152
St. Deviation	0	2.71	0.0345	NA	500	5.7	0.28	2.14	NA	7400	1.31	NA	530	51
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.02995	1.495	0.02995	NA	1500	5.35	3.17	4.89	NA	7970	2.28	NA	1230	116
Maximum	0.02995	5.33	0.0788	NA	2160	13.4	3.56	7.91	NA	18500	4.13	NA	1980	188
% of values undetected	100%	50%	50%											
# of values between MDL and MRL		1	1											
SEC32														
Sample Date														
09/02/04	**0.101**	**1.495**	**0.0299**		1490	15.9	5.77	15.8		15400	7.03		3940	209
09/02/04	**0.083**	**1.54**	0.77		7180	2.37	1.75	39.3		2670	5.56		641	28.7
Mean	0.09	1.52	0.4	NA	4340	9.1	3.76	27.6	NA	9000	6.3	NA	2290	119
Median	0.09	1.52	0.4	NA	4340	9.1	3.76	27.6	NA	9000	6.3	NA	2290	119
St. Deviation	0.01	0.03	0.523	NA	4020	9.6	2.84	16.6	NA	9000	1.04	NA	2330	127
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.083	1.495	0.02985	NA	1490	2.37	1.75	15.8	NA	2670	5.56	NA	641	28.7
Maximum	0.101	1.54	0.77	NA	7180	15.9	5.77	39.3	NA	15400	7.03	NA	3940	209
% of values undetected		100%	50%											
# of values between MDL and MRL	2													
SEC34														
Sample Date														
09/03/04	**0.0304**	**1.52**	**0.112**		3720	3.14	0.996	3.43		2940	1.46		732	88.5
Mean	0.0304	1.52	0.112	NA	3720	3.14	0.996	3.43	NA	2940	1.46	NA	732	88.5
Median	0.0304	1.52	0.112	NA	3720	3.14	0.996	3.43	NA	2940	1.46	NA	732	88.5
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0304	1.52	0.112	NA	3720	3.14	0.996	3.43	NA	2940	1.46	NA	732	88.5
Maximum	0.0304	1.52	0.112	NA	3720	3.14	0.996	3.43	NA	2940	1.46	NA	732	88.5
% of values undetected	100%	100%												
# of values between MDL and MRL			1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEC27															
Sample Date															
09/03/04	**0.035**		**0.765**	7.09		580	0.974	**0.0154**	230		0.135	**0.497**	36.1	41.7	
Mean	0.035	NA	0.765	7.09	NA	580	0.974	0.0154	230	NA	0.135	0.497	36.1	41.7	NA
Median	0.035	NA	0.765	7.09	NA	580	0.974	0.0154	230	NA	0.135	0.497	36.1	41.7	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.035	NA	0.765	7.09	NA	580	0.974	0.0154	230	NA	0.135	0.497	36.1	41.7	NA
Maximum	0.035	NA	0.765	7.09	NA	580	0.974	0.0154	230	NA	0.135	0.497	36.1	41.7	NA
% of values undetected								100%				100%			
# of values between MDL and MRL	1		1												
SEC28															
Sample Date															
08/25/04	**0.006**		**0.150**	5.92		315	**0.145**	**0.0150**	199		**0.003**	**0.483**	17.3	32.9	
09/03/04	**0.0332**		1.3	1.49		149	**0.354**	**0.0150**	**75**		**0.0079**	**0.483**	54.9	22.7	
Mean	0.02	NA	0.72	3.71	NA	232	0.25	0.015	140	NA	0.0055	0.483	36.1	27.8	NA
Median	0.02	NA	0.72	3.71	NA	232	0.25	0.015	140	NA	0.0055	0.483	36.1	27.8	NA
St. Deviation	0.019	NA	0.81	3.13	NA	117	0.148	0	90	NA	0.0035	0	26.6	7.2	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.006	NA	0.1495	1.49	NA	149	0.145	0.01495	75	NA	0.003	0.483	17.3	22.7	NA
Maximum	0.0332	NA	1.3	5.92	NA	315	0.354	0.01495	199	NA	0.0079	0.483	54.9	32.9	NA
% of values undetected	50%		50%					100%	50%		50%	100%			
# of values between MDL and MRL	1						2				1				
SEC32															
Sample Date															
09/02/04	**0.0183**		**0.432**	8.02		534	0.913	**0.0603**	151		**0.003**	**0.482**	48.1	59.3	
09/02/04	0.0874		**0.921**	2.5		99.6	1.49	0.163	119		0.212	**0.497**	7.82	17.3	
Mean	0.0529	NA	0.677	5.3	NA	317	1.2	0.112	135	NA	0.11	0.489	28	38.3	NA
Median	0.0529	NA	0.677	5.3	NA	317	1.2	0.112	135	NA	0.11	0.489	28	38.3	NA
St. Deviation	0.0489	NA	0.346	3.9	NA	307	0.41	0.073	23	NA	0.15	0.011	28.5	29.7	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.0183	NA	0.432	2.5	NA	99.6	0.913	0.0603	119	NA	0.003	0.482	7.82	17.3	NA
Maximum	0.0874	NA	0.921	8.02	NA	534	1.49	0.163	151	NA	0.212	0.497	48.1	59.3	NA
% of values undetected											50%	100%			
# of values between MDL and MRL	1		2					1							
SEC34															
Sample Date															
09/03/04	**0.0213**		**0.328**	0.937		459	1.58	0.168	**86.3**		0.0412	**0.490**	10.6	**1.52**	
Mean	0.0213	NA	0.328	0.937	NA	459	1.58	0.168	86.3	NA	0.0412	0.49	10.6	1.52	NA
Median	0.0213	NA	0.328	0.937	NA	459	1.58	0.168	86.3	NA	0.0412	0.49	10.6	1.52	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0213	NA	0.328	0.937	NA	459	1.58	0.168	86.3	NA	0.0412	0.49	10.6	1.52	NA
Maximum	0.0213	NA	0.328	0.937	NA	459	1.58	0.168	86.3	NA	0.0412	0.49	10.6	1.52	NA
% of values undetected												100%		100%	
# of values between MDL and MRL	1		1						1						

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SK100A														
Sample Date														
06/05/04						0.54	0.225	665		19500	0.323	24.6	117	0.776
06/02/05			0.998	1.59	19.5	**0.0410**		49.6		8050	0.155	10.8	43.1	0.276
07/09/05	70.3		**1.1**	**0.671**	**1.38**	**0.0165**		41.4		7840	**0.112**	7.9	41	0.223
06/18/06	61.6		2.49	**0.251**	4.28	**0.0130**		**8.70**	**0.35**	8260	0.194	13.1	59.4	0.361
06/16/07	75	0.96	**2.2**	**0.3800**	4.2	**0.06**		46		10000	0.26	12	44	0.27
Mean	69	0.96	1.7	0.72	7.3	0.13	0.225	162	0.35	10700	0.209	13.7	61	0.381
Median	70.3	0.96	1.7	0.53	4.2	0.04	0.225	46	0.35	8300	0.194	12	44	0.276
St. Deviation	6.8	NA	0.8	0.6	8.2	0.23	NA	282	NA	5000	0.084	6.4	32	0.226
# of values	3	1	4	4	4	5	1	5	1	5	5	5	5	5
Minimum	61.6	0.96	0.998	0.251	1.38	0.013	0.225	8.7	0.35	7840	0.112	7.9	41	0.223
Maximum	75	0.96	2.49	1.59	19.5	0.54	0.225	665	0.35	19500	0.323	24.6	117	0.776
% of values undetected			25%	25%		60%			100%					
# of values between MDL and MRL			1	2	1	1		1			1			
SK100B														
Sample Date														
06/04/04						0.40	0.493	529		24600	0.433	29.6	118	0.820
07/14/04			1.74	**0.366**	24.7	0.071		61.6		8490	0.216	10.3	36.9	0.327
09/13/04			1.25	**0.287**	109	0.61		95		15500	0.203	9.37	51.2	0.363
06/03/05			2.9	7.41	68.4	**0.031**		99.1		11300	0.144	11.5	49	0.294
07/08/05	57.7		1.83	**0.848**	5.05	**0.059**		118		10800	**0.1325**	10.9	47.4	0.337
06/18/06	40.9		4.16	**0.379**	6.14	0.054		155	22.3	11600	**0.164**	10.2	56.7	0.393
06/17/07	59	1.13	**2.6**	**0.34**	7.0	**0.075**		100		12000	0.49	15	56	0.37
Mean	52.5	1.13	2.41	1.61	37	0.19	0.493	165	22.3	13500	0.255	13.8	59	0.415
Median	57.7	1.13	2.22	0.37	16	0.07	0.493	100	22.3	11600	0.203	10.9	51	0.363
St. Deviation	10.1	NA	1.05	2.85	43	0.23	NA	163	NA	5300	0.145	7.2	27	0.182
# of values	3	1	6	6	6	7	1	7	1	7	7	7	7	7
Minimum	40.9	1.13	1.25	0.287	5.05	0.031	0.493	61.6	22.3	8490	0.1325	9.37	36.9	0.294
Maximum	59	1.13	4.16	7.41	109	0.61	0.493	529	22.3	24600	0.49	29.6	118	0.82
% of values undetected			17%	17%		14%					14%			
# of values between MDL and MRL				4		2					1			
SK100B1														
Sample Date														
06/18/06	70.6		**0.593**	**0.219**	7.41	**0.035**		24.5	**0.35**	8920	0.212	9.83	32.0	0.297
Mean	70.6	NA	0.593	0.219	7.41	0.035	NA	24.5	0.35	8920	0.212	9.83	32	0.297
Median	70.6	NA	0.593	0.219	7.41	0.035	NA	24.5	0.35	8920	0.212	9.83	32	0.297
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	70.6	NA	0.593	0.219	7.41	0.035	NA	24.5	0.35	8920	0.212	9.83	32	0.297
Maximum	70.6	NA	0.593	0.219	7.41	0.035	NA	24.5	0.35	8920	0.212	9.83	32	0.297
% of values undetected				100%					100%					
# of values between MDL and MRL			1			1								

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SK100A														
Sample Date														
06/05/04	0.244	**4.14**	0.547		5960	29.6	12.4	57.0		23400	20.4		6080	1150
06/02/05	**0.0308**	**1.535**	0.247		2440	11	5.16	14.4		15800	6.02		3700	403
07/09/05	**0.0428**	**2.14**	**0.152**		1860	7.42	4.01	15		14200	5.12		3230	256
06/18/06	**0.0494**	**0.944**	**0.292**	0.09	2570	9.61	6.25	18.7	2.9	16100	6.07	3.2	4540	487
06/16/07	**2.9**	**140**	**0.16**		2700	8.8	5.4	15		22000	6.2		4800	380
Mean	0.65	30	0.28	0.09	3110	13.3	6.6	24	2.9	18300	8.8	3.2	4470	540
Median	0.05	2	0.247	0.09	2570	9.6	5.4	15	2.9	16100	6.1	3.2	4540	400
St. Deviation	1.26	62	0.161	NA	1630	9.2	3.3	19	NA	4100	6.5	NA	1100	350
# of values	5	5	5	1	5	5	5	5	1	5	5	1	5	5
Minimum	0.03075	0.944	0.152	0.09	1860	7.42	4.01	14.4	2.9	14200	5.12	3.2	3230	256
Maximum	2.9	140	0.547	0.09	5960	29.6	12.4	57	2.9	23400	20.4	3.2	6080	1150
% of values undetected	80%	60%												
# of values between MDL and MRL		2	3											
SK100B														
Sample Date														
06/04/04	0.317	**1.54**	0.552		6150	33.4	17.4	96.8		36300	28.6		7110	1460
07/14/04	**0.0297**	**1.49**	0.203		2760	13.2	7.69	33.4		22900	8.44		4160	541
09/13/04	**0.131**	**3.23**	0.357		3550	14.8	8.35	53.6		21400	12.9		4520	325
06/03/05	**0.0310**	**1.55**	0.43		2630	11.4	7.19	41.8		20800	13.1		4660	461
07/08/05	**0.265**	**6.86**	**0.188**		2630	12.3	7.64	49.2		19800	15		4030	455
06/18/06	**0.0760**	**0.951**	0.498	0.42	3170	13.0	7.24	54.1	24.9	15800	12.8	11.3	4050	290
06/17/07	**3.4**	**13.5**	0.35		3400	13	9.8	51		26000	14		5200	650
Mean	0.61	4.2	0.368	0.42	3470	15.9	9.3	54.3	24.9	23300	15	11.3	4820	600
Median	0.13	1.6	0.357	0.42	3170	13	7.7	51	24.9	21400	13.1	11.3	4520	460
St. Deviation	1.24	4.6	0.138	NA	1240	7.8	3.7	20.2	NA	6500	6.3	NA	1090	400
# of values	7	7	7	1	7	7	7	7	1	7	7	1	7	7
Minimum	0.0297	0.951	0.188	0.42	2630	11.4	7.19	33.4	24.9	15800	8.44	11.3	4030	290
Maximum	3.4	13.5	0.552	0.42	6150	33.4	17.4	96.8	24.9	36300	28.6	11.3	7110	1460
% of values undetected	71%	57%												
# of values between MDL and MRL	1	3	1											
SK100B1														
Sample Date														
06/18/06	**0.0434**	1.67	**0.211**	0.21	3170	10.3	6.69	38.3	13.5	20900	10.3	7.7	3700	372
Mean	0.0434	1.67	0.211	0.21	3170	10.3	6.69	38.3	13.5	20900	10.3	7.7	3700	372
Median	0.0434	1.67	0.211	0.21	3170	10.3	6.69	38.3	13.5	20900	10.3	7.7	3700	372
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0434	1.67	0.211	0.21	3170	10.3	6.69	38.3	13.5	20900	10.3	7.7	3700	372
Maximum	0.0434	1.67	0.211	0.21	3170	10.3	6.69	38.3	13.5	20900	10.3	7.7	3700	372
% of values undetected	100%													
# of values between MDL and MRL			1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SK100A															
Sample Date															
06/05/04	0.0493		5.35	15.3		725	2.76	0.239	321		0.138	1.11	94.4	145	
06/02/05	**0.00595**		1.55	6.32		463	1.34	**0.0707**	163		0.0316	**0.496**	33.1	51.6	
07/09/05	**0.0084**		**0.926**	5.96		465	**0.104**	**0.0214**	146		0.0353	**0.437**	30.9	64.1	
06/18/06	**0.00945**	**0.005**	**1.19**	8.37	0.7	682	**0.120**	**0.0247**	197	84.6	0.0343	**0.795**	37.4	91.6	15.8
06/16/07	**0.0049**		1.3	5.9		**630**	**0.285**	**0.115**	**75**		**0.115**	**0.285**	34	61	
Mean	0.0156	0.005	2.06	8.4	0.7	593	0.92	0.094	180	84.6	0.071	0.62	46	83	15.8
Median	0.0084	0.005	1.3	6.3	0.7	630	0.29	0.071	163	84.6	0.035	0.5	34	64	15.8
St. Deviation	0.0189	NA	1.85	4	NA	122	1.15	0.09	90	NA	0.051	0.33	27.2	38	NA
# of values	5	1	5	5	1	5	5	5	5	1	5	5	5	5	1
Minimum	0.0049	0.005	0.926	5.9	0.7	463	0.1035	0.0214	75	84.6	0.0316	0.285	30.9	51.6	15.8
Maximum	0.0493	0.005	5.35	15.3	0.7	725	2.76	0.239	321	84.6	0.138	1.11	94.4	145	15.8
% of values undetected	80%	100%					60%	60%	20%		20%	60%			
# of values between MDL and MRL			2			1		1				1			
SK100B															
Sample Date															
06/04/04	0.0683		11.6	17.2		715	2.38	0.264	271		0.168	1.15	143	186	
07/14/04	**0.00595**		2.36	8.31		418	**0.183**	**0.0149**	113		**0.00295**	**0.480**	55	90.8	
09/13/04	**0.0215**		3.58	9.85		447	0.605	0.12	149		0.0799	**0.464**	65.6	113	
06/03/05	**0.00595**		3.28	8.16		404	0.543	**0.0899**	118		0.0344	**0.500**	53.9	107	
07/08/05	**0.0205**		**3.63**	8.12		**375**	**0.64**	**0.133**	**132.5**		**0.124**	**1.33**	62.1	113	
06/18/06	**0.0147**	**0.015**	3.29	9.21	2.3	416	**1.01**	**0.0775**	**141**	1230	0.0802	**1.22**	58.4	125	60.6
06/17/07	0.04		4.3	9.0		**330**	0.77	**0.135**	**85**		**0.135**	**0.33**	66	120	
Mean	0.0253	0.015	4.6	10	2.3	444	0.88	0.119	144	1230	0.089	0.78	72	122	60.6
Median	0.0205	0.015	3.6	9	2.3	416	0.64	0.12	133	1230	0.08	0.5	62	113	60.6
St. Deviation	0.0222	NA	3.2	3.2	NA	125	0.71	0.076	60	NA	0.058	0.43	32	30	NA
# of values	7	1	7	7	1	7	7	7	7	1	7	7	7	7	1
Minimum	0.00595	0.015	2.36	8.12	2.3	330	0.183	0.01485	85	1230	0.00295	0.33	53.9	90.8	60.6
Maximum	0.0683	0.015	11.6	17.2	2.3	715	2.38	0.264	271	1230	0.168	1.325	143	186	60.6
% of values undetected	43%	100%					14%	43%	29%		29%	86%			
# of values between MDL and MRL	2		1			2	2	2	1		1				
SK100B1															
Sample Date															
06/18/06	**0.0084**	**0.005**	2.42	7.35	1.2	336	**0.105**	**0.0217**	**86.9**	189	0.0397	**0.70**	72.5	105	34.6
Mean	0.0084	0.005	2.42	7.35	1.2	336	0.105	0.02165	86.9	189	0.0397	0.7	72.5	105	34.6
Median	0.0084	0.005	2.42	7.35	1.2	336	0.105	0.02165	86.9	189	0.0397	0.7	72.5	105	34.6
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0084	0.005	2.42	7.35	1.2	336	0.105	0.02165	86.9	189	0.0397	0.7	72.5	105	34.6
Maximum	0.0084	0.005	2.42	7.35	1.2	336	0.105	0.02165	86.9	189	0.0397	0.7	72.5	105	34.6
% of values undetected	100%	100%					100%	100%				100%			
# of values between MDL and MRL									1						

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SK100C														
Sample Date														
06/03/04			1.84	**0.939**	37.4	0.31	0.314	362		25200	**0.466**	22.5	112	0.483
07/13/04			1.36	**0.439**	39.9	0.14		46.8		8330	0.262	17	49.4	0.296
09/14/04			8.87	**0.656**	26.1	0.13		69.1		13400	0.304	23	53.6	0.403
06/04/05			4.46	5.6	46.4	0.16		197		14900	0.282	24	54.1	0.334
07/08/05	56.9		4.15	**1.13**	19.1	0.065		86.3		11200	0.26	18.8	53.3	0.374
06/18/06	45.4		3.23	**0.858**	16.7	0.11		114	**0.35**	21000	0.336	26.5	92.1	0.552
06/17/07	61	1.7	**0.85**	**0.240**	7.7	1.5		250		13000	0.85	34	130	0.53
Mean	54.4	1.7	3.54	1.41	27.6	0.3	0.314	161	0.35	15300	0.394	24	78	0.425
Median	56.9	1.7	3.23	0.86	26.1	0.1	0.314	114	0.35	13400	0.304	23	54	0.403
St. Deviation	8.1	NA	2.73	1.87	14.1	0.5	NA	115	NA	5800	0.213	6	33	0.099
# of values	3	1	7	7	7	7	1	7	1	7	7	7	7	7
Minimum	45.4	1.7	0.85	0.24	7.7	0.065	0.314	46.8	0.35	8330	0.26	17	49.4	0.296
Maximum	61	1.7	8.87	5.6	46.4	1.5	0.314	362	0.35	25200	0.85	34	130	0.552
% of values undetected			14%						100%					
# of values between MDL and MRL				6							1			
SK100D														
Sample Date														
09/15/05	67.9		**0.677**	**0.735**	10.1	0.42		37.1		13800	0.58	73.3	190	0.806
Mean	67.9	NA	0.677	0.735	10.1	0.42	NA	37.1	NA	13800	0.58	73.3	190	0.806
Median	67.9	NA	0.677	0.735	10.1	0.42	NA	37.1	NA	13800	0.58	73.3	190	0.806
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	67.9	NA	0.677	0.735	10.1	0.42	NA	37.1	NA	13800	0.58	73.3	190	0.806
Maximum	67.9	NA	0.677	0.735	10.1	0.42	NA	37.1	NA	13800	0.58	73.3	190	0.806
% of values undetected				100%										
# of values between MDL and MRL			1											
SK100F														
Sample Date														
06/01/04								350		15600	0.230	8.24	123	0.484
07/14/04			15.3	4.03	192	0.5		**432**		14900	0.251	7.85	97.6	0.547
09/14/04			**0.532**	**0.15**	4.23	0.79		10.6		13300	0.27	7.68	99.8	0.499
06/05/05			1.14	1.93	70.1	**0.015**		34.9		8840	0.163	5.48	42.3	0.453
06/17/07	25	7.49	**6**	**1.10**	55	2.1		170		15000	**0.405**	19	140	**0.54**
Mean	25	7.49	5.7	1.8	80	0.9	NA	200	NA	13500	0.264	9.7	101	0.505
Median	25	7.49	3.6	1.5	63	0.6	NA	170	NA	14900	0.251	7.9	100	0.499
St. Deviation	NA	NA	6.8	1.7	80	0.9	NA	187	NA	2800	0.089	5.3	37	0.039
# of values	1	1	4	4	4	4	0	5	0	5	5	5	5	5
Minimum	25	7.49	0.532	0.15	4.23	0.015	NA	10.6	NA	8840	0.163	5.48	42.3	0.453
Maximum	25	7.49	15.3	4.03	192	2.1	NA	432	NA	15600	0.405	19	140	0.547
% of values undetected			25%	25%		25%					20%			
# of values between MDL and MRL			1	1				1						1

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SK100C														
Sample Date														
06/03/04	0.274	9.99	0.749		5110	22.7	14.0	138		41300	40.3		7090	1110
07/13/04	**0.0301**	**1.51**	0.804		4230	11.2	14.8	77.6		29300	19.8		4830	1200
09/14/04	**0.172**	**5.95**	0.686		3710	13.5	14.6	89.9		33900	27.9		5590	1250
06/04/05	**0.177**	**1.55**	0.635		3380	14.5	14.2	79.9		32300	23.8		5590	1720
07/08/05	**0.135**	**5.45**	0.776		4030	12	11.1	84.4		29800	20.3		5080	955
06/18/06	**0.259**	2.84	0.943	0.83	5840	19.7	16.0	144	72.8	33800	32.5	23.4	7490	969
06/17/07	**3.7**	**14.5**	2.6		3600	14	33	130		40000	30		6100	4600
Mean	0.68	6	1.03	0.83	4270	15.4	16.8	106	72.8	34300	27.8	23.4	5970	1690
Median	0.18	5.5	0.78	0.83	4030	14	14.6	90	72.8	33800	27.9	23.4	5590	1200
St. Deviation	1.33	4.8	0.7	NA	890	4.2	7.3	30	NA	4700	7.3	NA	1000	1310
# of values	7	7	7	1	7	7	7	7	1	7	7	1	7	7
Minimum	0.0301	1.505	0.635	0.83	3380	11.2	11.1	77.6	72.8	29300	19.8	23.4	4830	955
Maximum	3.7	14.5	2.6	0.83	5840	22.7	33	144	72.8	41300	40.3	23.4	7490	4600
% of values undetected	29%	43%												
# of values between MDL and MRL	4	2												
SK100D														
Sample Date														
09/15/05	**0.0447**	7.64	0.882		2770	12.5	26.4	102		56500	8.48		3980	6970
Mean	0.0447	7.64	0.882	NA	2770	12.5	26.4	102	NA	56500	8.48	NA	3980	6970
Median	0.0447	7.64	0.882	NA	2770	12.5	26.4	102	NA	56500	8.48	NA	3980	6970
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0447	7.64	0.882	NA	2770	12.5	26.4	102	NA	56500	8.48	NA	3980	6970
Maximum	0.0447	7.64	0.882	NA	2770	12.5	26.4	102	NA	56500	8.48	NA	3980	6970
% of values undetected	100%													
# of values between MDL and MRL														
SK100F														
Sample Date														
06/01/04	**0.173**	**1.55**	0.217		5460	14.5	6.87	36.9		23700	5.78		3580	1010
07/14/04	**0.0745**	**1.49**	0.258		4150	16.9	7.94	48.3		21700	7.18		3560	688
09/14/04	**0.194**	**4.26**	**0.169**		3750	5.72	6.94	14.5		25600	5.11		4160	880
06/05/05	**0.0309**	**3.74**	0.234		2640	7.46	4.15	11.4		15700	4.86		3060	439
06/17/07	**10.5**	**40.5**	**0.61**		8300	17	12	94		33000	8.3		4100	1700
Mean	2.2	10.3	0.298	NA	4860	12.3	7.6	41	NA	23900	6.25	NA	3690	940
Median	0.2	3.7	0.234	NA	4150	14.5	6.9	36.9	NA	23700	5.78	NA	3580	880
St. Deviation	4.6	16.9	0.178	NA	2170	5.4	2.8	33.4	NA	6300	1.46	NA	450	470
# of values	5	5	5	0	5	5	5	5	0	5	5	0	5	5
Minimum	0.0309	1.49	0.169	NA	2640	5.72	4.15	11.4	NA	15700	4.86	NA	3060	439
Maximum	10.5	40.5	0.61	NA	8300	17	12	94	NA	33000	8.3	NA	4160	1700
% of values undetected	40%	60%												
# of values between MDL and MRL	3	2	2											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SK100C															
Sample Date															
06/03/04	**0.0383**		6.40	16.1		679	1.15	0.216	**218**		0.0862	**0.491**	109	271	
07/13/04	**0.00595**		4.01	10.2		479	0.528	**0.0151**	125		**0.003**	**0.486**	82.1	159	
09/14/04	**0.0167**		5.05	12.3		505	0.635	0.173	116		0.135	**0.499**	84.7	178	
06/04/05	**0.0199**		6.3	9.95		450	1.06	**0.0682**	115		0.103	**0.499**	87.3	175	
07/08/05	**0.0103**		4.29	9.36		449	**0.130**	**0.0833**	**122**		0.102	**0.553**	78.3	176	
06/18/06	**0.0335**	**0.015**	6.47	15.7	3.6	560	2.18	0.217	**174**	915	0.118	**1.06**	106	304	123
06/17/07	0.05		11	16		**560**	1.0	**0.145**	**95**		0.33	**0.365**	88	240	
Mean	0.0249	0.015	6.2	12.8	3.6	526	0.95	0.131	138	915	0.125	0.56	91	215	123
Median	0.0199	0.015	6.3	12.3	3.6	505	1	0.145	122	915	0.103	0.5	87	178	123
St. Deviation	0.0161	NA	2.3	3.1	NA	82	0.65	0.078	43	NA	0.1	0.22	12	57	NA
# of values	7	1	7	7	1	7	7	7	7	1	7	7	7	7	1
Minimum	0.00595	0.015	4.01	9.36	3.6	449	0.1295	0.01505	95	915	0.003	0.365	78.3	159	123
Maximum	0.05	0.015	11	16.1	3.6	679	2.18	0.217	218	915	0.33	1.055	109	304	123
% of values undetected	29%	100%					14%	29%	14%		14%	86%			
# of values between MDL and MRL	4					1		2	3			1			
SK100D															
Sample Date															
09/15/05	**0.0318**		20.5	18.1		570	**0.447**	**0.079**	177		0.445	1.66	60.7	106	
Mean	0.0318	NA	20.5	18.1	NA	570	0.447	0.079	177	NA	0.445	1.66	60.7	106	NA
Median	0.0318	NA	20.5	18.1	NA	570	0.447	0.079	177	NA	0.445	1.66	60.7	106	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0318	NA	20.5	18.1	NA	570	0.447	0.079	177	NA	0.445	1.66	60.7	106	NA
Maximum	0.0318	NA	20.5	18.1	NA	570	0.447	0.079	177	NA	0.445	1.66	60.7	106	NA
% of values undetected															
# of values between MDL and MRL	1						1	1							
SK100F															
Sample Date															
06/01/04	**0.0339**		1.90	7.70		847	1.04	**0.0839**	407		0.0914	**0.498**	44.4	70.5	
07/14/04	**0.0293**		2.01	10.5		772	0.952	**0.0149**	250		**0.003**	**0.481**	41.3	69.4	
09/14/04	**0.00595**		1.74	5.66		1180	**0.473**	**0.0492**	225		0.144	1.15	38	56.2	
06/05/05	**0.00585**		**0.54**	5.2		998	0.952	**0.0341**	187		0.076	**0.499**	20.5	46.5	
06/17/07	0.075		3.5	12		**570**	**1.0**	**0.405**	**265**		**0.405**	**1.0**	44	110	
Mean	0.03	NA	1.9	8	NA	870	0.88	0.117	267	NA	0.144	0.73	37.6	71	NA
Median	0.0293	NA	1.9	8	NA	850	0.95	0.049	250	NA	0.091	0.5	41.3	69	NA
St. Deviation	0.0283	NA	1.1	3	NA	230	0.23	0.163	84	NA	0.154	0.32	9.9	24	NA
# of values	5	0	5	5	0	5	5	5	5	0	5	5	5	5	0
Minimum	0.00585	NA	0.54	5.2	NA	570	0.473	0.0149	187	NA	0.003	0.481	20.5	46.5	NA
Maximum	0.075	NA	3.5	12	NA	1180	1.04	0.405	407	NA	0.405	1.15	44.4	110	NA
% of values undetected	40%						20%	60%	20%		40%	80%			
# of values between MDL and MRL	2		1			1	1	2							

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SK100G														
Sample Date														
06/01/04						0.41	0.457	594		8370	0.135	13.8	86.9	0.297
07/15/04			2.24	**0.459**	197	0.25		165		9550	0.136	9.1	86.5	0.291
08/09/04			1.01	**0.366**	44.9	0.13		72.3		9600	0.113	12	76.5	0.283
09/14/04			1.4	**0.129**	36	0.091		27.7		12500	0.185	11.1	94.6	0.326
06/05/05			2.38	9.63	103	0.082		169		10100	0.136	13.3	92.9	0.378
07/11/05	47.9		2.29	**0.764**	3.18	**0.015**		132		9650	**0.129**	11	74.4	0.375
06/17/07	71	0.97	**0.75**	**0.480**	8.6	**0.065**		83		9600	0.32	18	97	0.35
Mean	59.45	0.97	1.68	1.97	65	0.15	0.457	178	NA	9900	0.165	13	87	0.329
Median	59.45	0.97	1.82	0.47	40	0.09	0.457	132	NA	9600	0.136	12	86.9	0.326
St. Deviation	16.33417	NA	0.72	3.76	74	0.14	NA	191	NA	1300	0.072	3	8.8	0.04
# of values	2	1	6	6	6	7	1	7	0	7	7	7	7	7
Minimum	47.9	0.97	0.75	0.1285	3.18	0.015	0.457	27.7	NA	8370	0.113	9.1	74.4	0.283
Maximum	71	0.97	2.38	9.63	197	0.41	0.457	594	NA	12500	0.32	18	97	0.378
% of values undetected			17%	17%		29%								
# of values between MDL and MRL				4							1			
SK119A														
Sample Date														
06/04/04						0.58	0.955	647		16800	0.202	7.38	110	0.516
07/13/04			2.09	**0.458**	27.7	0.094		53.8		11800	0.171	6.39	63.6	0.37
09/13/04			**0.151**	**0.38**	1.36	0.11		**4.15**		9940	**0.0897**	5.08	47.6	0.252
06/05/05			2.27	6.17	57.5	**0.058**		61.9		9400	0.243	19.2	43.6	0.311
06/19/06	69.2		**0.533**	**0.224**	2.03	**0.040**		17.3	**0.35**	12400	**0.0939**	5.54	57.7	0.331
Mean	69.2	NA	1.26	1.81	22.1	0.18	0.955	157	0.35	12100	0.16	8.7	65	0.356
Median	69.2	NA	1.31	0.42	14.9	0.09	0.955	54	0.35	11800	0.171	6.4	58	0.331
St. Deviation	NA	NA	1.08	2.91	26.6	0.23	NA	275	NA	2900	0.067	5.9	27	0.099
# of values	1	0	4	4	4	5	1	5	1	5	5	5	5	5
Minimum	69.2	NA	0.151	0.2235	1.36	0.04	0.955	4.15	0.35	9400	0.0897	5.08	43.6	0.252
Maximum	69.2	NA	2.27	6.17	57.5	0.58	0.955	647	0.35	16800	0.243	19.2	110	0.516
% of values undetected			25%	25%					100%					
# of values between MDL and MRL			1	2		2		1			2			
SK131A														
Sample Date														
07/13/04			1.52	**0.325**	8.95	0.076		38.5		10300	0.409	14.6	74	0.406
09/15/04			**0.154**	**0.154**	1.27	**0.015**		**1.55**		10600	0.341	15.5	59.9	0.364
Mean	NA	NA	0.84	0.239	5.11	0.046	NA	20	NA	10500	0.375	15.1	67	0.385
Median	NA	NA	0.84	0.239	5.11	0.046	NA	20	NA	10500	0.375	15.1	67	0.385
St. Deviation	NA	NA	0.97	0.121	5.43	0.043	NA	26.1	NA	200	0.048	0.6	10	0.03
# of values	0	0	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	NA	NA	0.1535	0.1535	1.27	0.015	NA	1.545	NA	10300	0.341	14.6	59.9	0.364
Maximum	NA	NA	1.52	0.325	8.95	0.076	NA	38.5	NA	10600	0.409	15.5	74	0.406
% of values undetected			50%	50%		50%		50%						
# of values between MDL and MRL				1										

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SK100G														
Sample Date														
06/01/04	**0.0782**	11.4	0.219		2950	10.3	6.66	130		83400	3.69		1550	943
07/15/04	**0.030**	**1.50**	**0.120**		2440	13	6.97	59		30900	4.07		3460	366
08/09/04	**0.0821**	**1.53**	**0.104**		2270	10.9	6.82	55		31700	3.46		3510	499
09/14/04	**0.0733**	**4.86**	**0.128**		2090	13	6.89	59		31000	4.65		3580	276
06/05/05	**0.0306**	**1.53**	0.43		2870	14.8	7	97.5		27000	5.12		3900	295
07/11/05	**0.0635**	**3.18**	**0.202**		2990	12.6	6.06	83		27800	3.77		3650	462
06/17/07	**2.8**	**11**	**0.19**		2600	12	7.7	66		41000	5.0		3900	420
Mean	0.45	5	0.199	NA	2600	12.4	6.87	80	NA	39000	4.25	NA	3360	466
Median	0.07	3.2	0.19	NA	2600	12.6	6.89	70	NA	31000	4.07	NA	3580	420
St. Deviation	1.04	4.4	0.111	NA	350	1.5	0.49	30	NA	20100	0.67	NA	820	226
# of values	7	7	7	0	7	7	7	7	0	7	7	0	7	7
Minimum	0.03	1.5	0.104	NA	2090	10.3	6.06	55	NA	27000	3.46	NA	1550	276
Maximum	2.8	11.4	0.43	NA	2990	14.8	7.7	130	NA	83400	5.12	NA	3900	943
% of values undetected	57%	71%												
# of values between MDL and MRL	3	1	5											
SK119A														
Sample Date														
06/04/04	0.338	**1.54**	0.264		5970	21.2	8.53	30.2		22000	12.6		5090	804
07/13/04	1.26	**1.49**	**0.180**		3520	12.3	12.2	29		34400	9.12		4510	625
09/13/04	**0.104**	**5.36**	**0.164**		3080	9.79	7.09	20.3		28900	6.67		3810	517
06/05/05	**0.0976**	**5.45**	0.789		4030	12.3	12.0	69.4		29800	25.7		4920	1160
06/19/06	**0.0915**	1.62	**0.255**	0.13	3140	7.50	6.43	28.6	5.3	26800	7.55	6.7	4650	549
Mean	0.38	3.09	0.33	0.13	3950	12.6	9.3	35.5	5.3	28400	12.3	6.7	4600	730
Median	0.1	1.62	0.255	0.13	3520	12.3	8.5	29	5.3	28900	9.1	6.7	4650	630
St. Deviation	0.5	2.11	0.26	NA	1190	5.2	2.7	19.4	NA	4500	7.8	NA	490	260
# of values	5	5	5	1	5	5	5	5	1	5	5	1	5	5
Minimum	0.0915	1.49	0.164	0.13	3080	7.5	6.43	20.3	5.3	22000	6.67	6.7	3810	517
Maximum	1.26	5.45	0.789	0.13	5970	21.2	12.2	69.4	5.3	34400	25.7	6.7	5090	1160
% of values undetected		40%												
# of values between MDL and MRL	3	2	3											
SK131A														
Sample Date														
07/13/04	**0.0301**	**1.505**	**0.13**		3570	15.4	7.16	9.08		23800	6.26		4720	469
09/15/04	**0.099**	**5.3**	**0.111**		3070	11.8	6.18	7.73		21400	5.51		4200	421
Mean	0.0645	3.4	0.12	NA	3320	13.6	6.67	8.41	NA	22600	5.89	NA	4500	445
Median	0.0645	3.4	0.12	NA	3320	13.6	6.67	8.41	NA	22600	5.89	NA	4500	445
St. Deviation	0.0488	2.68	0.01	NA	350	2.5	0.69	0.95	NA	1700	0.53	NA	400	34
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.03005	1.505	0.111	NA	3070	11.8	6.18	7.73	NA	21400	5.51	NA	4200	421
Maximum	0.099	5.3	0.13	NA	3570	15.4	7.16	9.08	NA	23800	6.26	NA	4720	469
% of values undetected	50%	50%												
# of values between MDL and MRL	1	1	2											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SK100G															
Sample Date															
06/01/04	0.0798		5.80	7.68		376	1.65	0.104	104		0.0787	**0.499**	34.9	44.3	
07/15/04	**0.0178**		2.39	8.48		541	**0.408**	**0.015**	212		**0.003**	**0.484**	31.7	58.2	
08/09/04	**0.0146**		2.7	8.43		537	0.628	**0.0624**	183		0.0791	**0.494**	30.6	59.3	
09/14/04	**0.0199**		2.38	9.39		556	**0.409**	0.115	238		0.136	0.983	32.8	60	
06/05/05	**0.02**		2.27	9.62		598	0.967	**0.0441**	210		0.0816	**0.4935**	40.2	72.4	
07/11/05	**0.027**		2.69	8.2		621	2.12	**0.0318**	**201**		0.0957	**1.025**	34.7	63.9	
06/17/07	**0.00465**		4.8	8.0		**690**	**0.275**	**0.11**	**70**		**0.11**	**0.275**	35	59	
Mean	0.0263	NA	3.29	8.54	NA	560	0.92	0.069	174	NA	0.083	0.61	34.3	59.6	NA
Median	0.0199	NA	2.69	8.43	NA	556	0.63	0.062	201	NA	0.082	0.49	34.7	59.3	NA
St. Deviation	0.0246	NA	1.41	0.71	NA	97	0.71	0.041	62	NA	0.041	0.28	3.1	8.4	NA
# of values	7	0	7	7	0	7	7	7	7	0	7	7	7	7	0
Minimum	0.00465	NA	2.27	7.68	NA	376	0.275	0.015	70	NA	0.003	0.275	30.6	44.3	NA
Maximum	0.0798	NA	5.8	9.62	NA	690	2.12	0.115	238	NA	0.136	1.025	40.2	72.4	NA
% of values undetected	14%						14%	43%	14%		29%	86%			
# of values between MDL and MRL	5					1	2	2	1						
SK119A															
Sample Date															
06/04/04	**0.0392**		3.00	9.74		585	0.991	0.177	232		0.0891	**0.497**	97.7	82.0	
07/13/04	**0.00595**		1.96	6.88		417	**0.329**	**0.0149**	130		**0.003**	**0.481**	94.2	69.2	
09/13/04	**0.00595**		1.14	5.89		412	**0.168**	0.445	**94.8**		0.046	**0.478**	77.3	53.8	
06/05/05	**0.00595**		4.25	8.71		390	1.66	0.167	**92.9**		0.0761	**0.48**	75.9	152	
06/19/06	**0.00855**	**0.005**	**1.17**	6.34	1.1	462	**0.1035**	0.235	**120**	144	0.0430	**0.69**	62.0	80.4	22.3
Mean	0.0131	0.005	2.3	7.51	1.1	453	0.65	0.208	134	144	0.051	0.525	81.4	87	22.3
Median	0.0060	0.005	1.96	6.88	1.1	417	0.33	0.177	120	144	0.046	0.481	77.3	80	22.3
St. Deviation	0.0146	NA	1.33	1.64	NA	78	0.67	0.156	57	NA	0.033	0.093	14.6	38	NA
# of values	5	1	5	5	1	5	5	5	5	1	5	5	5	5	1
Minimum	0.00595	0.005	1.14	5.89	1.1	390	0.1035	0.0149	92.9	144	0.003	0.478	62	53.8	22.3
Maximum	0.0392	0.005	4.25	9.74	1.1	585	1.66	0.445	232	144	0.0891	0.69	97.7	152	22.3
% of values undetected	80%	100%					20%	20%			20%	100%			
# of values between MDL and MRL	1		1				2		3						
SK131A															
Sample Date															
07/13/04	**0.00595**		0.977	8.64		681	**0.281**	**0.0151**	216		**0.003**	0.973	46.8	54.2	
09/15/04	**0.00590**		1.04	8.14		618	**0.17**	**0.0496**	169		0.135	1.13	38.2	40.7	
Mean	0.0059	NA	1.01	8.39	NA	650	0.23	0.0323	193	NA	0.07	1.05	42.5	47.5	NA
Median	0.0059	NA	1.01	8.39	NA	650	0.23	0.0323	193	NA	0.07	1.05	42.5	47.5	NA
St. Deviation	0	NA	0.04	0.35	NA	45	0.08	0.0244	33	NA	0.09	0.11	6.1	9.5	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.0059	NA	0.977	8.14	NA	618	0.17	0.01505	169	NA	0.003	0.973	38.2	40.7	NA
Maximum	0.00595	NA	1.04	8.64	NA	681	0.281	0.0496	216	NA	0.135	1.13	46.8	54.2	NA
% of values undetected	100%							100%			50%				
# of values between MDL and MRL							2								

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP0405														
Sample Date														
07/21/05	71.4		**1.32**	**0.904**	1.63	**0.032**		39.2		11400	0.166	8.64	68.7	0.45
10/07/05	62		1.79	**0.805**	2.82	**0.031**		73.7		18800	0.216	12.9	73	0.633
Mean	67	NA	1.56	0.855	2.23	0.032	NA	56.5	NA	15100	0.191	10.8	71	0.54
Median	67	NA	1.56	0.855	2.23	0.032	NA	56.5	NA	15100	0.191	10.8	71	0.54
St. Deviation	7	NA	0.33	0.07	0.84	0.001	NA	24.4	NA	5200	0.035	3	3	0.13
# of values	2	0	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	62	NA	1.32	0.805	1.63	0.031	NA	39.2	NA	11400	0.166	8.64	68.7	0.45
Maximum	71.4	NA	1.79	0.904	2.82	0.032	NA	73.7	NA	18800	0.216	12.9	73	0.633
% of values undetected				50%										
# of values between MDL and MRL			1	1		2								
SP0705														
Sample Date														
07/19/05	65.4		1.54	**0.483**	3.26	0.057		41.4		5400	0.153	9.94	51.4	0.246
Mean	65.4	NA	1.54	0.483	3.26	0.057	NA	41.4	NA	5400	0.153	9.94	51.4	0.246
Median	65.4	NA	1.54	0.483	3.26	0.057	NA	41.4	NA	5400	0.153	9.94	51.4	0.246
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	65.4	NA	1.54	0.483	3.26	0.057	NA	41.4	NA	5400	0.153	9.94	51.4	0.246
Maximum	65.4	NA	1.54	0.483	3.26	0.057	NA	41.4	NA	5400	0.153	9.94	51.4	0.246
% of values undetected														
# of values between MDL and MRL				1										
SP1205														
Sample Date														
10/06/05	10.1		14.8	**4.96**	20.8	**0.045**		946		15600	**0.949**	60.3	51.8	**0.518**
Mean	10.1	NA	14.8	4.96	20.8	0.045	NA	946	NA	15600	0.949	60.3	51.8	0.518
Median	10.1	NA	14.8	4.96	20.8	0.045	NA	946	NA	15600	0.949	60.3	51.8	0.518
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	10.1	NA	14.8	4.96	20.8	0.045	NA	946	NA	15600	0.949	60.3	51.8	0.518
Maximum	10.1	NA	14.8	4.96	20.8	0.045	NA	946	NA	15600	0.949	60.3	51.8	0.518
% of values undetected				100%										
# of values between MDL and MRL						1					1			1

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP0405														
Sample Date														
07/21/05	**0.0415**	**2.08**	0.393		3080	20.1	6.62	12.5		18400	6.69		4450	360
10/07/05	**0.116**	3.54	**0.186**		3910	20.6	8.39	14.9		29000	8.2		4820	527
Mean	0.079	2.81	0.29	NA	3500	20.4	7.51	13.7	NA	24000	7.4	NA	4640	440
Median	0.079	2.81	0.29	NA	3500	20.4	7.51	13.7	NA	24000	7.4	NA	4640	440
St. Deviation	0.053	1.04	0.146	NA	590	0.4	1.25	1.7	NA	7000	1.1	NA	260	120
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.04145	2.075	0.186	NA	3080	20.1	6.62	12.5	NA	18400	6.69	NA	4450	360
Maximum	0.116	3.54	0.393	NA	3910	20.6	8.39	14.9	NA	29000	8.2	NA	4820	527
% of values undetected	50%	50%												
# of values between MDL and MRL	1		1											
SP0705														
Sample Date														
07/19/05	**0.0456**	**2.28**	**0.277**		3010	15.8	3.85	8.26		10600	5.3		2450	259
Mean	0.0456	2.28	0.277	NA	3010	15.8	3.85	8.26	NA	10600	5.3	NA	2450	259
Median	0.0456	2.28	0.277	NA	3010	15.8	3.85	8.26	NA	10600	5.3	NA	2450	259
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0456	2.28	0.277	NA	3010	15.8	3.85	8.26	NA	10600	5.3	NA	2450	259
Maximum	0.0456	2.28	0.277	NA	3010	15.8	3.85	8.26	NA	10600	5.3	NA	2450	259
% of values undetected	100%	100%												
# of values between MDL and MRL			1											
SP1205														
Sample Date														
10/06/05	**0.307**	**9.57**	**0.307**		23400	105	**3.14**	18.3		9320	5.82		2450	233
Mean	0.307	9.57	0.307	NA	23400	105	3.14	18.3	NA	9320	5.82	NA	2450	233
Median	0.307	9.57	0.307	NA	23400	105	3.14	18.3	NA	9320	5.82	NA	2450	233
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.307	9.57	0.307	NA	23400	105	3.14	18.3	NA	9320	5.82	NA	2450	233
Maximum	0.307	9.57	0.307	NA	23400	105	3.14	18.3	NA	9320	5.82	NA	2450	233
% of values undetected	100%		100%											
# of values between MDL and MRL		1					1							

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP0405															
Sample Date															
07/21/05	0.118		1.72	9.39		423	**0.3345**	**0.0208**	218		0.0609	**0.67**	48	42.9	
10/07/05	0.166		2.66	11.1		509	**0.401**	**0.103**	203		0.0581	**0.80**	61.1	48.7	
Mean	0.142	NA	2.19	10.2	NA	466	0.368	0.062	211	NA	0.0595	0.74	55	45.8	NA
Median	0.142	NA	2.19	10.2	NA	466	0.368	0.062	211	NA	0.0595	0.74	55	45.8	NA
St. Deviation	0.034	NA	0.66	1.2	NA	61	0.047	0.058	11	NA	0.002	0.09	9	4.1	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.118	NA	1.72	9.39	NA	423	0.3345	0.02075	203	NA	0.0581	0.67	48	42.9	NA
Maximum	0.166	NA	2.66	11.1	NA	509	0.401	0.103	218	NA	0.0609	0.8	61.1	48.7	NA
% of values undetected							100%	50%				100%			
# of values between MDL and MRL								1							
SP0705															
Sample Date															
07/19/05	**0.0089**		**0.228**	5.51		506	0.934	**0.0228**	195		0.0442	**0.735**	36.7	27.1	
Mean	0.0089	NA	0.228	5.51	NA	506	0.934	0.0228	195	NA	0.0442	0.735	36.7	27.1	NA
Median	0.0089	NA	0.228	5.51	NA	506	0.934	0.0228	195	NA	0.0442	0.735	36.7	27.1	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0089	NA	0.228	5.51	NA	506	0.934	0.0228	195	NA	0.0442	0.735	36.7	27.1	NA
Maximum	0.0089	NA	0.228	5.51	NA	506	0.934	0.0228	195	NA	0.0442	0.735	36.7	27.1	NA
% of values undetected	100%		100%					100%				100%			
# of values between MDL and MRL															
SP1205															
Sample Date															
10/06/05	**0.0595**		**1.54**	5.4		**782**	9.92	**0.154**	**366**		**0.0307**	**4.95**	41	30.9	
Mean	0.0595	NA	1.54	5.4	NA	782	9.92	0.154	366	NA	0.0307	4.95	41	30.9	NA
Median	0.0595	NA	1.54	5.4	NA	782	9.92	0.154	366	NA	0.0307	4.95	41	30.9	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0595	NA	1.54	5.4	NA	782	9.92	0.154	366	NA	0.0307	4.95	41	30.9	NA
Maximum	0.0595	NA	1.54	5.4	NA	782	9.92	0.154	366	NA	0.0307	4.95	41	30.9	NA
% of values undetected	100%		100%					100%			100%	100%			
# of values between MDL and MRL						1			1						

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP1505														
Sample Date														
10/05/05	66.8		**1.4**	**0.745**	4.44	**0.0155**		42.3		16000	1.04	130	41.8	0.889
Mean	66.8	NA	1.4	0.745	4.44	0.0155	NA	42.3	NA	16000	1.04	130	41.8	0.889
Median	66.8	NA	1.4	0.745	4.44	0.0155	NA	42.3	NA	16000	1.04	130	41.8	0.889
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	66.8	NA	1.4	0.745	4.44	0.0155	NA	42.3	NA	16000	1.04	130	41.8	0.889
Maximum	66.8	NA	1.4	0.745	4.44	0.0155	NA	42.3	NA	16000	1.04	130	41.8	0.889
% of values undetected				100%		100%								
# of values between MDL and MRL			1											
SP1705														
Sample Date														
07/18/05	69.7		1.5	**0.513**	3.8	**0.014**		**19.7**		4280	0.156	15.2	25	0.155
10/06/05	66.6		**0.764**	**0.750**	4.45	**0.032**		57.2		7400	**0.148**	17.3	22.3	0.214
Mean	68.2	NA	1.1	0.63	4.1	0.023	NA	38.5	NA	5800	0.152	16.3	24	0.185
Median	68.2	NA	1.1	0.63	4.1	0.023	NA	38.5	NA	5800	0.152	16.3	24	0.185
St. Deviation	2.2	NA	0.5	0.17	0.5	0.013	NA	26.5	NA	2200	0.006	1.5	2	0.042
# of values	2	0	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	66.6	NA	0.764	0.513	3.8	0.014	NA	19.7	NA	4280	0.148	15.2	22.3	0.155
Maximum	69.7	NA	1.5	0.75	4.45	0.032	NA	57.2	NA	7400	0.156	17.3	25	0.214
% of values undetected				50%		50%								
# of values between MDL and MRL			1	1		1		1			1			
SP1805														
Sample Date														
07/17/05	72.8		3.29	**0.593**	**0.499**	**0.0155**		**18.1**		6100	0.225	24.9	49.3	0.238
10/06/05	70.2		3.3	**0.710**	4.17	**0.015**		30.4		10600	0.159	26.3	49.2	0.218
Mean	71.5	NA	3.3	0.65	2.33	0.015	NA	24.3	NA	8000	0.192	25.6	49.3	0.228
Median	71.5	NA	3.3	0.65	2.33	0.015	NA	24.3	NA	8000	0.192	25.6	49.3	0.228
St. Deviation	1.8	NA	0	0.08	2.6	0	NA	8.7	NA	3000	0.047	1	0.1	0.014
# of values	2	0	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	70.2	NA	3.29	0.593	0.499	0.015	NA	18.1	NA	6100	0.159	24.9	49.2	0.218
Maximum	72.8	NA	3.3	0.71	4.17	0.0155	NA	30.4	NA	10600	0.225	26.3	49.3	0.238
% of values undetected				50%		100%								
# of values between MDL and MRL				1	1			1						

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP1505														
Sample Date														
10/05/05	**0.0954**	2.31	**0.192**		2310	5.69	3.42	5.67		22900	6.76		2710	409
Mean	0.0954	2.31	0.192	NA	2310	5.69	3.42	5.67	NA	22900	6.76	NA	2710	409
Median	0.0954	2.31	0.192	NA	2310	5.69	3.42	5.67	NA	22900	6.76	NA	2710	409
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0954	2.31	0.192	NA	2310	5.69	3.42	5.67	NA	22900	6.76	NA	2710	409
Maximum	0.0954	2.31	0.192	NA	2310	5.69	3.42	5.67	NA	22900	6.76	NA	2710	409
% of values undetected														
# of values between MDL and MRL	1		1											
SP1705														
Sample Date														
07/18/05	**0.0433**	**2.16**	0.136		1480	11.4	2.47	6.54		11300	5.06		2130	162
10/06/05	**0.0465**	2.08	**0.0465**		1910	10.5	2.47	6.44		14300	4.9		2150	162
Mean	0.0449	2.12	0.091	NA	1700	11	2.47	6.49	NA	12800	5	NA	2140	162
Median	0.0449	2.12	0.091	NA	1700	11	2.47	6.49	NA	12800	5	NA	2140	162
St. Deviation	0.0023	0.06	0.063	NA	300	0.6	0	0.07	NA	2100	0.1	NA	10	0
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.04325	2.08	0.0465	NA	1480	10.5	2.47	6.44	NA	11300	4.9	NA	2130	162
Maximum	0.0465	2.16	0.136	NA	1910	11.4	2.47	6.54	NA	14300	5.06	NA	2150	162
% of values undetected	100%	50%	50%											
# of values between MDL and MRL			1											
SP1805														
Sample Date														
07/17/05	**0.115**	**2.05**	**0.187**		3370	15	4.45	7.96		14200	5.71		3700	343
10/06/05	**0.044**	2.23	**0.138**		4010	12.6	4.34	6.93		22100	4.79		3570	368
Mean	0.08	2.14	0.163	NA	3690	14	4.4	7.45	NA	18200	5.25	NA	3600	356
Median	0.08	2.14	0.163	NA	3690	14	4.4	7.45	NA	18200	5.25	NA	3600	356
St. Deviation	0.05	0.13	0.035	NA	450	2	0.08	0.73	NA	5600	0.65	NA	100	18
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.044	2.05	0.138	NA	3370	12.6	4.34	6.93	NA	14200	4.79	NA	3570	343
Maximum	0.115	2.23	0.187	NA	4010	15	4.45	7.96	NA	22100	5.71	NA	3700	368
% of values undetected	50%	50%												
# of values between MDL and MRL	1		2											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP1505															
Sample Date															
10/05/05	0.0655		3.75	2.97		534	1	2.54	**118**		0.263	**0.745**	29.7	52.6	
Mean	0.0655	NA	3.75	2.97	NA	534	1	2.54	118	NA	0.263	0.745	29.7	52.6	NA
Median	0.0655	NA	3.75	2.97	NA	534	1	2.54	118	NA	0.263	0.745	29.7	52.6	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0655	NA	3.75	2.97	NA	534	1	2.54	118	NA	0.263	0.745	29.7	52.6	NA
Maximum	0.0655	NA	3.75	2.97	NA	534	1	2.54	118	NA	0.263	0.745	29.7	52.6	NA
% of values undetected												100%			
# of values between MDL and MRL									1						
SP1705															
Sample Date															
07/18/05	**0.0085**		**0.216**	3.63		409	**0.3485**	**0.0216**	**124**		0.0415	**0.695**	37.2	26.5	
10/06/05	**0.0089**		**0.233**	4.03		378	**0.113**	**0.0233**	**121**		0.0346	**0.750**	34.7	24.7	
Mean	0.0087	NA	0.224	3.83	NA	394	0.231	0.0224	123	NA	0.0381	0.72	36	25.6	NA
Median	0.0087	NA	0.224	3.83	NA	394	0.231	0.0224	123	NA	0.0381	0.72	36	25.6	NA
St. Deviation	0.0003	NA	0.012	0.28	NA	22	0.167	0.0012	2	NA	0.0049	0.04	1.8	1.3	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.0085	NA	0.216	3.63	NA	378	0.1125	0.0216	121	NA	0.0346	0.695	34.7	24.7	NA
Maximum	0.0089	NA	0.2325	4.03	NA	409	0.3485	0.02325	124	NA	0.0415	0.75	37.2	26.5	NA
% of values undetected	100%		100%				100%	100%				100%			
# of values between MDL and MRL									2						
SP1805															
Sample Date															
07/17/05	**0.0082**		**0.575**	5.85		532	**0.331**	**0.0205**	261		0.0367	**0.66**	53.4	43.3	
10/06/05	**0.0083**		**0.220**	6.36		524	**0.355**	**0.0614**	262		**0.0273**	**0.71**	44.5	37.1	
Mean	0.0083	NA	0.4	6.11	NA	528	0.343	0.041	262	NA	0.032	0.69	49	40.2	NA
Median	0.0083	NA	0.4	6.11	NA	528	0.343	0.041	262	NA	0.032	0.69	49	40.2	NA
St. Deviation	0.0001	NA	0.25	0.36	NA	6	0.017	0.0289	1	NA	0.0066	0.04	6.3	4.4	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.0082	NA	0.220	5.85	NA	524	0.331	0.0205	261	NA	0.0273	0.66	44.5	37.1	NA
Maximum	0.0083	NA	0.575	6.36	NA	532	0.355	0.0614	262	NA	0.0367	0.71	53.4	43.3	NA
% of values undetected	100%		50%				100%	50%				100%			
# of values between MDL and MRL			1					1			1				

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP1905														
Sample Date														
07/17/05	70.5		**0.972**	**0.219**	4.71	**0.0135**		35		7830	0.148	17.4	32.7	0.305
Mean	70.5	NA	0.972	0.219	4.71	0.0135	NA	35	NA	7830	0.148	17.4	32.7	0.305
Median	70.5	NA	0.972	0.219	4.71	0.0135	NA	35	NA	7830	0.148	17.4	32.7	0.305
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	70.5	NA	0.972	0.219	4.71	0.0135	NA	35	NA	7830	0.148	17.4	32.7	0.305
Maximum	70.5	NA	0.972	0.219	4.71	0.0135	NA	35	NA	7830	0.148	17.4	32.7	0.305
% of values undetected				100%		100%								
# of values between MDL and MRL			1											
SP2205														
Sample Date														
07/17/05	44.8		2.81	**1.13**	**0.338**	0.12		203		7290	0.271	8.78	59.1	0.316
Mean	44.8	NA	2.81	1.13	0.338	0.12	NA	203	NA	7290	0.271	8.78	59.1	0.316
Median	44.8	NA	2.81	1.13	0.338	0.12	NA	203	NA	7290	0.271	8.78	59.1	0.316
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	44.8	NA	2.81	1.13	0.338	0.12	NA	203	NA	7290	0.271	8.78	59.1	0.316
Maximum	44.8	NA	2.81	1.13	0.338	0.12	NA	203	NA	7290	0.271	8.78	59.1	0.316
% of values undetected					100%									
# of values between MDL and MRL				1										
SP2405														
Sample Date														
07/21/05	70.6		**1.12**	1.98	42.7	0.072		50.5		8510	0.317	22.9	12.3	0.673
Mean	70.6	NA	1.12	1.98	42.7	0.072	NA	50.5	NA	8510	0.317	22.9	12.3	0.673
Median	70.6	NA	1.12	1.98	42.7	0.072	NA	50.5	NA	8510	0.317	22.9	12.3	0.673
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	70.6	NA	1.12	1.98	42.7	0.072	NA	50.5	NA	8510	0.317	22.9	12.3	0.673
Maximum	70.6	NA	1.12	1.98	42.7	0.072	NA	50.5	NA	8510	0.317	22.9	12.3	0.673
% of values undetected														
# of values between MDL and MRL			1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP1905														
Sample Date														
07/17/05	**0.043**	**2.15**	**0.239**		2130	13.5	3.84	9.63		15900	6.28		3400	254
Mean	0.043	2.15	0.239	NA	2130	13.5	3.84	9.63	NA	15900	6.28	NA	3400	254
Median	0.043	2.15	0.239	NA	2130	13.5	3.84	9.63	NA	15900	6.28	NA	3400	254
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.043	2.15	0.239	NA	2130	13.5	3.84	9.63	NA	15900	6.28	NA	3400	254
Maximum	0.043	2.15	0.239	NA	2130	13.5	3.84	9.63	NA	15900	6.28	NA	3400	254
% of values undetected	100%	100%												
# of values between MDL and MRL			1											
SP2205														
Sample Date														
07/17/05	**0.067**	**3.35**	**0.317**		5510	19.4	5.65	16.7		14800	8.59		3220	249
Mean	0.067	3.35	0.317	NA	5510	19.4	5.65	16.7	NA	14800	8.59	NA	3220	249
Median	0.067	3.35	0.317	NA	5510	19.4	5.65	16.7	NA	14800	8.59	NA	3220	249
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.067	3.35	0.317	NA	5510	19.4	5.65	16.7	NA	14800	8.59	NA	3220	249
Maximum	0.067	3.35	0.317	NA	5510	19.4	5.65	16.7	NA	14800	8.59	NA	3220	249
% of values undetected	100%	100%												
# of values between MDL and MRL			1											
SP2405														
Sample Date														
07/21/05	0.31	**2.12**	0.595		7990	5.85	15.4	90.5		30200	37.8		6800	1100
Mean	0.31	2.12	0.595	NA	7990	5.85	15.4	90.5	NA	30200	37.8	NA	6800	1100
Median	0.31	2.12	0.595	NA	7990	5.85	15.4	90.5	NA	30200	37.8	NA	6800	1100
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.31	2.12	0.595	NA	7990	5.85	15.4	90.5	NA	30200	37.8	NA	6800	1100
Maximum	0.31	2.12	0.595	NA	7990	5.85	15.4	90.5	NA	30200	37.8	NA	6800	1100
% of values undetected		100%												
# of values between MDL and MRL														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP1905															
Sample Date															
07/17/05	**0.0085**		**0.215**	5.48		424	**0.104**	**0.0215**	147		0.0427	**0.695**	40.2	38.3	
Mean	0.0085	NA	0.215	5.48	NA	424	0.104	0.0215	147	NA	0.0427	0.695	40.2	38.3	NA
Median	0.0085	NA	0.215	5.48	NA	424	0.104	0.0215	147	NA	0.0427	0.695	40.2	38.3	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0085	NA	0.215	5.48	NA	424	0.104	0.0215	147	NA	0.0427	0.695	40.2	38.3	NA
Maximum	0.0085	NA	0.215	5.48	NA	424	0.104	0.0215	147	NA	0.0427	0.695	40.2	38.3	NA
% of values undetected	100%		100%				100%	100%				100%			
# of values between MDL and MRL															
SP2205															
Sample Date															
07/17/05	**0.0691**		**0.707**	7.75		655	1.86	**0.0335**	258		0.0963	**1.08**	45.3	45	
Mean	0.0691	NA	0.707	7.75	NA	655	1.86	0.03345	258	NA	0.0963	1.08	45.3	45	NA
Median	0.0691	NA	0.707	7.75	NA	655	1.86	0.03345	258	NA	0.0963	1.08	45.3	45	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0691	NA	0.707	7.75	NA	655	1.86	0.03345	258	NA	0.0963	1.08	45.3	45	NA
Maximum	0.0691	NA	0.707	7.75	NA	655	1.86	0.03345	258	NA	0.0963	1.08	45.3	45	NA
% of values undetected								100%				100%			
# of values between MDL and MRL	1		1												
SP2405															
Sample Date															
07/21/05	**0.0324**		6.26	6.57		1640	1.7	**0.0212**	**76.9**		0.279	**0.685**	129	313	
Mean	0.0324	NA	6.26	6.57	NA	1640	1.7	0.0212	76.9	NA	0.279	0.685	129	313	NA
Median	0.0324	NA	6.26	6.57	NA	1640	1.7	0.0212	76.9	NA	0.279	0.685	129	313	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0324	NA	6.26	6.57	NA	1640	1.7	0.0212	76.9	NA	0.279	0.685	129	313	NA
Maximum	0.0324	NA	6.26	6.57	NA	1640	1.7	0.0212	76.9	NA	0.279	0.685	129	313	NA
% of values undetected								100%				100%			
# of values between MDL and MRL	1								1						

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPS1														
Sample Date														
08/23/06									2.1					
08/10/07	37	5.41	**1.4**	**0.39**	10	**1.3**		180		15000	**0.33**	8.4	130	**0.34**
Mean	37	5.41	1.4	0.39	10	1.3	NA	180	2.1	15000	0.33	8.4	130	0.34
Median	37	5.41	1.4	0.39	10	1.3	NA	180	2.1	15000	0.33	8.4	130	0.34
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	0	1	1	1	1	1	1	1
Minimum	37	5.41	1.4	0.39	10	1.3	NA	180	2.1	15000	0.33	8.4	130	0.34
Maximum	37	5.41	1.4	0.39	10	1.3	NA	180	2.1	15000	0.33	8.4	130	0.34
% of values undetected			100%			100%								
# of values between MDL and MRL				1					1		1			1
TPS2														
Sample Date														
08/23/06	15.9		**4.65**	**2.07**	16.9	**0.038**		757	16.1	8190	**0.095**	10.2	46.9	**0.214**
08/10/07	13	14.4	**4.10**	**1.9**	38	**3.6**		770		11000	**0.38**	13	78	**0.36**
Mean	14	14.4	4.4	2	27	1.8	NA	760	16.1	10000	0.24	12	62	0.29
Median	14	14.4	4.4	2	27	1.8	NA	760	16.1	10000	0.24	12	62	0.29
St. Deviation	2	NA	0.4	0.1	15	2.5	NA	10	NA	2000	0.2	2	22	0.1
# of values	2	1	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	13	14.4	4.1	1.9	16.9	0.038	NA	757	16.1	8190	0.095	10.2	46.9	0.214
Maximum	15.9	14.4	4.65	2.07	38	3.6	NA	770	16.1	11000	0.38	13	78	0.36
% of values undetected			50%			50%					50%			
# of values between MDL and MRL			1	2		1					1			2
TPS3														
Sample Date														
08/23/06	74.8		**0.207**	**0.520**	2.23	**0.014**		63.7	**0.35**	19000	**0.0199**	7.61	79.6	0.403
08/10/07	86	0.46	**1.3**	**0.170**	**1.75**	**0.50**		69		5700	**0.10**	2.7	42	**0.17**
Mean	80	0.46	0.8	0.35	1.99	0.26	NA	66	0.35	12000	0.06	5.2	61	0.29
Median	80	0.46	0.8	0.35	1.99	0.26	NA	66	0.35	12000	0.06	5.2	61	0.29
St. Deviation	8	NA	0.8	0.25	0.34	0.34	NA	4	NA	9000	0.06	3.5	27	0.16
# of values	2	1	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	74.8	0.46	0.207	0.17	1.75	0.014	NA	63.7	0.35	5700	0.01985	2.7	42	0.17
Maximum	86	0.46	1.3	0.52	2.23	0.5	NA	69	0.35	19000	0.1	7.61	79.6	0.403
% of values undetected			50%		50%	100%			100%		50%			
# of values between MDL and MRL			1	2							1			1
TPS4														
Sample Date														
08/23/06	16.2		**3.81**	**1.91**	**4.49**	**0.0145**		666	**3.0**	5990	**0.0915**	**0.915**	34.0	**0.0915**
08/10/07	10	20.4	**5**	**1.2**	31	**4.3**		1600		6000	**0.19**	2.1	44	**0.085**
Mean	13	20.4	4.4	1.6	18	2.2	NA	1100	3.0	6000	0.14	1.5	39	0.088
Median	13	20.4	4.4	1.6	18	2.2	NA	1100	3.0	6000	0.14	1.5	39	0.088
St. Deviation	4	NA	0.8	0.5	19	3	NA	700	NA	0	0.07	0.8	7	0.005
# of values	2	1	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	10	20.4	3.81	1.2	4.49	0.0145	NA	666	3.0	5990	0.0915	0.915	34	0.085
Maximum	16.2	20.4	5	1.91	31	4.3	NA	1600	3.0	6000	0.19	2.1	44	0.0915
% of values undetected			50%			100%					50%	50%		100%
# of values between MDL and MRL			1	2	1				1		1			

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPS1														
Sample Date														
08/23/06				0.5					27.5			**2.9**		
08/10/07	**0.65**	**2.6**	**0.26**		4200	18	7.0	35		21000	6.2		4600	260
Mean	0.65	2.6	0.26	0.5	4200	18	7	35	27.5	21000	6.2	2.9	4600	260
Median	0.65	2.6	0.26	0.5	4200	18	7	35	27.5	21000	6.2	2.9	4600	260
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.65	2.6	0.26	0.5	4200	18	7	35	27.5	21000	6.2	2.9	4600	260
Maximum	0.65	2.6	0.26	0.5	4200	18	7	35	27.5	21000	6.2	2.9	4600	260
% of values undetected	100%	100%	100%									100%		
# of values between MDL and MRL														
TPS2														
Sample Date														
08/23/06	**0.190**	**3.025**	**0.190**	**0.3**	6620	18.2	3.40	10.1	5.2	8270	5.53	**6.2**	1380	196
08/10/07	**1.90**	**7.5**	**0.75**		12000	20	6.0	16		16000	6.6		2200	240
Mean	1	5.26	0.47	0.3	9000	19	4.7	13	5.2	12000	6.1	6.2	1800	220
Median	1	5.26	0.47	0.3	9000	19	4.7	13	5.2	12000	6.1	6.2	1800	220
St. Deviation	1.2	3.16	0.4	NA	4000	1	1.8	4	NA	5000	0.8	NA	600	30
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.19	3.025	0.19	0.3	6620	18.2	3.4	10.1	5.2	8270	5.53	6.2	1380	196
Maximum	1.9	7.5	0.75	0.3	12000	20	6	16	5.2	16000	6.6	6.2	2200	240
% of values undetected	100%	100%	100%	100%								100%		
# of values between MDL and MRL														
TPS3														
Sample Date														
08/23/06	**0.110**	3.15	**0.103**	**0.05**	1770	15.4	7.40	15.7	6.6	18300	8.90	5.5	3510	433
08/10/07	**0.59**	**1.15**	**0.115**		1800	12	4.0	5.5		12000	2.8		2600	230
Mean	0.35	2.15	0.109	0.1	1800	14	5.7	11	6.6	15000	5.9	5.5	3100	330
Median	0.35	2.15	0.109	0.1	1800	14	5.7	11	6.6	15000	5.9	5.5	3100	330
St. Deviation	0.34	1.41	0.008	NA	0	2	2.4	7	NA	4000	4.3	NA	600	140
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.11	1.15	0.103	0.05	1770	12	4	5.5	6.6	12000	2.8	5.5	2600	230
Maximum	0.59	3.15	0.115	0.05	1800	15.4	7.4	15.7	6.6	18300	8.9	5.5	3510	433
% of values undetected		50%	50%	100%										
# of values between MDL and MRL	2		1											
TPS4														
Sample Date														
08/23/06	**0.1825**	**2.980**	**0.1825**	**0.25**	5480	6.36	**2.82**	15.7	3.7	6150	2.60	**5.5**	919	111
08/10/07	**2.45**	**120**	**0.95**		7500	8.8	3.2	6.6		6800	2.7		1100	140
Mean	1.32	60	0.566	0.3	6500	7.6	3	11	3.7	6500	2.7	5.5	1000	130
Median	1.32	60	0.566	0.3	6500	7.6	3	11	3.7	6500	2.7	5.5	1000	130
St. Deviation	1.6	80	0.543	NA	1400	1.7	0.3	6	NA	500	0.1	NA	100	20
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.1825	2.98	0.1825	0.25	5480	6.36	2.82	6.6	3.7	6150	2.6	5.5	919	111
Maximum	2.45	120	0.95	0.25	7500	8.8	3.2	15.7	3.7	6800	2.7	5.5	1100	140
% of values undetected	100%	100%	100%	100%								100%		
# of values between MDL and MRL							1							

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPS1															
Sample Date															
08/23/06		**0.025**			8.7					1560					51.6
08/10/07	**0.012**		0.88	13		1000	**0.40**	**0.26**	**93**		**0.26**	**0.40**	43	88	
Mean	0.012	0.025	0.88	13	8.7	1000	0.4	0.26	93	1560	0.26	0.4	43	88	51.6
Median	0.012	0.025	0.88	13	8.7	1000	0.4	0.26	93	1560	0.26	0.4	43	88	51.6
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.012	0.025	0.88	13	8.7	1000	0.4	0.26	93	1560	0.26	0.4	43	88	51.6
Maximum	0.012	0.025	0.88	13	8.7	1000	0.4	0.26	93	1560	0.26	0.4	43	88	51.6
% of values undetected	100%	100%						100%			100%				
# of values between MDL and MRL							1		1			1			
TPS2															
Sample Date															
08/23/06	0.424	**0.05**	**0.95**	8.01	3.8	722	9.06	**0.095**	**197**	4520	**0.109**	**3.07**	19.0	41.6	33.2
08/10/07	**0.033**		**0.75**	12		**420**	3.7	**0.75**	**190**		**0.75**	**0.43**	29	78	
Mean	0.23	0.05	0.85	10	3.8	570	6.4	0.42	190	4520	0.43	1.75	24	60	33.2
Median	0.23	0.05	0.85	10	3.8	570	6.4	0.42	190	4520	0.43	1.75	24	60	33.2
St. Deviation	0.28	NA	0.14	3	NA	210	3.8	0.46	0	NA	0.45	1.86	7	26	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.033	0.05	0.75	8.01	3.8	420	3.7	0.095	190	4520	0.109	0.43	19	41.6	33.2
Maximum	0.424	0.05	0.95	12	3.8	722	9.06	0.75	197	4520	0.75	3.07	29	78	33.2
% of values undetected	50%	100%	100%					100%			50%	50%			
# of values between MDL and MRL						1			2		1	1			
TPS3															
Sample Date															
08/23/06	**0.0225**	**0.01**	**0.688**	10.4	4	462	1.10	**0.0199**	153	279	0.103	**0.64**	51.7	55.4	24.2
08/10/07	**0.017**		**0.115**	6.0		340	**0.090**	**0.115**	**7.5**		**0.115**	**0.46**	24	32	
Mean	0.02	0.01	0.402	8	4	400	0.6	0.067	80	279	0.109	0.55	38	44	24.2
Median	0.02	0.01	0.402	8	4	400	0.6	0.067	80	279	0.109	0.55	38	44	24.2
St. Deviation	0.004	NA	0.405	3	NA	90	0.7	0.067	100	NA	0.008	0.13	20	17	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.017	0.01	0.115	6	4	340	0.09	0.01985	7.5	279	0.103	0.46	24	32	24.2
Maximum	0.0225	0.01	0.688	10.4	4	462	1.1	0.115	153	279	0.115	0.64	51.7	55.4	24.2
% of values undetected		100%	50%					100%	50%		50%	50%			
# of values between MDL and MRL	2		1				1					1			
TPS4															
Sample Date															
08/23/06	**0.0362**	**0.045**	**0.915**	3.75	**1.1**	**367**	4.67	**0.0915**	**91.5**	3500	0.137	**2.95**	**11.4**	26.3	24.3
08/10/07	**0.13**		**0.95**	3.8		**490**	**1.1**	**0.95**	**240**		**0.0065**	**0.32**	15	30	
Mean	0.083	0.045	0.93	3.8	1.1	430	2.9	0.52	170	3500	0.07	1.63	13	28	24.3
Median	0.083	0.045	0.93	3.8	1.1	430	2.9	0.52	170	3500	0.07	1.63	13	28	24.3
St. Deviation	0.066	NA	0.02	0	NA	90	2.5	0.61	110	NA	0.09	1.86	3	3	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.0362	0.045	0.915	3.75	1.1	367	1.1	0.0915	91.5	3500	0.0065	0.32	11.4	26.3	24.3
Maximum	0.13	0.045	0.95	3.8	1.1	490	4.67	0.95	240	3500	0.137	2.945	15	30	24.3
% of values undetected	50%	100%	100%		100%			100%	50%		50%	50%			
# of values between MDL and MRL	1					2	1		1			1	1		

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPS5														
Sample Date														
08/23/06	26.1		**3.33**	**0.595**	**3.68**	0.12		293	**0.35**	15200	**0.057**	5.61	77.3	0.418
08/11/07	65	2.95	**0.85**	**0.18**	6.9	**0.75**		190		6900	0.35	17	38	**0.22**
Mean	46	2.95	2.1	0.39	5.3	0.44	NA	240	0.35	11000	0.2	11	58	0.32
Median	46	2.95	2.1	0.39	5.3	0.44	NA	240	0.35	11000	0.2	11	58	0.32
St. Deviation	28	NA	1.8	0.29	2.3	0.45	NA	70	NA	6000	0.21	8	28	0.14
# of values	2	1	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	26.1	2.95	0.85	0.18	3.68	0.12	NA	190	0.35	6900	0.057	5.61	38	0.22
Maximum	65	2.95	3.33	0.595	6.9	0.75	NA	293	0.35	15200	0.35	17	77.3	0.418
% of values undetected			50%	50%		50%			100%		50%			
# of values between MDL and MRL			1	1	1									1
TPS6														
Sample Date														
08/24/06	27.8		4.10	**1.69**	7.74	0.078		327	**0.35**	18200	**0.054**	95.2	91.6	**0.293**
08/11/07	40.0	4.46	**1.35**	**0.63**	8.1	**1.2**		540		11000	0.64	54	66	**0.32**
Mean	34	4.46	2.7	1.2	7.9	0.6	NA	430	0.35	15000	0.35	75	79	0.31
Median	34	4.46	2.7	1.2	7.9	0.6	NA	430	0.35	15000	0.35	75	79	0.31
St. Deviation	9	NA	1.9	0.7	0.3	0.8	NA	150	NA	5000	0.41	29	18	0.02
# of values	2	1	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	27.8	4.46	1.35	0.63	7.74	0.078	NA	327	0.35	11000	0.054	54	66	0.293
Maximum	40	4.46	4.1	1.69	8.1	1.2	NA	540	0.35	18200	0.64	95.2	91.6	0.32
% of values undetected			50%			50%			100%		50%			
# of values between MDL and MRL				2										2
TPS7														
Sample Date														
08/24/06	76.0		**0.578**	**0.204**	1.31	0.098		34.3	**0.35**	7550	**0.0203**	18.2	22.1	0.168
08/11/07	85.0	0.77	**2.9**	**0.050**	**2.3**	**0.5**		59		5100	0.37	31	16	**0.15**
Mean	81	0.77	1.7	0.13	1.8	0.3	NA	47	0.35	6300	0.195	25	19	0.16
Median	81	0.77	1.7	0.13	1.8	0.3	NA	47	0.35	6300	0.195	25	19	0.16
St. Deviation	6	NA	1.6	0.11	0.7	0.28	NA	17	NA	1700	0.247	9	4	0.01
# of values	2	1	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	76	0.77	0.578	0.050	1.31	0.098	NA	34.3	0.35	5100	0.0203	18.2	16	0.15
Maximum	85	0.77	2.9	0.204	2.3	0.5	NA	59	0.35	7550	0.37	31	22.1	0.168
% of values undetected				100%		50%			100%		50%			
# of values between MDL and MRL			2		1									1
TPS8														
Sample Date														
08/24/06	73.2		**0.724**	**0.2115**	5.72	**0.0135**		20.6	**0.35**	7530	**0.0209**	26.2	37.0	0.232
08/11/07	22.0	13.6	**8.6**	**0.185**	150	**2.15**		1000		9400	1.1	270	95	**0.33**
Mean	48	13.6	4.7	0.198	80	1.08	NA	500	0.35	8500	0.56	150	66	0.28
Median	48	13.6	4.7	0.198	80	1.08	NA	500	0.35	8500	0.56	150	66	0.28
St. Deviation	36	NA	5.6	0.019	100	1.51	NA	700	NA	1300	0.76	170	41	0.07
# of values	2	1	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	22	13.6	0.724	0.185	5.72	0.0135	NA	20.6	0.35	7530	0.0209	26.2	37	0.232
Maximum	73.2	13.6	8.6	0.2115	150	2.15	NA	1000	0.35	9400	1.1	270	95	0.33
% of values undetected				100%		100%			100%		50%			
# of values between MDL and MRL			2											1

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPS5														
Sample Date														
08/23/06	**0.114**	**1.87**	**0.114**	**0.2**	5190	22.9	6.03	13.1	6.9	14500	10.2	**3.6**	3630	183
08/11/07	**0.375**	**1.45**	**0.145**		2400	9.9	3.6	6.7		14000	6.5		2100	260
Mean	0.245	1.66	0.13	0.2	3800	16	4.8	10	6.9	14000	8	3.6	2900	220
Median	0.245	1.66	0.13	0.2	3800	16	4.8	10	6.9	14000	8	3.6	2900	220
St. Deviation	0.185	0.3	0.022	NA	2000	9	1.7	5	NA	0	3	NA	1100	50
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.114	1.45	0.114	0.2	2400	9.9	3.6	6.7	6.9	14000	6.5	3.6	2100	183
Maximum	0.375	1.87	0.145	0.2	5190	22.9	6.03	13.1	6.9	14500	10.2	3.6	3630	260
% of values undetected	100%	100%	100%	100%								100%		
# of values between MDL and MRL														
TPS6														
Sample Date														
08/24/06	**0.108**	**1.765**	**0.108**	**0.2**	6180	29.0	7.51	12.1	5.4	17600	8.46	**3.6**	3760	268
08/11/07	**0.60**	**2.45**	**0.245**		5200	22	5.1	7.7		14000	7.4		3200	170
Mean	0.35	2.11	0.177	0.2	5700	26	6.3	10	5.4	16000	7.9	3.6	3500	220
Median	0.35	2.11	0.177	0.2	5700	26	6.3	10	5.4	16000	7.9	3.6	3500	220
St. Deviation	0.35	0.48	0.097	NA	700	5	1.7	3	NA	3000	0.7	NA	400	70
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.108	1.765	0.108	0.2	5200	22	5.1	7.7	5.4	14000	7.4	3.6	3200	170
Maximum	0.6	2.45	0.245	0.2	6180	29	7.51	12.1	5.4	17600	8.46	3.6	3760	268
% of values undetected	100%	100%	100%	100%								100%		
# of values between MDL and MRL														
TPS7														
Sample Date														
08/24/06	**0.0405**	1.95	**0.0405**	**0.05**	1240	8.24	3.65	7.80	3.6	12300	6.46	6.5	2810	265
08/11/07	**0.30**	**1.15**	**0.115**		1000	7.7	3.5	6.9		12000	5.5		2000	330
Mean	0.17	1.55	0.078	0.05	1100	8	3.6	7.4	3.6	12000	6	6.5	2400	300
Median	0.17	1.55	0.078	0.05	1100	8	3.6	7.4	3.6	12000	6	6.5	2400	300
St. Deviation	0.18	0.57	0.053	NA	200	0.4	0.1	0.6	NA	0	0.7	NA	600	50
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.0405	1.15	0.0405	0.05	1000	7.7	3.5	6.9	3.6	12000	5.5	6.5	2000	265
Maximum	0.3	1.95	0.115	0.05	1240	8.24	3.65	7.8	3.6	12300	6.46	6.5	2810	330
% of values undetected	100%	50%	100%	100%										
# of values between MDL and MRL														
TPS8														
Sample Date														
08/24/06	**0.0417**	2.36	**0.0417**	**0.05**	1520	7.33	4.05	6.19	2.2	13000	4.30	3.7	3160	359
08/11/07	**3.1**	**4.35**	**0.435**		6600	20	6.6	9.2		49000	6.8		2200	770
Mean	1.57	3.36	0.238	0.05	4100	14	5.3	7.7	2.2	31000	5.6	3.7	2700	560
Median	1.57	3.36	0.238	0.05	4100	14	5.3	7.7	2.2	31000	5.6	3.7	2700	560
St. Deviation	2.16	1.41	0.278	NA	3600	9	1.8	2.1	NA	25000	1.8	NA	700	290
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.0417	2.36	0.0417	0.05	1520	7.33	4.05	6.19	2.2	13000	4.3	3.7	2200	359
Maximum	3.1	4.35	0.435	0.05	6600	20	6.6	9.2	2.2	49000	6.8	3.7	3160	770
% of values undetected	50%	50%	100%	100%										
# of values between MDL and MRL	1													

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPS5															
Sample Date															
08/23/06	**0.0642**	**0.03**	**0.57**	10.1	5.9	546	2.93	**0.057**	**245**	1230	0.110	**1.84**	32.4	81.0	60.6
08/11/07	**0.024**		0.44	4.7		290	**0.27**	**0.145**	**38**		**0.145**	**0.25**	27	35	
Mean	0.044	0.03	0.51	7	5.9	420	1.6	0.1	140	1230	0.13	1	30	58	60.6
Median	0.044	0.03	0.51	7	5.9	420	1.6	0.1	140	1230	0.13	1	30	58	60.6
St. Deviation	0.028	NA	0.09	4	NA	180	1.9	0.06	150	NA	0.02	1.1	4	33	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.024	0.03	0.44	4.7	5.9	290	0.27	0.057	38	1230	0.11	0.25	27	35	60.6
Maximum	0.0642	0.03	0.57	10.1	5.9	546	2.93	0.145	245	1230	0.145	1.84	32.4	81	60.6
% of values undetected		100%	50%					100%			50%	50%			
# of values between MDL and MRL	2						1		2			1			
TPS6															
Sample Date															
08/24/06	**0.0744**	**0.03**	**0.54**	10.9	5.7	659	2.42	**0.054**	**248**	1080	0.0740	**1.745**	52.9	62.7	40.9
08/11/07	**0.0290**		0.63	7.3		490	**0.71**	**0.245**	**87**		**0.245**	**0.36**	35	53	
Mean	0.052	0.03	0.59	9	5.7	570	1.6	0.15	170	1080	0.16	1.05	44	58	40.9
Median	0.052	0.03	0.59	9	5.7	570	1.6	0.15	170	1080	0.16	1.05	44	58	40.9
St. Deviation	0.032	NA	0.06	3	NA	120	1.2	0.14	110	NA	0.12	0.98	13	7	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.029	0.03	0.54	7.3	5.7	490	0.71	0.054	87	1080	0.074	0.36	35	53	40.9
Maximum	0.0744	0.03	0.63	10.9	5.7	659	2.42	0.245	248	1080	0.245	1.745	52.9	62.7	40.9
% of values undetected		100%	50%					100%			50%	50%			
# of values between MDL and MRL	2						1		2			1			
TPS7															
Sample Date															
08/24/06	**0.0159**	**0.01**	**0.516**	4.80	2.1	496	**0.098**	**0.0203**	**87.2**	132	0.0376	**0.65**	25.3	40.1	20.1
08/11/07	**0.0160**		0.54	4.5		270	**0.17**	**0.115**	**7.5**		**0.115**	**0.20**	18	38	
Mean	0.016	0.01	0.53	4.7	2.1	380	0.13	0.068	47	132	0.076	0.43	22	39	20.1
Median	0.016	0.01	0.53	4.7	2.1	380	0.13	0.068	47	132	0.076	0.43	22	39	20.1
St. Deviation	0	NA	0.02	0.2	NA	160	0.05	0.067	56	NA	0.055	0.32	5	1	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.0159	0.01	0.516	4.5	2.1	270	0.098	0.02025	7.5	132	0.0376	0.2	18	38	20.1
Maximum	0.016	0.01	0.54	4.8	2.1	496	0.17	0.115	87.2	132	0.115	0.65	25.3	40.1	20.1
% of values undetected		100%					50%	100%	50%		50%	50%			
# of values between MDL and MRL	2		1				1		1			1			
TPS8															
Sample Date															
08/24/06	**0.00805**	**0.01**	**0.689**	5.07	2	429	1.41	**0.0209**	**122**	116	0.0423	**0.67**	24.7	33.5	14.5
08/11/07	0.1		6.3	6.1		**330**	**2.1**	**0.435**	**28**		**0.435**	**0.34**	67	36	
Mean	0.05	0.01	3.5	5.6	2	380	1.8	0.228	80	116	0.239	0.51	46	35	14.5
Median	0.05	0.01	3.5	5.6	2	380	1.8	0.228	80	116	0.239	0.51	46	35	14.5
St. Deviation	0.07	NA	4	0.7	NA	70	0.5	0.293	70	NA	0.278	0.23	30	2	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.00805	0.01	0.689	5.07	2	330	1.41	0.02085	28	116	0.0423	0.34	24.7	33.5	14.5
Maximum	0.1	0.01	6.3	6.1	2	429	2.1	0.435	122	116	0.435	0.67	67	36	14.5
% of values undetected	50%	100%						100%	50%		50%	50%			
# of values between MDL and MRL			1			1	1		1			1			

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
UT100A														
Sample Date														
09/16/04			**0.51**	**0.152**	3.47	0.37		45		10800	0.214	18.6	68.5	0.334
Mean	NA	NA	0.51	0.152	3.47	0.37	NA	45	NA	10800	0.214	18.6	68.5	0.334
Median	NA	NA	0.51	0.152	3.47	0.37	NA	45	NA	10800	0.214	18.6	68.5	0.334
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	NA	NA	0.51	0.152	3.47	0.37	NA	45	NA	10800	0.214	18.6	68.5	0.334
Maximum	NA	NA	0.51	0.152	3.47	0.37	NA	45	NA	10800	0.214	18.6	68.5	0.334
% of values undetected				100%										
# of values between MDL and MRL			1											
UT100B														
Sample Date														
06/03/04						0.38	0.260			17300	0.344	38.9	144	0.636
07/15/04			1.2	**0.6**	23.6	**0.043**		43.5		6710	0.191	17.4	55.7	0.338
08/09/04			**0.418**	**0.1505**	4.86	**0.032**		18		7440	**0.253**	16	52.9	0.274
09/16/04			**0.1415**	**0.1415**	1.57	0.066		**4**		9070	0.207	15.5	43.1	0.277
06/03/05			2.11	3.72	29.9	**0.034**		46.3		8790	0.158	16.1	56.4	0.302
07/10/05	77.8		**0.575**	**0.1935**	**0.925**	**0.0145**		30.2		7180	0.166	15.1	39.7	0.227
09/14/05	76.5		2.28	**0.65**	**1.2**	**0.014**		16.7		8480	0.173	16.2	54.5	0.348
06/17/06	66.6		**0.465**	**0.495**	2.70	0.058		**11.8**	**0.35**	13700	0.147	17.4	78.6	0.457
06/19/07	71	1.16	**0.75**	**0.19**	5.2	0.48		45		8700	0.39	27	74	0.37
Mean	73	1.16	0.99	0.77	8.7	0.12	0.26	26.9	0.35	9700	0.225	20	67	0.359
Median	73.8	1.16	0.66	0.34	3.8	0.04	0.26	24.1	0.35	8700	0.191	16.2	56	0.338
St. Deviation	5.2	NA	0.8	1.21	11.4	0.18	NA	16.6	NA	3500	0.087	8	32	0.123
# of values	4	1	8	8	8	9	1	8	1	9	9	9	9	9
Minimum	66.6	1.16	0.1415	0.1415	0.925	0.014	0.26	4	0.35	6710	0.147	15.1	39.7	0.227
Maximum	77.8	1.16	2.28	3.72	29.9	0.48	0.26	46.3	0.35	17300	0.39	38.9	144	0.636
% of values undetected			25%	50%		22%			100%					
# of values between MDL and MRL			3	3	2	3		2			1			
UT100C														
Sample Date														
06/03/04						0.30	0.402	374		12000	0.180	15.5	80.6	0.357
Mean	NA	NA	NA	NA	NA	0.3	0.402	374	NA	12000	0.18	15.5	80.6	0.357
Median	NA	NA	NA	NA	NA	0.3	0.402	374	NA	12000	0.18	15.5	80.6	0.357
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	0	0	0	0	0	1	1	1	0	1	1	1	1	1
Minimum	NA	NA	NA	NA	NA	0.3	0.402	374	NA	12000	0.18	15.5	80.6	0.357
Maximum	NA	NA	NA	NA	NA	0.3	0.402	374	NA	12000	0.18	15.5	80.6	0.357
% of values undetected														
# of values between MDL and MRL														
UT100D														
Sample Date														
06/03/04			2.85	1.51	32.4	0.40	0.130	435		21700	0.343	16.4	227	0.869
07/15/04			1.39	**0.687**	59.8	0.12		57.7		9600	0.135	5.29	112	0.395
09/17/04			**0.524**	1.04	7.76	0.22		39.8		15500	0.154	8.84	143	0.454
06/04/05			**0.766**	**0.497**	25.4	**0.051**		18.8		9350	0.125	8.03	111	0.374
07/11/05	70		**0.53**	**0.2165**	4.01	**0.044**		40.2		11200	0.164	9.42	147	0.53
09/13/05	64.5		**1.24**	**0.77**	4.94	**0.054**		52.5		12400	**0.118**	5.82	120	0.398
06/17/06	74.1		**0.444**	**0.2085**	4.21	**0.043**		44.3	**0.35**	14800	**0.103**	5.33	107	0.324
06/19/07	51	1.83	**2.2**	**0.63**	11	**0.09**		120		16000	0.35	12	200	0.60
Mean	64.9	1.83	1.24	0.69	18.7	0.13	0.130	101	0.35	13800	0.187	8.9	146	0.493
Median	67.3	1.83	1.00	0.66	9.4	0.07	0.130	48	0.35	13600	0.145	8.4	132	0.426
St. Deviation	10.1	NA	0.88	0.43	19.7	0.13	NA	138	NA	4100	0.101	3.8	45	0.176
# of values	4	1	8	8	8	8	1	8	1	8	8	8	8	8
Minimum	51	1.83	0.444	0.2085	4.01	0.043	0.130	18.8	0.35	9350	0.103	5.29	107	0.324
Maximum	74.1	1.83	2.85	1.51	59.8	0.4	0.130	435	0.35	21700	0.35	16.4	227	0.869
% of values undetected				38%		13%			100%					
# of values between MDL and MRL			6	3		4					2			

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
UT100A														
Sample Date														
09/16/04	**0.0309**	**4.31**	**0.174**		3340	13.3	6.98	8.62		21000	10.8		4260	604
Mean	0.0309	4.31	0.174	NA	3340	13.3	6.98	8.62	NA	21000	10.8	NA	4260	604
Median	0.0309	4.31	0.174	NA	3340	13.3	6.98	8.62	NA	21000	10.8	NA	4260	604
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0309	4.31	0.174	NA	3340	13.3	6.98	8.62	NA	21000	10.8	NA	4260	604
Maximum	0.0309	4.31	0.174	NA	3340	13.3	6.98	8.62	NA	21000	10.8	NA	4260	604
% of values undetected	100%													
# of values between MDL and MRL		1	1											
UT100B														
Sample Date														
06/03/04	**0.125**	**3.75**	**0.182**		7510	39.3	14.8	17.7		27600	10.7		6650	1330
07/15/04	**0.03**	**1.5**	**0.0769**		3080	10.9	6.54	6.91		19500	4.31		3860	544
08/09/04	**0.0309**	**1.545**	**0.0679**		2660	12	5.7	7.23		18100	3.4		3600	387
09/16/04	**0.0294**	**4.1**	**0.0717**		3140	15.5	6.47	8.24		21600	4.65		4390	414
06/03/05	**0.0310**	**1.545**	0.244		3290	14.6	6.02	6.91		19100	4.28		4140	441
07/10/05	**0.0388**	**1.94**	0.299		2340	9.92	5.09	15.3		18100	3.69		3660	393
09/14/05	**0.0400**	1.96	**0.229**		2990	11.9	6.07	6.53		18800	4.05		3760	516
06/17/06	**0.0454**	1.56	**0.157**	0.14	3760	15.4	8.19	9.00	2.7	14800	5.18	4.4	4830	486
06/19/07	**2.8**	**11**	**0.16**		3400	13	8.5	7.6		23000	5.1		4200	740
Mean	0.35	3.2	0.165	0.14	3570	15.8	7.5	9.5	2.7	20100	5	4.4	4340	580
Median	0.04	1.9	0.16	0.14	3140	13	6.5	7.6	2.7	19100	4.3	4.4	4140	490
St. Deviation	0.92	3.1	0.083	NA	1530	9	3	4.1	NA	3600	2.2	NA	950	300
# of values	9	9	9	1	9	9	9	9	1	9	9	1	9	9
Minimum	0.0294	1.5	0.0679	0.14	2340	9.92	5.09	6.53	2.7	14800	3.4	4.4	3600	387
Maximum	2.8	11	0.299	0.14	7510	39.3	14.8	17.7	2.7	27600	10.7	4.4	6650	1330
% of values undetected	89%	56%												
# of values between MDL and MRL	1	2	7											
UT100C														
Sample Date														
06/03/04	**0.0298**	**4.52**	**0.0683**		4310	20.4	7.54	9.49		31800	5.62		3560	692
Mean	0.0298	4.52	0.0683	NA	4310	20.4	7.54	9.49	NA	31800	5.62	NA	3560	692
Median	0.0298	4.52	0.0683	NA	4310	20.4	7.54	9.49	NA	31800	5.62	NA	3560	692
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.0298	4.52	0.0683	NA	4310	20.4	7.54	9.49	NA	31800	5.62	NA	3560	692
Maximum	0.0298	4.52	0.0683	NA	4310	20.4	7.54	9.49	NA	31800	5.62	NA	3560	692
% of values undetected	100%													
# of values between MDL and MRL		1	1											
UT100D														
Sample Date														
06/03/04	**0.162**	**8.47**	0.267		10400	43.5	25.6	30.6		46200	11.1		7970	2890
07/15/04	**0.0298**	**1.485**	**0.0785**		4340	17.8	11.9	8.93		24600	4.54		4190	758
09/17/04	**0.0295**	**5.05**	**0.132**		5230	20.3	15.9	11.6		32200	5.29		4920	1330
06/04/05	**0.0309**	**1.545**	0.457		3770	15.4	12.2	8.24		25500	4.23		3960	1140
07/11/05	**0.0433**	**2.165**	0.637		4430	17.6	13.5	11.8		27900	4.85		5710	1230
09/13/05	**0.0461**	3.5	**0.203**		5270	19.4	13.7	11		28000	4.63		4790	1120
06/17/06	**0.0403**	1.76	**0.208**	**0.05**	3650	14.4	10.6	8.95	2.9	23400	3.98	2.9	4030	822
06/19/07	**3.7**	**14.5**	**0.25**		7400	26	19	16		39000	7.1		6000	1800
Mean	0.51	4.8	0.279	0.05	5600	21.8	15.3	13.4	2.9	30900	5.7	2.9	5200	1390
Median	0.04	2.8	0.229	0.05	4800	18.6	13.6	11.3	2.9	28000	4.7	2.9	4860	1190
St. Deviation	1.29	4.6	0.183	NA	2300	9.5	4.9	7.4	NA	8000	2.4	NA	1350	690
# of values	8	8	8	1	8	8	8	8	1	8	8	1	8	8
Minimum	0.0295	1.485	0.0785	0.05	3650	14.4	10.6	8.24	2.9	23400	3.98	2.9	3960	758
Maximum	3.7	14.5	0.637	0.05	10400	43.5	25.6	30.6	2.9	46200	11.1	2.9	7970	2890
% of values undetected	88%	50%		100%										
# of values between MDL and MRL	1	2	5											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
UT100A															
Sample Date															
09/16/04	0.0156		0.753	8.79		604	0.075	0.0499	250		0.0331	1.11	41.7	48.9	
Mean	0.0156	NA	0.753	8.79	NA	604	0.075	0.04985	250	NA	0.0331	1.11	41.7	48.9	NA
Median	0.0156	NA	0.753	8.79	NA	604	0.075	0.04985	250	NA	0.0331	1.11	41.7	48.9	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0156	NA	0.753	8.79	NA	604	0.075	0.04985	250	NA	0.0331	1.11	41.7	48.9	NA
Maximum	0.0156	NA	0.753	8.79	NA	604	0.075	0.04985	250	NA	0.0331	1.11	41.7	48.9	NA
% of values undetected							100%	100%							
# of values between MDL and MRL	1		1												
UT100B															
Sample Date															
06/03/04	0.128		1.73	18.7		815	1.07	0.0154	557		0.0282	1.21	87.4	84.5	
07/15/04	0.0127		0.598	6.79		551	0.181	0.015	251		0.003	0.484	36.4	43.8	
08/09/04	0.12		0.502	7.72		510	0.302	0.055	190		0.0191	0.499	36.1	44.5	
09/16/04	0.0059		0.638	9.65		600	0.176	0.0474	193		0.0389	0.982	46.9	38.1	
06/03/05	0.0059		0.591	7.86		467	0.986	0.0566	234		0.0307	0.499	36.5	40.1	
07/10/05	0.0434		0.573	6.82		547	0.0940	0.0194	208		0.0326	46.2	30.8	40	
09/14/05	0.0238		0.585	8.34		495	0.0965	0.0662	187		0.0336	0.645	36.1	42.9	
06/17/06	0.0448	0.01	0.666	11.0	4	529	0.110	0.0227	284	207	0.0360	0.730	43.0	56.8	21.7
06/19/07	0.027		0.90	8.8		380	0.275	0.11	70		0.11	0.275	40	47	
Mean	0.046	0.01	0.75	9.5	4	544	0.37	0.045	242	207	0.037	5.7	43.7	48.6	21.7
Median	0.027	0.01	0.6	8.3	4	529	0.18	0.047	208	207	0.033	0.6	36.5	43.8	21.7
St. Deviation	0.047	NA	0.38	3.7	NA	119	0.38	0.031	132	NA	0.029	15.2	17	14.5	NA
# of values	9	1	9	9	1	9	9	9	9	1	9	9	9	9	1
Minimum	0.0059	0.01	0.502	6.79	4	380	0.094	0.015	70	207	0.003	0.275	30.8	38.1	21.7
Maximum	0.128	0.01	1.73	18.7	4	815	1.07	0.11	557	207	0.11	46.2	87.4	84.5	21.7
% of values undetected	22%	100%					44%	67%	11%		22%	67%			
# of values between MDL and MRL	4		7			1	3	3			1				
UT100C															
Sample Date															
06/03/04	0.16		0.976	9.81		466	0.2405	0.0674	341		0.0576	0.481	45.5	45.6	
Mean	0.16	NA	0.976	9.81	NA	466	0.2405	0.0674	341	NA	0.0576	0.481	45.5	45.6	NA
Median	0.16	NA	0.976	9.81	NA	466	0.2405	0.0674	341	NA	0.0576	0.481	45.5	45.6	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.16	NA	0.976	9.81	NA	466	0.2405	0.0674	341	NA	0.0576	0.481	45.5	45.6	NA
Maximum	0.16	NA	0.976	9.81	NA	466	0.2405	0.0674	341	NA	0.0576	0.481	45.5	45.6	NA
% of values undetected							100%					100%			
# of values between MDL and MRL								1							
UT100D															
Sample Date															
06/03/04	0.119		1.72	27.4		1120	1.39	0.0155	492		0.0998	1.32	100	115	
07/15/04	0.0596		0.509	10.8		535	0.252	0.0149	394		0.003	0.480	43.5	63.4	
09/17/04	0.0528		0.875	14.8		709	0.305	0.0982	474		0.0755	1.08	53.1	66.2	
06/04/05	0.0648		0.714	10.7		724	1.02	0.0363	397		0.0611	0.498	38.5	56.2	
07/11/05	0.0613		0.825	13		892	0.349	0.0217	495		0.0827	0.7	53.1	76.4	
09/13/05	0.0380		0.595	14.7		631	0.370	0.0231	358		0.0241	0.745	45.4	72.4	
06/17/06	0.0289	0.01	0.483	11.3	4.6	512	0.0975	0.0202	276	160	0.0526	0.65	36.5	63.6	28.7
06/19/07	0.093		1.1	16		490	0.36	0.145	95		0.145	0.36	65	78	
Mean	0.065	0.01	0.85	14.8	4.6	700	0.52	0.047	373	160	0.068	0.73	54	74	28.7
Median	0.06	0.01	0.77	13.9	4.6	670	0.35	0.022	396	160	0.068	0.68	49	69	28.7
St. Deviation	0.029	NA	0.41	5.5	NA	220	0.44	0.048	135	NA	0.044	0.32	21	18	NA
# of values	8	1	8	8	1	8	8	8	8	1	8	8	8	8	1
Minimum	0.0289	0.01	0.483	10.7	4.6	490	0.0975	0.01485	95	160	0.003	0.36	36.5	56.2	28.7
Maximum	0.119	0.01	1.72	27.4	4.6	1120	1.39	0.145	495	160	0.145	1.32	100	115	28.7
% of values undetected		100%					38%	75%	13%		25%	75%			
# of values between MDL and MRL	2		6			1	3	1			1				

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
UT100E														
Sample Date														
06/05/04						0.80	0.927	665		24200	0.273	16.3	239	0.966
07/15/04			2.08	**0.863**	41.3	0.12		101		9860	0.199	7.1	99.9	0.365
09/17/04			1.4	**0.140**	2.8	0.089		13		12100	0.197	7.06	89.6	0.363
06/04/05			1.75	**0.477**	27.1	**0.047**		37.4		10300	0.175	9.27	90.2	0.422
06/17/06	70.0		**0.714**	**0.514**	3.23	0.081		32.3		13800	**0.128**	7.46	113	0.414
06/19/06									**0.35**					
06/19/07	66	1.11	**1.8**	**0.52**	5.3	**0.07**		63		11000	**0.125**	7.1	110	0.420
Mean	68	1.11	1.55	0.503	15.9	0.2	0.927	152	0.35	13500	0.183	9.05	124	0.492
Median	68	1.11	1.75	0.514	5.3	0.09	0.927	50	0.35	11600	0.186	7.28	105	0.417
St. Deviation	3	NA	0.53	0.256	17.4	0.29	NA	253	NA	5400	0.055	3.65	57	0.234
# of values	2	1	5	5	5	6	1	6	1	6	6	6	6	6
Minimum	66	1.11	0.714	0.14	2.8	0.047	0.927	13	0.35	9860	0.125	7.06	89.6	0.363
Maximum	70	1.11	2.08	0.863	41.3	0.8	0.927	665	0.35	24200	0.273	16.3	239	0.966
% of values undetected				20%		17%			100%		17%			
# of values between MDL and MRL			2	4		1					1			
UT119A														
Sample Date														
06/04/04						0.97	0.810	406		10000	0.194	25.2	55.7	0.253
07/15/04			1.53	**0.538**	56.6	0.084		48.9		8980	**0.244**	18.7	47.9	0.295
09/16/04			**0.806**	**0.141**	2.08	0.21		32.5		9220	0.157	18.1	44.8	0.214
06/02/05			4.01	3.5	23.4	**0.047**		74.7		7340	0.112	14.1	41.8	0.182
06/17/06	74.0		**1.17**	**0.209**	**0.209**	**0.040**		33.5	**0.35**	8380	**0.122**	14.6	41.0	0.196
06/20/07	79	0.41	**0.65**	**0.14**	**2.6**	**0.055**		36		8300	0.250	20	48	0.26
Mean	76.5	0.41	1.63	0.91	17	0.23	0.81	105	0.35	8700	0.180	18.5	46.5	0.233
Median	76.5	0.41	1.17	0.21	2.6	0.07	0.81	42	0.35	8700	0.176	18.4	46.4	0.234
St. Deviation	3.5	NA	1.37	1.46	24.1	0.37	NA	148	NA	900	0.060	4	5.4	0.043
# of values	2	1	5	5	5	6	1	6	1	6	6	6	6	6
Minimum	74	0.41	0.65	0.14	0.209	0.04	0.81	32.5	0.35	7340	0.112	14.1	41	0.182
Maximum	79	0.41	4.01	3.5	56.6	0.97	0.81	406	0.35	10000	0.250	25.2	55.7	0.295
% of values undetected			20%	40%	20%	17%			100%					
# of values between MDL and MRL			2	2	1	2					2			
UT119B														
Sample Date														
07/10/05	72.8		**0.651**	**0.827**	3.28	**0.015**		27.6		9670	0.162	8.47	77.6	0.308
06/17/06	67.1		2.08	**0.462**	**0.231**	0.065		76.2	**0.35**	10900	0.164	21.6	66.9	0.382
Mean	70.0	NA	1.37	0.645	1.76	0.04	NA	51.9	0.35	10300	0.163	15	72.3	0.345
Median	70.0	NA	1.37	0.645	1.76	0.04	NA	51.9	0.35	10300	0.163	15	72.3	0.345
St. Deviation	4.0	NA	1.01	0.258	2.16	0.035	NA	34.4	NA	900	0.001	9.3	7.6	0.052
# of values	2	0	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	67.1	NA	0.651	0.462	0.231	0.015	NA	27.6	0.35	9670	0.162	8.47	66.9	0.308
Maximum	72.8	NA	2.08	0.827	3.28	0.065	NA	76.2	0.35	10900	0.164	21.6	77.6	0.382
% of values undetected					50%	50%			100%					
# of values between MDL and MRL			1	2										

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
UT100E														
Sample Date														
06/05/04	**0.105**	**5.39**	0.315		9700	46.5	22.8	16.6		45500	9.45		6810	2860
07/15/04	**0.030**	**1.5**	**0.105**		4010	19.9	11.7	7.9		24600	4.46		3760	815
09/17/04	**0.0305**	**4.78**	**0.117**		3890	18.4	10.3	7.79		25900	4.02		4270	859
06/04/05	**0.0309**	**1.545**	0.543		3800	18.2	9.98	7.38		27200	4.36		4490	1020
06/17/06	**0.0427**	1.79	0.308		3970	17.4	11.2	8.47		22800	4.44		4520	1060
06/19/06				0.09					0.6			1.6		
06/19/07	**3.15**	**12.5**	**0.18**		5000	17	12	8.0		28000	4.7		7500	1200
Mean	0.56	4.6	0.261	0.09	5100	22.9	13	9.36	0.6	29000	5.24	1.6	5230	1300
Median	0.04	3.3	0.244	0.09	4000	18.3	11.5	7.95	0.6	26600	4.45	1.6	4510	1040
St. Deviation	1.27	4.2	0.165	NA	2300	11.6	4.9	3.57	NA	8300	2.07	NA	1540	780
# of values	6	6	6	1	6	6	6	6	1	6	6	1	6	6
Minimum	0.03	1.5	0.105	0.09	3800	17	9.98	7.38	0.6	22800	4.02	1.6	3760	815
Maximum	3.15	12.5	0.543	0.09	9700	46.5	22.8	16.6	0.6	45500	9.45	1.6	7500	2860
% of values undetected	83%	50%												
# of values between MDL and MRL	1	2	3											
UT119A														
Sample Date														
06/04/04	**0.0704**	**1.525**	**0.0806**		4060	16.8	3.54	7.33		20100	5.32		2080	365
07/15/04	**0.0886**	**1.5**	**0.0942**		2950	9.94	4.7	7.37		19700	4.42		3830	365
09/16/04	**0.0629**	**3.33**	**0.0786**		2570	10.4	4.27	6.13		15900	4.3		3350	365
06/02/05	**0.0309**	**1.545**	**0.135**		2400	10.3	3.26	5.62		12700	4.02		2830	267
06/17/06	**0.0413**	**0.594**	**0.0942**	0.08	2410	9.77	3.74	7.13	1.4	9810	4.62	3	3110	273
06/20/07	**3.05**	**12**	**0.14**		3200	8.4	4.5	5.8		18000	5.0		3900	370
Mean	0.56	3.4	0.104	0.08	2930	10.9	4	6.56	1.4	16000	4.61	3	3180	334
Median	0.07	1.5	0.094	0.08	2760	10.1	4.01	6.63	1.4	17000	4.52	3	3230	365
St. Deviation	1.22	4.3	0.027	NA	640	3	0.57	0.8	NA	4100	0.48	NA	680	50
# of values	6	6	6	1	6	6	6	6	1	6	6	1	6	6
Minimum	0.0309	0.594	0.0786	0.08	2400	8.4	3.26	5.62	1.4	9810	4.02	3	2080	267
Maximum	3.05	12	0.14	0.08	4060	16.8	4.7	7.37	1.4	20100	5.32	3	3900	370
% of values undetected	50%	67%												
# of values between MDL and MRL	3	2	6											
UT119B														
Sample Date														
07/10/05	**0.0419**	**2.095**	0.424		2120	11.7	6.15	84		22800	4.29		3220	343
06/17/06	**0.0454**	2.17	**0.170**	0.11	2600	13.1	5.72	10.5	2	13200	6.77	4.6	4140	399
Mean	0.0437	2.13	0.3	0.11	2400	12.4	5.94	47	2	18000	5.53	4.6	3680	371
Median	0.0437	2.13	0.3	0.11	2400	12.4	5.94	47	2	18000	5.53	4.6	3680	371
St. Deviation	0.0025	0.05	0.18	NA	300	1	0.3	52	NA	6800	1.75	NA	650	40
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.0419	2.095	0.17	0.11	2120	11.7	5.72	10.5	2	13200	4.29	4.6	3220	343
Maximum	0.0454	2.17	0.424	0.11	2600	13.1	6.15	84	2	22800	6.77	4.6	4140	399
% of values undetected	100%	50%												
# of values between MDL and MRL			1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
UT100E															
Sample Date															
06/05/04	0.0646		1.49	25.7		934	2.36	0.113	423		0.106	1.31	97.9	125	
07/15/04	**0.0157**		**0.53**	12		571	**0.248**	**0.015**	312		**0.003**	**0.484**	47.5	60	
09/17/04	**0.0191**		**0.609**	11.7		637	**0.0735**	**0.0491**	269		0.047	1.09	45	55.1	
06/04/05	**0.0161**		**0.686**	10.6		636	0.988	**0.0553**	270		0.0649	**0.499**	43.6	56.4	
06/17/06	**0.00845**		**0.607**	12.9		658	**0.468**	**0.0214**	269		0.0599	**0.69**	44.0	73.9	
06/19/06		**0.005**			2.7					149					18.3
06/19/07	**0.019**		0.64	15		**420**	**0.31**	**0.125**	**80**		**0.125**	**0.31**	38	57	
Mean	0.0238	0.005	0.76	14.7	2.7	643	0.741	0.063	271	149	0.068	0.73	53	71.2	18.3
Median	0.0176	0.005	0.625	12.5	2.7	637	0.389	0.052	270	149	0.062	0.59	45	58.5	18.3
St. Deviation	0.0203	NA	0.361	5.6	NA	167	0.852	0.046	111	NA	0.043	0.39	22	27.2	NA
# of values	6	1	6	6	1	6	6	6	6	1	6	6	6	6	1
Minimum	0.00845	0.005	0.53	10.6	2.7	420	0.0735	0.015	80	149	0.003	0.31	38	55.1	18.3
Maximum	0.0646	0.005	1.49	25.7	2.7	934	2.36	0.125	423	149	0.125	1.31	97.9	125	18.3
% of values undetected	17%	100%					33%	67%	17%		33%	67%			
# of values between MDL and MRL	4		4			1	2	1							
UT119A															
Sample Date															
06/04/04	**0.0194**		**0.493**	5.45		564	0.876	**0.0485**	630		0.0291	**0.491**	47.4	33.0	
07/15/04	**0.0059**		**0.541**	6.07		549	**0.242**	**0.0582**	215		**0.0484**	**0.484**	38.5	49.7	
09/16/04	**0.0137**		**0.472**	5.37		476	**0.201**	**0.0489**	159		0.0253	**0.489**	35.5	30.5	
06/02/05	**0.00595**		**0.155**	4.68		401	1.09	**0.0466**	144		0.0258	**0.498**	29.5	30.1	
06/17/06	**0.008**	**0.005**	**0.206**	5.65	0.7	435	**0.299**	**0.0206**	159	156	**0.0133**	**0.665**	30.3	39.4	8.6
06/20/07	**0.011**		0.46	5.2		**310**	**0.30**	**0.12**	**80**		**0.12**	**0.30**	30	41	
Mean	0.011	0.005	0.388	5.4	0.7	456	0.5	0.057	231	156	0.044	0.488	35.2	37.3	8.6
Median	0.01	0.005	0.466	5.41	0.7	456	0.3	0.049	159	156	0.027	0.49	32.9	36.2	8.6
St. Deviation	0.005	NA	0.164	0.46	NA	95	0.38	0.033	200	NA	0.039	0.116	7	7.6	NA
# of values	6	1	6	6	1	6	6	6	6	1	6	6	6	6	1
Minimum	0.0059	0.005	0.155	4.68	0.7	310	0.201	0.0206	80	156	0.0133	0.3	29.5	30.1	8.6
Maximum	0.0194	0.005	0.541	6.07	0.7	564	1.09	0.12	630	156	0.12	0.665	47.4	49.7	8.6
% of values undetected	50%	100%	33%				33%	50%	17%		50%	100%			
# of values between MDL and MRL	3		3			1	2	3							
UT119B															
Sample Date															
07/10/05	**0.00825**		6.64	7.95		629	**0.102**	**0.0210**	175		0.0692	**0.513**	35.6	42.2	
06/17/06	**0.0218**	**0.005**	**0.467**	8.92	1.3	542	**0.230**	**0.0227**	166	156	0.0600	**0.73**	47.0	56.2	14.8
Mean	0.015	0.005	3.55	8.44	1.3	586	0.166	0.0218	171	156	0.065	0.62	41	49.2	14.8
Median	0.015	0.005	3.55	8.44	1.3	586	0.166	0.0218	171	156	0.065	0.62	41	49.2	14.8
St. Deviation	0.0096	NA	4.36	0.69	NA	62	0.091	0.0012	6	NA	0.007	0.15	8	9.9	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.00825	0.005	0.467	7.95	1.3	542	0.102	0.02095	166	156	0.06	0.513	35.6	42.2	14.8
Maximum	0.0218	0.005	6.64	8.92	1.3	629	0.23	0.0227	175	156	0.0692	0.73	47	56.2	14.8
% of values undetected	50%	100%					50%	100%				50%			
# of values between MDL and MRL	1		1				1					1			

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
UT138A														
Sample Date														
07/15/04			1.34	**0.576**	26.2	0.082		58.5		8650	0.165	7.54	99.3	0.379
09/17/04			1.14	**0.306**	2.12	0.091		**1.53**		13200	0.19	8.29	124	0.48
Mean	NA	NA	1.24	0.441	14.2	0.087	NA	30	NA	10900	0.18	7.92	112	0.43
Median	NA	NA	1.24	0.441	14.2	0.087	NA	30	NA	10900	0.18	7.92	112	0.43
St. Deviation	NA	NA	0.14	0.191	17	0.006	NA	40.3	NA	3200	0.02	0.53	17	0.07
# of values	0	0	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	NA	NA	1.14	0.306	2.12	0.082	NA	1.53	NA	8650	0.165	7.54	99.3	0.379
Maximum	NA	NA	1.34	0.576	26.2	0.091	NA	58.5	NA	13200	0.19	8.29	124	0.48
% of values undetected								50%						
# of values between MDL and MRL				2										
UT141A														
Sample Date														
07/15/04			1.3	**0.376**	148	0.067		47.4		9920	0.138	9.17	69.6	0.278
09/17/04			**0.609**	**0.155**	5.48	0.13		82.8		13900	0.158	15.2	86.8	0.288
07/09/05	46.5		3.34	**0.872**	3.98	**0.042**		195		11400	**0.136**	11.2	95.3	0.239
06/17/06	67.3		**0.534**	**0.230**	2.21	**0.045**		41.8	**0.35**	17400	**0.122**	10.5	85.9	0.336
06/20/07	60	2.45	**0.85**	**0.56**	5.0	0.18		110		14000	**0.145**	13	100	0.34
Mean	57.9	2.45	1.33	0.439	33	0.09	NA	95	0.35	13300	0.14	11.8	88	0.296
Median	60	2.45	0.85	0.376	5	0.07	NA	83	0.35	13900	0.138	11.2	87	0.288
St. Deviation	10.6	NA	1.16	0.288	64	0.06	NA	62	NA	2900	0.013	2.3	12	0.042
# of values	3	1	5	5	5	5	0	5	1	5	5	5	5	5
Minimum	46.5	2.45	0.534	0.155	2.21	0.042	NA	41.8	0.35	9920	0.122	9.17	69.6	0.239
Maximum	67.3	2.45	3.34	0.872	148	0.18	NA	195	0.35	17400	0.158	15.2	100	0.34
% of values undetected			20%	40%					100%		20%			
# of values between MDL and MRL			2	3		2					2			
UT146A														
Sample Date														
07/15/04			2.27	1.07	122	0.34		60.8		10900	0.123	8.24	116	0.656
09/17/04			**0.427**	1.04	11.3	0.43		11.8		17300	0.138	9.7	132	0.804
Mean	NA	NA	1.35	1.06	67	0.39	NA	36.3	NA	14100	0.131	9	124	0.73
Median	NA	NA	1.35	1.06	67	0.39	NA	36.3	NA	14100	0.131	9	124	0.73
St. Deviation	NA	NA	1.3	0.02	78	0.06	NA	34.6	NA	4500	0.011	1	11	0.105
# of values	0	0	2	2	2	2	0	2	0	2	2	2	2	2
Minimum	NA	NA	0.427	1.04	11.3	0.34	NA	11.8	NA	10900	0.123	8.24	116	0.656
Maximum	NA	NA	2.27	1.07	122	0.43	NA	60.8	NA	17300	0.138	9.7	132	0.804
% of values undetected														
# of values between MDL and MRL			1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
UT138A														
Sample Date														
07/15/04	**0.0300**	**1.495**	**0.0821**		4150	23.1	13.8	9.17		33800	4.02		4640	1150
09/17/04	**0.0299**	**5.94**	**0.109**		4730	22.4	13.5	8.82		33900	4.75		4890	1120
Mean	0.0299	3.72	0.096	NA	4440	22.8	13.7	9	NA	33900	4.39	NA	4770	1140
Median	0.0299	3.72	0.096	NA	4440	22.8	13.7	9	NA	33900	4.39	NA	4770	1140
St. Deviation	0	3.14	0.019	NA	410	0.5	0.2	0.25	NA	100	0.52	NA	180	20
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.0299	1.495	0.0821	NA	4150	22.4	13.5	8.82	NA	33800	4.02	NA	4640	1120
Maximum	0.0300	5.94	0.109	NA	4730	23.1	13.8	9.17	NA	33900	4.75	NA	4890	1150
% of values undetected	100%	50%												
# of values between MDL and MRL		1	2											
UT141A														
Sample Date														
07/15/04	**0.0303**	**1.515**	**0.0303**		3550	16.4	8.22	6.77		23000	3.96		5100	397
09/17/04	**0.0309**	**4.21**	**0.0876**		4770	17.9	8.43	7.1		30200	4.76		4770	462
07/09/05	**0.0645**	**3.215**	**0.181**		4070	14.5	7.04	7.06		22700	4.23		3960	712
06/17/06	**0.0456**	2.96	**0.146**	**0.050**	3520	17.2	8.44	7.96	1.2	27700	4.21	2.8	5550	401
06/20/07	**3.7**	**14.5**	**0.160**		4600	20	9.6	7.9		27000	5.3		5500	480
Mean	0.77	5.3	0.121	0.05	4100	17.2	8.35	7.36	1.2	26100	4.49	2.8	4980	490
Median	0.05	3.2	0.146	0.05	4070	17.2	8.43	7.1	1.2	27000	4.23	2.8	5100	462
St. Deviation	1.64	5.2	0.061	NA	580	2	0.91	0.54	NA	3200	0.54	NA	650	129
# of values	5	5	5	1	5	5	5	5	1	5	5	1	5	5
Minimum	0.03025	1.515	0.03025	0.05	3520	14.5	7.04	6.77	1.2	22700	3.96	2.8	3960	397
Maximum	3.7	14.5	0.181	0.05	4770	20	9.6	7.96	1.2	30200	5.3	2.8	5550	712
% of values undetected	100%	60%	20%	100%										
# of values between MDL and MRL		1	4											
UT146A														
Sample Date														
07/15/04	**0.0301**	**1.51**	0.265		3320	14.4	40.8	40.7		44400	3.68		3380	2310
09/17/04	**0.0298**	**7.31**	0.406		3980	17	49.1	50.1		48600	3.78		3800	3640
Mean	0.0299	4.41	0.336	NA	3650	16	45	45.4	NA	46500	3.73	NA	3600	2980
Median	0.0299	4.41	0.336	NA	3650	16	45	45.4	NA	46500	3.73	NA	3600	2980
St. Deviation	0.0002	4.1	0.1	NA	470	2	5.9	6.6	NA	3000	0.07	NA	300	940
# of values	2	2	2	0	2	2	2	2	0	2	2	0	2	2
Minimum	0.0298	1.505	0.265	NA	3320	14.4	40.8	40.7	NA	44400	3.68	NA	3380	2310
Maximum	0.0301	7.31	0.406	NA	3980	17	49.1	50.1	NA	48600	3.78	NA	3800	3640
% of values undetected	100%	50%												
# of values between MDL and MRL		1												

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
UT138A															
Sample Date															
07/15/04	**0.019**		**0.671**	14.3		461	**0.0725**	**0.0150**	298		**0.003**	**0.483**	56.9	66.6	
09/17/04	**0.0266**		0.981	15		528	**0.236**	0.127	357		0.151	1.11	54.6	61.3	
Mean	0.023	NA	0.826	15	NA	495	0.154	0.071	328	NA	0.08	0.8	55.8	64	NA
Median	0.023	NA	0.826	15	NA	495	0.154	0.071	328	NA	0.08	0.8	55.8	64	NA
St. Deviation	0.005	NA	0.219	0	NA	47	0.116	0.079	42	NA	0.1	0.44	1.6	3.7	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.019	NA	0.671	14.3	NA	461	0.0725	0.01495	298	NA	0.003	0.483	54.6	61.3	NA
Maximum	0.0266	NA	0.981	15	NA	528	0.236	0.127	357	NA	0.151	1.11	56.9	66.6	NA
% of values undetected							50%	50%			50%	50%			
# of values between MDL and MRL	2		1				1								
UT141A															
Sample Date															
07/15/04	**0.0187**		**0.424**	9.54		411	**0.073**	**0.0152**	186		**0.003**	**0.488**	41.7	53.9	
09/17/04	0.177		**0.841**	10.1		426	0.526	0.118	241		0.0839	1.08	50.8	55.2	
07/09/05	**0.0599**		**0.844**	7.69		379	**0.1555**	**0.0322**	283		0.07	**0.322**	40.6	49.1	
06/17/06	**0.0412**	**0.01**	**0.594**	11.3	1.1	455	**0.110**	**0.0228**	201	262	0.0375	**0.735**	45.7	66.0	14.6
06/20/07	0.13		0.94	11		**240**	**0.365**	**0.145**	**95**		**0.145**	**0.365**	51	57	
Mean	0.085	0.01	0.729	9.9	1.1	382	0.246	0.067	201	262	0.068	0.6	46	56.2	14.6
Median	0.06	0.01	0.841	10.1	1.1	411	0.156	0.032	201	262	0.07	0.49	45.7	55.2	14.6
St. Deviation	0.066	NA	0.213	1.4	NA	84	0.193	0.06	70	NA	0.053	0.31	4.9	6.2	NA
# of values	5	1	5	5	1	5	5	5	5	1	5	5	5	5	1
Minimum	0.0187	0.01	0.424	7.69	1.1	240	0.073	0.01515	95	262	0.003	0.322	40.6	49.1	14.6
Maximum	0.177	0.01	0.94	11.3	1.1	455	0.526	0.145	283	262	0.145	1.08	51	66	14.6
% of values undetected		100%					80%	80%	20%		40%	80%			
# of values between MDL and MRL	3		4			1									
UT146A															
Sample Date															
07/15/04	**0.0209**		1.46	30.6		572	**0.279**	**0.0151**	302		**0.003**	**0.485**	41.7	114	
09/17/04	**0.0255**		1.58	46.9		573	0.664	**0.0480**	298		0.241	1	46.1	138	
Mean	0.0232	NA	1.52	38.8	NA	573	0.472	0.0315	300	NA	0.12	0.7	43.9	126	NA
Median	0.0232	NA	1.52	38.8	NA	573	0.472	0.0315	300	NA	0.12	0.7	43.9	126	NA
St. Deviation	0.0033	NA	0.08	11.5	NA	1	0.272	0.0233	3	NA	0.17	0.4	3.1	17	NA
# of values	2	0	2	2	0	2	2	2	2	0	2	2	2	2	0
Minimum	0.0209	NA	1.46	30.6	NA	572	0.279	0.01505	298	NA	0.003	0.485	41.7	114	NA
Maximum	0.0255	NA	1.58	46.9	NA	573	0.664	0.04795	302	NA	0.241	1	46.1	138	NA
% of values undetected								100%			50%	50%			
# of values between MDL and MRL	2						1								

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
WIGGLY														
Sample Date														
08/12/07	84	0.13	**0.6**	**0.05**	**2.0**	**0.55**		36		5100	**0.11**	4.9	46	0.25
Mean	84	0.13	0.6	0.05	2	0.55	NA	36	NA	5100	0.11	4.9	46	0.25
Median	84	0.13	0.6	0.05	2	0.55	NA	36	NA	5100	0.11	4.9	46	0.25
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	84	0.13	0.6	0.05	2	0.55	NA	36	NA	5100	0.11	4.9	46	0.25
Maximum	84	0.13	0.6	0.05	2	0.55	NA	36	NA	5100	0.11	4.9	46	0.25
% of values undetected			100%	100%		100%								
# of values between MDL and MRL					1						1			
WIGGLY2														
Sample Date														
07/14/05	20.7		**2.46**	**0.735**	53	**0.0145**		852		15400	**0.195**	4.86	91.5	**0.262**
Mean	20.7	NA	2.46	0.735	53	0.0145	NA	852	NA	15400	0.195	4.86	91.5	0.262
Median	20.7	NA	2.46	0.735	53	0.0145	NA	852	NA	15400	0.195	4.86	91.5	0.262
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	20.7	NA	2.46	0.735	53	0.0145	NA	852	NA	15400	0.195	4.86	91.5	0.262
Maximum	20.7	NA	2.46	0.735	53	0.0145	NA	852	NA	15400	0.195	4.86	91.5	0.262
% of values undetected				100%		100%								
# of values between MDL and MRL			1								1			1
WIGGLY4														
Sample Date														
07/14/05	9.88		10.3	**1.55**	14	**0.015**		932		8230	**0.151**	**5.47**	42.8	**0.151**
Mean	9.88	NA	10.3	1.55	14	0.015	NA	932	NA	8230	0.151	5.47	42.8	0.151
Median	9.88	NA	10.3	1.55	14	0.015	NA	932	NA	8230	0.151	5.47	42.8	0.151
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	9.88	NA	10.3	1.55	14	0.015	NA	932	NA	8230	0.151	5.47	42.8	0.151
Maximum	9.88	NA	10.3	1.55	14	0.015	NA	932	NA	8230	0.151	5.47	42.8	0.151
% of values undetected				100%		100%					100%			100%
# of values between MDL and MRL												1		
WIGGLY5														
Sample Date														
07/14/05	20.1		**4.14**	**0.755**	6.58	**0.0165**		426		4860	**0.16**	**4.02**	43.6	**0.076**
Mean	20.1	NA	4.14	0.755	6.58	0.0165	NA	426	NA	4860	0.16	4.02	43.6	0.076
Median	20.1	NA	4.14	0.755	6.58	0.0165	NA	426	NA	4860	0.16	4.02	43.6	0.076
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	1	1	0	1	0	1	1	1	1	1
Minimum	20.1	NA	4.14	0.755	6.58	0.0165	NA	426	NA	4860	0.16	4.02	43.6	0.076
Maximum	20.1	NA	4.14	0.755	6.58	0.0165	NA	426	NA	4860	0.16	4.02	43.6	0.076
% of values undetected				100%		100%								100%
# of values between MDL and MRL			1								1	1		

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
WIGGLY														
Sample Date														
08/12/07	**0.285**	**1.1**	**0.11**		2400	12	5.8	6.6		17000	2.6		2700	310
Mean	0.285	1.1	0.11	NA	2400	12	5.8	6.6	NA	17000	2.6	NA	2700	310
Median	0.285	1.1	0.11	NA	2400	12	5.8	6.6	NA	17000	2.6	NA	2700	310
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.285	1.1	0.11	NA	2400	12	5.8	6.6	NA	17000	2.6	NA	2700	310
Maximum	0.285	1.1	0.11	NA	2400	12	5.8	6.6	NA	17000	2.6	NA	2700	310
% of values undetected	100%	100%	100%											
# of values between MDL and MRL														
WIGGLY2														
Sample Date														
07/14/05	**0.148**	**7.4**	**0.148**		5250	25.9	5.73	24.9		14100	6.07		2440	210
Mean	0.148	7.4	0.148	NA	5250	25.9	5.73	24.9	NA	14100	6.07	NA	2440	210
Median	0.148	7.4	0.148	NA	5250	25.9	5.73	24.9	NA	14100	6.07	NA	2440	210
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.148	7.4	0.148	NA	5250	25.9	5.73	24.9	NA	14100	6.07	NA	2440	210
Maximum	0.148	7.4	0.148	NA	5250	25.9	5.73	24.9	NA	14100	6.07	NA	2440	210
% of values undetected	100%	100%	100%											
# of values between MDL and MRL														
WIGGLY4														
Sample Date														
07/14/05	**0.303**	**15.1**	**0.303**		4880	24.7	**4.59**	11.9		9390	4.69		1720	157
Mean	0.303	15.1	0.303	NA	4880	24.7	4.59	11.9	NA	9390	4.69	NA	1720	157
Median	0.303	15.1	0.303	NA	4880	24.7	4.59	11.9	NA	9390	4.69	NA	1720	157
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.303	15.1	0.303	NA	4880	24.7	4.59	11.9	NA	9390	4.69	NA	1720	157
Maximum	0.303	15.1	0.303	NA	4880	24.7	4.59	11.9	NA	9390	4.69	NA	1720	157
% of values undetected	100%	100%	100%											
# of values between MDL and MRL							1							
WIGGLY5														
Sample Date														
07/14/05	**0.152**	**7.6**	**0.152**		3000	14.8	3.5	6.26		8050	2.94		1780	119
Mean	0.152	7.6	0.152	NA	3000	14.8	3.5	6.26	NA	8050	2.94	NA	1780	119
Median	0.152	7.6	0.152	NA	3000	14.8	3.5	6.26	NA	8050	2.94	NA	1780	119
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	0	1	1	1	1	0	1	1	0	1	1
Minimum	0.152	7.6	0.152	NA	3000	14.8	3.5	6.26	NA	8050	2.94	NA	1780	119
Maximum	0.152	7.6	0.152	NA	3000	14.8	3.5	6.26	NA	8050	2.94	NA	1780	119
% of values undetected	100%	100%	100%											
# of values between MDL and MRL														

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
WIGGLY															
Sample Date															
08/12/07	**0.017**		0.28	8.0		220	**0.066**	**0.11**	**7.5**		**0.11**	**0.28**	21	37	
Mean	0.017	NA	0.28	8	NA	220	0.066	0.11	7.5	NA	0.11	0.28	21	37	NA
Median	0.017	NA	0.28	8	NA	220	0.066	0.11	7.5	NA	0.11	0.28	21	37	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.017	NA	0.28	8	NA	220	0.066	0.11	7.5	NA	0.11	0.28	21	37	NA
Maximum	0.017	NA	0.28	8	NA	220	0.066	0.11	7.5	NA	0.11	0.28	21	37	NA
% of values undetected								100%	100%		100%				
# of values between MDL and MRL	1						1					1			
WIGGLY2															
Sample Date															
07/14/05	**0.0287**		**0.74**	8.19		693	3.41	**0.074**	**301**		0.133	**2.38**	33.2	57.2	
Mean	0.0287	NA	0.74	8.19	NA	693	3.41	0.074	301	NA	0.133	2.38	33.2	57.2	NA
Median	0.0287	NA	0.74	8.19	NA	693	3.41	0.074	301	NA	0.133	2.38	33.2	57.2	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0287	NA	0.74	8.19	NA	693	3.41	0.074	301	NA	0.133	2.38	33.2	57.2	NA
Maximum	0.0287	NA	0.74	8.19	NA	693	3.41	0.074	301	NA	0.133	2.38	33.2	57.2	NA
% of values undetected	100%		100%					100%				100%			
# of values between MDL and MRL									1						
WIGGLY4															
Sample Date															
07/14/05	**0.059**		**1.51**	6.86		**452**	**2.44**	**0.151**	**151**		**0.121**	**4.88**	31.9	41.4	
Mean	0.059	NA	1.51	6.86	NA	452	2.44	0.151	151	NA	0.121	4.88	31.9	41.4	NA
Median	0.059	NA	1.51	6.86	NA	452	2.44	0.151	151	NA	0.121	4.88	31.9	41.4	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.059	NA	1.51	6.86	NA	452	2.44	0.151	151	NA	0.121	4.88	31.9	41.4	NA
Maximum	0.059	NA	1.51	6.86	NA	452	2.44	0.151	151	NA	0.121	4.88	31.9	41.4	NA
% of values undetected	100%		100%				100%	100%	100%			100%			
# of values between MDL and MRL						1					1				
WIGGLY5															
Sample Date															
07/14/05	**0.0291**		**0.76**	4.73		**475**	**1.22**	**0.076**	**278**		**0.0833**	**2.45**	21.2	30.9	
Mean	0.0291	NA	0.76	4.73	NA	475	1.22	0.076	278	NA	0.0833	2.45	21.2	30.9	NA
Median	0.0291	NA	0.76	4.73	NA	475	1.22	0.076	278	NA	0.0833	2.45	21.2	30.9	NA
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0
Minimum	0.0291	NA	0.76	4.73	NA	475	1.22	0.076	278	NA	0.0833	2.45	21.2	30.9	NA
Maximum	0.0291	NA	0.76	4.73	NA	475	1.22	0.076	278	NA	0.0833	2.45	21.2	30.9	NA
% of values undetected	100%		100%				100%	100%				100%			
# of values between MDL and MRL						1			1		1				

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Cyanide WAD	Ammonia	Acid Volatile Sulfides	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
WLP01														
Sample Date														
07/26/06	22.2		**3.07**	**0.70**	9.47	0.088		664	241	13000	**0.338**	20.0	193	0.467
08/10/07	36	9.62	**4.90**	**0.56**	17	**1.25**		810		18000	**0.520**	15	120	**0.37**
Mean	29	9.62	4	0.63	13	0.7	NA	740	241	16000	0.43	18	160	0.42
Median	29	9.62	4	0.63	13	0.7	NA	740	241	16000	0.43	18	160	0.42
St. Deviation	10	NA	1.3	0.1	5	0.8	NA	100	NA	4000	0.13	4	50	0.07
# of values	2	1	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	22.2	9.62	3.07	0.56	9.47	0.088	NA	664	241	13000	0.338	15	120	0.37
Maximum	36	9.62	4.9	0.7	17	1.25	NA	810	241	18000	0.52	20	193	0.467
% of values undetected				50%		50%								
# of values between MDL and MRL			2	1							2			1
WLS04D														
Sample Date														
07/26/06	80.1		**0.194**	**0.194**	4.79	**0.044**		28.0	**0.3**	15200	0.198	11.4	65.4	0.300
08/11/07	84	1.69	**0.600**	**0.050**	**2.8**	**0.550**		69		11000	0.37	14	40	**0.21**
Mean	82	1.69	0.4	0.12	3.8	0.3	NA	49	0.3	13000	0.28	13	53	0.26
Median	82	1.69	0.4	0.12	3.8	0.3	NA	49	0.3	13000	0.28	13	53	0.26
St. Deviation	3	NA	0.29	0.1	1.4	0.36	NA	29	NA	3000	0.12	2	18	0.06
# of values	2	1	2	2	2	2	0	2	1	2	2	2	2	2
Minimum	80.1	1.69	0.1935	0.05	2.8	0.044	NA	28	0.3	11000	0.198	11.4	40	0.21
Maximum	84	1.69	0.6	0.1935	4.79	0.55	NA	69	0.3	15200	0.37	14	65.4	0.3
% of values undetected			100%	100%		50%			100%					
# of values between MDL and MRL					1	1								1

Key:

Bold Results = Parameter undetected by test, value shown is 1/2 MDL or 1/2 MRL.

If result was not detected at the lab MDL, the value shown is 1/2 MDL.

If result was validation flagged U or UJ, the value shown is 1/2 MRL.

Green Results = Estimate result reported by laboratory below reporting limit (MRL).

MDL = Method Detection Limit.

MRL = Method Reporting Limit.

NA = Not Applicable.

WAD = Weak Acid Dissociable

SEM = Simultaneously Extracted Metals (Simultaneous with Acid Volatile Sulfides)

Note: All results reported on dry weight basis, except total solids reported on wet weight basis.

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

STATION	Bismuth	Boron	Cadmium	Cadmium-SEM	Calcium	Chromium	Cobalt	Copper	Copper-SEM	Iron	Lead	Lead-SEM	Magnesium	Manganese
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
WLP01														
Sample Date														
07/26/06	**0.137**	7.51	**0.399**	0.5	3620	10.9	18.3	145	115	47300	7.27	**5**	2130	2280
08/10/07	**0.7**	**2.7**	**0.270**		3000	19	8.8	200		29000	11		3400	600
Mean	0.42	5.1	0.33	0.5	3300	15	14	170	115	38000	9	5	2800	1400
Median	0.42	5.1	0.33	0.5	3300	15	14	170	115	38000	9	5	2800	1400
St. Deviation	0.4	3.4	0.09	NA	400	6	7	40	NA	13000	3	NA	900	1200
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.137	2.7	0.27	0.5	3000	10.9	8.8	145	115	29000	7.27	5	2130	600
Maximum	0.7	7.51	0.399	0.5	3620	19	18.3	200	115	47300	11	5	3400	2280
% of values undetected	100%	50%	50%									100%		
# of values between MDL and MRL			1											
WLS04D														
Sample Date														
07/26/06	**0.115**	2.27	**0.193**	**0.05**	583	11.0	7.70	14.8	11.3	17900	7.97	8	2890	879
08/11/07	**0.300**	**1.15**	**0.115**		650	10	5.1	12		14000	5.8		2500	190
Mean	0.21	1.71	0.154	0.05	620	11	6.4	13	11.3	16000	6.9	8	2700	530
Median	0.21	1.71	0.154	0.05	620	11	6.4	13	11.3	16000	6.9	8	2700	530
St. Deviation	0.13	0.79	0.055	NA	50	1	1.8	2	NA	3000	1.5	NA	300	490
# of values	2	2	2	1	2	2	2	2	1	2	2	1	2	2
Minimum	0.115	1.15	0.115	0.05	583	10	5.1	12	11.3	14000	5.8	8	2500	190
Maximum	0.3	2.27	0.193	0.05	650	11	7.7	14.8	11.3	17900	7.97	8	2890	879
% of values undetected	50%	50%	50%	100%										
# of values between MDL and MRL	1		1											

Appendix 10.2B
Sediment Samples Results Summary, Mine Study Area, 2004-2007

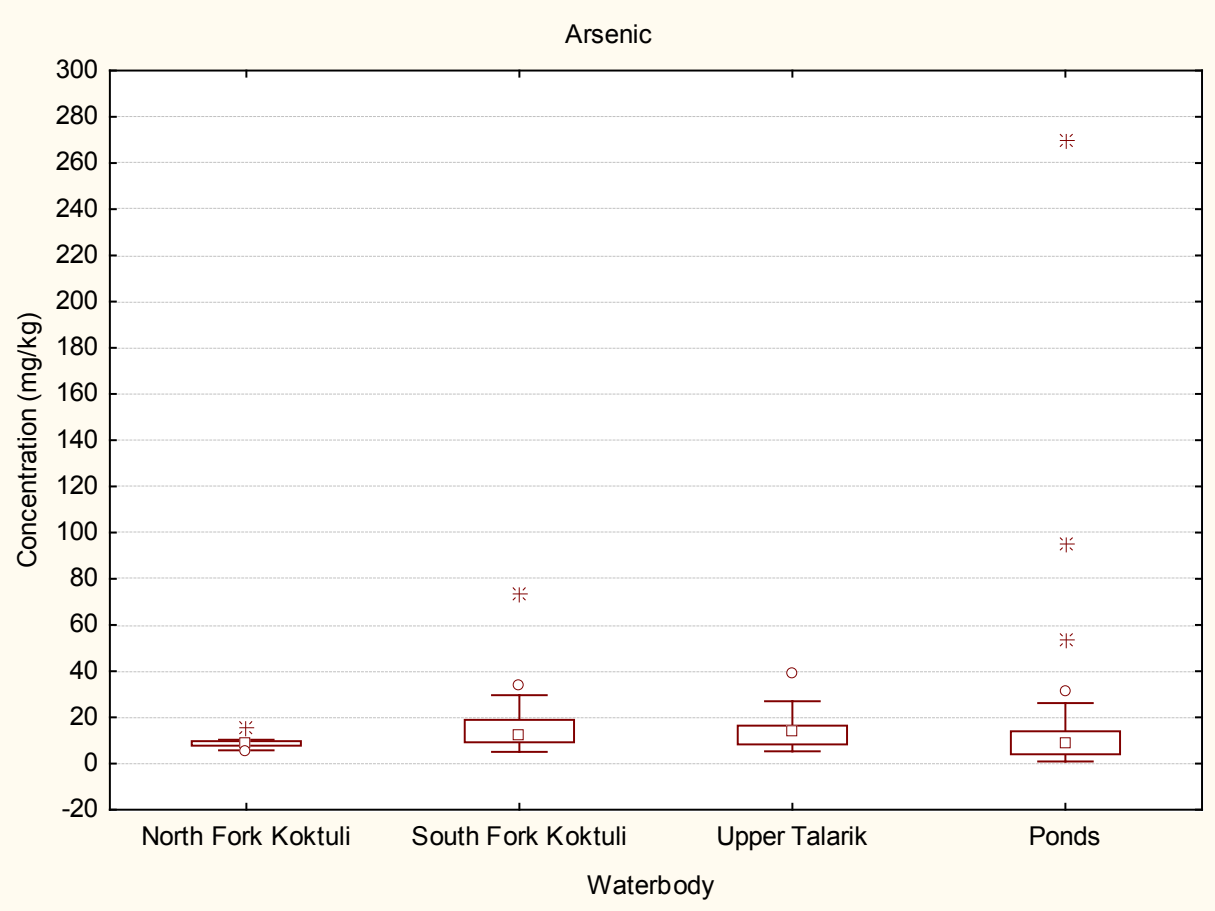
STATION	Mercury	Mercury-SEM	Molybdenum	Nickel	Nickel-SEM	Potassium	Selenium	Silver	Sodium	Sulfur	Thallium	Tin	Vanadium	Zinc	Zinc-SEM
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
WLP01															
Sample Date															
07/26/06	**0.0884**	**0.04**	11.4	9.32	7.1	**342**	7.28	**0.200**	**68.5**	2750	0.450	**2.21**	40.3	56.8	52.5
08/10/07	0.23		12	9.2		510	1.5	**0.270**	**17.5**		**0.27**	**0.55**	57	42	
Mean	0.16	0.04	12	9.3	7.1	430	4.4	0.24	43	2750	0.36	1.38	49	49	52.5
Median	0.16	0.04	12	9.3	7.1	430	4.4	0.24	43	2750	0.36	1.38	49	49	52.5
St. Deviation	0.1	NA	0	0.1	NA	120	4.1	0.05	36.1	NA	0.13	1.17	12	10	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.0884	0.04	11.4	9.2	7.1	342	1.5	0.2	17.5	2750	0.27	0.55	40.3	42	52.5
Maximum	0.23	0.04	12	9.32	7.1	510	7.28	0.27	68.5	2750	0.45	2.205	57	56.8	52.5
% of values undetected		100%						50%	100%		50%	50%			
# of values between MDL and MRL	1					1		1				1			
WLS04D															
Sample Date															
07/26/06	**0.0176**	**0.01**	**1.09**	8.50	6.3	615	1.00	**0.0663**	**95.0**	194	0.137	**0.615**	40.4	49.7	38.7
08/11/07	**0.0120**		0.60	6.8		390	**0.37**	**0.115**	**7.5**		**0.115**	**0.28**	30	43	
Mean	0.015	0.01	0.8	7.7	6.3	500	0.7	0.091	51	194	0.126	0.45	35	46	38.7
Median	0.015	0.01	0.8	7.7	6.3	500	0.7	0.091	51	194	0.126	0.45	35	46	38.7
St. Deviation	0.004	NA	0.3	1.2	NA	160	0.4	0.034	62	NA	0.016	0.24	7	5	NA
# of values	2	1	2	2	1	2	2	2	2	1	2	2	2	2	1
Minimum	0.012	0.01	0.6	6.8	6.3	390	0.37	0.0663	7.5	194	0.115	0.28	30	43	38.7
Maximum	0.0176	0.01	1.09	8.5	6.3	615	1	0.115	95	194	0.137	0.615	40.4	49.7	38.7
% of values undetected		100%						50%	50%		50%	50%			
# of values between MDL and MRL	2		1				1	1	1			1			

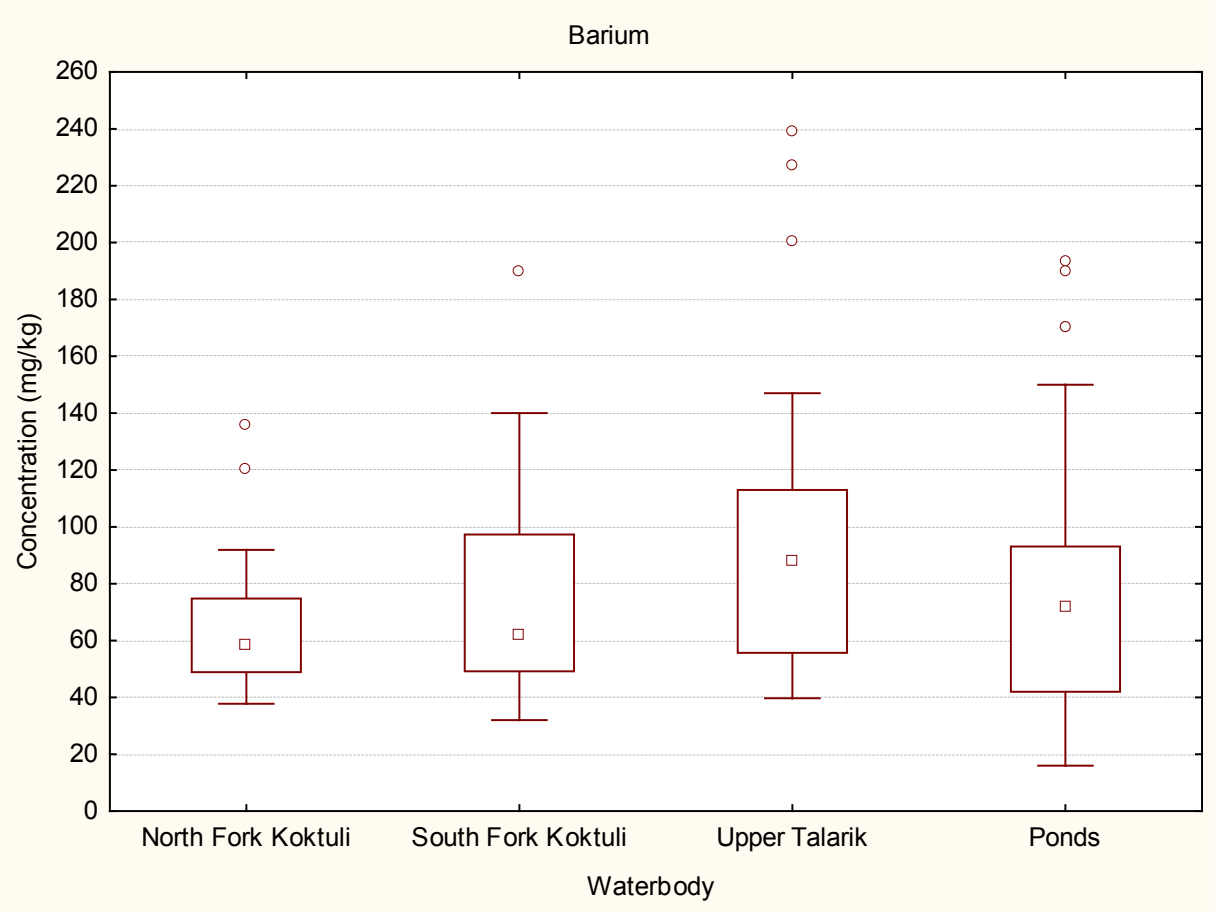
APPENDIX 10.2C

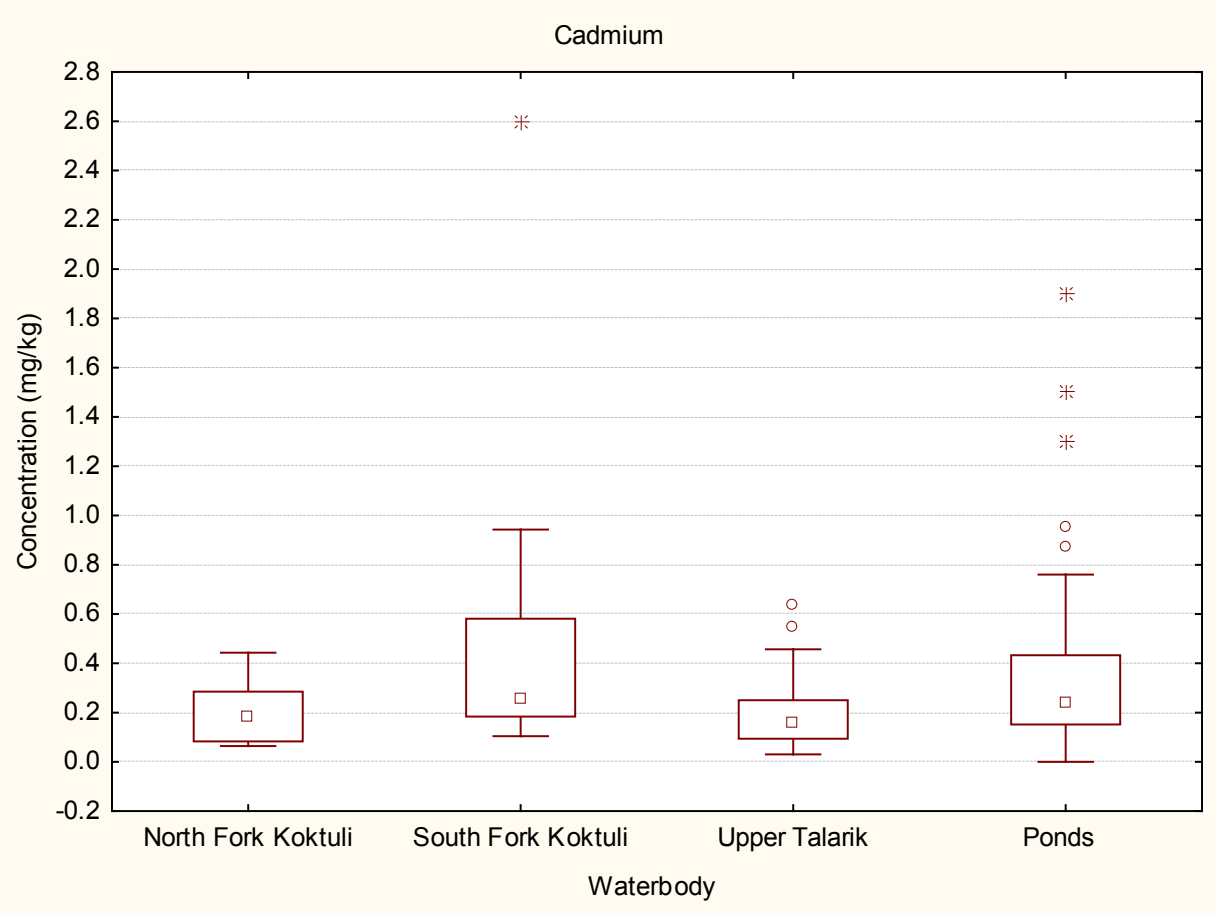
Box-and-Whisker Plots for Sediment Data, Mine Study Area, 2004-2007

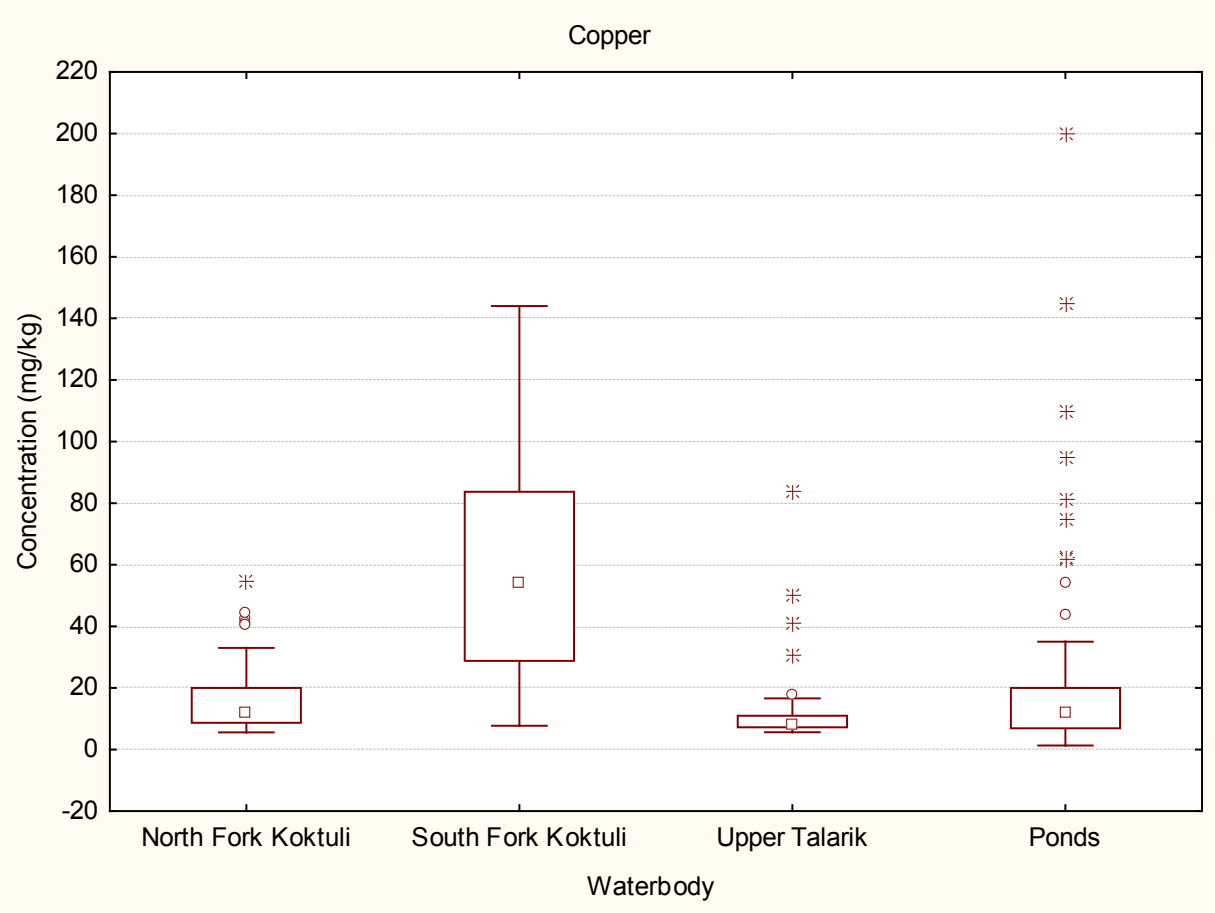
Boxplot Legend: This legend applies to all sediment boxplots for the mine study area.

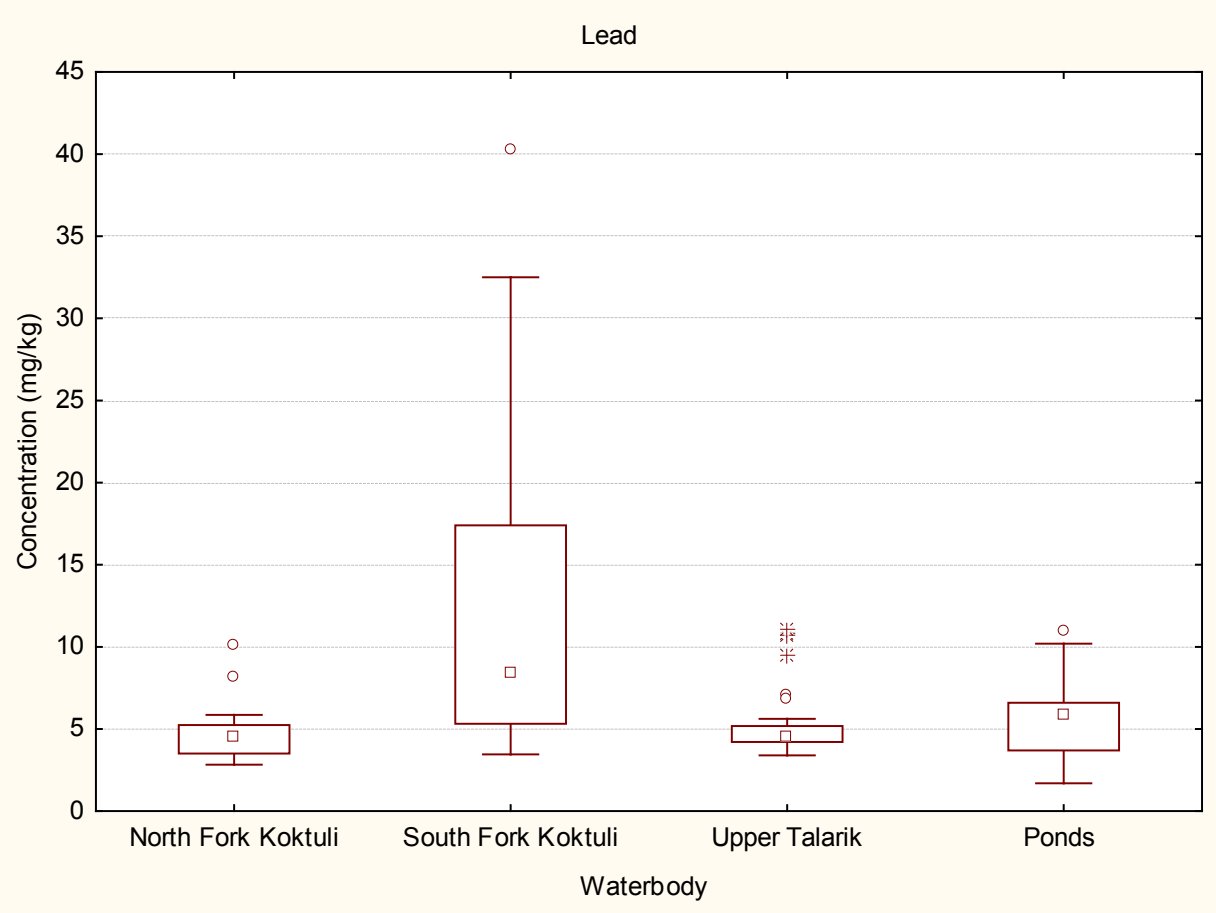
Median 25%-75% Non-Outlier Range Outliers Extremes

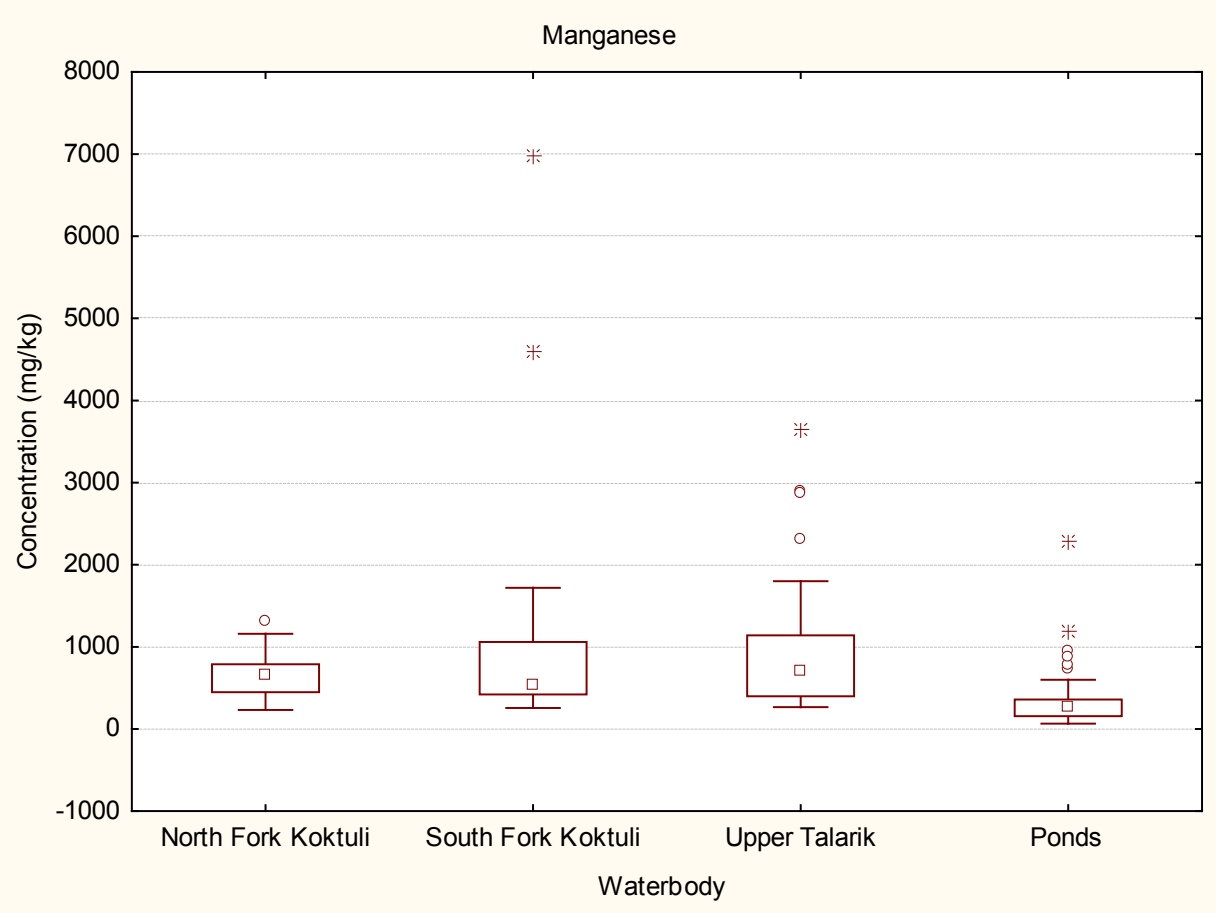


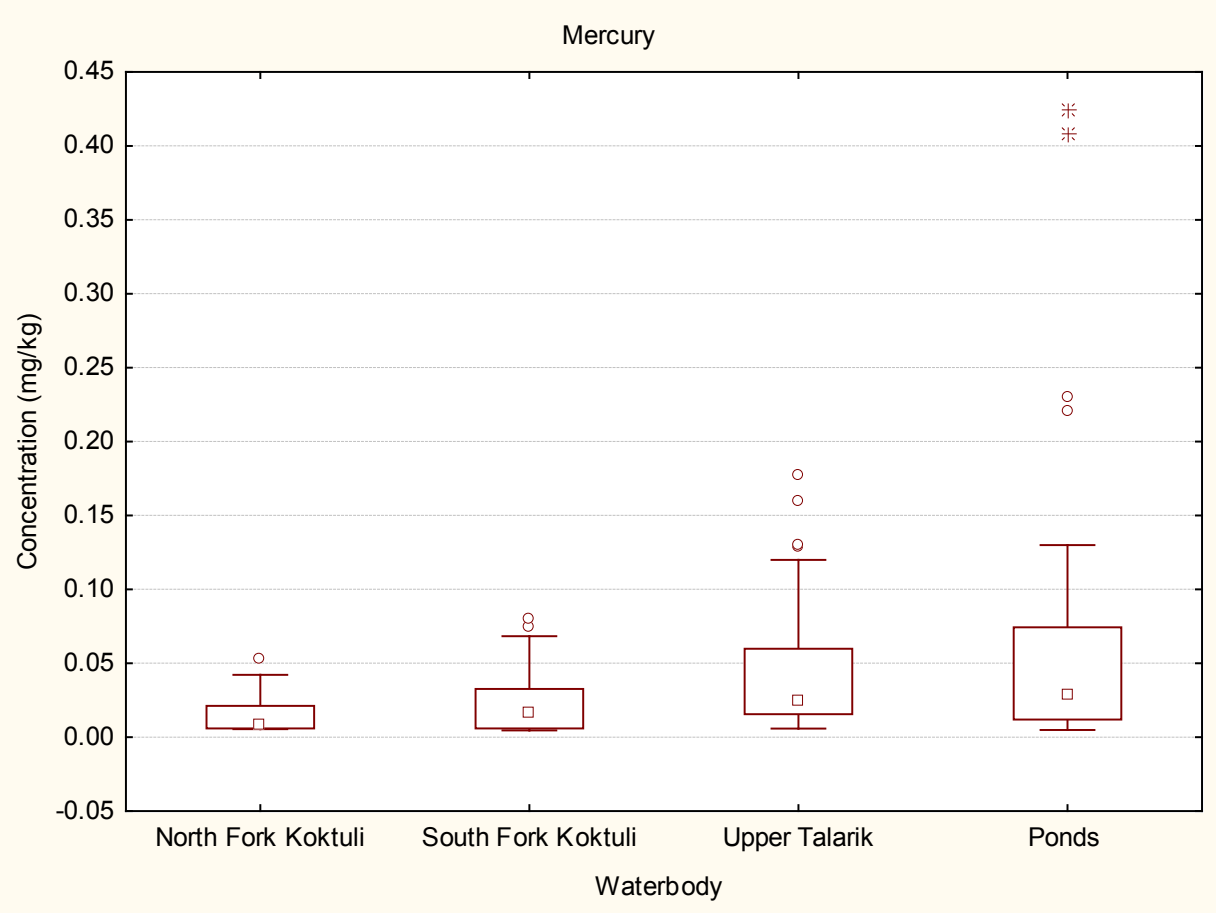

Barium
Concentration (mg/kg)
260
240
220
200
180
160
140
120
100
80
60
40
20
0
North Fork Koktuli
South Fork Koktuli
Upper Talarik
Ponds
Waterbody

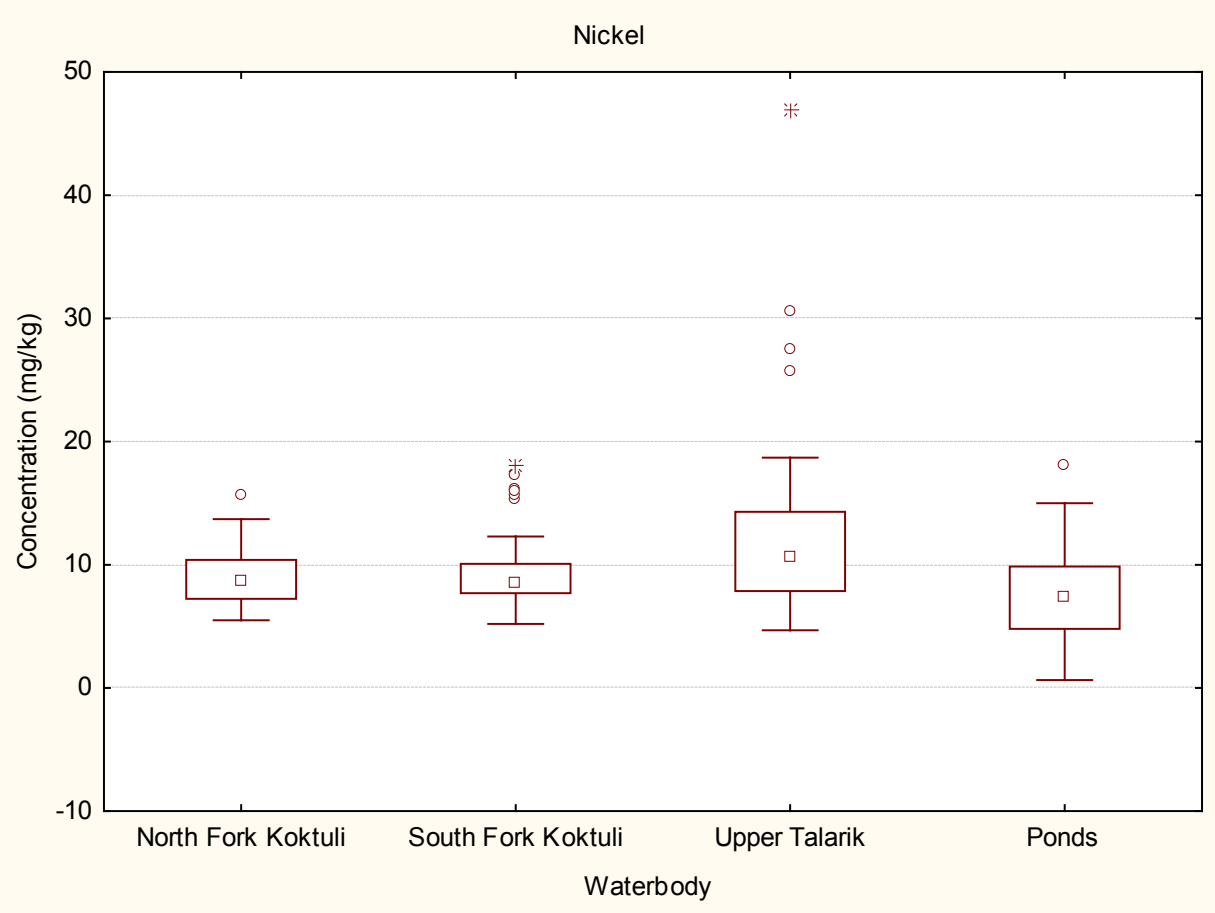

Cadmium
Concentration (mg/kg)
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
North Fork Koktuli
South Fork Koktuli
Upper Talarik
Ponds
Waterbody

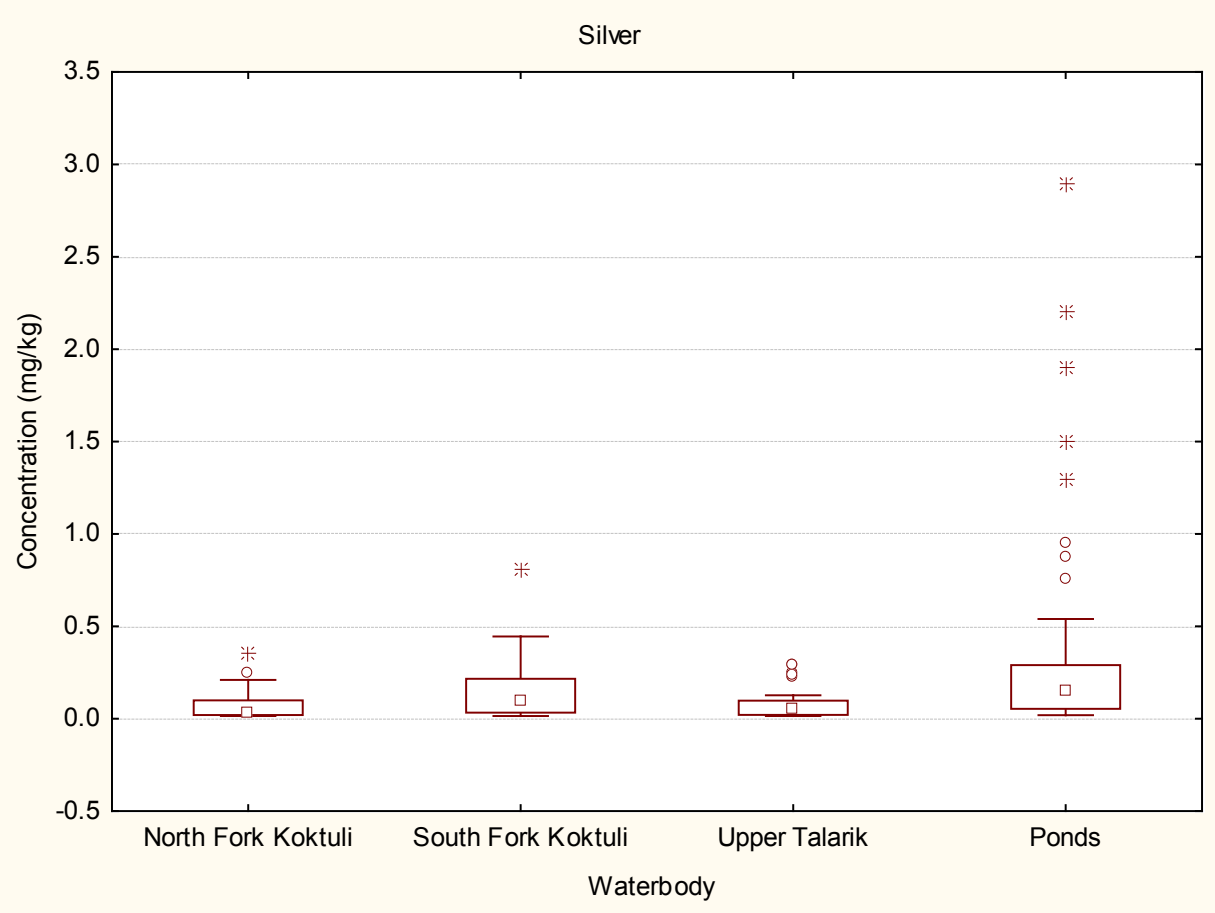

Copper
220
200
180
160
140
120
100
80
60
40
20
0
-20
Concentration (mg/kg)
North Fork Koktuli
South Fork Koktuli
Upper Talarik
Ponds
Waterbody

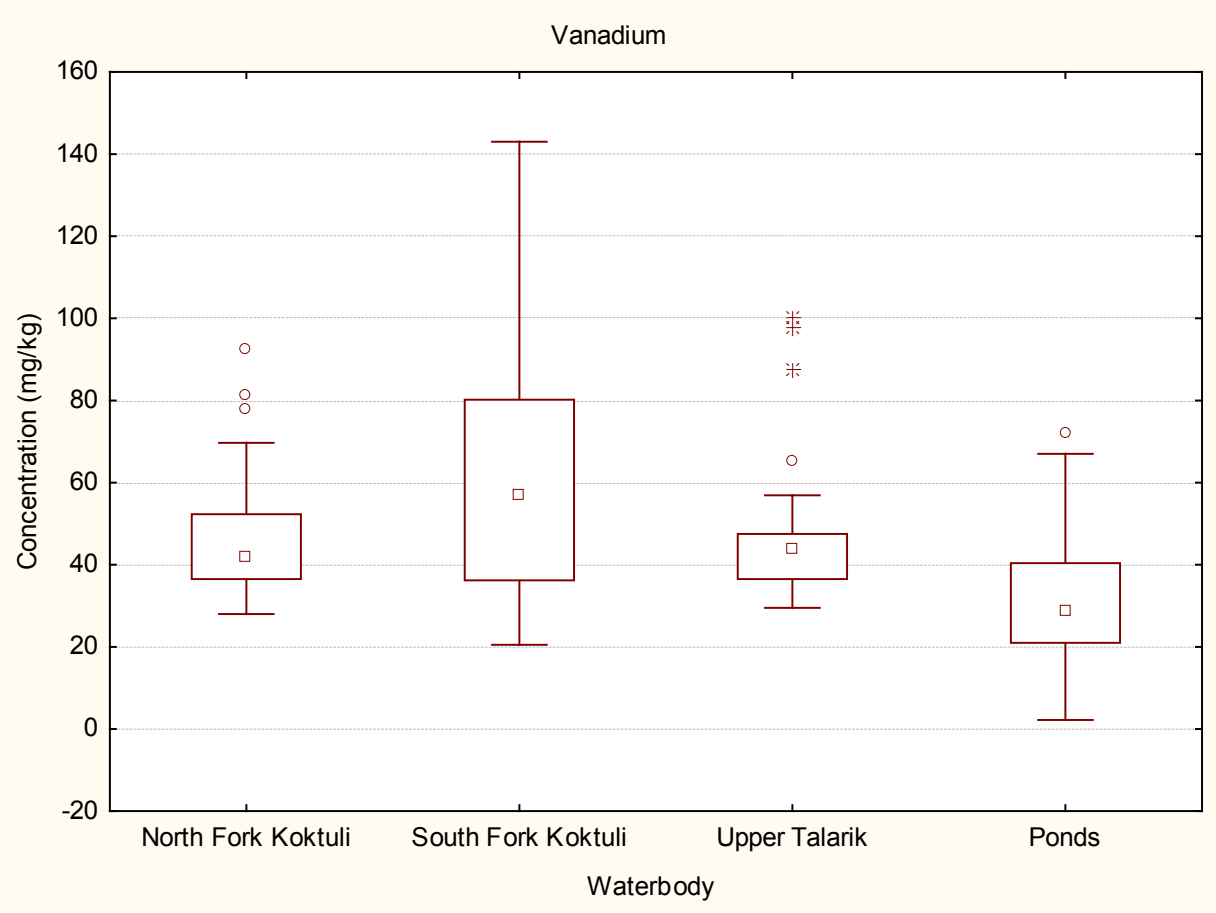

Lead
Concentration (mg/kg)
45
40
35
30
25
20
15
10
5
0
North Fork Koktuli
South Fork Koktuli
Upper Talarik
Ponds
Waterbody

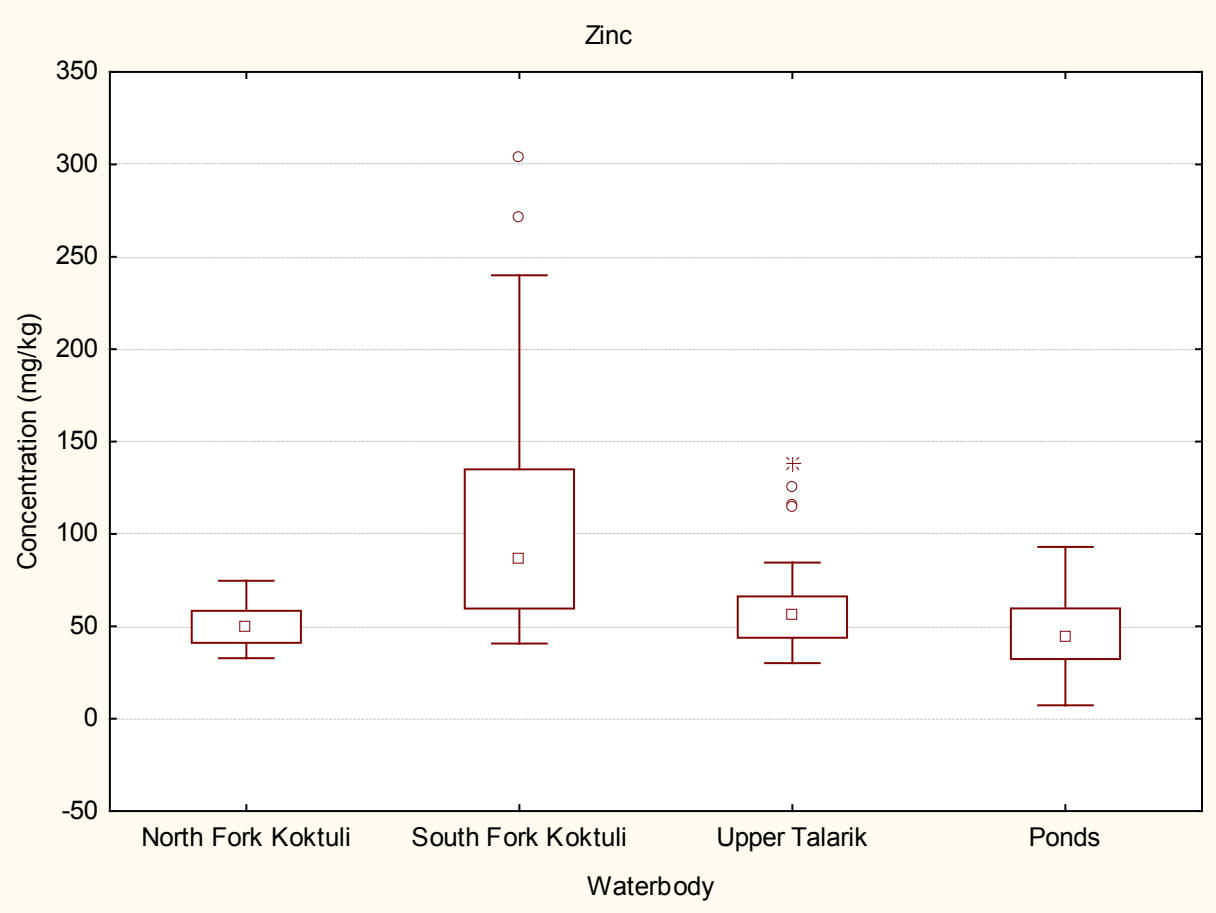

Manganese
8000
7000
6000
5000
4000
3000
2000
1000
0
-1000
Concentration (mg/kg)
North Fork Koktuli
South Fork Koktuli
Upper Talarik
Ponds
Waterbody


Mercury
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
-0.05
Concentration (mg/kg)
North Fork Koktuli
South Fork Koktuli
Upper Talarik
Ponds
Waterbody


Nickel
50
40
30
20
10
0
-10
Concentration (mg/kg)
North Fork Koktuli
South Fork Koktuli
Upper Talarik
Ponds
Waterbody


Silver
Concentration (mg/kg)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
North Fork Koktuli
South Fork Koktuli
Upper Talarik
Ponds
Waterbody


Vanadium
160
140
120
100
80
60
40
20
0
-20
Concentration (mg/kg)
North Fork Koktuli
South Fork Koktuli
Upper Talarik
Ponds
Waterbody


Zinc
350
300
250
200
150
100
50
0
-50
Concentration (mg/kg)
North Fork Koktuli
South Fork Koktuli
Upper Talarik
Ponds
Waterbody

10.3 Fish Tissue—Mine Study Area

10.3.1 Introduction

Whole fish from various creeks and rivers were collected and analyzed in 2004 and 2005. Samples of fish liver and muscle tissue were collected and analyzed in 2006, and muscle-tissue samples were collected and analyzed in 2007. The findings of the 2004 through 2007 trace elements study of fish in the mine study area are discussed below.

10.3.2 Study Objectives

The objectives of this study were to determine baseline concentrations of NOCs in fish tissues and to assess spatial and temporal variability of NOC concentrations in fish tissues from different waterbodies in the mine study area.

10.3.3 Study Area

The mine study area for trace elements in fish tissue is the same as the mine study area for sediment, including limited sampling of fish in Kaskanak Creek (Section 10.2.3).

10.3.4 Scope of Work

The 2004 through 2007 field work was conducted by primarily HDR Inc. in accordance with the approach described in the consolidated study program for Pebble Project (Appendix E of this environmental baseline document). The scope of work for the trace elements study of fish tissues in the mine study area in 2004 through 2007 is described below. (In 2004 and 2005, fish-tissue samples from Kaskanak Creek were collected to confirm that this creek has no hydrological connection to the Pebble Deposit drainage area. Although these samples are included in the scope of work described below, the results for these samples are not considered part of the fish-tissue data set for the mine study area.) In each sampling event, fish that were present and responsive to the sampling efforts were collected and analyzed. No attempt was made to collect a specific species of fish; therefore the sampling reflects availability of fish specific to each sampling event.

10.3.4.1 2004

- Collection of 20 northern pike (*Esox lucius linnaeus*) from Frying Pan Lake and Big Wiggly Lake (10 each), and analysis of liver and muscle samples for trace elements.
- Collection of 11 northern pike from the South Fork Koktuli River (from one location), and whole-body analysis (i.e., chemical analysis of the entire fish) for trace elements.
- Collection of 11 coho salmon (*Oncorhynchus kisutch*) from Kaskanak Creek (from one location), and whole-body analysis for trace elements.
- Collection of 22 coho salmon from the South Fork Koktuli River (11 each from two separate locations), and whole-body analysis for trace elements.

- Collection of 33 coho salmon from Upper Talarik Creek (11 each from three separate locations), and whole-body analysis for trace elements.
- Collection of 11 coho or chinook salmon (species not differentiated) from the North Fork Koktuli River (from one location), and whole-body analysis for trace elements.
- Collection of 11 coho or chinook salmon (species not differentiated) from the South Fork Koktuli River (from one location), and whole-body analysis for trace elements.
- Collection of 21 Dolly Varden (*Salvelinus malma*) from the North Fork Koktuli River (10 and 11, respectively, from two separate locations), and whole-body analysis for trace elements.
- Collection of 33 Dolly Varden from Upper Talarik Creek (11 each from three separate locations), and whole-body analysis for trace elements.
- Collection of 11 arctic grayling (*Thymallus arcticus*) from the North Fork Koktuli River (from one location), and whole-body analysis for trace elements.
- Collection of 22 arctic grayling from the South Fork Koktuli River (11 each from two separate locations), and whole-body analysis for trace elements.

10.3.4.2 2005

- Collection of 40 northern pike (10 each) from Frying Pan Lake, Big Wiggly Lake, Lake 2, and Black Lake, and analysis of liver and muscle samples for trace elements.
- Collection of 10 northern pike from the South Fork Koktuli River (from one location), and whole-body analysis for trace elements.
- Collection of 10 coho salmon from Kaskanak Creek (from one location), and whole-body analysis for trace elements.
- Collection of 10 coho salmon from the North Fork Koktuli River (from one location), and whole-body analysis for trace elements.
- Collection of 10 coho or chinook salmon (species not differentiated) from the North Fork Koktuli River (from one location), and whole-body analysis for trace elements.
- Collection of 40 coho salmon from the South Fork Koktuli River (10 each from four separate locations), and whole-body analysis for trace elements.
- Collection of 30 coho salmon from Upper Talarik Creek (10 each from three separate locations), and whole-body analysis for trace elements.
- Collection of 10 chinook salmon (*Oncorhynchus tshawytscha*) from Upper Talarik Creek (from one location), and whole-body analysis for trace elements.
- Collection of 20 Dolly Varden from the North Fork Koktuli River (10 each from two locations), and whole-body analysis for trace elements.
- Collection of 20 Dolly Varden from Upper Talarik Creek (10 each from two locations), and whole-body analysis for trace elements.
- Collection of 20 arctic grayling from the South Fork Koktuli River (10 each from two locations), and whole-body analysis for trace elements.

10.3.4.3 2006

- Collection of nine arctic grayling from Big Wiggly Lake, and analysis of muscle-tissue samples for trace elements.
- Collection of 20 northern pike from Black Lake and Lake 2 (10 each), and analysis of liver and muscle-tissue samples for trace elements.
- Collection of seven arctic grayling from Big Wiggly Lake, and analysis of liver-tissue samples for mercury.

10.3.4.4 2007

- Collection of 31 arctic grayling from Upper Talarik Creek (12 from one location), the South Fork Koktuli River (10 from one location), and the North Fork Koktuli River (nine from one location), and analysis of muscle-tissue samples for trace elements.
- Collection of 42 northern pike from Black Lake, Lake 2, and Frying Pan Lake (10 each) and Big Wiggly Lake (12), and analysis of muscle-tissue samples for trace elements.
- Collection of 10 Whitefish (*Coregonus sp*.) from Big Wiggly Lake, and analysis of muscle-tissue samples for trace elements.

10.3.4.5 2008

- Collection of 24 arctic grayling from the South Fork Koktuli River (14 from two locations) and the North Fork Koktuli River (10 from one location), and analysis of muscle-tissue samples for trace elements.
- Collection of 37 northern pike from Black Lake, Lake 2, Frying Pan Lake (10 each), and Big Wiggly Lake (7), and analysis of muscle-tissue samples for trace elements.
- Collection of three arctic grayling from Big Wiggly Lake, and analysis of muscle-tissue samples for trace elements.

All fish sampling was conducted at the same locations where sampling for surface water quality (Chapter 9) and sediment (Section 10.2) was conducted.

10.3.5 Methods

Fish samples were collected following the protocols described in the consolidated study program for Pebble Project (Appendix E of this environmental baseline document) and in the field sampling plans for fish and aquatic resources (Appendix F of this environmental baseline document). Fish samples were collected using several methods, including electrofishing, angling, minnow trapping, and tangle netting. The capture method used at a given sampling location was based on the type of habitat being surveyed and general conditions of the sample area. At the lake sampling sites (Big Wiggly Lake, Black Lake, Frying Pan Lake, and Lake 2), only angling and tangle netting were used. At the mainstem Kaskanak Creek, Koktuli River, South Fork Koktuli River, North Fork Koktuli River, and Upper Talarik Creek sampling locations, a combination of angling, minnow trapping, and electrofishing were used. At the tributary sites in the South Fork Koktuli River, North Fork Koktuli River, and Upper Talarik Creek watersheds, only minnow trapping and electrofishing were used.

Quality assurance and control protocols were generally as described in the quality assurance project plans (Appendix G of this environmental baseline document) were followed, with the following exception. In 2004, where whole fish were collected for analysis for trace element analyses, separate whole fish also were collected for use as quality control (duplicate) samples. Subsequently a determination was made that separate fish were not appropriate for quality control purposes because of variation among individual fish. New quality control methods using laboratory standard samples were established, and the results for those fish originally intended for quality control (designated with the fish identification number 201) were included in the data set with the primary sample results.

Fish samples were analyzed for nine trace elements in 2004 (antimony, arsenic, cadmium, copper, lead, mercury, nickel, selenium, and silver). Five more trace elements were added to fish sample analyses starting in 2005 (beryllium, chromium, molybdenum, thallium, and zinc) for a total of 14 trace elements—using the same methods listed in Table 10.1-1 for trace elements in soil and vegetation. Liver and muscle-tissue samples were analyzed for methyl-mercury only in 2004. Based on evaluation of those 2004 data, the mercury was found to be almost exclusively in its methylated form; therefore, beginning in 2005, the only mercury analysis was for total mercury, based on the assumption that all mercury was present as methyl-mercury.

10.3.6 Data Reduction

The following is a summary of how the raw data were processed and used for data evaluation. Data for whole-body, muscle-tissue, and liver-tissue samples were collected in 2004 and 2005. Data for liver and muscle tissue also were collected in 2006, and muscle-tissue data also were collected in 2007 and 2008. Whole-body fish samples were either juveniles, mixed ages, or in some cases, not specified; therefore, separate data sets based on age were not compiled. Similarly, for liver and muscle tissue samples, insufficient data were available to conduct age-based comparisons. The following general statistics were compiled for each data set, i.e., liver, muscle-tissue, and whole fish:

- Number of samples in which analytes were detected above the MDL compared to the number of samples analyzed, and the resulting percentage of detections (i.e., the FOD).
- Minimum and maximum detected concentrations.
- Minimum and maximum MDLs and MRLs observed.
- Mean and median concentrations.
- Standard deviations and CVs.

These statistics are summarized by types of sample and types of waterbodies in Tables 10.3-1 through 10.3-17. Only primary sample data were used for data evaluation.

Data for whole-body samples were evaluated separately for each of the three primary streams (North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek) to enable comparison of the variability in trace element concentrations among the streams. Data for the whole-body samples from Kaskanak Creek were evaluated separately. Mean concentrations of select analytes—arsenic, cadmium, copper, mercury, and nickel—in whole-body samples collected in 2004 and 2005 were calculated for each stream by year and for both years combined. Mean concentrations of those five trace elements plus selenium and silver in liver and muscle-tissue samples collected in 2004 through 2007 were calculated by

year and for all years combined. (All fish-tissue data for 2004 through 2007 are provided by sampling location in Appendix 10.3A. All results were calculated on dry weight basis, with the exception of percent solids, which was calculated on a wet weight basis.)

Statistical comparisons among data sets were conducted to identify differences in concentrations of trace elements between fish species. The pair-wise nonparametric Mann-Whitney U-test was conducted to identify which groups differed from the others. (Results of comparisons among species are summarized in Appendix 10.3B. Box-and-whisker plots for some of the commonly detected trace elements are provided in Appendix 10.3C.)

For summary statistics, statistical analyses, figures, and box-and-whisker plots, non-detect results are included as one-half the MDL, and results flagged with a "U" or "UJ" qualifier are included as one-half the MRL. No outliers were eliminated from the data evaluation discussed below, except as previously noted.

10.3.7 Results and Discussion

10.3.7.1 Whole Fish

Between 2004 and 2005, 345 whole-body fish samples from the mine study area were analyzed—175 samples in 2004 and 170 samples in 2005. The resulting data (Tables 10.3-1 through 10.3-3) represent three separate rivers in the mine study area. Fish species represented in the samples are coho and chinook salmon, Dolly Varden, arctic grayling, and northern pike. The results discussed below were for the primary samples from all locations and species. The summary tables present only validated data. (Twenty-one whole-body samples were collected from Kaskanak Creek in 2004 and 2005; however, these samples are not included in the general discussion of combined watersheds below nor in Tables 10.3-1 through 10.3-3 because this creek is outside the mine study area. They are presented in figures 10.3-1 through 10.3-5 for comparison purposes and discussed as stand-alone results, as well as compared to the drainages within the mine study area)

In 2004, whole-body samples were analyzed for nine trace elements, and all nine target analytes were detected (Table 10.3-2). Copper and nickel were detected in all 175 samples. Arsenic, cadmium, lead, mercury, and selenium were detected in 85 to 99 percent of samples. Silver (in 61 percent of samples) and antimony (in 20 percent) were the only two trace elements detected in fewer than 85 percent of samples in 2004. On average, copper (mean concentration of 3.52 mg/kg) was present at the highest concentrations, followed by selenium (mean concentration of 1.68 mg/kg) and nickel (mean concentration of 1.23 mg/kg). Antimony, cadmium, lead, and silver had relatively low mean concentrations (less than 0.10 mg/kg). Mercury and arsenic had mean concentrations of 0.12 and 0.27 mg/kg, respectively.

In 2005, all 14 trace elements for which analyses were performed were detected (Table 10.3-3). Five trace elements (arsenic, cadmium, copper, mercury, and zinc) were detected in all 170 samples; another six trace elements (chromium, molybdenum, nickel, selenium, silver, and thallium) were detected in 85 to 99 percent of samples. Lead was detected in 75 percent of samples. Antimony (in 5 percent) and beryllium (in 10 percent) were the only two trace elements detected in fewer than 50 percent of the samples. On average, zinc (mean concentration of 124 mg/kg) was present at the highest concentrations. Copper (mean concentration of 4.26 mg/kg), selenium (mean concentration of 2.15 mg/kg), chromium (mean concentration of 2.03 mg/kg), and nickel (mean concentration of 1.87 mg/kg) were present at the next

highest concentrations. Mean concentrations of all other analytes were less than 1.0 mg/kg. Antimony, beryllium, cadmium, lead, molybdenum, silver, and thallium had relatively low mean concentrations (less than 0.10 mg/kg). Arsenic and mercury had mean concentrations of 0.35 and 0.14 mg/kg, respectively.

Overall, concentrations between years were generally consistent (Tables 10.3-2 and 10.3-3), with two exceptions. The mean concentration for lead in 2004 was approximately twice that in 2005. Conversely, the mean concentration for cadmium in 2005 was approximately twice that in 2004. Except for lead, mean concentrations for all chemicals were slightly higher in 2005 than in 2004. The overall mean concentrations shown in Table 10.3-1, except those for lead and cadmium, therefore are representative of elemental concentrations in fish over both sampling events. For lead and cadmium, each year represents distinct and different data. The difference in lead concentrations between the two years may be due in part to a lower detection frequency for this analyte in 2005, particularly in the North and South Forks of the Koktuli River.

Mean concentrations of select analytes (arsenic, cadmium, copper, mercury, and nickel) in whole-body samples from primary streams are shown by stream for 2004, 2005, and both years combined on Figures 10.3-1 through 10.3-5. These constituents are the ones those most commonly associated with fish toxicity. Note that Kaskanak Creek results are included in these figures for comparison purposes.

North Fork Koktuli River

Eighty-three whole-body samples were collected from the North Fork Koktuli River—43 in 2004 and 40 in 2005. Fish species sampled were coho and chinook salmon, Dolly Varden, and arctic grayling. All 14 trace elements for which samples were analyzed were detected in at least some samples (Table 10.3-4). Antimony and beryllium were detected in 23 and 25 percent of samples, respectively. Silver was detected in 72 percent of samples. All other trace elements were detected in at least 80 percent of samples.

Zinc was detected at the highest mean concentration (120 mg/kg). Chromium, copper, nickel, and selenium were detected at mean concentrations between 1 and 5 mg/kg. Antimony, beryllium, and silver were detected at the lowest mean concentrations (less than 0.01 mg/kg).

Mean concentrations of individual analytes were generally consistent between 2004 and 2005 in whole-body fish samples from the North Fork Koktuli River. The two exceptions are lead and nickel. The mean lead concentration for 2004 was more than 2 times higher than for 2005. Conversely, the mean nickel concentration for 2005 was twice the 2004 mean concentration. Nickel was detected in all samples from both years.

South Fork Koktuli River

During 2004 and 2005, 136 samples were collected from the South Fork Koktuli River—66 in 2004 and 70 in 2005. Fish species sampled were coho and chinook salmon, northern pike, and arctic grayling. All the trace elements, for which samples were analyzed, except beryllium, were detected in at least some samples from this river (Table 10.3-5). Antimony was detected in only 4 percent of samples. Silver and lead were detected at 62 and 76 percent of samples, respectively. All other analytes were detected in at least 85 percent of samples.

Zinc was detected at the highest mean concentration (128 mg/kg). Chromium, copper, and selenium were detected at mean concentrations between 1 and 5 mg/kg, and antimony and silver were detected at the lowest mean concentrations (less than 0.01 mg/kg).

Mean concentrations were generally consistent between 2004 and 2005, with the exception of cadmium. The mean cadmium concentration in 2005 was more than twice that in 2004 (Figure 10.3-2). Chromium and lead also had high variability from year to year, as exhibited by coefficients of variation greater than 1.0.

Upper Talarik Creek

In 2004 and 2005, 126 whole-body samples were collected from Upper Talarik Creek—66 in 2004 and 60 in 2005. Fish species sampled were coho and chinook salmon and Dolly Varden. All 14 trace elements were detected in at least some samples from this creek (Table 10.3-6). Antimony and beryllium were detected in 15 and 12 percent of samples, respectively. Selenium was detected in 71 percent of samples. All other trace elements were detected in at least 80 percent of samples.

Mean concentrations in whole-body samples from Upper Talarik Creek were generally consistent between 2004 and 2005. Only two trace elements, antimony and nickel, had CVs above 1.0. For antimony, this high CV is likely due to the low FOD.

Kaskanak Creek

Twenty-one samples were collected in 2004 and 2005 from Kaskanak Creek (11 in 2004 and 10 in 2005). Only coho salmon were sampled in Kaskanak Creek. All trace elements for which analyses were performed, except beryllium, were detected in at least some samples from this creek (Table 10.3-7). Antimony was detected in only one sample. Chromium and silver were detected in 40 and 67 percent of samples, respectively. The other 10 trace elements were detected in at least 85 percent of samples.

Analyte concentrations in fish samples from Kaskanak Creek were generally consistent between 2004 and 2005. However, the mean copper concentration in 2004 was more than twice that in 2005 (Figure 10.3-3), and the mean lead concentration in 2004 was also almost 2 times higher. All CVs were below 0.7, however, indicating low variability in concentrations of trace elements among fish samples from this creek.

Comparison among Rivers

Concentrations of trace elements in fish samples from the South Fork Koktuli River, North Fork Koktuli River and Upper Talarik Creek were generally similar to each other. For example, mean copper concentrations were consistent in fish from both forks of the Koktuli River and from Upper Talarik Creek (Figure 10.3-3). However, there were some notable exceptions.

- The mean nickel concentrations for fish from the North Fork Koktuli River were higher than the means for either the South Fork Koktuli River or Upper Talarik Creek in both 2004 and 2005 (Figure 10.3-5). For example, the overall 2004-2005 mean nickel concentration for whole-body fish samples from the North Fork Koktuli River (3.63 mg/kg) was almost five times higher than that for samples from the South Fork Koktuli River (0.76 mg/kg). Also, the variability of nickel

concentrations observed in North Fork Koktuli River samples was not evident in samples from the South Fork Koktuli River (Figure 10.3-5).

- Mean chromium concentrations in whole fish from the North Fork Koktuli River (4.23 mg/kg) were almost 4 times higher than those from the South Fork Koktuli River (1.13 mg/kg).

- Mean lead concentration for samples from the North Fork Koktuli River (0.099 mg/kg) was slightly more than twice as high as the mean concentration for samples from the South Fork Koktuli River (0.045 mg/kg).

- The mean cadmium concentration for Upper Talarik Creek (0.012 mg/kg) was about 5 times lower than that for the South Fork Koktuli River (0.050; Figure 10.3-2). The mean cadmium concentration for the North Fork Koktuli River was higher than that for Upper Talarik Creek, but was about 2 times lower than that for the South Fork Koktuli River (Figure 10.3-2).

- Beryllium was not detected in fish from the South Fork Koktuli River, but was detected in fish from the North Fork Koktuli River and Upper Talarik Creek.

- Mean mercury concentrations were similar between the North Fork Koktuli River and the South Fork Koktuli River in 2004, but not in 2005 (Figure 10.3-4). In 2005, mean concentrations were similar between the North Fork Koktuli River and Upper Talarik Creek. Across both years, the South Fork Koktuli River had a lower mean mercury concentration than any of the other three rivers (including Kaskanak Creek).

- The mean arsenic concentration for fish samples from Kaskanak Creek (0.59 mg/kg) was approximately 2 1/2 times higher than the mean concentration for samples from the South Fork Koktuli River (0.23 mg/kg). Mean arsenic concentrations in Upper Talarik Creek and the North Fork Koktuli River were intermediate between the means for Kaskanak Creek and the South Fork Koktuli River (Figure 10.3-1).

Mean concentrations of trace elements in Kaskanak Creek differed from the other three drainages in several ways.

- Mean selenium for Kaskanak Creek fish samples (0.83 mg/kg) were about 2 times lower than the mean concentrations for samples from the South Fork Koktuli River (2.4 mg/kg).

- Mean chromium concentrations for Kaskanak Creek fish samples (0.25 mg/kg) were about 5 times lower than the mean concentrations for samples from the South Fork Koktuli River (1.13 mg/kg).

- The mean cadmium concentration for samples from Kaskanak Creek (0.010 mg/kg) was 5 times lower than for samples from the South Fork Koktuli River (0.050 mg/kg).

Otherwise, concentrations in Kaskanak Creek were similar to those reported for the South Fork Koktuli River. These element-specific differences, which are not seen between the other three major river systems, support the idea that Kaskanak Creek is not hydrologically connected to the three major drainages in the mine study area.

Box-and-whisker plots comparing some of the routinely detected trace elements among the different waterbodies are provided in Appendix 10.3C.

10.3.7.2 Statistical Comparison of Results for Whole Fish among Species and Waterbodies

The discussion above focuses on the results for whole-body fish regardless of species. This section focuses on comparing levels of trace elements in whole fish within and among fish species in the different sampled waterbodies within the mine study area drainages

Intraspecies Differences among Waterbodies

Using data from 2004 and 2005, each of the six species of fish for which whole-body samples were analyzed were statistically evaluated to identify differences in trace element concentrations across waterbodies. As discussed in Section 10.3.4, only salmon (both coho and chinook) were collected from all three rivers (Upper Talarik Creek, North Fork Koktuli, and South Fork Koktuli). Dolly Varden were not collected from the South Fork Koktuli, and arctic grayling were not collected from Upper Talarik Creek. Northern pike were collected only from the South Fork Koktuli, so no comparison among rivers can be conducted for this species. The results of the statistical analysis are described below:

- Numerous differences existed in trace element concentrations for coho salmon between the three mine study drainages. Cadmium was present at significantly higher concentrations in coho salmon from the South Fork Koktuli River relative to those from Upper Talarik Creek and the North Fork Koktuli River; fish from Upper Talarik Creek had the lowest cadmium concentrations. Mercury, conversely, was present at significantly higher concentrations in coho salmon from Upper Talarik Creek relative to salmon from the North Fork Koktuli and South Fork Koktuli rivers, with the lowest concentrations present in fish from the South Fork Koktuli River. Concentrations of arsenic, chromium, molybdenum, and selenium also showed significant differences between Upper Talarik Creek and both the North Fork Koktuli and South Fork Koktuli rivers, although concentrations were consistent between the North Fork Koktuli and South Fork Koktuli. Concentrations of other analytes were significantly different between Upper Talarik Creek and the North Fork Koktuli River (antimony and zinc) or the South Fork Koktuli River (copper and thallium). Lead, thallium, and zinc concentrations in coho salmon differed significantly between the North Fork Koktuli and South Fork Koktuli rivers.
- Some sampling events in the North Fork Koktuli and South Fork Koktuli involved collection of coho and chinook salmon, but the fish were not identified by separate species. For this group, significant differences were observed for four trace elements—antimony, copper, nickel, and selenium. Copper, nickel, and selenium concentrations were significantly higher in salmon from the South Fork Koktuli River, while antimony concentrations were significantly higher in salmon from the North Fork Koktuli River. The higher copper concentrations in the South Fork Koktuli River were expected because copper-rich bedrock is located in the headwaters of that watershed. This copper-rich bedrock results in substrate that is higher in copper here than in other areas. Fish take up the copper through respiration. Since higher concentrations of copper are present in the rock and surface water in this area, more copper is taken up by the fish in these areas.
- Concentrations in Dolly Varden differed significantly for six trace elements—cadmium, copper, lead, nickel, thallium, and zinc—between the Upper Talarik Creek and the North Fork Koktuli River. For all of these elements except copper, concentrations in Dolly Varden from the North

Fork Koktuli River were significantly higher than in Dolly Varden from Upper Talarik Creek. Copper concentrations were significantly higher in fish from Upper Talarik Creek. This may be explained by the underlying geology. In the South Fork Koktuli there are several parts of the river where the underlying geology is rich in copper. Part of the geology underlying Upper Talarik Creek is also known to be rich in copper, but here the copper rich area is limited to a relatively short reach at the headwaters of the creek.

- Concentrations of trace elements in arctic grayling were consistent between the North Fork Koktuli River and the South Fork Koktuli River except for three elements—lead, selenium, and silver. Lead and silver were significantly higher in grayling from the North Fork Koktuli River, while selenium was significantly higher in grayling from the South Fork Koktuli River.

Interspecies Differences within Waterbodies

The results of the statistical analysis of the differences between species within a given waterbody are discussed below and are summarized in Appendix 10.3B. This analysis is important as it relates to selection of potential indicator species and also from a statistical standpoint regarding data aggregation. If concentrations of trace elements were consistent among species within a given waterbody, then any fish species would be representative of baseline conditions in the that waterbody and there would be no need to focus on a specific species. This commonality also would provide a more robust data set because samples across species could be combined.

In the South Fork Koktuli River, coho salmon, arctic grayling, and northern pike were collected in 2004 and 2005. In addition, the coho and chinook salmon (combined into one group) were collected in 2004. This was the only river from which northern pike were collected and analyzed. The results of the statistical analysis of interspecies differences for the South Fork Koktuli River are as follows:

- Concentrations of trace elements in northern pike and in arctic grayling were significantly different for seven elements—copper, lead, mercury, molybdenum, selenium, silver, and zinc. Concentrations of copper, lead, mercury, molybdenum, selenium, and silver were significantly higher in arctic grayling, while zinc concentrations were significantly higher in northern pike.
- Concentrations of trace elements in coho salmon and arctic grayling were significantly different for 10 elements—antimony, arsenic, cadmium, copper, lead, mercury, nickel, selenium, thallium, and zinc. Concentrations of antimony, arsenic, cadmium, lead, and zinc were significantly higher in coho salmon. Concentrations of copper, mercury, nickel, selenium, and thallium were significantly higher in arctic grayling.
- Concentrations of trace elements in coho salmon and northern pike were significantly different for eight elements—antimony, arsenic, cadmium, copper, lead, molybdenum, nickel, and silver. Antimony, arsenic, cadmium, copper, lead, molybdenum, and silver were significantly higher in coho salmon, while nickel was higher in northern pike.
- Concentrations of trace elements in the coho/chinook salmon group and arctic grayling were significantly different for six elements—antimony, arsenic, cadmium, copper, lead, and selenium. Concentrations of arsenic, cadmium, and lead were significantly higher in coho and chinook salmon. Concentrations of antimony, copper, and selenium were significantly higher in arctic grayling.

- Concentrations of trace elements in the coho/chinook salmon group and in northern pike were significantly different for seven elements—arsenic, cadmium, copper, lead, mercury, nickel, and silver. All seven of these elements were significantly higher in coho and chinook salmon than in northern pike.
- The fewest significant differences in elemental concentrations were observed between coho salmon and the coho/chinook (combined) salmon group. Only four elements—antimony, cadmium, mercury, and nickel—were significantly different between these two salmon groups. Antimony and cadmium were higher in coho salmon, and mercury and nickel were higher in the coho/chinook group.

In the North Fork Koktuli River, coho and chinook salmon (combined), Dolly Varden, and arctic grayling were collected in 2004. Coho and chinook salmon (combined), coho salmon, and Dolly Varden were collected in 2005. The results of the statistical analysis of interspecies differences for the North Fork Koktuli River are as follows:

- Concentrations of six trace elements—antimony, copper, lead, molybdenum, selenium, and zinc—were significantly different between coho salmon and the coho/chinook salmon group. Antimony, copper, molybdenum, nickel, and selenium had higher concentrations in coho salmon, and lead and zinc concentrations were higher in the coho/chinook group.
- Concentrations of seven trace elements—beryllium, cadmium, chromium, lead, mercury, nickel, and thallium—were significantly different in Dolly Varden than in coho salmon. Cadmium and mercury were significantly higher in coho salmon, while beryllium, chromium, lead, nickel, and thallium were significantly higher in Dolly Varden.
- Concentrations of trace elements in arctic grayling and Dolly Varden were significantly different for four elements—cadmium, mercury, nickel, and selenium. Nickel concentrations were higher in Dolly Varden, and concentrations of cadmium, mercury, and selenium were higher in arctic grayling.
- Concentrations of trace elements in arctic grayling and the coho/chinook group were significantly different for five elements—copper, lead, mercury, nickel, and selenium. All of these elements except mercury were significantly higher in arctic grayling.
- Concentrations of trace elements in Dolly Varden and the coho/chinook group were significantly different for 11 elements—antimony, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, thallium, and zinc. All of these elements except cadmium and zinc were significantly higher in Dolly Varden.
- The fewest significant differences in elemental concentrations were observed between arctic grayling and coho salmon. Concentrations of only two trace elements—lead and selenium—were significantly different between these two species. Both elements were present at significantly higher concentrations in arctic grayling than in coho salmon.

In Upper Talarik Creek, coho salmon and Dolly Varden were collected in 2004 and 2005. Chinook salmon were collected only in 2005. This was the only river from which chinook salmon were collected as a separate group (i.e., not in combination with coho salmon). The results of the statistical analysis of interspecies differences for Upper Talarik Creek are as follows:

- Concentrations of trace elements in coho salmon and in chinook salmon were significantly different for six elements—cadmium, lead, mercury, molybdenum, nickel, and selenium. Cadmium, molybdenum, nickel, and selenium concentrations were higher in coho salmon, and lead and mercury concentrations were higher in chinook salmon.
- In Dolly Varden and coho salmon, concentrations were significantly different for nine trace elements—beryllium, cadmium, chromium, copper, mercury, nickel, selenium, silver, and zinc. Cadmium, mercury, and zinc concentrations were significantly higher in coho salmon, while beryllium, chromium, copper, nickel, selenium, and silver concentrations were significantly higher in Dolly Varden.
- Chinook salmon and Dolly Varden had significant differences in concentrations for nine trace elements—cadmium, chromium, copper, lead, mercury, molybdenum, selenium, silver, and zinc. Cadmium, mercury, molybdenum, and zinc were significantly higher in coho salmon. Chromium, copper, lead, selenium, and silver were significantly higher in Dolly Varden.

This evaluation indicates that elemental concentrations differ between different fish species; therefore, the results for one species are not representative of other species, at least for the majority of trace elements.

10.3.7.3 Muscle and Liver Fish Tissues

No whole-body analyses were conducted for fish collected from lakes. Instead, these fish were dissected, and liver and muscle tissues from the fish were analyzed. In 2004 through 2006, samples of liver and muscle tissue were collected from lakes only. In 2007 and 2008, only muscle tissue was analyzed, and samples were collected from lakes and from the north and south forks of the Koktuli River in both years, as well as from the Upper Talarik Creek in 2007. Overall, 236 muscle samples and 87 liver samples were collected.

Results for various trace elements in liver and muscle tissue are summarized for all sampling years individually and combined in Figures 10.3-6 through 10.3-17. Box-and-whisker plots for some of the trace elements that were routinely detected in fish liver and muscle tissues are provided in Appendix 10.3C, following the plots for whole-body data.

Muscle tissue data for 2004 through 2008 are summarized in tables 10.3-8 through 10.3-13.The following observations were made regarding the general presence of trace elements in fish muscle samples. Four trace elements—copper, total mercury, methyl-mercury, and zinc—were detected in all muscle samples which were analyzed for these constituents (Table 10.3-8). Arsenic, selenium, and thallium were detected in more than 90 percent (but less than 100 percent) of muscle samples. Beryllium was detected in only 5 percent of muscle samples and only in 2007 (analysis for beryllium was not conducted in 2004). Antimony was detected in only 3 percent of muscle samples.

Comparison of fish muscle tissue data from year to year yielded the following observations. Lead was not detected in any muscle samples in 2004 (Table 10.3-9) and was detected in only three muscle samples (8 percent) in 2005 (Table 10.3-10); however, lead was detected in 62 percent of muscle samples in 2006 (Table 10.3-11), in 95 percent of samples in 2007 (Table 10.3-12), and in 69 percent of samples in 2008 (Table 10.3-13The mean arsenic concentration for muscle-tissue samples from 2007 was about twice the mean concentrations for other years (Figure 10.3-6). The mean copper concentration for 2007 was about one-half those for 2005 or 2006, but was twice as high as the mean for 2004 (Figure 10.3-9). Mean nickel

concentrations were about 7 times higher in 2005 and 2006 than in the other three years (Figure 10.3-13).The mean lead concentration for 2007 was 2 to 7 times higher than the concentrations for 2005, 2006, and 2008 (as previously noted, lead was not detected in any samples in 2004). The mean concentration for silver was as much as 4 times higher in 2005 than in other years. Mean cadmium concentrations were about 3 times higher in 2004 and 2007 than in other years. Molybdenum and chromium concentrations also varied among the years in which they were target analytes. The mean molybdenum concentration in 2005 was about twice those for 2007 or 2008, which in turn were about twice that for 2006. The mean chromium concentration in 2005 was about twice those in 2007 or 2008, and chromium was not detected in any muscle-tissue samples from 2006. Selenium was consistent in mean concentrations across all years (Figure 10.3-15), and mercury was lower in 2007 than in other years (Figure 10.3-11).

Interpretation of these differences is complicated by the differences in sampling locations and species sampled from year to year, due to differential sampling success across years and water bodies. For example, concentrations of many trace elements in fish muscle tissues were generally higher in 2007 samples. In 2007, only 22 of 83 muscle samples (27 percent) were collected from Big Wiggly Lake; 10 of these were whitefish (12 percent of all muscles samples) and 12 were northern pike (15 percent of all muscles samples). In 2006, a similar proportion of samples was collected from Big Wiggly Lake (nine of 29, or 31 percent), but those fish were all arctic grayling. In 2005, a similar proportion of samples was collected from Big Wiggly Lake (10 of 40, or 25 percent), but those fish were all northern pike. In 2004, 10 of the 20 muscle samples collected that year were from northern pike from Big Wiggly Lake. In 2008, only 10 of 64 muscle samples (16 percent) were collected from Big Wiggly Lake, and seven of those fish were northern pike, while three were arctic grayling. As noted in Section 10.2, concentrations of trace elements in sediment often differ substantially in different waterbodies; therefore, collection of a significant proportion of fish samples from a single lake that may have different elemental concentrations than other lakes could skew the statistical results. Concentrations in sediment are related somewhat to the concentrations in fish through ingestion of prey items in the sediment, and some fish (e.g., northern pike) feed off bottom-dwelling organisms. This conclusion suggests that muscle-tissue data for 2007 are most representative of fish in the mine study area, because these data are for samples from the widest variety of locations and species—four lakes, three rivers, and three species of fish.

Liver-tissue data for 2004 through 2006 are summarized in tables 10.3-14 through 10.3-17. The following observations were made regarding the general presence of trace elements in fish muscle samples. All trace elements for which liver samples were analyzed were detected in at least some liver samples. Beryllium was detected in only two liver samples (3 percent) and was detected only in 2006. Chromium was detected in 45 percent of liver samples, but all detections were from 2005. Lead and antimony were detected in 56 and 11 percent of samples, respectively. All other target analytes were detected in at least 90 percent of all samples (Table 10.3-14).

Comparison of fish muscle tissue data from year to year yielded the following observations. The mean arsenic concentration was about 5 times higher in 2006 than in 2004 and 2005 (Figure 10.3-7), while the mean nickel concentration was 4 to 6 times lower in 2006 than in the other two years (Figure 10.3-14). Copper concentrations in fish liver were generally consistent over the years (Figure 10.3-10), but the mean silver concentration was about twice as high in 2006 as in the other two years (Figure 10.3-17). The 2004 mean cadmium concentration was almost twice that calculated for 2005, while the 2006 mean was lower than that for 2005 (Figure 10.3-8). The mean mercury concentration for 2006 was higher than those for other years (Figure 10.3-12). The mean lead concentration for 2004 was almost 5 times higher than

that for 2005, while the 2006 mean concentration was between the means for the other two years. Concentrations of all other target analytes in liver samples were similar among years, differing by no more than a factor of 2. (e.g., selenium, Figure 10.3-16).

Comparison of fish tissue types indicated the following. Mean concentrations for total mercury, selenium, thallium, and zinc in muscle-tissue samples were similar across years; however, variability was generally high in muscle-tissue samples relative to whole-body samples. For example, for muscle tissue, nine of the 15 trace elements had data with CVs above 1.0, and four trace elements—antimony, beryllium, lead, and silver—had data with CVs above 2.0 (Table 10.3-8). When concentrations of trace elements were not consistent between liver tissues and muscle tissues, concentrations were generally much higher in liver than in muscle. This is important because the majority of human consumption excludes the liver, while wildlife such as bears typically consume the entire fish, including the liver. Therefore, while the data for liver tissue are relevant for comparison of baseline levels in fish across locations, use of liver data for evaluation regarding human consumption is likely not warranted for all elements. The higher levels of trace elements in fish liver tissue, compared to muscle tissue, is most apparent for cadmium, copper, molybdenum, and silver, which had mean concentrations in liver that exceeded mean concentrations in muscle by factors of 17, 27, 29, and 188, respectively (Tables10.3-14 and 10.3-8). The mean zinc concentration for liver samples was 8 times higher than the mean concentration for muscle-tissue samples, and the mean selenium concentrations were about 3 times higher for liver than for muscle tissue. Mercury and methyl-mercury were the only trace elements with noticeably lower concentrations in liver tissue than in muscle tissue; mean mercury and methyl-mercury concentrations were 2 and 4 times lower, respectively, in liver than in muscle tissue. Lead and nickel had slightly lower concentrations in liver tissue (means of 0.039 mg/kg and 0.26 mg/kg, respectively) than in muscle tissue (means of 0.048 mg/kg and 0.35, respectively). It is interesting to note that the mean concentrations for antimony in liver and muscle tissues for all sampling years combined were identical (0.015 mg/kg).

10.3.8 Summary

The trace elements study for fish was initiated in 2004 and continued annually through 2008. Work in the mine study area focused on the South Fork Koktuli River, North Fork Koktuli River, and Upper Talarik Creek watersheds that are associated with the Pebble West and Pebble East deposits. One location in Kaskanak Creek also was included to confirm that this creek is not hydrologically connected with the watersheds in which the Pebble Deposit is located.

The primary objective of the trace elements study for fish was to provide scientific documentation of the existing natural levels of trace elements in fish tissue.

Each summer, teams collected fish samples from rivers and lakes in the study area. The mine study area includes three major watersheds—the North Fork Koktuli River, the South Fork Koktuli River, and Upper Talarik Creek—as well as Frying Pan Lake, Big Wiggly Lake, Lake 2, and Black Lake. As noted, samples also were collected from Kaskanak Creek. In 2004 through 2008, 689 primary samples were collected from 24 separate locations among these waterbodies. Only whole-body fish samples were collected from rivers in 2004 and 2005: 186 in 2004 and 180 in 2005. Liver samples were collected from lakes in 2004 through 2006, and muscle samples were collected from lakes in all five years of sampling and also from rivers in 2007 and 2008. In 2004, 20 each of liver and muscle samples were collected. In 2005, 40 each of liver and muscle samples were collected. In 2006, 20 liver samples and 29 muscle

samples were collected (seven additional liver samples were collected to be analyzed for mercury only), and in 2007, 83 muscle samples were collected. In 2008, 64 muscle samples were collected. These samples (except those analyzed only for mercury) were analyzed for a variety of trace elements.

Fourteen trace elements comprised the 2005 through 2008 analyses. Analyses were conducted for nine of these elements in 2004. In addition, methyl-mercury was included in the 2004 analyses for liver and muscle tissues. Most of the mercury detected in 2004 was found to be in its methylated form; therefore, after 2004, only total mercury was analyzed for, based on the assumption that mercury was all present as methyl-mercury. All elements for which analyses were performed were detected in at least some samples.

Evaluation of the results indicated a wide variability of elemental concentrations among drainages, among fish species, and among tissue types. Trace element concentrations in whole-body fish were compared between fish species and between major drainages. Concentrations for various elements differed between species in each river and between rivers for each species. Elemental concentrations were typically higher in liver tissue than in muscle tissue, sometimes substantially.

The different major drainages, as well as different fish species, have different signatures of natural levels of trace elements, although element uptake from sediment appears to be generally similar among rivers.

TABLES

TABLE 10.3-1

Trace Elements in Whole Fish from Major Rivers, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2005

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	44 / 345	13%	0.0050 - 0.085	0.0050 - 0.016	0.0042	0.0040	0.0049	1.16
Arsenic	329 / 345	95%	0.10 - 4.12	0.030 - 0.10	0.31	0.25	0.27	0.87
Beryllium [e]	17 / 170	10%	0.0040 - 0.035	0.0030 - 0.0060	0.0024	0.0015	0.0038	1.55
Cadmium	337 / 345	98%	0.0050 - 0.53	0.0040 - 0.010	0.030	0.017	0.045	1.51
Chromium [e]	158 / 170	93%	0.30 - 38.3	0.30 - 0.60	2.03	1.00	4.04	1.98
Copper	345 / 345	100%	1.61 - 13.6	0.020 - 0.14	3.88	3.21	1.96	0.50
Lead	291 / 345	84%	0.0090 - 0.67	0.0070 - 0.040	0.062	0.042	0.070	1.13
Mercury	344 / 345	100%	0.022 - 0.65	0.00030 - 0.00080	0.13	0.097	0.090	0.70
Molybdenum [e]	147 / 170	86%	0.050 - 0.17	0.050 - 0.10	0.072	0.070	0.028	0.40
Nickel	343 / 345	99%	0.10 - 37.1	0.020 - 0.20	1.55	0.70	3.93	2.54
Selenium	309 / 345	90%	0.40 - 5.50	0.29 - 0.80	1.91	2.00	1.02	0.53
Silver	266 / 345	77%	0.0020 - 0.038	0.0020 - 0.0080	0.0065	0.0060	0.0041	0.63
Thallium [e]	160 / 170	94%	0.0060 - 0.073	0.0020 - 0.0040	0.013	0.012	0.0070	0.52
Zinc [e]	170 / 170	100%	61.9 - 197	0.070 - 0.14	124	123	25.0	0.20

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.3-2

Trace Elements in Whole Fish from Major Rivers, Data Summary and Descriptive Statistics, Mine Study Area 2004

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d,e]								
Antimony	35 / 175	20%	0.0050 - 0.085	0.0050 - 0.010	0.0040	0.0025	0.0066	1.65
Arsenic	159 / 175	91%	0.10 - 1.37	0.030 - 0.060	0.27	0.24	0.14	0.54
Cadmium	167 / 175	95%	0.0050 - 0.092	0.0050 - 0.010	0.021	0.016	0.016	0.78
Copper	175 / 175	100%	1.61 - 10.1	0.070 - 0.14	3.52	3.13	1.51	0.43
Lead	164 / 175	94%	0.0090 - 0.67	0.0070 - 0.014	0.080	0.059	0.084	1.05
Mercury	174 / 175	99%	0.023 - 0.38	0.00030 - 0.00080	0.12	0.091	0.073	0.64
Nickel	175 / 175	100%	0.25 - 35.2	0.030 - 0.060	1.23	0.79	2.74	2.22
Selenium	148 / 175	85%	0.40 - 5.00	0.40 - 0.80	1.68	1.60	1.00	0.59
Silver	107 / 175	61%	0.0040 - 0.026	0.0040 - 0.0080	0.0062	0.0060	0.0037	0.59

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.3-3
Trace Elements in Whole Fish from Major Rivers, Data Summary and Descriptive Statistics, Mine Study Area, 2005

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	9 / 170	5%	0.0080 - 0.020	0.0080 - 0.016	0.0044	0.0040	0.0019	0.44
Arsenic	170 / 170	100%	0.10 - 4.12	0.050 - 0.10	0.35	0.28	0.35	0.98
Beryllium [e]	17 / 170	10%	0.0040 - 0.035	0.0030 - 0.0060	0.0024	0.0015	0.0038	1.55
Cadmium	170 / 170	100%	0.0050 - 0.53	0.0040 - 0.0080	0.039	0.021	0.061	1.55
Chromium [e]	158 / 170	93%	0.30 - 38.3	0.30 - 0.60	2.03	1.00	4.04	1.98
Copper	170 / 170	100%	2.05 - 13.6	0.020 - 0.040	4.26	3.44	2.28	0.53
Lead	127 / 170	75%	0.020 - 0.30	0.020 - 0.040	0.043	0.030	0.046	1.06
Mercury	170 / 170	100%	0.022 - 0.65	0.00060 - 0.00060	0.14	0.11	0.10	0.72
Molybdenum [e]	147 / 170	86%	0.050 - 0.17	0.050 - 0.10	0.072	0.070	0.028	0.40
Nickel	168 / 170	99%	0.10 - 37.1	0.020 - 0.20	1.87	0.60	4.85	2.60
Selenium	161 / 170	95%	0.50 - 5.50	0.29 - 0.60	2.15	2.14	0.98	0.46
Silver	159 / 170	94%	0.0020 - 0.038	0.0020 - 0.0040	0.0067	0.0060	0.0045	0.67
Thallium [e]	160 / 170	94%	0.0060 - 0.073	0.0020 - 0.0040	0.013	0.012	0.0070	0.52
Zinc [e]	170 / 170	100%	61.9 - 197	0.070 - 0.14	124	123	25.0	0.20

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.3-4

Trace Elements in Whole Fish from North Fork Koktuli River, Data Summary and Descriptive Statistics, 2004-2005

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	19 / 83	23%	0.0050 - 0.011	0.0050 - 0.0080	0.0044	0.0040	0.0022	0.51
Arsenic	83 / 83	100%	0.14 - 4.12	0.030 - 0.050	0.34	0.25	0.45	1.33
Beryllium [e]	10 / 40	25%	0.0040 - 0.035	0.0030 - 0.0030	0.0047	0.0015	0.0072	1.53
Cadmium	83 / 83	100%	0.0060 - 0.069	0.0040 - 0.0050	0.023	0.022	0.012	0.51
Chromium [e]	33 / 40	83%	0.30 - 38.3	0.30 - 0.30	4.23	0.95	7.73	1.83
Copper	83 / 83	100%	1.61 - 12.3	0.020 - 0.070	3.81	3.04	1.98	0.52
Lead	68 / 83	82%	0.020 - 0.63	0.0070 - 0.020	0.099	0.075	0.10	1.01
Mercury	83 / 83	100%	0.031 - 0.65	0.00060 - 0.00080	0.14	0.098	0.13	0.92
Molybdenum [e]	34 / 40	85%	0.050 - 0.15	0.050 - 0.050	0.073	0.070	0.030	0.42
Nickel	83 / 83	100%	0.10 - 37.1	0.030 - 0.10	3.63	0.83	7.52	2.07
Selenium	83 / 83	100%	0.80 - 3.16	0.29 - 0.40	1.92	1.99	0.54	0.28
Silver	60 / 83	72%	0.0020 - 0.019	0.0020 - 0.0040	0.0076	0.0080	0.0033	0.43
Thallium [e]	40 / 40	100%	0.0060 - 0.032	0.0020 - 0.0020	0.013	0.012	0.0064	0.47
Zinc [e]	40 / 40	100%	82.8 - 172	0.070 - 0.070	120	118	17.9	0.15

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.3-5

Trace Elements in Whole Fish from South Fork Koktuli River, Data Summary and Descriptive Statistics, 2004-2005

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	6 / 136	4%	0.0050 - 0.011	0.0050 - 0.016	0.0035	0.0040	0.0012	0.36
Arsenic	126 / 136	93%	0.10 - 0.52	0.030 - 0.10	0.23	0.23	0.091	0.39
Beryllium [e]	0 / 70	0%	NA - NA	0.0030 - 0.0060	NA	NA	NA	NA
Cadmium	136 / 136	100%	0.0050 - 0.53	0.0040 - 0.0080	0.050	0.033	0.066	1.31
Chromium [e]	65 / 70	93%	0.40 - 6.80	0.30 - 0.60	1.13	0.80	1.14	1.01
Copper	136 / 136	100%	1.96 - 11.2	0.020 - 0.070	3.70	3.28	1.48	0.40
Lead	103 / 136	76%	0.0090 - 0.67	0.0070 - 0.040	0.045	0.030	0.065	1.46
Mercury	136 / 136	100%	0.022 - 0.38	0.00060 - 0.00080	0.11	0.082	0.068	0.65
Molybdenum [e]	60 / 70	86%	0.050 - 0.17	0.050 - 0.10	0.079	0.080	0.033	0.41
Nickel	134 / 136	99%	0.20 - 2.80	0.030 - 0.20	0.76	0.71	0.43	0.57
Selenium	136 / 136	100%	0.90 - 5.00	0.30 - 0.60	2.40	2.43	0.81	0.34
Silver	84 / 136	62%	0.0020 - 0.038	0.0020 - 0.0040	0.0050	0.0040	0.0044	0.89
Thallium [e]	70 / 70	100%	0.0070 - 0.073	0.0020 - 0.0040	0.016	0.015	0.0086	0.54
Zinc [e]	70 / 70	100%	75.6 - 197	0.070 - 0.14	128	128	25.7	0.20

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.3-6

Trace Elements in Whole Fish from Upper Talarik Creek, Data Summary and Descriptive Statistics, 2004-2005

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	19 / 126	15%	0.0050 - 0.085	0.0050 - 0.010	0.0049	0.0040	0.0077	1.59
Arsenic	120 / 126	95%	0.11 - 1.27	0.030 - 0.060	0.37	0.31	0.20	0.55
Beryllium [e]	7 / 60	12%	0.0040 - 0.0060	0.0030 - 0.0030	0.0019	0.0015	0.0012	0.64
Cadmium	118 / 126	94%	0.0050 - 0.040	0.0040 - 0.010	0.012	0.012	0.0064	0.52
Chromium [e]	60 / 60	100%	0.60 - 6.10	0.30 - 0.30	1.63	1.30	1.09	0.67
Copper	126 / 126	100%	1.75 - 13.6	0.020 - 0.14	4.14	3.15	2.35	0.57
Lead	120 / 126	95%	0.011 - 0.16	0.0070 - 0.020	0.056	0.050	0.033	0.59
Mercury	125 / 126	99%	0.028 - 0.32	0.00030 - 0.00080	0.15	0.15	0.077	0.52
Molybdenum [e]	53 / 60	88%	0.050 - 0.10	0.050 - 0.050	0.062	0.060	0.017	0.27
Nickel	126 / 126	100%	0.25 - 9.00	0.020 - 0.10	1.02	0.62	1.19	1.16
Selenium	90 / 126	71%	0.40 - 5.50	0.30 - 0.80	1.38	1.10	1.18	0.86
Silver	122 / 126	97%	0.0030 - 0.026	0.0020 - 0.0080	0.0073	0.0060	0.0037	0.51
Thallium [e]	50 / 60	83%	0.0070 - 0.018	0.0020 - 0.0020	0.010	0.010	0.0023	0.23
Zinc [e]	60 / 60	100%	61.9 - 183	0.070 - 0.070	121	123	27.6	0.23

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.3-7
Trace Elements in Whole Fish from Kaskanak Creek, Data Summary and Descriptive Statistics, 2004-2005

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	1 / 21	5%	0.0060 - 0.0060	0.0050 - 0.0080	0.0034	0.0040	0.00096	0.28
Arsenic	21 / 21	100%	0.33 - 0.90	0.030 - 0.050	0.59	0.64	0.17	0.28
Beryllium [e]	0 / 10	0%	NA - NA	0.0030 - 0.0030	NA	NA	NA	NA
Cadmium	21 / 21	100%	0.0050 - 0.021	0.0040 - 0.0050	0.010	0.0080	0.0043	0.42
Chromium [e]	4 / 10	40%	0.30 - 0.50	0.30 - 0.30	0.25	0.15	0.14	0.55
Copper	21 / 21	100%	2.16 - 8.98	0.020 - 0.070	4.10	3.03	2.37	0.58
Lead	18 / 21	86%	0.020 - 0.094	0.0070 - 0.020	0.036	0.031	0.020	0.58
Mercury	21 / 21	100%	0.12 - 0.28	0.00060 - 0.00080	0.16	0.14	0.037	0.24
Molybdenum [e]	10 / 10	100%	0.060 - 0.090	0.050 - 0.050	0.071	0.070	0.011	0.16
Nickel	21 / 21	100%	0.20 - 1.90	0.030 - 0.10	0.71	0.68	0.46	0.65
Selenium	18 / 21	86%	0.50 - 1.50	0.30 - 0.40	0.83	0.88	0.34	0.41
Silver	14 / 21	67%	0.0030 - 0.010	0.0020 - 0.0040	0.0039	0.0040	0.0020	0.51
Thallium [e]	10 / 10	100%	0.0060 - 0.011	0.0020 - 0.0020	0.0090	0.0090	0.0020	0.22
Zinc [e]	10 / 10	100%	99.8 - 166	0.070 - 0.070	127	127	18.7	0.15

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.3-8
Trace Elements in Fish Muscle Tissue from Lakes and Rivers, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2008

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	8 / 236	3%	0.010 - 1.12	0.0060 - 0.020	0.015	0.0040	0.087	5.84
Arsenic	224 / 236	95%	0.060 - 1.42	0.030 - 0.080	0.47	0.32	0.36	0.77
Beryllium [e]	11 / 216	5%	0.0020 - 0.11	0.0020 - 0.0070	0.0023	0.0015	0.0093	4.06
Cadmium	57 / 236	24%	0.0050 - 0.12	0.0040 - 0.010	0.0069	0.0045	0.011	1.53
Chromium [e]	71 / 216	33%	0.07 - 7.28	0.06 - 0.50	0.34	0.25	0.26	0.77
Copper	236 / 236	100%	0.49 - 18.1	0.020 - 0.090	2.42	1.78	2.07	0.85
Lead	144 / 236	61%	0.0040 - 1.08	0.0030 - 0.020	0.048	0.014	0.11	2.38
Mercury	235 / 235	100%	0.092 - 8.16	0.50000 - 5.0000	0.74	0.50	0.85	1.14
Methyl mercury [f]	20 / 20	100%	0.19 - 3.06	NR - NR	0.98	0.68	0.90	0.92
Molybdenum [e]	79 / 216	37%	0.0060 - 0.39	0.0060 - 0.050	0.020	0.010	0.037	1.90
Nickel	191 / 236	81%	0.030 - 4.23	0.020 - 0.040	0.35	0.15	0.50	1.40
Selenium	221 / 236	94%	0.47 - 4.80	0.25 - 0.50	1.64	1.50	0.79	0.48
Silver	39 / 236	17%	0.0020 - 0.11	0.0020 - 0.0070	0.0041	0.0025	0.011	2.63
Thallium [e]	208 / 216	96%	0.0050 - 0.38	0.0020 - 0.0050	0.023	0.018	0.032	1.43
Zinc [e]	216 / 216	100%	10.9 - 148	0.050 - 0.080	19.7	18.6	11.0	0.55

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

f. Methyl mercury was analyzed only in 2004. Method detection limits not provided by laboratory.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NR = not reported.

TABLE 10.3-9

Trace Elements in Fish Muscle Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d,e]								
Antimony	0 / 20	0%	NA - NA	0.0080 - 0.0080	NA	NA	NA	NA
Arsenic	20 / 20	100%	0.13 - 0.67	0.030 - 0.030	0.36	0.29	0.17	0.47
Cadmium	13 / 20	65%	0.0060 - 0.039	0.0060 - 0.0060	0.0088	0.0085	0.0080	0.91
Copper	20 / 20	100%	0.69 - 1.53	0.090 - 0.090	0.97	0.95	0.19	0.20
Lead	0 / 20	0%	NA - NA	0.0060 - 0.0060	NA	NA	NA	NA
Mercury	20 / 20	100%	0.15 - 2.40	0.0015 - 0.0030	0.86	0.65	0.73	0.85
Methyl mercury [f]	20 / 20	100%	0.19 - 3.06	NR - NR	0.98	0.68	0.90	0.92
Nickel	20 / 20	100%	0.050 - 0.49	0.030 - 0.030	0.13	0.11	0.099	0.74
Selenium	19 / 20	95%	0.90 - 2.30	0.40 - 0.40	1.48	1.40	0.60	0.41
Silver	2 / 20	10%	0.0070 - 0.018	0.0030 - 0.0030	0.0026	0.0015	0.0038	1.47

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent northern pike and arctic grayling only.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were not conducted in 2004.

f. Methyl mercury was analyzed only in 2004. Method detection limits not provided by laboratory.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

NR = not reported.

TABLE 10.3-10

Trace Elements in Fish Muscle Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2005

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	0 / 40	0%	NA - NA	0.0080 - 0.0080	NA	NA	NA	NA
Arsenic	40 / 40	100%	0.10 - 0.52	0.050 - 0.050	0.29	0.28	0.13	0.45
Beryllium	0 / 40	0%	NA - NA	0.0030 - 0.0030	NA	NA	NA	NA
Cadmium	8 / 40	20%	0.0050 - 0.010	0.0040 - 0.0040	0.0028	0.0020	0.0018	0.63
Chromium	31 / 40	78%	0.30 - 2.20	0.30 - 0.30	0.55	0.50	0.41	0.75
Copper	40 / 40	100%	0.84 - 18.1	0.020 - 0.020	3.47	2.46	3.09	0.89
Lead	3 / 40	8%	0.030 - 0.080	0.020 - 0.020	0.013	0.010	0.012	0.94
Mercury	40 / 40	100%	0.11 - 8.16	0.00060 - 0.00060	0.98	0.51	1.36	1.39
Molybdenum	1 / 40	3%	0.25 - 0.25	0.050 - 0.050	0.031	0.025	0.036	1.16
Nickel	40 / 40	100%	0.19 - 4.23	0.020 - 0.020	0.74	0.56	0.74	1.00
Selenium	39 / 40	98%	1.10 - 4.80	0.30 - 0.30	1.79	1.60	0.78	0.44
Silver	24 / 40	60%	0.0020 - 0.097	0.0020 - 0.0020	0.0065	0.0030	0.015	2.31
Thallium	40 / 40	100%	0.011 - 0.040	0.0020 - 0.0020	0.022	0.022	0.0077	0.35
Zinc	40 / 40	100%	15.9 - 148	0.070 - 0.070	22.0	18.6	20.5	0.93

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent northern pike and arctic grayling only.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.3-11

Trace Elements in Fish Muscle Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2006

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	0 / 29	0%	NA - NA	0.0060 - 0.0060	NA	NA	NA	NA
Arsenic	29 / 29	100%	0.060 - 0.74	0.050 - 0.050	0.34	0.28	0.21	0.62
Beryllium	0 / 29	0%	NA - NA	0.0020 - 0.0020	NA	NA	NA	NA
Cadmium	1 / 29	3%	0.0060 - 0.0060	0.0060 - 0.0060	0.0031	0.0030	0.00056	0.18
Chromium	0 / 29	0%	NA - NA	0.40 - 0.40	NA	NA	NA	NA
Copper	29 / 29	100%	1.25 - 8.48	0.020 - 0.020	3.53	3.22	2.03	0.58
Lead	18 / 29	62%	0.0040 - 0.070	0.0030 - 0.0030	0.018	0.010	0.014	0.80
Mercury	29 / 29	100%	0.20 - 3.89	0.00060 - 0.0030	0.73	0.30	0.87	1.20
Molybdenum	27 / 29	93%	0.0060 - 0.014	0.0060 - 0.0060	0.0081	0.0080	0.0024	0.30
Nickel	29 / 29	100%	0.26 - 1.32	0.030 - 0.030	0.72	0.71	0.30	0.41
Selenium	29 / 29	100%	0.70 - 2.30	0.50 - 0.50	1.28	1.30	0.37	0.29
Silver	1 / 29	3%	0.0040 - 0.0040	0.0030 - 0.0030	0.0016	0.0015	0.00046	0.29
Thallium	29 / 29	100%	0.0090 - 0.027	0.0030 - 0.0030	0.016	0.015	0.0045	0.28
Zinc	29 / 29	100%	16.5 - 25.3	0.060 - 0.060	20.2	20.0	2.24	0.11

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent northern pike and arctic grayling only.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.3-12

Trace Elements in Fish Muscle Tissue from Lakes and Rivers, Data Summary and Descriptive Statistics, Mine Study Area, 2007

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	4 / 83	5%	0.030 - 1.12	0.020 - 0.020	0.027	0.010	0.12	4.63
Arsenic	72 / 83	87%	0.080 - 1.42	0.040 - 0.050	0.63	0.64	0.44	0.70
Beryllium	11 / 83	13%	0.0020 - 0.11	0.0020 - 0.0030	0.0031	0.0015	0.013	4.01
Cadmium	22 / 83	27%	0.0080 - 0.12	0.0070 - 0.010	0.0098	0.0050	0.014	1.43
Chromium	11 / 83	13%	0.50 - 0.70	0.40 - 0.50	0.29	0.25	0.13	0.44
Copper	83 / 83	100%	0.80 - 7.72	0.020 - 0.030	1.87	1.62	1.09	0.58
Lead	79 / 83	95%	0.0060 - 1.08	0.0040 - 0.0060	0.086	0.037	0.16	1.81
Mercury	83 / 83	100%	0.093 - 2.92	0.00050 - 0.0010	0.60	0.51	0.41	0.69
Molybdenum	12 / 83	14%	0.020 - 0.39	0.020 - 0.020	0.018	0.010	0.043	2.35
Nickel	51 / 83	61%	0.030 - 1.04	0.020 - 0.040	0.092	0.050	0.14	1.52
Selenium	70 / 83	84%	0.60 - 3.40	0.40 - 0.50	1.72	1.60	0.89	0.52
Silver	4 / 83	5%	0.0060 - 0.11	0.0050 - 0.0060	0.0043	0.0025	0.011	2.68
Thallium	75 / 83	90%	0.0060 - 0.38	0.0020 - 0.0050	0.025	0.017	0.043	1.74
Zinc	83 / 83	100%	12.6 - 33.1	0.050 - 0.060	18.5	17.9	3.86	0.21

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent northern pike and whitefish only.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.3-13

Trace Elements in Fish Muscle Tissue from Lakes and Rivers, Data Summary and Descriptive Statistics, Mine Study Area, 2008

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	4 / 64	6%	0.010 - 0.11	0.0070 - 0.008	0.007	0.0040	0.014	2.10
Arsenic	63 / 64	98%	0.080 - 0.82	0.070 - 0.080	0.32	0.25	0.19	0.60
Beryllium	0 / 64	0%	0.0000 - 0.00	0.0060 - 0.0070	0.0033	0.0035	0.0002	0.07
Cadmium	13 / 64	20%	0.0050 - 0.03	0.0040 - 0.005	0.0037	0.0025	0.004	1.02
Chromium	29 / 64	45%	0.07 - 7.28	0.06 - 0.07	0.24	0.04	0.91	3.75
Copper	64 / 64	100%	0.49 - 2.53	0.040 - 0.050	1.40	1.34	0.44	0.31
Lead	44 / 64	69%	0.0040 - 0.21	0.0030 - 0.004	0.039	0.007	0.06	1.51
Mercury	63 / 63	100%	0.097 - 4.36	0.50000 - 5.0000	0.70	0.40	0.74	1.06
Molybdenum	39 / 64	61%	0.0080 - 0.063	0.0070 - 0.008	0.012	0.009	0.012	0.98
Nickel	51 / 64	80%	0.040 - 3.04	0.030 - 0.040	0.14	0.075	0.38	2.69
Selenium	64 / 64	100%	0.47 - 3.25	0.25 - 0.30	1.52	1.44	0.71	0.47
Silver	8 / 64	13%	0.0070 - 0.03	0.0060 - 0.0070	0.0050	0.0035	0.005	0.94
Thallium	64 / 64	100%	0.0050 - 0.08	0.0020 - 0.0030	0.023	0.020	0.013	0.59
Zinc	64 / 64	100%	10.9 - 44.8	0.070 - 0.080	19.2	17.05	6.8	0.35

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent northern pike and arctic grayling.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NR = not reported.

TABLE 10.3-14

Trace Elements in Fish Liver Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2004-2006

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	9 / 80	11%	0.0050 - 0.45	0.0050 - 0.020	0.015	0.0040	0.061	4.09
Arsenic	80 / 80	100%	0.13 - 2.42	0.030 - 0.050	0.65	0.34	0.62	0.95
Beryllium [e]	2 / 60	3%	0.031 - 0.047	0.0030 - 0.0030	0.0028	0.0015	0.0069	2.53
Cadmium	79 / 80	99%	0.0080 - 1.00	0.0040 - 0.0080	0.12	0.046	0.17	1.41
Chromium [e]	27 / 60	45%	0.30 - 1.10	0.30 - 0.50	0.36	0.25	0.22	0.60
Copper	80 / 80	100%	1.90 - 347	0.020 - 0.70	64.7	45.0	65.6	1.01
Lead	45 / 80	56%	0.0060 - 0.43	0.0050 - 0.020	0.039	0.010	0.069	1.76
Mercury	87 / 87	100%	0.054 - 4.01	0.00050 - 0.0010	0.34	0.22	0.49	1.46
Methyl mercury [f]	18 / 18	100%	0.047 - 0.84	NR - NR	0.23	0.15	0.23	0.99
Molybdenum [e]	59 / 60	98%	0.24 - 1.16	0.020 - 0.050	0.57	0.58	0.19	0.34
Nickel	76 / 80	95%	0.030 - 1.92	0.020 - 0.030	0.26	0.20	0.27	1.05
Selenium	80 / 80	100%	1.20 - 12.6	0.30 - 0.50	5.21	4.60	2.19	0.42
Silver	79 / 80	99%	0.017 - 3.69	0.0020 - 0.0050	0.78	0.68	0.64	0.83
Thallium [e]	60 / 60	100%	0.0050 - 0.15	0.0020 - 0.0050	0.024	0.020	0.024	0.97
Zinc [e]	60 / 60	100%	17.3 - 283	0.050 - 0.70	160	155	44.1	0.27

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

f. Methyl mercury was analyzed only in 2004. Method detection limits not provided by laboratory.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NR = not reported.

TABLE 10.3-15

Trace Elements in Fish Liver Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d,e]								
Antimony	5 / 20	25%	0.0050 - 0.0080	0.0050 - 0.0050	0.0034	0.0025	0.0017	0.50
Arsenic	20 / 20	100%	0.17 - 0.63	0.030 - 0.030	0.30	0.29	0.10	0.33
Cadmium	20 / 20	100%	0.0080 - 0.57	0.0050 - 0.0050	0.19	0.14	0.18	0.93
Copper	20 / 20	100%	10.5 - 347	0.070 - 0.70	90.5	52.6	94.0	1.04
Lead	20 / 20	100%	0.0080 - 0.24	0.0070 - 0.0070	0.078	0.064	0.062	0.79
Mercury	20 / 20	100%	0.061 - 0.93	0.00080 - 0.00080	0.29	0.17	0.28	0.97
Methyl mercury [f]	18 / 18	100%	0.047 - 0.84	NR - NR	0.23	0.15	0.23	0.99
Nickel	20 / 20	100%	0.14 - 1.92	0.030 - 0.030	0.44	0.35	0.40	0.91
Selenium	20 / 20	100%	2.60 - 12.5	0.40 - 0.40	5.51	5.10	2.30	0.42
Silver	20 / 20	100%	0.081 - 1.79	0.0040 - 0.0040	0.65	0.51	0.52	0.81

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

f. Methyl mercury was analyzed only in 2004. Method detection limits not provided by laboratory.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NR = not reported.

TABLE 10.3-16

Trace Elements in Fish Liver Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2005

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	2 / 40	5%	0.0080 - 0.011	0.0080 - 0.0080	0.0043	0.0040	0.0013	0.29
Arsenic	40 / 40	100%	0.13 - 0.59	0.050 - 0.050	0.32	0.32	0.12	0.37
Beryllium	0 / 40	0%	NA - NA	0.0030 - 0.0030	NA	NA	NA	NA
Cadmium	39 / 40	98%	0.011 - 1.00	0.0040 - 0.0040	0.10	0.038	0.18	1.82
Chromium	27 / 40	68%	0.30 - 1.10	0.30 - 0.30	0.42	0.40	0.25	0.58
Copper	40 / 40	100%	1.90 - 330	0.020 - 0.20	53.5	36.3	58.9	1.10
Lead	10 / 40	25%	0.020 - 0.090	0.020 - 0.020	0.017	0.010	0.017	1.00
Mercury	40 / 40	100%	0.063 - 1.60	0.00060 - 0.00060	0.27	0.21	0.28	1.03
Molybdenum	39 / 40	98%	0.24 - 1.16	0.050 - 0.050	0.54	0.53	0.21	0.38
Nickel	40 / 40	100%	0.080 - 0.86	0.020 - 0.020	0.26	0.22	0.17	0.66
Selenium	40 / 40	100%	1.20 - 12.6	0.30 - 0.30	5.30	4.50	2.35	0.44
Silver	39 / 40	98%	0.017 - 1.86	0.0020 - 0.0020	0.58	0.59	0.41	0.72
Thallium	40 / 40	100%	0.0060 - 0.064	0.0020 - 0.0020	0.022	0.021	0.011	0.51
Zinc	40 / 40	100%	17.3 - 283	0.070 - 0.70	164	160	43.7	0.27

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.3-17

Trace Elements in Fish Liver Tissue from Lakes, Data Summary and Descriptive Statistics, Mine Study Area, 2006

Analyte	Frequency of Detection [a]	Percent Detected [b]	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [c] (mg/kg)	Median [c] (mg/kg)	Standard Deviation [c]	Coefficient of Variation
Trace Elements [d]								
Antimony	2 / 20	10%	0.33 - 0.45	0.020 - 0.020	0.048	0.010	0.12	2.47
Arsenic	20 / 20	100%	1.14 - 2.42	0.040 - 0.050	1.65	1.60	0.38	0.23
Beryllium [e]	2 / 20	10%	0.031 - 0.047	0.0030 - 0.0030	0.0053	0.0015	0.012	2.25
Cadmium	20 / 20	100%	0.023 - 0.38	0.0070 - 0.0080	0.081	0.047	0.088	1.09
Chromium [e]	0 / 20	0%	NA - NA	0.40 - 0.50	NA	NA	NA	NA
Copper	20 / 20	100%	20.6 - 114	0.020 - 0.020	61.3	59.2	30.8	0.50
Lead	15 / 20	75%	0.0060 - 0.43	0.0050 - 0.0060	0.045	0.0075	0.11	2.51
Mercury	27 / 27	100%	0.054 - 4.01	0.00050 - 0.0010	0.48	0.33	0.78	1.63
Molybdenum [e]	20 / 20	100%	0.41 - 1.01	0.020 - 0.020	0.63	0.63	0.15	0.24
Nickel	16 / 20	80%	0.030 - 0.48	0.030 - 0.030	0.072	0.040	0.12	1.64
Selenium	20 / 20	100%	2.80 - 9.80	0.40 - 0.50	4.71	4.35	1.73	0.37
Silver	20 / 20	100%	0.43 - 3.69	0.0040 - 0.0050	1.30	1.01	0.84	0.64
Thallium [e]	20 / 20	100%	0.0050 - 0.15	0.0040 - 0.0050	0.029	0.017	0.038	1.29
Zinc [e]	20 / 20	100%	74.4 - 262	0.050 - 0.060	154	151	45.2	0.29

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. Values rounded to the nearest percent.

c. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

d. Data (reported on a dry weight basis) represent dolly varden, northern pike, arctic grayling, and coho and chinook salmon.

e. Analyses for chromium was conducted only in 2005.

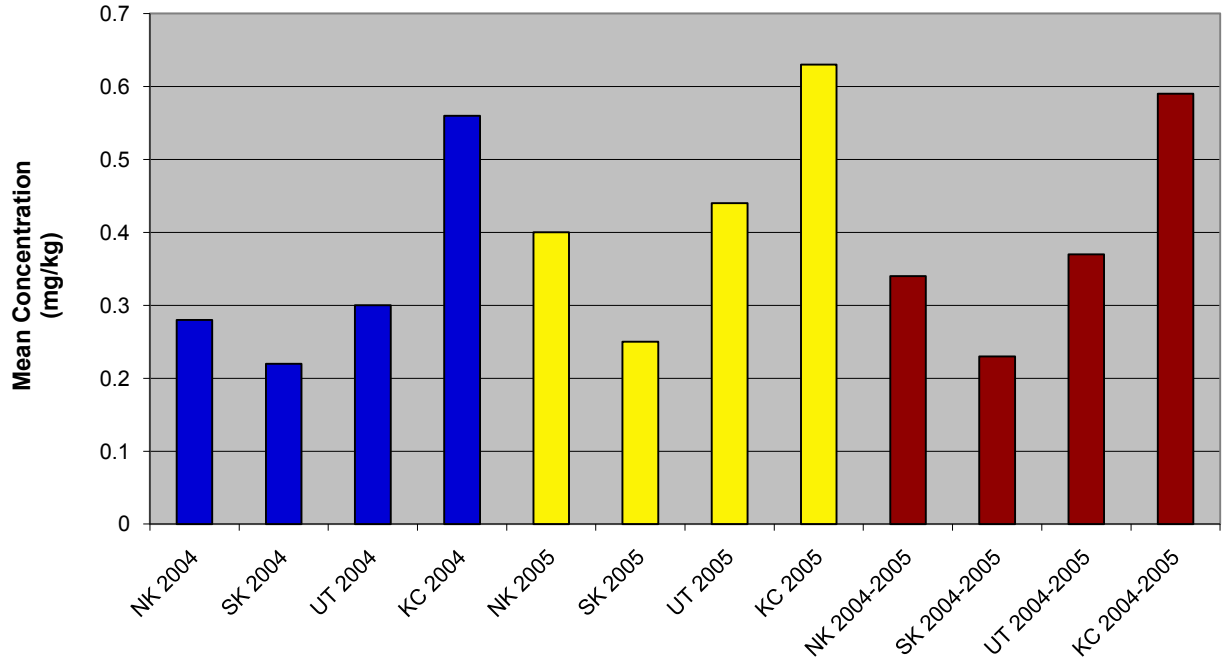
mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

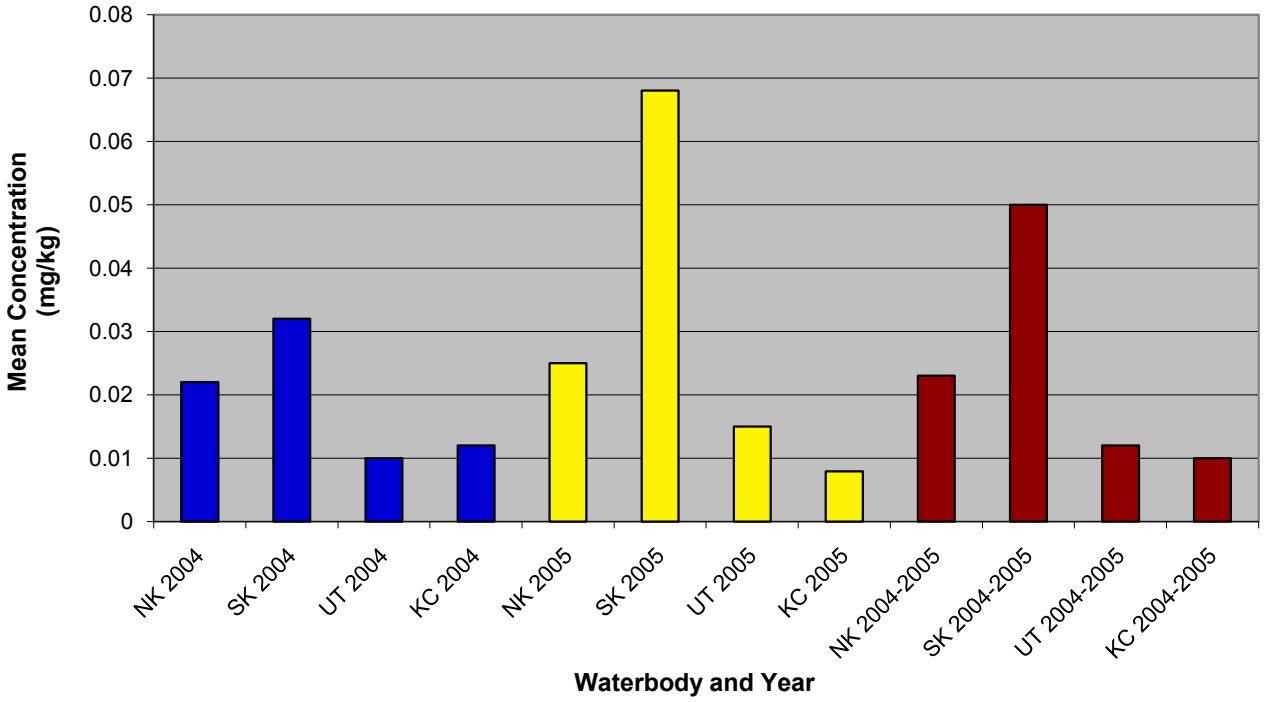
NA = not applicable; analyte not detected in any samples.

FIGURES



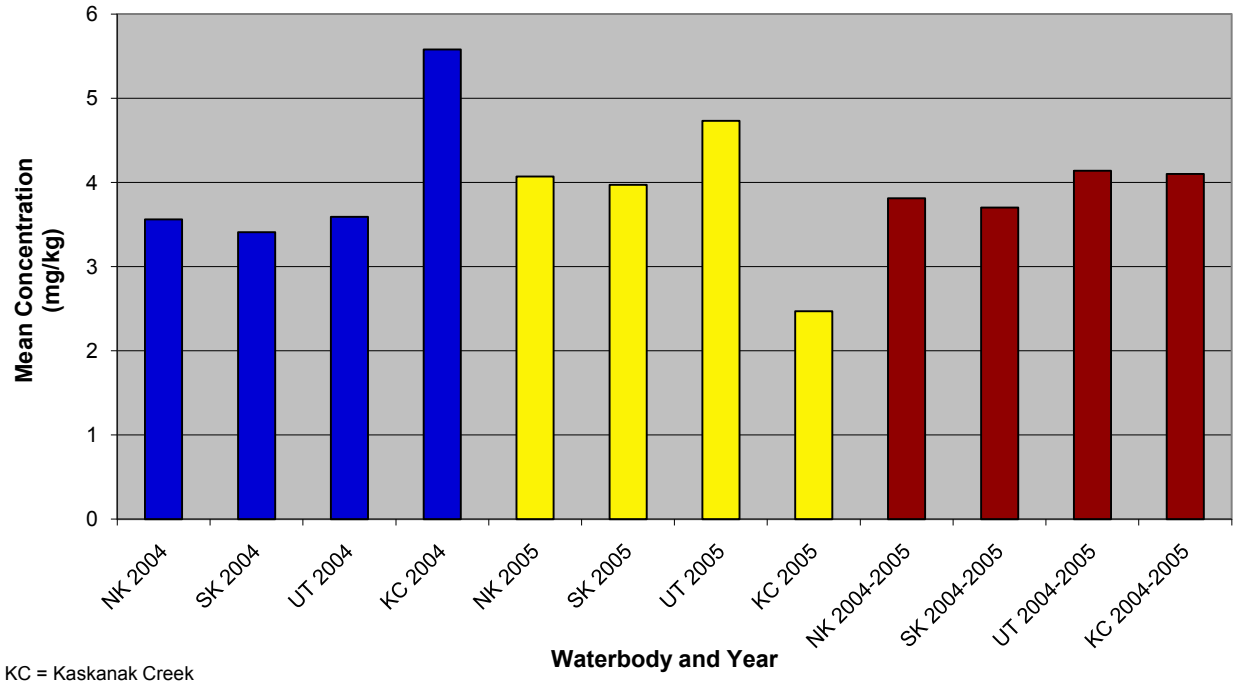
KC = Kaskanak Creek
NK = North Fork Koktuli River
SK = South Fork Koktuli River
UT = Upper Talarik Creek

FIGURE 10.3-1
Mean Arsenic Concentrations in Whole Fish, Mine Study Area, 2004-2005



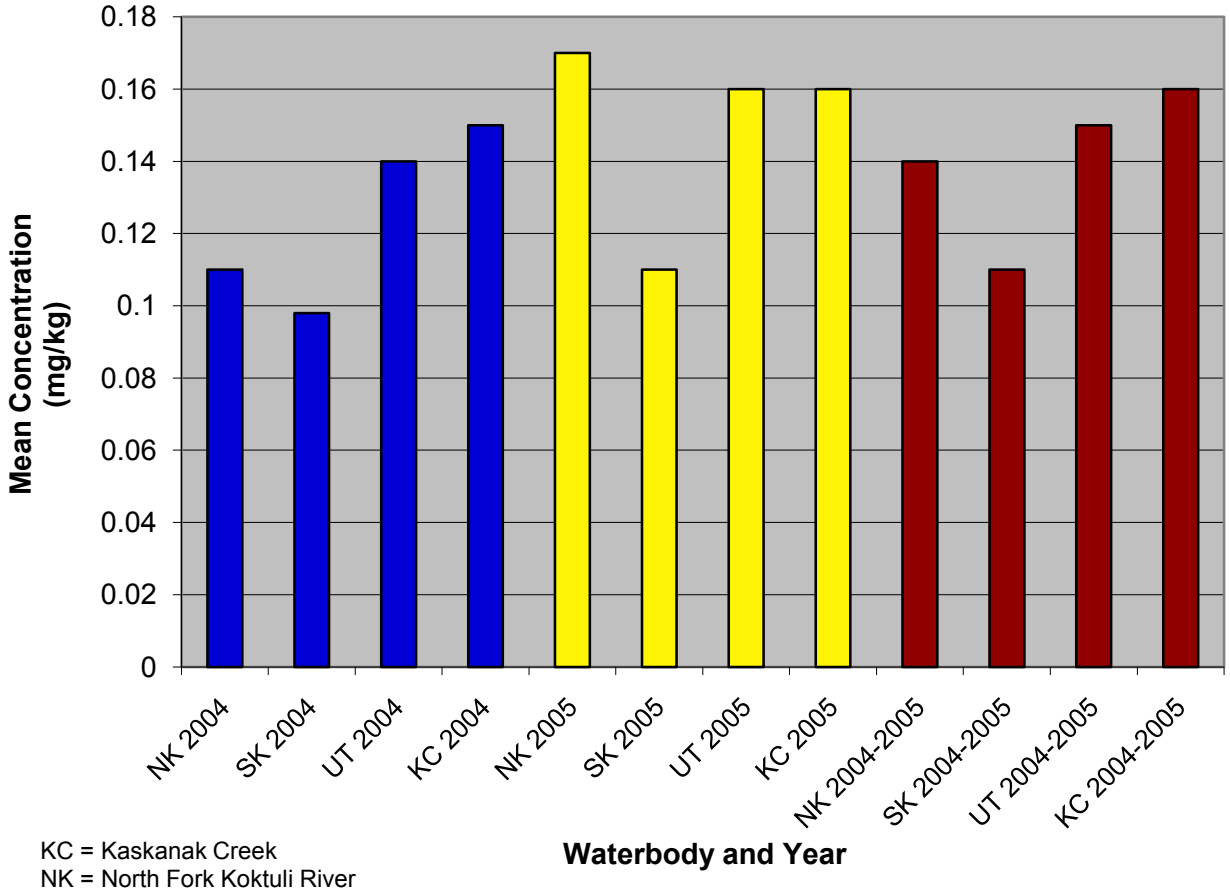
KC = Kaskanak Creek
NK = North Fork Koktuli River
SK = South Fork Koktuli River
UT = Upper Talarik Creek

FIGURE 10.3-2
Mean Cadmium Concentrations in Whole Fish, Mine Study Area, 2004-2005



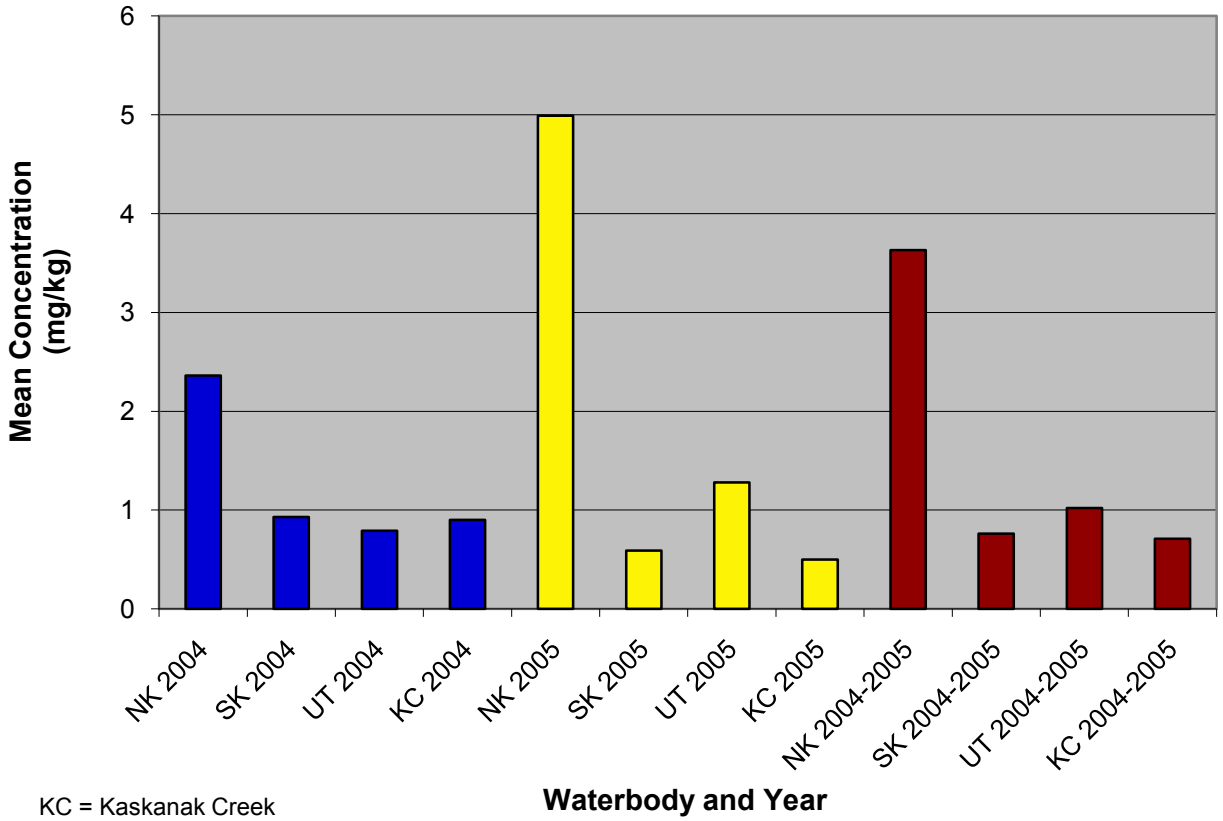
KC = Kaskanak Creek
NK = North Fork Koktuli River
SK = South Fork Koktuli River
UT = Upper Talarik Creek

FIGURE 10.3-3
Mean Copper Concentrations in Whole Fish, Mine Study Area, 2004-2005



KC = Kaskanak Creek
NK = North Fork Koktuli River
SK = South Fork Koktuli River
UT = Upper Talarik Creek

FIGURE 10.3-4
Mean Mercury Concentrations in Whole Fish, Mine Study Area, 2004-2005



KC = Kaskanak Creek
NK = North Fork Koktuli River
SK = South Fork Koktuli River
UT = Upper Talarik Creek

FIGURE 10.3-5
Mean Nickel Concentrations in Whole Fish, Mine Study Area, 2004-2005

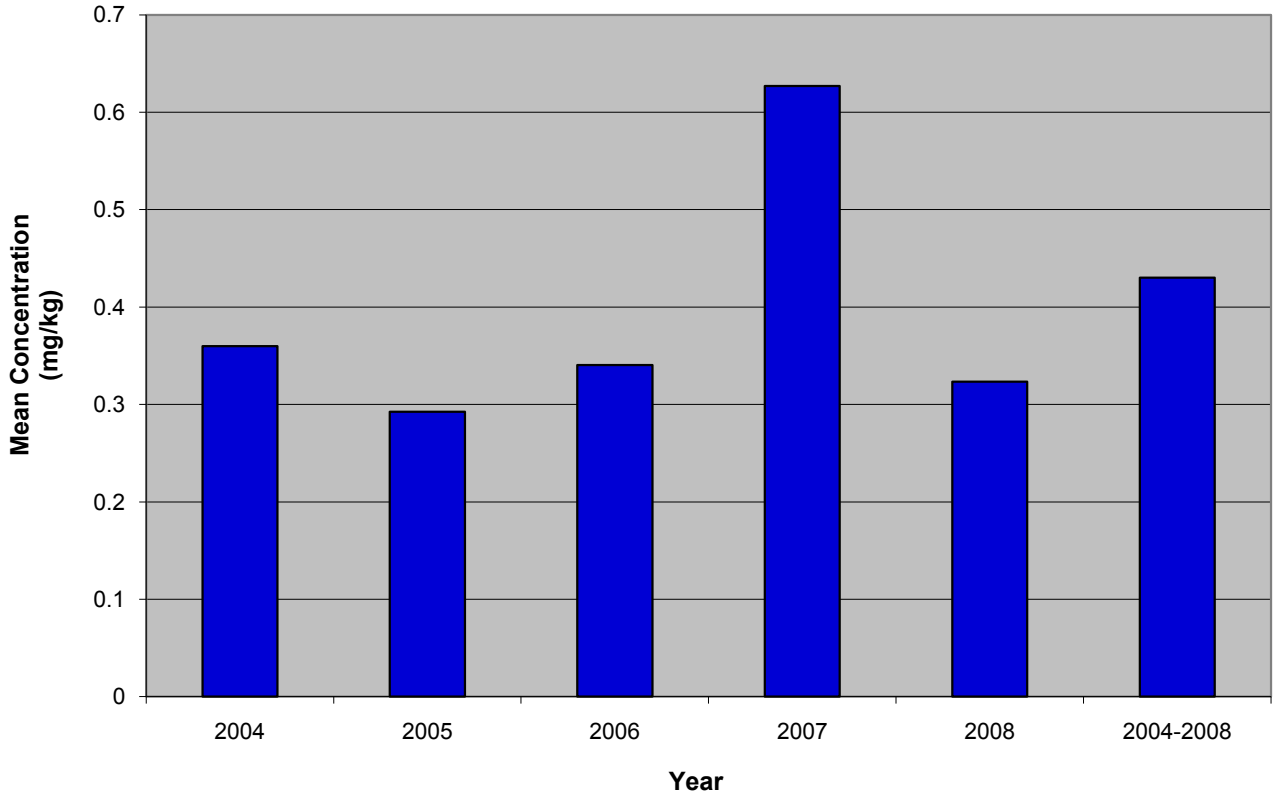


FIGURE 10.3-6
Mean Arsenic Concentrations in Fish Muscle Tissue, Mine Study Area, 2004-2008

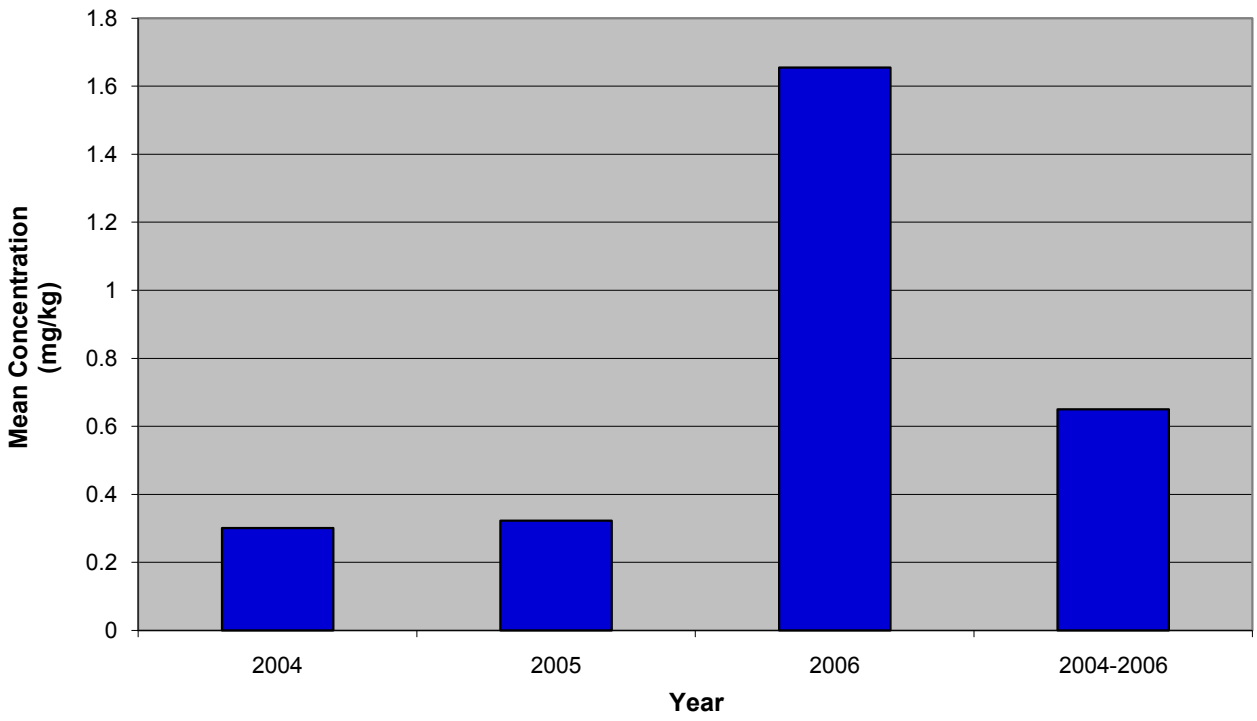


FIGURE 10.3-7
Mean Arsenic Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

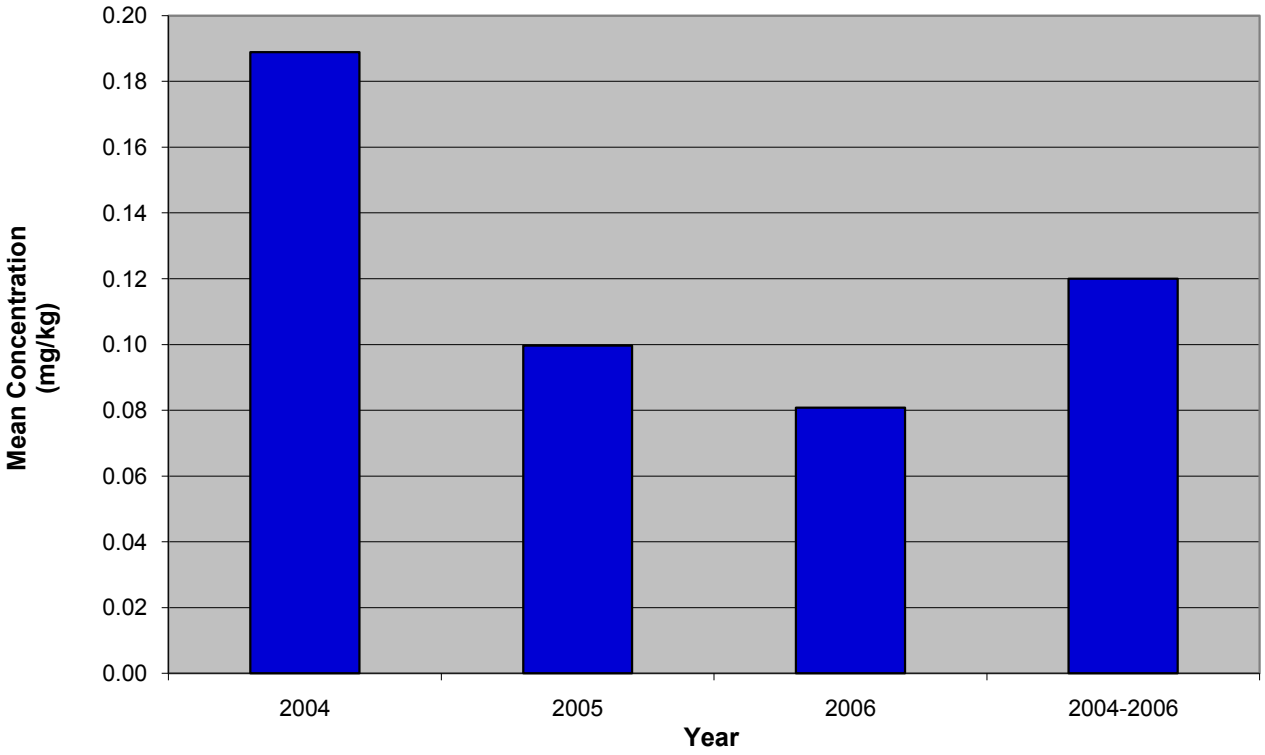


FIGURE 10.3-8
Mean Cadmium Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

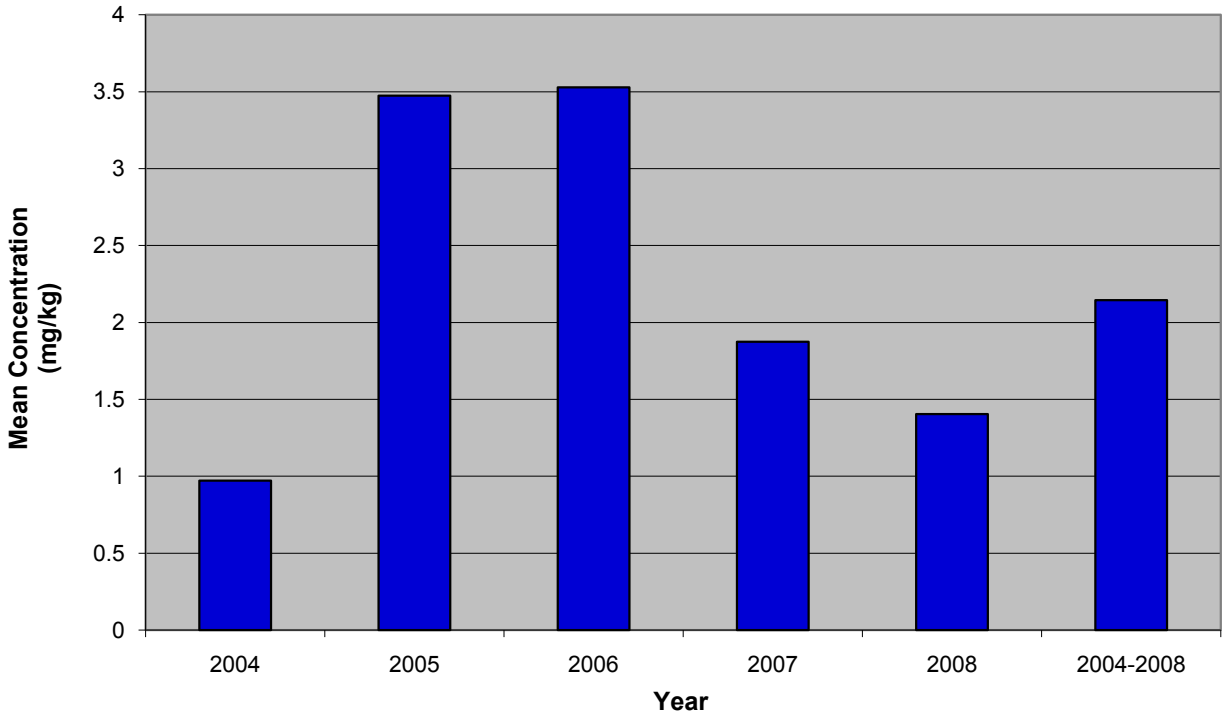


FIGURE 10.3-9
Mean Copper Concentrations in Fish Muscle Tissue, Mine Study Area, 2004-2008

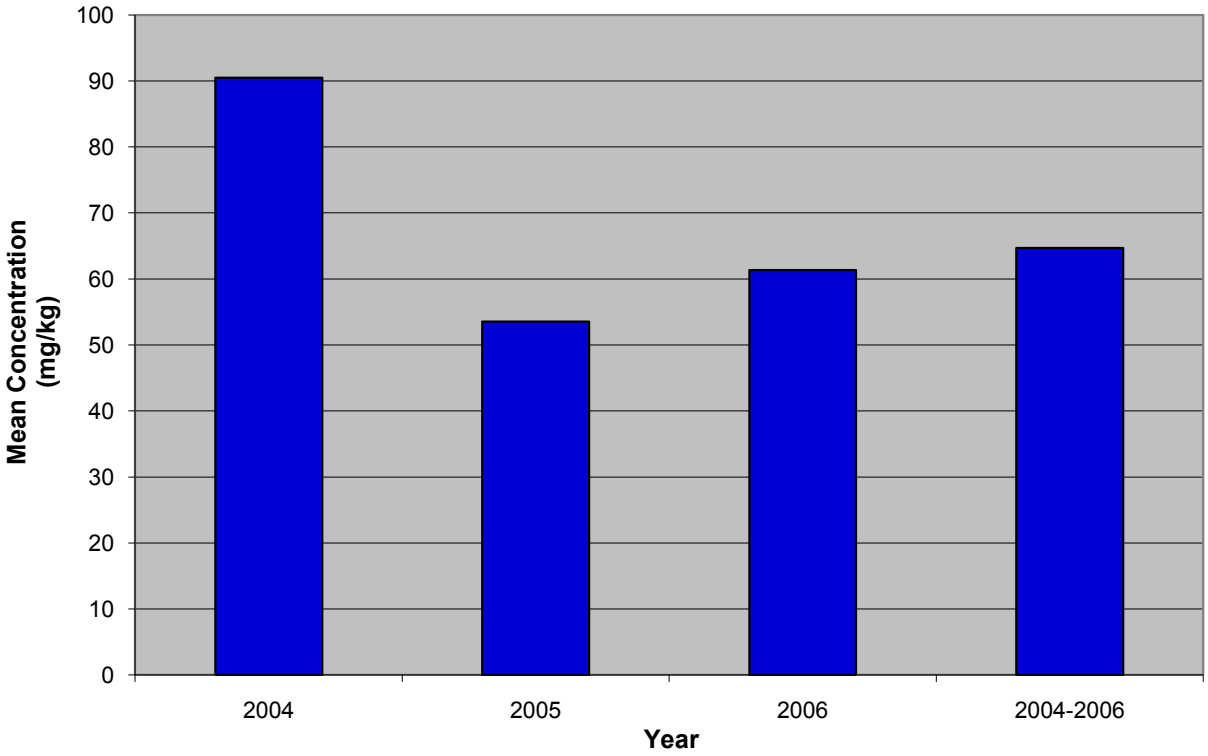


FIGURE 10.3-10
Mean Copper Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

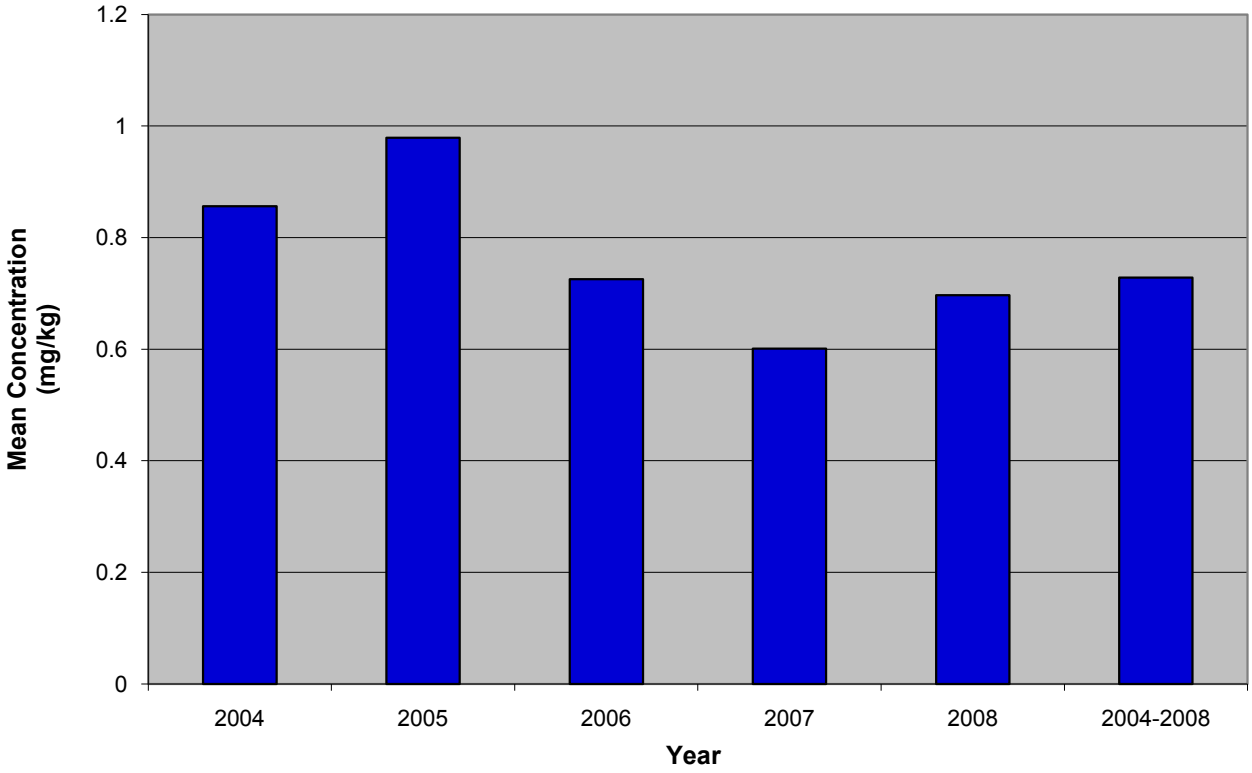


FIGURE 10.3-11
Mean Mercury Concentrations in Fish Muscle Tissue, Mine Study Area, 2004-2008

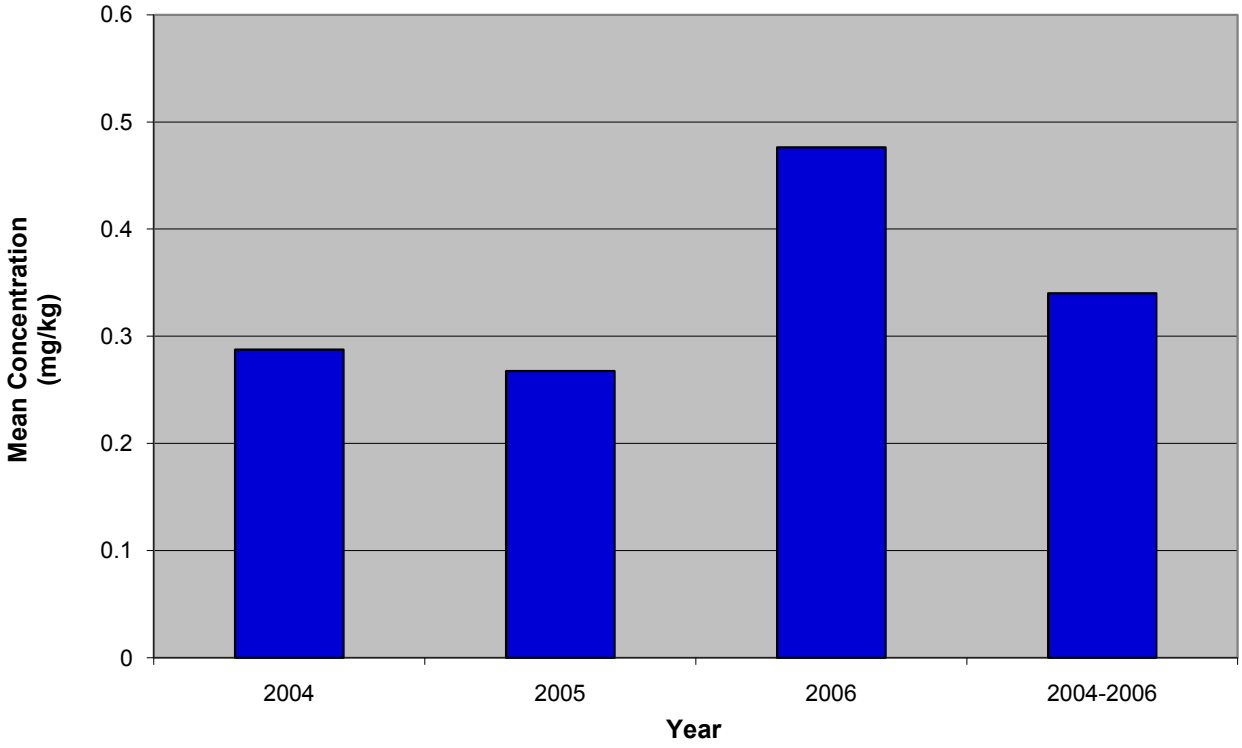


FIGURE 10.3-12
Mean Mercury Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

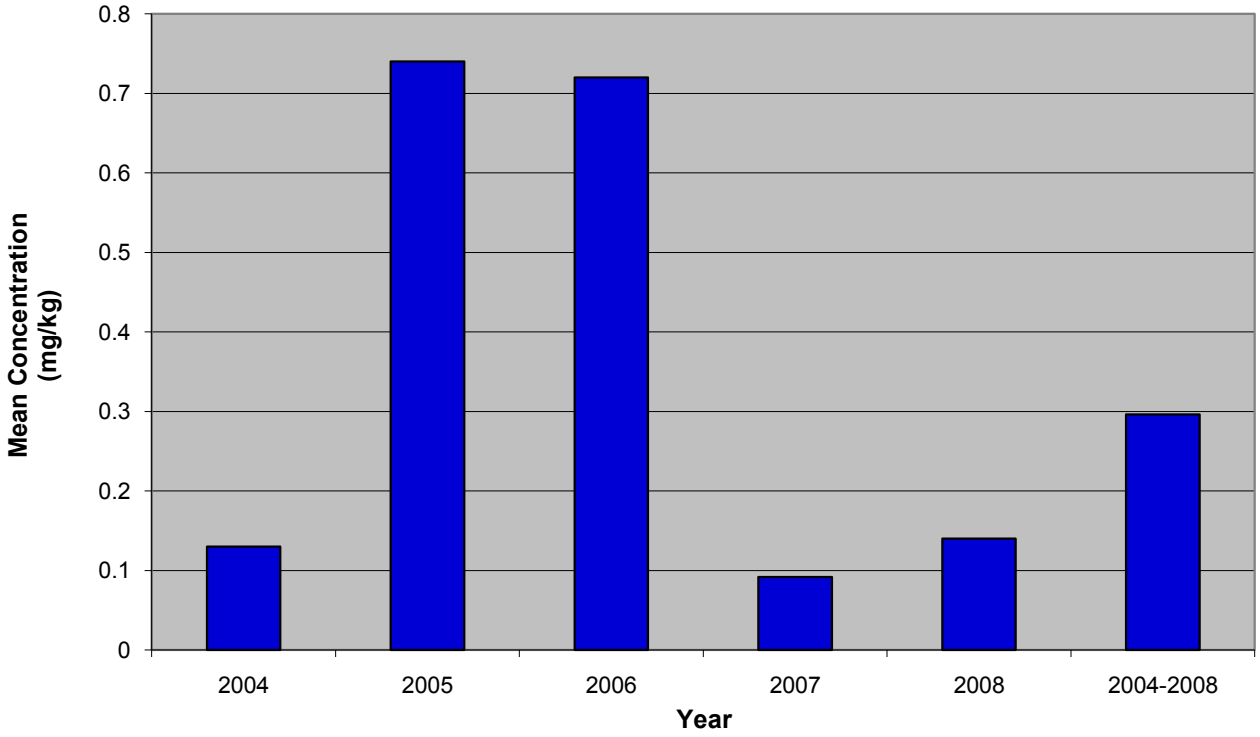


FIGURE 10.3-13
Mean Nickel Concentrations in Fish Muscle Tissue, Mine Study Area, 2004-2008

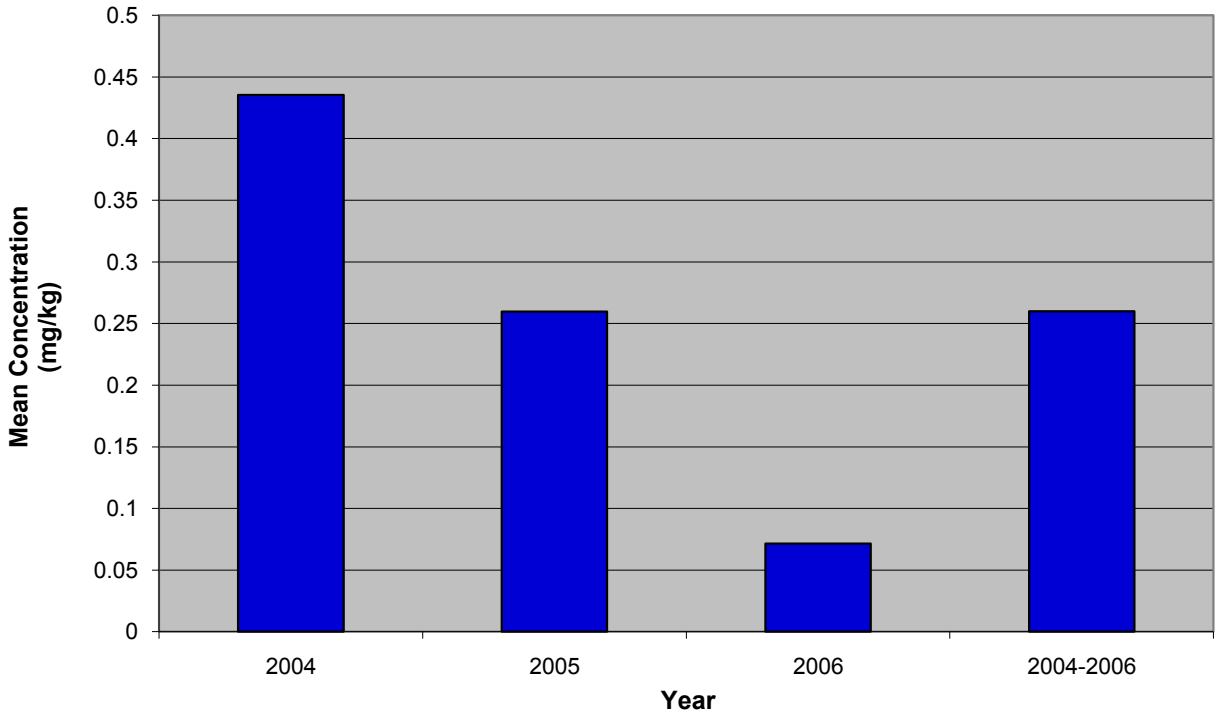


FIGURE 10.3-14
Mean Nickel Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

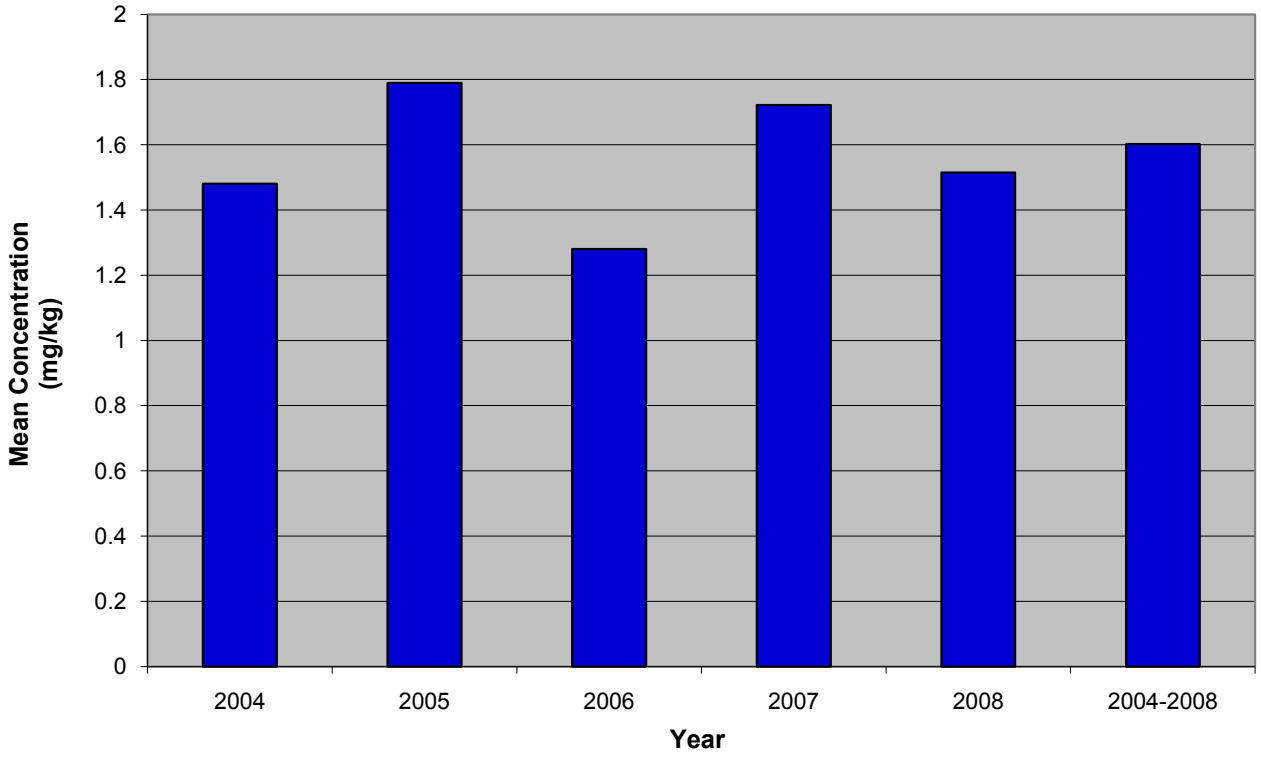


FIGURE 10.3-15
Mean Selenium Concentrations in Fish Muscle Tissue, Mine Study Area, 2004-2008

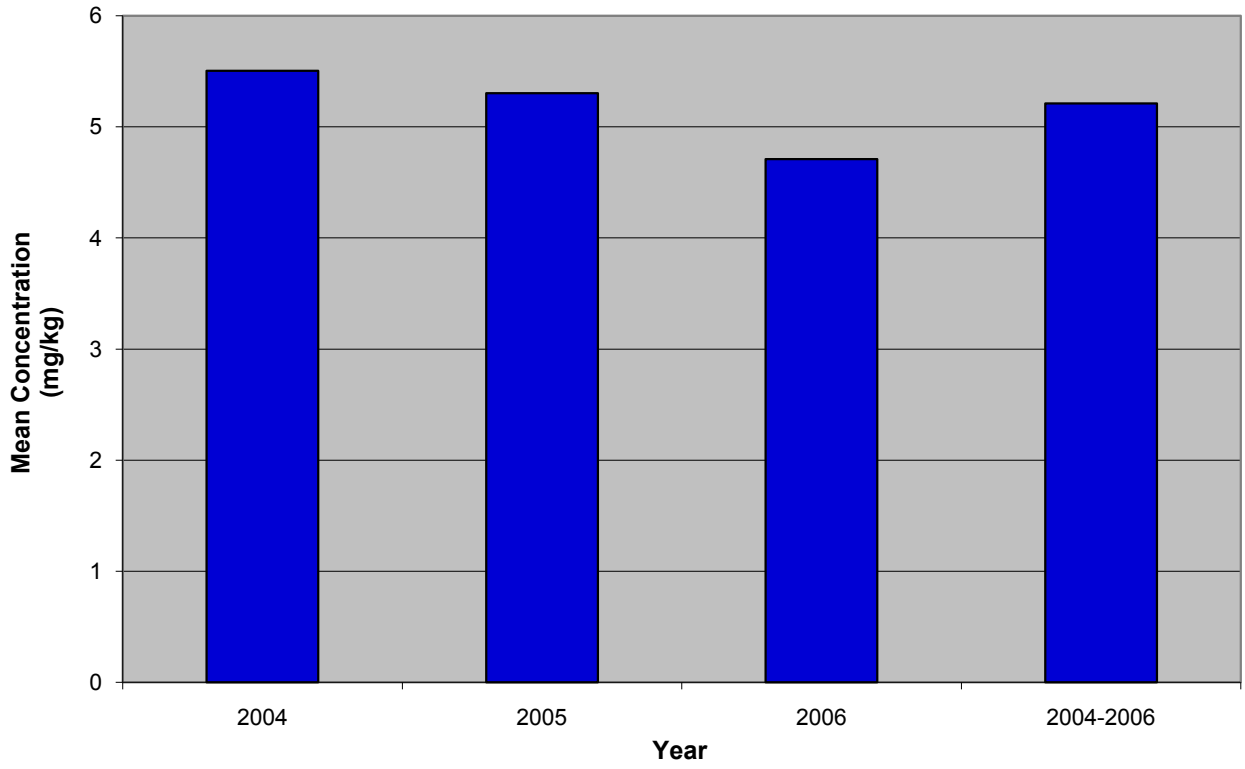


FIGURE 10.3-16
Mean Selenium Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

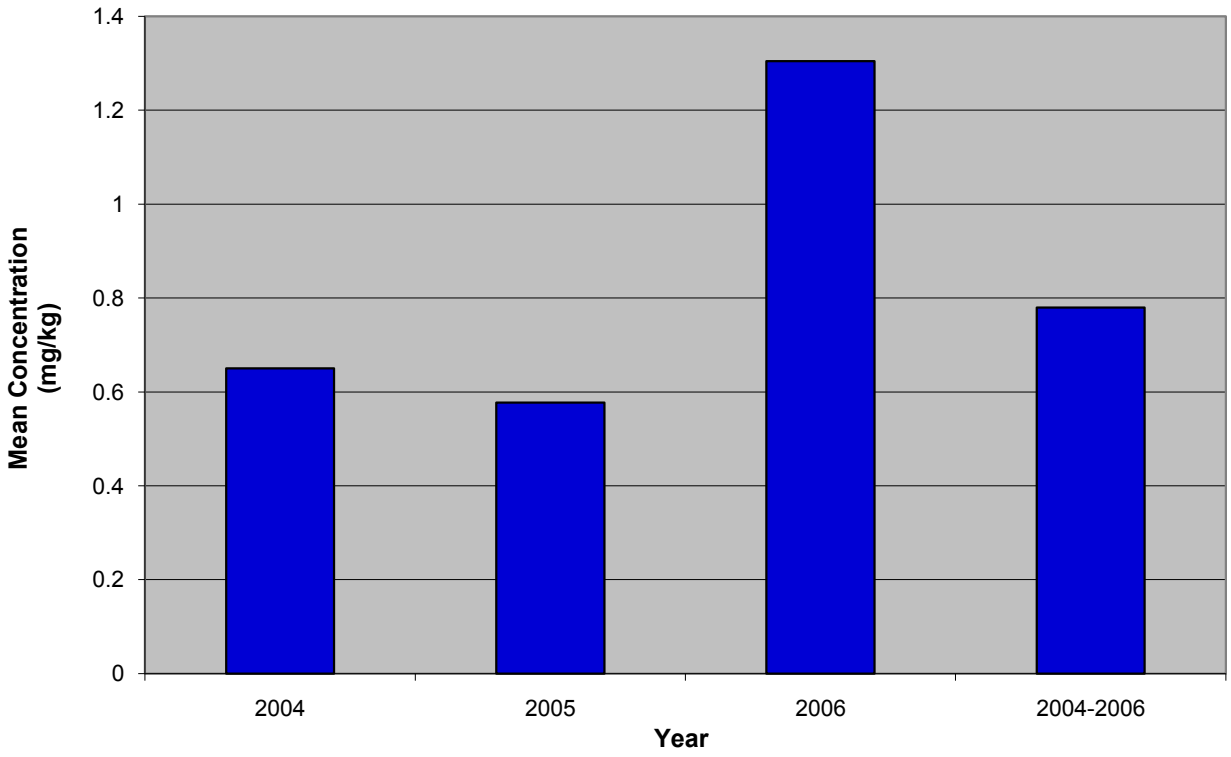


FIGURE 10.3-17
Mean Silver Concentrations in Fish Liver Tissue, Mine Study Area, 2004-2006

APPENDICES

APPENDIX 10.3A

Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2007

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Big Wiggly Lake (BWL)-(various Whitefish genera)-MUSCLE-Age ADULT																	
Sample Date	**Fish ID #**																
08/25/07	10	19.6	**0.01**	0.19	0.003	**0.005**	**0.25**	1.22	0.019	0.362		**0.01**	**0.015**	**0.5**	**0.003**	0.011	19.7
08/25/07	11	20.4	**0.01**	0.16	**0.001**	**0.005**	**0.25**	1.1	0.018	0.384		**0.01**	**0.015**	**0.5**	**0.003**	0.019	19.9
08/25/07	12	20	**0.01**	0.22	0.002	**0.005**	**0.25**	1.1	0.033	0.4		**0.01**	**0.015**	**0.45**	**0.003**	0.027	18.5
08/25/07	13	19.8	**0.01**	0.12	**0.001**	**0.005**	**0.25**	1.07	0.046	0.37		**0.01**	**0.015**	1.2	**0.003**	0.024	16.5
08/25/07	14	20.2	**0.01**	0.29	0.004	**0.005**	**0.25**	1.1	0.06	0.544		**0.01**	**0.015**	**0.5**	**0.003**	0.019	16.9
09/17/07	6	19.3	**0.01**	0.16	**0.001**	**0.005**	**0.25**	1.19	0.024	0.455		**0.01**	0.1	0.7	**0.003**	0.014	14.4
09/17/07	7	19.5	**0.01**	0.2	**0.001**	**0.005**	**0.25**	0.97	0.073	0.512		**0.01**	0.1	0.8	**0.003**	0.017	14.6
09/17/07	8	17.4	**0.01**	0.2	**0.001**	**0.0045**	**0.25**	1.04	**0.0095**	0.387		**0.01**	0.15	1	**0.003**	0.021	19.1
09/17/07	9	17.3	**0.01**	0.19	**0.001**	**0.005**	**0.25**	1.01	0.037	0.519		**0.01**	0.16	0.7	**0.003**	0.021	14.5
09/17/07	15	19.3	**0.01**	0.27	**0.001**	**0.005**	**0.25**	1	0.064	0.762		**0.01**	**0.02**	0.8	**0.003**	0.019	12.6
Mean		19.3	0.01	0.20	0.0016	0.0050	0.25	1.1	0.038	0.47		0.01	0.06	0.7	0.003	0.019	16.7
Median		19.55	0.01	0.195	0.001	0.0050	0.25	1.085	0.035	0.4275		0.01	0.0175	0.7	0.003	0.019	16.7
St. Deviation		1.1	0	0.05	0.0011	0.0002	0	0.1	0.022	0.123	NA	0	0.06	0.2	0	0.005	2.6
# of values		10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10
Minimum		17.3	0.01	0.12	0.001	0.0045	0.25	0.97	0.0095	0.362		0.01	0.015	0.45	0.003	0.011	12.6
Maximum		20.4	0.01	0.29	0.004	0.005	0.25	1.22	0.073	0.762		0.01	0.16	1.2	0.003	0.027	19.9
% of values undetected			100%		70%	100%	100%		10%			100%	60%	40%	100%		
# of values between MDL and MRL				10	3				2				4	4		5	
Big Wiggly Lake (BWL)-Esox lucius linnaeus-LIVER-Age ADULT																	
Sample Date	**Fish ID #**																
08/30/04	1	27.5	0.005	0.3		0.087		45.6	0.061	0.934	0.72		0.36	5.4	0.499		
08/30/04	2	29.1	**0.0025**	0.2		0.008		10.5	0.039	0.159	0.156014		0.16	2.6	0.081		
08/30/04	3	28.8	**0.0025**	0.17		0.008		11.6	0.018	0.189	0.191667		0.19	3.2	0.147		
08/30/04	4	31.1	0.007	0.26		0.034		19	0.008	0.29	0.353698		0.14	3.4	0.15		
08/30/04	5	27.8	**0.0025**	0.25		0.079		41.7	0.05	0.561	0.431655		0.22	4.2	0.528		
08/30/04	6	30.9	**0.0025**	0.28		0.138		18.4	0.049	0.178	0.142071		0.19	3.6	0.274		
08/30/04	7	27.2	**0.0025**	0.29		0.057		59.5	0.027	0.497	0.389706		0.21	4.2	1.68		
08/30/04	8	27.9	**0.0025**	0.27		0.079		16.9	0.027	0.933	0.835125		0.33	4.7	0.14		
08/30/04	9	35.8	**0.0025**	0.19		0.016		14.2	0.028	0.105	0.132961		0.22	3.5	0.2		
08/30/04	10	26.2	**0.0025**	0.2		0.027		23.5	0.016	0.246	0.206489		0.24	3.6	0.556		
08/22/05	1	27.5	**0.004**	0.19	**0.0015**	0.028	0.8	4.5	**0.01**	0.429		0.33	0.11	4	0.017	0.014	170
08/22/05	2	29.6	**0.004**	0.21	**0.0015**	0.025	0.4	11.8	**0.01**	0.244		0.44	0.19	3.1	0.072	0.021	162
08/22/05	3	28.5	**0.004**	0.2	**0.0015**	0.024	0.3	11.3	**0.01**	0.283		0.3	0.24	3.3	0.067	0.013	139
08/22/05	4	26.8	**0.004**	0.15	**0.0015**	0.038	0.6	19.3	**0.01**	0.254		0.31	0.22	3.6	0.257	0.016	146
08/22/05	5	27.6	**0.004**	0.19	**0.0015**	0.023	0.5	9.71	**0.01**	0.298		0.38	0.34	3.4	0.072	0.019	147
08/22/05	6	29.9	**0.004**	0.13	**0.0015**	0.013	0.4	21.4	**0.01**	0.234		0.38	0.22	3.6	0.239	0.012	168
08/22/05	7	27.7	**0.004**	0.21	**0.0015**	0.011	0.6	23.5	**0.01**	0.163		0.5	0.2	4.7	0.167	0.015	147
08/22/05	8	28.5	**0.004**	0.2	**0.0015**	0.022	0.8	34.4	**0.01**	0.285		0.43	0.21	4.2	0.592	0.016	166
08/22/05	9	22.2	**0.004**	0.14	**0.0015**	**0.002**	0.6	1.9	**0.01**	0.91		**0.025**	0.46	1.2	**0.001**	0.019	17.3
08/22/05	10	30.7	**0.004**	0.2	**0.0015**	0.037	0.4	12.4	**0.01**	0.207		0.24	0.29	3.7	0.294	0.011	129
Mean		28.6	0.0036	0.21	0.0015	0.04	0.54	20.6	0.021	0.37	0.356	0.33	0.24	3.7	0.3	0.016	139
Median		28.2	0.004	0.2	0.0015	0.026	0.55	17.65	0.01	0.2685	0.280093	0.355	0.22	3.6	0.1835	0.0155	147
St. Deviation		2.6	0.0011	0.05	0	0.03	0.17	14.5	0.016	0.264	0.248	0.13	0.08	0.9	0.37	0.003	45
# of values		20	20	20	10	20	10	20	20	20	10	10	20	20	20	10	10
Minimum		22.2	0.0025	0.13	0.0015	0.002	0.3	1.9	0.008	0.105	0.132961	0.025	0.11	1.2	0.001	0.011	17.3
Maximum		35.8	0.007	0.3	0.0015	0.138	0.8	59.5	0.061	0.934	0.835125	0.5	0.46	5.4	1.68	0.021	170
% of values undetected			90%		100%	5%			50%			10%			5%		
# of values between MDL and MRL			2	20		5	4		3				6		1	9	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Big Wiggly Lake (BWL)-Esox lucius linnaeus-MUSCLE-Age ADULT																	
Sample Date	**Fish ID #**																
08/30/04	1	20.3	**0.004**	**0.28**		**0.008**		1.23	**0.003**	2.206	3.064039		**0.18**	1	**0.0015**		
08/30/04	2	22.2	**0.004**	**0.2**		**0.003**		0.69	**0.003**	0.706	0.806306		**0.1**	1.1	**0.007**		
08/30/04	3	22.4	**0.004**	**0.14**		**0.003**		0.75	**0.003**	0.716	1.133929		**0.06**	1	**0.0015**		
08/30/04	4	21.4	**0.004**	**0.24**		**0.006**		1.01	**0.003**	1.68	2.168224		**0.07**	**0.9**	**0.0015**		
08/30/04	5	21.2	**0.004**	**0.2**		**0.003**		0.96	**0.003**	1.92	2.235849		**0.08**	1.1	**0.0015**		
08/30/04	6	22.7	**0.004**	**0.27**		**0.008**		0.9	**0.003**	0.666	0.577093		**0.1**	1.1	**0.0015**		
08/30/04	7	20.8	**0.004**	**0.28**		**0.003**		0.78	**0.003**	1.49	1.596154		**0.12**	1.1	**0.0015**		
08/30/04	8	20.3	**0.004**	**0.22**		**0.009**		0.79	**0.003**	2.4	2.620690		**0.11**	**0.9**	**0.0015**		
08/30/04	9	21.8	**0.004**	**0.13**		**0.003**		1.11	**0.003**	0.624	0.779817		**0.12**	1	**0.0015**		
08/30/04	10	21.6	**0.004**	**0.29**		0.039		1.53	**0.003**	1.01	0.319907		0.29	**0.2**	**0.018**		
08/22/05	1	20.5	**0.004**	**0.17**	**0.0015**	**0.002**	0.5	2.33	**0.01**	1.72		**0.025**	0.5	1.2	**0.002**	**0.015**	21.2
08/22/05	2	20.3	**0.004**	**0.11**	**0.0015**	**0.002**	0.5	3.96	**0.01**	0.821		**0.025**	0.32	1.1	**0.001**	0.021	19.2
08/22/05	3	21.2	**0.004**	**0.2**	**0.0015**	**0.002**	0.7	1.03	**0.01**	1.43		**0.025**	0.35	1.4	**0.001**	**0.019**	18
08/22/05	4	20.8	**0.004**	**0.13**	**0.0015**	**0.002**	0.5	1.02	**0.01**	8.16		**0.025**	0.24	1.3	**0.002**	**0.017**	15.9
08/22/05	5	21.1	**0.004**	**0.13**	**0.0015**	**0.002**	0.5	2.71	**0.01**	1.12		**0.025**	0.29	1.3	**0.001**	**0.016**	17.6
08/22/05	6	22.0	**0.004**	**0.15**	**0.0015**	**0.002**	0.6	3.15	**0.01**	1.06		**0.025**	0.56	1.3	**0.003**	**0.019**	22.6
08/22/05	7	22.8	**0.004**	**0.14**	**0.0015**	**0.002**	0.7	4.93	**0.01**	0.501		**0.025**	0.75	1.1	**0.003**	**0.016**	16.7
08/22/05	8	21.8	**0.004**	**0.1**	**0.0015**	**0.002**	0.8	2.59	**0.01**	0.876		**0.025**	0.51	1.3	**0.005**	**0.019**	17.9
08/22/05	9	33.4	**0.004**	**0.14**	**0.0015**	**0.01**	0.5	18.1	**0.01**	0.2		0.25	**0.19**	3.2	0.097	**0.012**	148
08/22/05	10	22.3	**0.004**	**0.13**	**0.0015**	**0.002**	0.6	0.97	**0.01**	0.792		**0.025**	0.39	1.1	**0.002**	**0.019**	19.8
08/25/07	1	21.6	**0.01**	**0.09**	**0.002**	0.03	**0.25**	0.97	0.023	0.609		**0.01**	**0.015**	**0.5**	**0.003**	0.021	19.5
08/25/07	2	20.2	1.12	**0.41**	0.114	0.12	**0.25**	1.44	1.08	0.576		0.39	1.04	1.6	0.105	0.383	20
08/25/07	3	21.5	**0.01**	**0.18**	**0.001**	**0.005**	**0.25**	0.96	**0.018**	0.817		**0.01**	**0.015**	**0.5**	**0.003**	0.022	19.2
08/25/07	4	19.9	**0.01**	**0.23**	**0.007**	**0.005**	**0.25**	1.29	**0.017**	0.548		**0.01**	**0.015**	**0.5**	**0.003**	0.021	20.6
08/25/07	5	20.8	**0.01**	**0.2**	**0.003**	**0.005**	**0.25**	0.89	0.02	0.649		**0.01**	**0.015**	**0.5**	**0.003**	0.023	17.5
08/25/07	6	22	**0.01**	**0.13**	**0.004**	**0.005**	**0.25**	1.02	0.022	0.766		**0.01**	**0.015**	1.6	**0.003**	0.021	18.3
08/25/07	7	20.6	**0.01**	**0.11**	**0.001**	**0.005**	**0.25**	1.25	0.023	0.591		**0.01**	**0.015**	**0.5**	**0.003**	**0.015**	20.5
08/25/07	8	21.6	**0.01**	**0.11**	**0.001**	**0.005**	**0.25**	1.01	**0.016**	0.616		**0.01**	**0.015**	**0.5**	**0.003**	**0.016**	19.3
08/25/07	9	20.5	**0.01**	**0.1**	**0.003**	**0.005**	**0.25**	0.98	0.02	1.58		**0.01**	**0.015**	**0.5**	**0.003**	**0.017**	20.6
08/25/07	15	19.8	**0.01**	**0.2**	**0.001**	**0.005**	**0.25**	0.91	0.046	0.565		**0.01**	**0.015**	**0.45**	**0.003**	**0.014**	18
08/25/07	16	17.8	**0.01**	**0.25**	**0.001**	**0.005**	**0.25**	0.8	0.069	1.29		**0.01**	**0.015**	**0.45**	**0.003**	**0.016**	21.6
08/25/07	17	20.3	**0.01**	**0.35**	**0.001**	**0.005**	**0.25**	1.18	0.053	1.2		**0.01**	**0.015**	1.1	**0.0025**	0.025	20.9
09/13/08	1	20.6	**0.004**	**0.19**	**0.0035**	**0.009**	**0.035**	1.12	0.159	1.58		**0.004**	**0.06**	2.29	**0.0035**	0.084	14.9
09/13/08	2	21.3	**0.0235**	**0.18**	**0.0035**	**0.0025**	**0.035**	0.8	0.143	0.724		**0.021**	**0.04**	**0.47**	**0.007**	0.033	17.8
10/01/08	3	21.5	**0.004**	**0.23**	**0.0035**	**0.0025**	**0.09**	1.2	**0.008**	0.783		**0.011**	**0.02**	**0.67**	**0.0035**	**0.019**	17.5
10/01/08	4	20.7	**0.004**	**0.2**	**0.0035**	**0.0025**	**0.035**	1.2	**0.007**	0.247		**0.004**	**0.02**	**0.9**	**0.0035**	**0.019**	30.9
10/01/08	5	21.4	**0.004**	**0.19**	**0.0035**	**0.0025**	**0.08**	1.07	**0.007**	2.08		**0.004**	**0.02**	**0.65**	**0.0035**	**0.018**	15.8
10/02/08	6	18.7	**0.004**	**0.22**	**0.0035**	**0.0025**	**0.18**	1.09	**0.007**	1.05		**0.004**	**0.07**	**0.85**	**0.0035**	**0.011**	21.2
10/02/08	7	19.4	**0.004**	**0.18**	**0.0035**	**0.0025**	**0.1**	0.88	**0.002**	1.35		**0.004**	**0.02**	**0.82**	**0.0035**	**0.015**	23.6
Mean		21.3	0	0.19	0.0062	0.01	0.33	1.8	0	1.22	1.53	0.035	0.2	1	0.01	0.033	24
Median		21.2	0.004	0.19	0.0015	0.003	0.25	1.03	0.01	0.821	1.365041	0.01	0.07	1	0.003	0.019	19.3
St. Deviation		2.2	0.2	0.07	0.0208	0.02	0.22	2.8	0.2	1.26	0.947	0.081	0.2	0.5	0.02	0.068	24
# of values		39	39	39	29	39	29	39	39	39	10	29	39	39	39	29	29
Minimum		17.8	0.004	0.09	0.001	0.002	0.035	0.69	0.002	0.2	0.319907	0.004	0.015	0.2	0.001	0.011	14.9
Maximum		33.4	1.12	0.41	0.114	0.12	0.8	18.1	1.08	8.16	3.064039	0.39	1.04	3.2	0.105	0.383	148
% of values undetected			97%		79%	77%	52%		54%			86%	38%	26%	72%		
# of values between MDL and MRL				39	5	6	4		7			2	13	8	9	19	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Big Wiggly Lake (BWL)-Thymallus arcticus Pallus-Liver-Age JUV																	
Sample Date	**Fish ID #**																
08/31/06	1	35.7								0.334							
08/31/06	2	34.3															
08/31/06	3	29.3								0.48							
08/31/06	4	32.5															
08/31/06	5	30.1								0.363							
08/31/06	6	31.0								0.487							
08/31/06	7	31.5															
08/31/06	8	30.8															
08/31/06	9	30.4								0.363							
08/31/06	24									0.402							
08/31/06	78									0.515							
Mean		31.7								0.421							
Median		31								0.402							
St. Deviation		2.1	NA	NA	NA	NA	NA	NA	NA	0.072	NA	NA	NA	NA	NA	NA	NA
# of values		9	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0
Minimum		29.3								0.334							
Maximum		35.7								0.515							
% of values undetected																	
# of values between MDL and MRL																	
Big Wiggly Lake (BWL)-Thymallus arcticus Pallus-MUSCLE-Age ADULT																	
Sample Date	**Fish ID #**																
10/01/08	1	23	**0.004**	**0.15**	**0.0035**	**0.0025**	**0.035**	1.49	0.023	0.29		**0.004**	**0.02**	1.96	**0.0035**	**0.013**	15.1
Mean		23	0.004	0.15	0.0035	0.0025	0.035	1.49	0.023	0.29		0.004	0.02	1.96	0.0035	0.013	15.1
Median		23	0.004	0.15	0.0035	0.0025	0.035	1.49	0.023	0.29		0.004	0.02	1.96	0.0035	0.013	15.1
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
Minimum		23	0.004	0.15	0.0035	0.0025	0.035	1.49	0.023	0.29		0.004	0.02	1.96	0.0035	0.013	15.1
Maximum		23	0.004	0.15	0.0035	0.0025	0.035	1.49	0.023	0.29		0.004	0.02	1.96	0.0035	0.013	15.1
% of values undetected			100%		100%	100%	100%					100%	100%		100%		
# of values between MDL and MRL				1												1	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

Sample Date	Fish ID #	Total Solids (percent)	Antimony (mg/kg)	Arsenic (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Methyl Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Zinc (mg/kg)
Big Wiggly Lake (BWL)-Thymallus arcticus Pallus-MUSCLE-Age JUV																	
08/31/06	1	23.7	**0.003**	0.12	**0.001**	**0.003**	**0.2**	2.04	**0.01**	0.284		0.006	0.58	0.7	**0.0015**	0.012	16.5
08/31/06	2	23	**0.003**	0.08	**0.001**	**0.003**	**0.2**	3.22	**0.01**	0.226		0.014	1.32	0.9	**0.0015**	0.012	21.6
08/31/06	3	23.1	**0.003**	0.13	**0.001**	**0.003**	**0.2**	8.48	0.023	0.261		0.007	0.46	2.2	**0.0015**	0.011	21.2
08/31/06	4	22.8	**0.003**	0.12	**0.001**	**0.003**	**0.2**	2.86	0.019	0.262		0.009	0.62	2.3	**0.0015**	0.011	23.1
08/31/06	5	24.3	**0.003**	0.14	**0.001**	0.006	**0.2**	2.26	**0.01**	0.261		0.007	0.8	1.1	**0.0015**	0.009	17.6
08/31/06	6	22.7	**0.003**	0.14	**0.001**	**0.003**	**0.2**	2.24	**0.01**	0.263		**0.003**	0.74	0.9	**0.0015**	0.013	20.6
08/31/06	7	22.6	**0.003**	0.16	**0.001**	**0.003**	**0.2**	5.2	**0.01**	0.254		0.008	0.54	1.3	**0.0015**	0.011	25.3
08/31/06	8	20.8	**0.003**	0.15	**0.001**	**0.003**	**0.2**	3.6	**0.0095**	0.278		0.011	0.76	1.5	**0.0015**	0.013	24.6
08/31/06	9	24.1	**0.003**	0.06	**0.001**	**0.003**	**0.2**	3.91	**0.01**	0.201		**0.003**	0.34	0.9	**0.0015**	0.013	17
09/13/08	3	22	**0.004**	0.12	**0.0035**	**0.0025**	**0.035**	1.4	0.155	0.274		0.015	0.06	0.63	**0.0035**	0.009	31.1
10/02/08	2	21.4	**0.004**	0.27	**0.0035**	**0.0025**	**0.035**	2.38	0.005	0.368		0.016	0.1	2.35	**0.0035**	0.013	37.8
Mean		22.8	0.0032	0.14	0.0015	0.0032	0.17	3.42	0.02	0.267		0.009	0.6	1.3	0.0019	0.012	23.3
Median		22.8	0.003	0.13	0.001	0.003	0.2	2.86	0.01	0.262		0.008	0.58	1.1	0.0015	0.012	21.6
St. Deviation		1.1	0.0004	0.05	0.001	0.001	0.07	1.98	0.04	0.041	NA	0.005	0.4	0.7	0.0008	0.002	6.4
# of values		11	11	11	11	11	11	11	11	11	0	11	11	11	11	11	11
Minimum		20.8	0.003	0.06	0.001	0.0025	0.035	1.4	0.005	0.201		0.003	0.06	0.63	0.0015	0.009	16.5
Maximum		24.3	0.004	0.27	0.0035	0.006	0.2	8.48	0.155	0.368		0.016	1.32	2.35	0.0035	0.013	37.8
% of values undetected			100%		100%	91%	100%		64%			18%			100%		
# of values between MDL and MRL				11		1			1			9	2	5		11	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Black Lake (BL)-Esox lucius linnaeus-LIVER-Age ADULT																	
Sample Date	**Fish ID #**																
08/21/05	1	31	**0.004**	0.44	**0.0015**	0.033	**0.15**	40.4	0.02	0.108		0.74	0.27	4.4	0.84	0.02	151
08/21/05	2	32.4	**0.004**	0.33	**0.0015**	0.02	**0.15**	21.2	**0.01**	0.107		0.48	0.28	3.6	0.34	0.024	127
08/21/05	3	31.7	**0.004**	0.49	**0.0015**	0.025	**0.15**	37.7	0.03	0.137		0.54	0.19	3.6	0.923	0.025	161
08/21/05	4	34.7	**0.004**	0.36	**0.0015**	0.039	**0.15**	42.5	0.06	0.173		0.67	0.15	3.8	0.511	0.022	157
08/21/05	5	32.6	**0.004**	0.32	**0.0015**	0.038	0.3	51.5	0.09	0.138		0.7	0.86	4	0.77	0.027	162
08/21/05	6	32.8	**0.004**	0.40	**0.0015**	0.039	0.7	32.9	**0.01**	0.0823		0.69	0.10	3.3	0.790	0.025	151
08/21/05	7	30.8	**0.004**	0.45	**0.0015**	0.04	0.6	69.9	**0.01**	0.124		0.75	0.19	4.4	1.15	0.032	187
08/21/05	8	30.0	**0.004**	0.59	**0.0015**	0.034	0.6	82.1	0.06	0.117		0.69	0.13	4.5	0.735	0.031	159
08/21/05	9	27.8	**0.004**	0.54	**0.0015**	0.03	0.5	73.7	**0.01**	0.0863		0.69	0.25	4.4	0.924	0.028	178
08/21/05	10	30.4	**0.004**	0.43	**0.0015**	0.027	0.4	56.7	**0.01**	0.079		0.55	0.16	3.9	0.957	0.019	147
08/29/06	1	33.9	**0.01**	1.19	**0.0015**	0.056	**0.25**	44.7	0.01	0.0995		0.49	0.04	3.5	0.644	0.008	114
08/29/06	2	33.0	**0.01**	1.45	**0.0015**	0.047	**0.25**	62.4	**0.003**	0.106		0.62	**0.015**	3.9	1.08	0.015	147
08/29/06	3	32.4	**0.01**	1.4	**0.0015**	0.04	**0.25**	47	0.008	0.133		0.5	0.03	3.5	0.943	0.013	151
08/29/06	4	35.1	**0.01**	1.59	**0.0015**	0.032	**0.25**	56	0.006	0.0729		0.51	0.03	3.5	0.807	0.014	136
08/29/06	5	28.8	**0.01**	1.61	**0.0015**	0.04	**0.25**	68.8	**0.003**	0.117		0.74	0.03	4.2	1.67	0.018	154
08/29/06	6	29.4	**0.01**	1.49	**0.0015**	0.023	**0.25**	36.4	0.02	0.0751		0.41	0.03	2.8	0.65	0.005	74.4
08/29/06	7	40.3	**0.01**	1.72	**0.0015**	0.038	**0.25**	80.9	0.014	0.133		0.7	0.07	3.4	1.46	0.021	150
08/29/06	8	31.4	**0.01**	1.75	**0.0015**	0.054	**0.25**	63	**0.003**	0.101		0.7	0.05	3.6	1.81	0.014	193
08/29/06	9	26.2	**0.01**	2.17	**0.0015**	0.058	**0.25**	100	**0.003**	0.161		1.01	0.04	5	2.43	0.023	262
08/29/06	10	29.3	**0.01**	2.23	**0.0015**	0.042	**0.25**	34.6	**0.003**	0.0543		0.82	0.04	3.1	0.734	0.023	147
	Mean	31.7	0.007	1	0.0015	0.038	0.31	55	0.019	0.11		0.7	0.15	3.8	1.01	0.02	155
	Median	31.55	0.007	0.89	0.0015	0.0385	0.25	53.75	0.01	0.1075		0.69	0.085	3.7	0.8815	0.0215	151
	St. Deviation	3	0.003	0.7	0	0.01	0.16	20	0.024	0.03	NA	0.1	0.19	0.5	0.49	0.007	36
	# of values	20	20	20	20	20	20	20	20	20	0	20	20	20	20	20	20
	Minimum	26.2	0.004	0.32	0.0015	0.02	0.15	21.2	0.003	0.0543		0.41	0.015	2.8	0.34	0.005	74.4
	Maximum	40.3	0.01	2.23	0.0015	0.058	0.7	100	0.09	0.173		1.01	0.86	5	2.43	0.032	262
	% of values undetected		100%		100%		70%		50%				5%				
	# of values between MDL and MRL			8			2		4				15			8	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

Sample Date	Fish ID #	Total Solids percent	Antimony mg/kg	Arsenic mg/kg	Beryllium mg/kg	Cadmium mg/kg	Chromium mg/kg	Copper mg/kg	Lead mg/kg	Mercury mg/kg	Methyl Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Selenium mg/kg	Silver mg/kg	Thallium mg/kg	Zinc mg/kg
Black Lake (BL)-Esox lucius linnaeus-MUSCLE-Age ADULT																	
08/21/05	1	22.2	**0.004**	**0.45**	**0.0015**	**0.002**	**0.15**	1.62	0.03	0.334		**0.025**	1.58	1.4	**0.004**	**0.017**	19
08/21/05	2	21.7	**0.004**	**0.37**	**0.0015**	**0.002**	**0.3**	2.12	**0.01**	0.313		**0.025**	0.74	1.6	**0.002**	0.026	19.8
08/21/05	3	21.7	**0.004**	**0.41**	**0.0015**	**0.002**	**0.15**	1.31	**0.01**	0.345		**0.025**	0.25	1.2	**0.004**	0.023	18.1
08/21/05	4	22.2	**0.004**	0.51	**0.0015**	**0.002**	0.6	3.43	**0.01**	0.327		**0.025**	0.64	1.1	**0.002**	0.023	18.7
08/21/05	5	22.4	**0.004**	**0.42**	**0.0015**	**0.002**	**0.4**	9.11	**0.01**	0.291		**0.025**	0.97	**0.5**	**0.004**	0.028	19.1
08/21/05	6	22.1	**0.004**	0.52	**0.0015**	**0.002**	2.2	4.27	0.04	0.248		**0.025**	1.97	1.8	**0.001**	0.024	21.3
08/21/05	7	22.1	**0.004**	0.5	**0.0015**	**0.002**	0.7	7.61	0.08	0.295		**0.025**	4.23	1.6	**0.003**	0.022	18.4
08/21/05	8	21.3	**0.004**	**0.44**	**0.0015**	**0.002**	0.7	3.36	**0.01**	0.282		**0.025**	0.56	1.8	**0.003**	0.025	21.8
08/21/05	9	21.1	**0.004**	0.5	**0.0015**	**0.005**	**0.4**	2.01	**0.01**	0.239		**0.025**	0.26	1.7	**0.002**	0.028	17.9
08/21/05	10	21.0	**0.004**	0.51	**0.0015**	**0.002**	**0.4**	1.91	**0.01**	0.281		**0.025**	0.22	1.8	**0.003**	0.023	19.1
08/29/06	1	22.4	**0.003**	0.52	**0.001**	**0.003**	**0.2**	6.53	0.025	0.356		**0.011** ,	1.03	1.2	**0.004**	0.021	20.7
08/29/06	2	22.1	**0.003**	0.61	**0.001**	**0.003**	**0.2**	5.39	0.032	0.296		**0.008** ,	0.71	1.5	**0.0015**	0.022	19.9
08/29/06	3	21.6	**0.003**	**0.48**	**0.001**	**0.003**	**0.2**	1.49	**0.01**	0.314		**0.008** ,	1.3	1.3	**0.0015**	0.02	23.3
08/29/06	4	22.3	**0.003**	0.64	**0.001**	**0.003**	**0.2**	3.43	0.046	0.222		**0.008** ,	0.35	1.2	**0.0015**	0.022	17.8
08/29/06	5	20.4	**0.003**	0.6	**0.001**	**0.003**	**0.2**	5.31	0.028	0.276		**0.007** ,	0.83	1.2	**0.0015**	**0.018**	23
08/29/06	6	20.8	**0.003**	0.74	**0.001**	**0.003**	**0.2**	1.25	**0.01**	0.298		**0.008** ,	0.8	1.1	**0.0015**	**0.015**	18.4
08/29/06	7	22.3	**0.003**	0.67	**0.001**	**0.003**	**0.2**	2.35	**0.01**	0.375		**0.007** ,	1.31	1.1	**0.0015**	**0.018**	19.6
08/29/06	8	21.8	**0.003**	0.55	**0.001**	**0.003**	**0.2**	1.5	0.023	0.257		**0.007** ,	0.71	**0.9**	**0.0015**	0.02	20
08/29/06	9	21.4	**0.003**	**0.46**	**0.001**	**0.003**	**0.2**	1.29	**0.0095**	0.357		**0.006** ,	0.58	1	**0.0015**	**0.014**	19.7
08/29/06	10	21.9	**0.003**	0.69	**0.001**	**0.003**	**0.2**	4.24	0.037	0.211		**0.008** ,	0.37	**0.9**	**0.0015**	0.02	20.8
09/10/07	1	20.8	**0.01**	0.48	**0.001**	**0.0045**	**0.25**	0.92	0.169	0.332		**0.01**	**0.015**	1.1	**0.003**	0.024	18.8
09/10/07	2	20.7	**0.01**	0.79	**0.001**	**0.0045**	**0.25**	1.2	0.048	0.297		**0.01**	**0.015**	1.6	**0.0025**	0.022	17.9
09/10/07	3	20.2	**0.01**	0.66	**0.001**	**0.0045**	**0.25**	1.08	0.052	0.285		**0.01**	**0.015**	1.5	**0.0025**	0.023	17
09/10/07	4	20.6	**0.01**	0.63	**0.001**	**0.005**	**0.25**	1.3	0.078	0.356		**0.01**	**0.015**	1.7	**0.003**	**0.0095**	22.6
09/10/07	5	20.3	**0.01**	0.77	**0.001**	**0.005**	**0.25**	2.26	0.023	0.347		**0.04** ,	**0.08**	1.6	**0.003**	0.02	19.9
09/10/07	6	21	**0.01**	0.75	**0.001**	**0.0045**	**0.25**	1.3	0.045	0.273		**0.03** ,	**0.015**	1.6	**0.003**	0.021	18.4
09/10/07	7	20.4	**0.01**	0.72	**0.001**	**0.005**	**0.25**	0.98	0.421	0.33		**0.01**	**0.09**	1.5	**0.003**	**0.0095**	17.3
09/10/07	8	19.3	**0.01**	0.64	**0.001**	**0.005**	**0.25**	1.01	0.024	0.326		**0.04** ,	**0.09**	1.6	**0.003**	**0.0095**	21.1
09/10/07	9	20.2	**0.01**	0.83	**0.001**	**0.0045**	**0.6**	7.72	0.025	0.259		**0.03** ,	**0.16**	1.4	**0.003**	0.022	17
09/10/07	10	20.8	**0.01**	**0.23**	**0.001**	**0.0045**	**0.25**	0.93	0.088	0.774		**0.03** ,	**0.015**	1.3	**0.003**	**0.0095**	15.3
09/14/08	1	22.2	**0.004**	0.66	**0.0035**	**0.0025**	**0.07**	0.9	**0.005**	0.28		**0.004**	**0.12**	**0.71**	**0.0035**	0.021	18.9
09/14/08	2	21.7	**0.004**	0.82	**0.0035**	**0.0025**	0.53	0.86	**0.002**	0.326		**0.01** ,	0.28	**0.55**	**0.0035**	**0.016**	17
09/14/08	3	21.5	**0.004**	0.55	**0.0035**	**0.0025**	**0.035**	0.87	**0.002**	0.287		**0.01** ,	**0.1**	**0.65**	**0.0035**	0.022	18.4
09/14/08	4	21.2	**0.004**	0.69	**0.0035**	**0.0025**	**0.035**	1.07	**0.002**	0.319		**0.004**	**0.09**	**0.57**	**0.0035**	**0.019**	18.6
09/14/08	5	21.3	**0.004**	0.48	**0.0035**	**0.0025**	**0.13**	0.49	**0.002**	0.351		**0.004**	**0.07**	**0.49**	**0.0035**	**0.01**	10.9
09/14/08	6	21.1	**0.0035**	0.71	**0.003**	**0.002**	**0.03**	1.06	0.037	0.341		**0.009** ,	**0.11**	**0.55**	**0.003**	0.026	18.6
09/14/08	7	21.3	**0.0035**	0.81	**0.003**	**0.002**	**0.03**	0.77	0.042	0.335		**0.0035**	**0.06**	**0.51**	**0.003**	0.022	16.7
09/15/08	8	21.6	**0.0035**	0.76	**0.003**	**0.0025**	0.26	0.94	**0.002**	0.458		**0.015** ,	**0.16**	0.97	**0.009**	0.024	16.7
09/15/08	9	21.3	**0.0035**	**0.32**	**0.003**	**0.002**	0.23	0.81	**0.0015**	0.589		**0.011** ,	0.27	1.42	**0.003**	0.019	17.4
09/15/08	10	21.2	**0.004**	0.63	**0.0035**	**0.0025**	**0.1**	0.91	**0.002**	0.355		**0.01** ,	**0.11**	1.45	**0.0035**	0.02	18.3
Mean		21.3	0.005	0.59	0.0017	0.0031	0.3	2.42	0	0.328		0.016	0.5	1.2	0.0028	0.02	18.8
Median		21.3	0.004	0.605	0.00125	0.003	0.24	1.305	0.023	0.3165		0.01	0.255	1.25	0.003	0.021	18.65
St. Deviation		0.7	0.003	0.15	0.001	0.0011	0.3	2.2	0.1	0.096	NA	0.01	0.8	0.4	0.0013	0.005	2.2
# of values		40	40	40	40	40	40	40	40	40	0	40	40	40	40	40	40
Minimum		19.3	0.003	0.23	0.001	0.002	0.03	0.49	0.0015	0.211		0.0035	0.015	0.49	0.001	0.0095	10.9
Maximum		22.4	0.01	0.83	0.0035	0.005	2.2	9.11	0.421	0.774		0.04	4.23	1.8	0.009	0.028	23.3
% of values undetected			100%	3%	100%	98%	63%		45%			48%	15%	3%	73%	10%	
# of values between MDL and MRL				8		1	8		1			21	12	9	11	8	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Frying Pan Lake (FPL, FRYPAN1)-Esox lucius linnaeus-LIVER-Age ADULT																	
Sample Date	**Fish ID #**																
08/27/04	1	28.7	**0.0025**	0.26		0.46		156	0.243	0.146	0.125784		0.83	6.8	1.22		
08/27/04	2	28.9	**0.0025**	0.29		0.208		45.2	0.089	0.0699	0.057786		1.92	5.8	0.241		
08/27/04	3	30.9	**0.0025**	0.31		0.289		139	0.09	0.0622	0.051456		0.49	6.3	0.479		
08/27/04	4	26.2	**0.0025**	0.41		0.288		133	0.182	0.0759	0.057252		0.46	7.2	0.977		
08/27/04	5	25.8	**0.0025**	0.34		0.142		87.4	0.067	0.101			0.43	5.9	0.372		
08/27/04	6	38.2	**0.0025**	0.34		0.227		98.7	0.149	0.11	0.052880		0.38	6.9	0.714		
08/27/04	7	31.1	**0.0025**	0.29		0.189		83.7	0.1	0.0614	0.047267		0.46	4.8	0.563		
08/27/04	8	21.2	0.008	0.63		0.566		347	0.152	0.674			0.76	12.5	1.38		
08/27/04	9	25.9	0.005	0.34		0.548		163	0.08	0.247	0.168340		0.33	7.5	1.79		
08/27/04	10	28	0.005	0.39		0.328		296	0.09	0.111	0.089286		0.39	8	1.01		
08/20/05	1	29.8	**0.004**	0.26	**0.0015**	0.062	0.7	49.9	**0.01**	0.0894		0.73	0.5	7.5	0.182	0.029	138
08/20/05	2	34.5	**0.004**	0.34	**0.0015**	0.384	0.6	191	**0.01**	0.191		0.65	0.64	10.8	1.86	0.024	197
08/20/05	3	27.0	**0.004**	0.44	**0.0015**	0.076	0.6	144	**0.01**	0.0974		0.8	0.1	9.8	0.194	0.038	283
08/20/05	4	28.9	**0.004**	0.44	**0.0015**	0.318	0.8	109	0.02	0.0833		0.77	0.22	9.7	1.12	0.03	209
08/20/05	5	24.5	**0.004**	0.37	**0.0015**	1	1.1	101	0.02	0.547		1.16	0.24	12.6	0.933	0.034	253
08/20/05	6	28.7	**0.004**	0.39	**0.0015**	0.139	0.4	79.1	0.03	0.0859		0.71	0.17	7.4	0.578	0.037	208
08/20/05	7	27.1	**0.004**	0.3	**0.0015**	0.12	**0.15**	62.6	**0.01**	0.0816		0.65	0.34	7	0.248	0.034	153
08/20/05	8	25.4	**0.004**	0.51	**0.0015**	0.542	0.5	330	**0.01**	0.258		0.7	0.32	9	0.997	0.064	254
08/20/05	9	27	**0.004**	0.41	**0.0015**	0.086	**0.15**	21	0.02	0.08		0.67	0.17	5.8	0.045	0.028	175
08/20/05	10	34.8	**0.004**	0.26	**0.0015**	0.167	**0.15**	65.6	**0.01**	0.0628		0.46	0.14	6.7	0.031	0.021	156
	Mean	28.6	0.0038	0.37	0.0015	0.31	0.52	135	0.07	0.162	0.0813	0.73	0.5	8	0.75	0.034	203
	Median	28.35	0.004	0.34	0.0015	0.2575	0.55	105	0.0485	0.0934	0.057519	0.705	0.385	7.3	0.646	0.032	202.5
	St. Deviation	3.9	0.0013	0.09	0	0.23	0.31	93	0.07	0.165	0.0441	0.18	0.4	2	0.55	0.012	49
	# of values	20	20	20	10	20	10	20	20	20	8	10	20	20	20	10	10
	Minimum	21.2	0.0025	0.26	0.0015	0.062	0.15	21	0.01	0.0614	0.047267	0.46	0.1	4.8	0.031	0.021	138
	Maximum	38.2	0.008	0.63	0.0015	1	1.1	347	0.243	0.674	0.16834	1.16	1.92	12.6	1.86	0.064	283
	% of values undetected		85%		100%		30%		30%								
	# of values between MDL and MRL		3	18			1						4				

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

Sample Date	Fish ID #	Total Solids percent	Antimony mg/kg	Arsenic mg/kg	Beryllium mg/kg	Cadmium mg/kg	Chromium mg/kg	Copper mg/kg	Lead mg/kg	Mercury mg/kg	Methyl Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Selenium mg/kg	Silver mg/kg	Thallium mg/kg	Zinc mg/kg
Frying Pan Lake (FPL, FRYPAN1)-Esox lucius linnaeus-MUSCLE-Age ADULT																	
08/27/04	1	22	**0.004**	0.55		**0.009**		0.9	**0.003**	0.425	0.486364		**0.09**	1.7	**0.0015**		
08/27/04	2	21.3	**0.004**	**0.27**		**0.003**		0.94	**0.003**	0.146	0.207042		**0.06**	2.1	**0.0015**		
08/27/04	3	22.2	**0.004**	**0.49**		**0.009**		0.96	**0.003**	0.178	0.229730		**0.14**	2	**0.0015**		
08/27/04	4	21.6	**0.004**	**0.39**		**0.011**		0.91	**0.003**	0.184	0.198611		**0.11**	1.9	**0.0015**		
08/27/04	5	21.9	**0.004**	**0.4**		**0.009**		0.98	**0.003**	0.165	0.207306		**0.15**	2.3	**0.0015**		
08/27/04	6	21.9	**0.004**	0.61		**0.009**		1.26	**0.003**	0.28	0.318722		**0.15**	2.3	**0.0015**		
08/27/04	7	21.8	**0.004**	**0.42**		**0.003**		0.87	**0.003**	0.181	0.187156		**0.05**	2.1	**0.0015**		
08/27/04	8	19.6	**0.004**	0.67		**0.014**		0.95	**0.003**	1.28	1.214286		0.49	2.1	**0.0015**		
08/27/04	9	21.5	**0.004**	0.61		**0.012**		0.88	**0.003**	0.636	0.874419		**0.11**	1.7	**0.0015**		
08/27/04	10	21.6	**0.004**	0.54		**0.011**		1.02	**0.003**	0.23	0.312963		**0.11**	2	**0.0015**		
08/20/05	1	21.2	**0.004**	**0.2**	**0.0015**	**0.002**	0.8	5.82	**0.01**	0.18		**0.025**	2.58	2.8	**0.001**	0.026	19.7
08/20/05	2	22.1	**0.004**	**0.36**	**0.0015**	**0.005**	0.5	6.74	**0.01**	0.495		**0.025**	0.74	2.9	**0.008**	0.031	21.1
08/20/05	3	21.4	**0.004**	**0.29**	**0.0015**	**0.002**	0.8	3.99	**0.01**	0.107		**0.025**	0.76	2.7	**0.001**	0.029	18.8
08/20/05	4	22.4	**0.004**	**0.41**	**0.0015**	**0.006**	1.6	2.25	**0.01**	0.195		**0.025**	0.91	2.9	**0.006**	0.037	17.7
08/20/05	5	21.1	**0.004**	**0.28**	**0.0015**	**0.005**	1.1	2.65	**0.01**	1.5		**0.025**	0.73	2.5	**0.003**	0.028	16.2
08/20/05	6	21.9	**0.004**	**0.33**	**0.0015**	**0.002**	**0.4**	1.27	**0.01**	0.11		**0.025**	1.02	2.3	**0.01**	0.04	15.9
08/20/05	7	22.7	**0.004**	**0.24**	**0.0015**	**0.006**	1.2	1.6	**0.01**	0.19		**0.025**	1.13	2.7	**0.01**	0.034	16
08/20/05	8	21.4	**0.004**	**0.44**	**0.0015**	**0.006**	**0.4**	3.72	**0.01**	0.523		**0.025**	0.69	2.2	**0.01**	0.036	16.3
08/20/05	9	21.1	**0.004**	**0.2**	**0.0015**	**0.002**	0.5	4.84	**0.01**	0.241		**0.025**	0.62	2	**0.001**	0.026	17.7
08/20/05	10	22.4	**0.004**	**0.2**	**0.0015**	**0.005**	**0.15**	1.75	**0.01**	0.248		**0.025**	0.67	4.8	**0.001**	0.035	21
08/25/07	1	18.6	**0.01**	1.17	**0.0015**	0.022	**0.25**	1.96	0.058	0.5		**0.03**	**0.15**	2.4	**0.006**	0.042	24.1
08/25/07	2	19.3	0.25	1.1	0.025	0.042	**0.25**	2.42	0.346	0.458		0.1	0.53	2.6	0.024	0.135	21.6
08/25/07	3	20.9	**0.01**	0.89	**0.0015**	0.021	**0.25**	1.68	**0.014**	0.371		**0.01**	**0.06**	2.5	**0.0025**	0.029	21.6
08/25/07	4	19.1	**0.01**	1.19	**0.0015**	**0.019**	**0.25**	1.62	0.515	0.198		**0.01**	**0.09**	2.9	**0.0025**	0.045	22.5
08/25/07	5	19.2	**0.01**	1.25	**0.0015**	0.023	**0.25**	1.71	0.033	0.111		**0.01**	0.29	2.6	**0.0025**	0.052	33.1
08/25/07	6	18.5	**0.01**	1.08	**0.0015**	**0.016**	**0.25**	1.64	0.039	0.667		**0.01**	**0.15**	2	**0.0025**	0.033	21.3
08/25/07	7	18.6	**0.01**	1.1	**0.0015**	0.02	**0.25**	2.24	0.127	0.375		**0.01**	**0.13**	2.7	**0.0025**	0.037	30.4
08/25/07	8	22.6	**0.01**	1.24	**0.0015**	**0.018**	**0.25**	2.23	0.05	0.352		**0.01**	**0.16**	2.2	**0.0025**	0.042	32.1
08/25/07	9	18.2	**0.01**	1.29	**0.0015**	0.022	**0.25**	1.85	0.051	0.0932		**0.01**	**0.17**	2.3	**0.0025**	0.046	27.4
08/25/07	10	20.3	**0.01**	1.17	**0.0015**	**0.015**	**0.25**	2.35	**0.014**	0.389		**0.01**	**0.11**	2.3	**0.0025**	0.057	21.1
09/12/08	1	21.4	**0.0035**	**0.44**	**0.003**	**0.007**	**0.03**	1.56	0.141	0.439		**0.0035**	**0.07**	1.39	**0.003**	0.042	16
09/12/08	2	21.8	**0.0035**	**0.34**	**0.003**	**0.005**	**0.03**	1.09	0.141	0.27		**0.0035**	**0.07**	1.13	**0.003**	0.041	15.9
09/12/08	3	21.3	**0.0035**	**0.44**	**0.003**	**0.005**	**0.03**	1.01	0.145	0.0965		**0.0035**	**0.08**	**0.72**	**0.003**	0.039	17.2
09/15/08	4	21.2	**0.0035**	**0.31**	**0.0035**	**0.0025**	**0.1**	1.19	**0.002**	0.23		**0.008**	**0.08**	1.64	**0.0035**	0.03	18.4
09/15/08	5	21.2	**0.0035**	**0.35**	**0.003**	**0.002**	**0.03**	1.19	**0.0015**	0.286		**0.012**	**0.09**	1.38	**0.003**	0.038	17.1
09/15/08	6	21	**0.0035**	**0.39**	**0.003**	**0.002**	**0.1**	1	**0.005**	0.22		**0.008**	**0.11**	1.43	**0.003**	0.029	15.6
09/15/08	7	20.6	**0.004**	**0.32**	**0.0035**	**0.0025**	**0.035**	1.41	0.028	0.733		**0.004**	**0.08**	1.29	**0.0035**	0.04	15.8
09/15/08	8	21.2	**0.0035**	**0.28**	**0.0035**	**0.0025**	**0.035**	1.1	0.049	0.232		**0.0035**	**0.1**	1.23	**0.0035**	0.036	16.8
09/15/08	9	19.6	**0.0035**	**0.23**	**0.003**	**0.006**	**0.03**	1.27	0.071	0.366		**0.0035**	**0.08**	1.27	**0.003**	0.019	19.2
09/15/08	10	20.8	**0.004**	**0.37**	**0.0035**	**0.0025**	**0.035**	1.22	**0.004**	0.206		**0.004**	**0.09**	1.4	**0.0035**	0.031	18.1
Mean		21	0.01	0.6	0.0029	0.01	0.35	1.9	0.05	0.35	0.424	0.02	0.4	2.1	0.004	0.04	20.2
Median		21.25	0.004	0.415	0.0015	0.006	0.25	1.485	0.01	0.2445	0.271346	0.01	0.135	2.15	0.0025	0.0365	18.6
St. Deviation		1.2	0.04	0.4	0.0043	0.009	0.39	1.35	0.1	0.29	0.349	0.02	0.5	0.7	0.004	0.02	4.9
# of values		40	40	40	30	40	30	40	40	40	10	30	40	40	40	30	30
Minimum		18.2	0.0035	0.2	0.0015	0.002	0.03	0.87	0.0015	0.0932	0.187156	0.0035	0.05	0.72	0.001	0.019	15.6
Maximum		22.7	0.25	1.29	0.025	0.042	1.6	6.74	0.515	1.5	1.214286	0.1	2.58	4.8	0.024	0.135	33.1
% of values undetected			98%		97%	30%	63%		55%			83%			88%		
# of values between MDL and MRL				25		22	4		4			4	27	1	4		

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Kaskanak Creek (KC100A)-Oncorhynchus kisutch-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/29/04	1	26.4	**0.0025**	0.78		**0.008**		2.24	0.038	0.2			1.07	1	**0.002**		
08/29/04	2	26.1	**0.0025**	0.59		**0.008**		3.65	0.031	0.143			0.62	1	**0.002**		
08/29/04	3	27.1	**0.0025**	**0.34**		**0.01**		2.72	0.034	0.15			0.77	**0.8**	**0.002**		
08/29/04	4	27	**0.0025**	0.69		**0.008**		3.2	0.035	0.19			0.64	**0.2**	**0.002**		
08/29/04	5	23.2	**0.0025**	0.9		**0.017**		5.53	0.064	0.132			1.25	**0.7**	**0.007**		
08/29/04	6	26.5	**0.0025**	0.7		0.021		8.65	0.094	0.128			1.55	**0.2**	**0.01**		
08/29/04	7	22.8	**0.0025**	**0.37**		**0.018**		6.17	0.031	0.141			0.86	**0.6**	**0.002**		
08/29/04	8	24.3	**0.0025**	**0.48**		**0.012**		8.68	0.044	0.169			0.77	**0.8**	**0.002**		
08/29/04	9	25.5	**0.0025**	**0.39**		**0.011**		6.25	0.038	0.138			0.68	**0.5**	**0.005**		
08/29/04	10	23.8	**0.006**	**0.35**		**0.007**		8.98	0.025	0.128			0.9	**0.2**	**0.002**		
08/29/04	201	23.8	**0.0025**	0.54		**0.013**		5.36	0.072	0.141			0.81	1.5	**0.004**		
08/20/05	1	26.8	**0.004**	0.69	**0.0015**	**0.006**	**0.4**	3.03	0.02	0.277		0.07	1.9	**0.84**	**0.004**	**0.011**	130
08/20/05	2	24.4	**0.004**	0.76	**0.0015**	**0.007**	0.5	2.79	0.04	0.195		0.07	0.9	1	**0.005**	**0.01**	130
08/20/05	3	23.1	**0.004**	0.65	**0.0015**	**0.006**	**0.3**	2.18	0.03	0.137		0.07	0.3	1.08	**0.005**	**0.007**	126
08/20/05	4	21.2	**0.004**	0.75	**0.0015**	**0.01**	**0.15**	2.42	0.03	0.131		0.09	0.3	1.2	**0.004**	**0.011**	139
08/20/05	5	24.3	**0.004**	**0.33**	**0.0015**	**0.007**	**0.15**	2.21	**0.01**	0.198		0.06	0.2	**0.94**	**0.004**	**0.007**	99.8
08/20/05	6	22.2	**0.004**	0.64	**0.0015**	**0.005**	**0.15**	2.24	**0.01**	0.169		0.07	0.3	**0.88**	**0.004**	**0.006**	100
08/20/05	7	20.3	**0.004**	0.7	**0.0015**	**0.01**	**0.15**	2.16	0.02	0.126		0.09	0.2	**0.95**	**0.004**	**0.008**	166
08/20/05	8	21.6	**0.004**	**0.44**	**0.0015**	**0.007**	**0.15**	2.2	**0.01**	0.118		0.06	0.2	**0.76**	**0.003**	**0.008**	126
08/20/05	9	22.8	**0.004**	0.68	**0.0015**	**0.008**	**0.4**	2.34	0.03	0.139		0.06	0.3	1.16	**0.004**	**0.011**	127
08/20/05	10	22.5	**0.004**	0.64	**0.0015**	**0.013**	**0.15**	3.17	0.04	0.159		0.07	0.4	1.02	**0.004**	**0.011**	127
	Mean	24.1	0.003	0.59	0.0015	0.01	0.25	4.1	0.036	0.158		0.071	1	0.8	0.004	0.009	127
	Median	23.8	0.004	0.64	0.0015	0.008	0.15	3.03	0.031	0.141		0.07	0.68	0.88	0.004	0.009	127
	St. Deviation	2	0.001	0.17	0	0.004	0.14	2.37	0.02	0.037	NA	0.011	0	0.3	0.002	0.002	19
	# of values	21	21	21	10	21	10	21	21	21	0	10	21	21	21	10	10
	Minimum	20.3	0.0025	0.33	0.0015	0.005	0.15	2.16	0.01	0.118		0.06	0.2	0.2	0.002	0.006	99.8
	Maximum	27.1	0.006	0.9	0.0015	0.021	0.5	8.98	0.094	0.277		0.09	1.9	1.5	0.01	0.011	166
	% of values undetected		95%		100%	5%	60%		14%					14%	36%		
	# of values between MDL and MRL		1	7		20	3		1					10	14	10	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Lake 2 (L2, LT2F)-Esox lucius linnaeus-LIVER-Age ADULT																	
Sample Date	**Fish ID #**																
08/23/05	1	30.8	**0.011**	**0.37**	**0.0015**	0.021	**0.4**	32.4	0.02	0.206		0.42	**0.1**	4.7	0.74	**0.011**	113
08/23/05	2	33.4	**0.004**	**0.31**	**0.0015**	0.029	0.7	21.7	**0.01**	0.256		0.62	0.46	5.3	0.577	**0.012**	174
08/23/05	3	32.8	**0.004**	**0.34**	**0.0015**	0.07	**0.3**	26.2	**0.01**	0.433		0.48	0.58	6	0.806	**0.01**	169
08/23/05	4	33.4	**0.004**	**0.21**	**0.0015**	**0.018**	**0.15**	20.2	**0.01**	0.26		0.49	0.28	4.9	0.393	**0.009**	111
08/23/05	5	27.7	**0.004**	**0.32**	**0.0015**	0.046	**0.15**	55.5	**0.01**	0.398		0.51	**0.08**	4.8	0.879	0.027	202
08/23/05	6	30.6	**0.004**	**0.24**	**0.0015**	**0.019**	**0.4**	20.3	**0.01**	0.288		0.66	**0.15**	4.5	0.34	**0.012**	136
08/23/05	7	27.8	**0.008**	**0.3**	**0.0015**	0.077	**0.15**	35.9	**0.01**	0.334		0.31	**0.14**	4.8	1.01	**0.01**	161
08/23/05	8	29.8	**0.004**	**0.43**	**0.0015**	0.035	**0.15**	46.8	**0.01**	0.25		0.38	**0.1**	6.4	0.787	**0.013**	211
08/23/05	9	33.9	**0.004**	**0.32**	**0.0015**	0.086	**0.15**	34.3	**0.01**	0.639		0.36	**0.09**	5.6	0.921	**0.006**	142
08/23/05	10	28.7	**0.004**	**0.18**	**0.0015**	0.142	**0.15**	36.6	**0.01**	1.6		0.25	0.51	4.1	0.74	**0.01**	137
08/30/06	1	39.2	**0.01**	1.14	**0.0015**	0.026	**0.2**	25.2	**0.006**	0.272		0.5	**0.015**	3.8	0.529	**0.006**	75.5
08/30/06	2	31.5	0.33	1.63	0.031	0.074	**0.25**	32.5	0.308	0.223		0.72	0.33	4.5	0.779	0.124	139
08/30/06	3	26.3	**0.01**	1.94	**0.0015**	0.08	**0.25**	67.1	**0.007**	0.68		0.63	**0.03**	6.5	1.46	0.027	156
08/30/06	4	30.1	**0.01**	1.7	**0.0015**	0.117	**0.2**	98	**0.011**	0.663		0.64	**0.05**	5.2	1.8	0.032	188
08/30/06	5	31.7	0.45	2.29	0.047	0.257	**0.25**	108	0.429	1.69		0.74	0.48	8.1	2.35	0.15	151
08/30/06	6	27.8	**0.01**	2.42	**0.0015**	0.382	**0.25**	108	0.026	4.01		0.83	**0.04**	9.8	3.69	0.022	215
08/30/06	7	30.6	**0.01**	1.33	**0.0015**	0.043	**0.2**	31.2	**0.008**	0.353		0.53	**0.015**	5	0.489	**0.013**	145
08/30/06	8	34.3	**0.01**	1.36	**0.0015**	0.04	**0.25**	20.6	**0.006**	0.263		0.46	**0.04**	4.8	0.428	**0.01**	102
08/30/06	9	29.4	**0.01**	1.29	**0.0015**	0.046	**0.25**	28.5	**0.006**	0.336		0.61	**0.015**	5.2	0.566	**0.016**	164
08/30/06	10	28.4	**0.01**	1.39	**0.0015**	0.12	**0.25**	114	**0.016**	0.371		0.49	**0.04**	4.8	1.77	0.034	209
	Mean	30.9	0.05	0.98	0.005	0.09	0.25	48	0.05	0.68		0.53	0.18	5.4	1.05	0.03	155
	Median	30.6	0.01	0.785	0.0015	0.058	0.25	33.4	0.01	0.3445		0.505	0.095	4.95	0.783	0.0125	153.5
	St. Deviation	3	0.12	0.76	0.012	0.09	0.13	32	0.11	0.89	NA	0.15	0.19	1.4	0.82	0.04	38
	# of values	20	20	20	20	20	20	20	20	20	0	20	20	20	20	20	20
	Minimum	26.3	0.004	0.18	0.0015	0.018	0.15	20.2	0.006	0.206		0.25	0.015	3.8	0.34	0.006	75.5
	Maximum	39.2	0.45	2.42	0.047	0.382	0.7	114	0.429	4.01		0.83	0.58	9.8	3.69	0.15	215
	% of values undetected		80%		90%		80%		45%				15%				
	# of values between MDL and MRL		2	10		2	3		7				11			13	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

Sample Date	Fish ID #	Total Solids percent	Antimony mg/kg	Arsenic mg/kg	Beryllium mg/kg	Cadmium mg/kg	Chromium mg/kg	Copper mg/kg	Lead mg/kg	Mercury mg/kg	Methyl Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Selenium mg/kg	Silver mg/kg	Thallium mg/kg	Zinc mg/kg
Lake 2 (L2, LT2F)-Esox lucius linnaeus-MUSCLE-Age ADULT																	
08/23/05	1	23	**0.004**	0.34	**0.0015**	**0.002**	**0.15**	2.02	**0.01**	0.969		**0.025**	0.61	1.6	**0.01**	0.015	18.2
08/23/05	2	22	**0.004**	0.15	**0.0015**	**0.002**	**0.15**	1.72	**0.01**	0.946		**0.025**	0.21	1.5	**0.001**	0.012	16.4
08/23/05	3	21.4	**0.004**	0.26	**0.0015**	**0.002**	0.4	2.29	**0.01**	1.81		**0.025**	0.69	1.5	**0.01**	0.018	16.2
08/23/05	4	21.6	**0.004**	0.27	**0.0015**	**0.002**	**0.15**	3.39	**0.01**	1.22		**0.025**	0.5	1.7	**0.01**	0.012	21.2
08/23/05	5	22.8	**0.004**	0.29	**0.0015**	**0.002**	0.4	1.44	**0.01**	1.22		**0.025**	0.25	1.4	**0.01**	0.028	18.5
08/23/05	6	22.2	**0.004**	0.17	**0.0015**	**0.002**	**0.15**	5.24	**0.01**	0.963		**0.025**	0.56	1.4	0.003	0.011	21.8
08/23/05	7	21.4	**0.004**	0.35	**0.0015**	**0.002**	**0.15**	0.84	**0.01**	1.61		**0.025**	0.48	1.5	0.003	0.012	18.4
08/23/05	8	21.9	**0.004**	0.27	**0.0015**	**0.002**	0.4	1.16	**0.01**	1.08		**0.025**	0.32	1.1	0.004	0.016	20.3
08/23/05	9	21.7	**0.004**	0.28	**0.0015**	**0.002**	0.4	1.99	**0.01**	2.45		**0.025**	0.54	1.7	0.007	0.015	22.1
08/23/05	10	21.4	**0.004**	0.34	**0.0015**	**0.002**	**0.15**	6.7	**0.01**	3.46		**0.025**	0.22	1.6	0.006	0.016	17.5
08/30/06	1	22.1	**0.003**	0.21	**0.001**	**0.003**	**0.2**	1.28	0.004	1.02		0.01 J	1.25	1.9	**0.0015**	0.018	20.4
08/30/06	2	22.8	**0.003**	0.27	**0.001**	**0.003**	**0.2**	1.98	0.007	0.792		0.012 J	0.61	1.6	**0.0015**	0.018	19.4
08/30/06	3	23.4	**0.003**	0.31	**0.001**	**0.003**	**0.2**	1.48	0.01	1.56		0.007 J	0.61	1.4	**0.0015**	0.023	19.6
08/30/06	4	24.2	**0.003**	0.28	**0.001**	**0.003**	**0.2**	1.48	0.005	1.63		0.007 J	0.8	1.4	**0.0015**	0.019	17
08/30/06	5	22	**0.003**	0.37	**0.001**	**0.003**	**0.2**	7.86	0.07	3.08		0.01 J	0.53	1.3	**0.0015**	0.01	19.4
08/30/06	6	22.1	**0.003**	0.37	**0.001**	**0.003**	**0.2**	6.65	0.028	3.89		0.008 J	0.79	1.3	**0.0015**	0.014	20.6
08/30/06	7	22.9	**0.003**	0.2	**0.001**	**0.003**	**0.2**	4.56	0.013	0.894		0.008 J	0.26	1.3	**0.0015**	0.015	20.1
08/30/06	8	24.2	**0.003**	0.17	**0.001**	**0.003**	**0.2**	3.07	0.006	1.09		0.012 J	0.39	1.3	**0.0015**	0.015	17
08/30/06	9	23.6	**0.003**	0.22	**0.001**	**0.003**	**0.2**	3.49	0.016	0.735		0.009 J	0.56	1.3	**0.0015**	0.016	21.6
08/30/06	10	23.1	**0.003**	0.41	**0.001**	**0.003**	**0.2**	3.89	0.023	1.09		0.007 J	0.94	1.1	**0.0015**	0.027	19.2
08/27/07	1	20.6	**0.01**	**0.215**	**0.001**	**0.0045**	**0.2**	1.38	0.207	0.829		**0.01**	0.03	0.6	**0.0025**	0.033	18.4
08/27/07	2	20.3	**0.01**	**0.235**	**0.001**	**0.0045**	**0.25**	1.43	0.383	1.38		**0.01**	**0.015**	1.2	**0.003**	0.025	20.7
08/27/07	3	21	**0.01**	**0.225**	**0.001**	**0.0045**	**0.25**	1.03	0.016	2.92		**0.01**	**0.015**	1.4	**0.0025**	0.022	17.2
08/27/07	4	20.6	**0.01**	**0.205**	**0.001**	**0.004**	**0.2**	1.3	0.05	1.07		**0.01**	**0.01**	1.2	**0.0025**	**0.0085**	18.6
08/27/07	5	18.6	**0.01**	**0.23**	**0.001**	0.011	**0.25**	1.25	0.168	1.85		**0.01**	**0.015**	0.8	**0.0025**	0.024	18.6
08/27/07	6	21.2	**0.01**	**0.24**	**0.001**	**0.005**	**0.25**	1.21	0.024	0.818		**0.01**	**0.015**	1	**0.003**	0.022	18.9
08/27/07	7	20.5	**0.01**	**0.215**	**0.001**	**0.0045**	**0.2**	1.04	0.02	1.42		**0.01**	**0.015**	1.2	**0.0025**	0.022	17.5
08/27/07	8	20.5	**0.01**	**0.245**	**0.001**	**0.005**	**0.25**	1.09	0.249	0.947		**0.01**	**0.015**	0.6	**0.003**	0.04	17.9
08/27/07	9	19.5	**0.01**	**0.22**	**0.001**	**0.0045**	**0.2**	1.05	0.031	0.689		**0.01**	**0.015**	0.8	**0.0025**	0.026	15.8
08/27/07	10	20.1	**0.01**	**0.205**	**0.001**	**0.004**	**0.2**	1.05	0.121	1.24		**0.01**	**0.01**	1.3	**0.0025**	0.025	17
09/30/08	1	19.4	0.035	**0.245**	**0.0035**	0.007	**0.035**	1.31	0.039	4.36		0.025 J	0.1	1.78	0.01	0.035	21
09/30/08	2	20.9	0.011	0.55	**0.0035**	**0.0025**	0.12	1.2	0.009	2.55		0.011 J	**0.02**	1.91	**0.0035**	0.026	14
09/30/08	3	21.5	**0.004**	0.48	**0.0035**	**0.0025**	0.09	1.27	0.007	1.34		0.011 J	**0.02**	1.06	**0.01**	0.029	17.8
09/30/08	4	21.3	**0.004**	0.41	**0.0035**	**0.0025**	0.13	1.46	0.008	1.34		0.009 J	**0.02**	1.6	**0.0035**	0.029	18.1
09/30/08	5	21.3	**0.004**	0.62	**0.0035**	**0.0025**	0.1	1.11	0.007	0.874		0.011 J	**0.02**	1.24	**0.0035**	0.036	15.5
09/30/08	6	20.5	**0.004**	0.36	**0.0035**	**0.0025**	**0.035**	1.81	0.004	1.78		0.008 J	**0.02**	1.66	**0.0035**	0.024	22.1
09/30/08	7	21.6	**0.004**	0.33	**0.0035**	**0.0025**	0.08	1.41	0.004	1.94		**0.004**	**0.02**	2.6	**0.0035**	0.026	17.3
09/30/08	8	21.8	**0.004**	0.7	**0.0035**	**0.0025**	0.08	1.09	0.005	1.1		0.008 J	**0.02**	1.38	0.031	0.035	14.8
09/30/08	9	21	**0.004**	0.46	**0.0035**	**0.0025**	0.1	1.25	0.004	1.26		**0.004**	0.06	1.54	**0.01**	0.04	16.9
09/30/08	10	20.3	**0.004**	0.39	**0.0035**	**0.0025**	**0.035**	1.54	0.006	2.61		**0.004**	**0.02**	1.44	**0.01**	0.025	17.5
Mean		21.6	0.006	0.31	0.002	0.003	0.19	2.2	0.04	1.6		0.013	0.29	1.4	0.005	0.022	18.5
Median		21.45	0.004	0.27	0.00125	0.003	0.2	1.435	0.01	1.25		0.01	0.155	1.4	0.003	0.022	18.4
St. Deviation		1.3	0.006	0.12	0.001	0.002	0.09	1.74	0.08	0.9	NA	0.007	0.32	0.4	0.005	0.008	2
# of values		40	40	40	40	40	40	40	40	40	0	40	40	40	40	40	40
Minimum		18.6	0.003	0.15	0.001	0.002	0.035	0.84	0.004	0.689		0.004	0.01	0.6	0.001	0.0085	14
Maximum		24.2	0.035	0.7	0.0035	0.011	0.4	7.86	0.383	4.36		0.025	1.25	2.6	0.031	0.04	22.1
% of values undetected			95%	28%	100%	95%	73%		25%			58%	43%		83%	3%	
# of values between MDL and MRL			2	26		2	11		17			17	3	4	6	17	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
North Fork Koktuli River (NK100A)-Oncorhynchus kisutch & tshawytscha-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/29/04	1	23.5	0.007	0.14		0.019		2.44	0.122	0.121			0.83	1.2	**0.01**		
08/29/04	2	26	**0.0025**	0.23		0.023		1.72	0.083	0.132			0.65	1.5	**0.01**		
08/29/04	3	25.5	**0.0025**	0.23		0.015		1.61	0.074	0.145			0.63	1.4	**0.01**		
08/29/04	4	22.9	**0.0025**	0.25		0.036		2.25	0.046	0.127			0.84	1	**0.01**		
08/29/04	5	25.7	**0.0025**	0.26		0.026		1.86	0.075	0.105			0.52	1.4	**0.01**		
08/29/04	6	24.8	**0.0025**	0.22		0.022		1.79	0.074	0.105			0.57	1.3	**0.002**		
08/29/04	7	23.9	**0.0025**	0.19		0.024		1.77	0.052	0.116			0.51	1.3	**0.01**		
08/29/04	8	23.4	**0.0025**	0.19		0.023		2.01	0.057	0.224			0.45	1	**0.01**		
08/29/04	9	24.3	**0.0025**	0.21		0.02		1.99	0.083	0.0931			0.54	1.2	**0.01**		
08/29/04	10	24.3	**0.0025**	0.25		0.022		2.02	0.057	0.371			0.69	0.8	**0.01**		
08/29/04	201	25.5	**0.0025**	0.15		0.016		1.9	0.119	0.0745			1.16	1.1	0.004		
08/20/05	1	22.8	**0.004**	0.35	**0.0015**	0.069	0.3	2.71	0.02	0.558		0.07	0.2	0.92	0.007	0.007	141
08/20/05	2	22.7	**0.004**	0.3	**0.0015**	0.014	**0.15**	2.46	**0.01**	0.0638		0.06	0.1	2.11	0.006	0.009	134
08/20/05	3	21.8	**0.004**	0.25	**0.0015**	0.051	0.3	2.27	0.05	0.652		0.06	0.2	1.43	0.006	0.007	119
08/20/05	4	23.2	**0.004**	0.29	**0.0015**	0.035	**0.15**	2.23	**0.01**	0.583		0.07	0.3	1.89	0.006	0.009	121
08/20/05	5	21.3	**0.004**	0.29	**0.0015**	0.026	**0.15**	2.5	0.03	0.158		0.08	0.2	1.84	0.005	0.012	172
08/20/05	6	23.3	**0.004**	0.29	**0.0015**	0.024	**0.15**	2.05	**0.01**	0.426		0.06	0.2	1.9	0.004	0.007	111
08/20/05	7	22.1	**0.004**	0.24	**0.0015**	0.012	1.9	2.11	0.02	0.0814		0.06	0.2	1.21	0.004	0.032	128
08/20/05	8	22.9	**0.004**	0.31	**0.0015**	0.037	**0.15**	2.62	0.03	0.348		0.06	0.2	1.81	0.006	0.008	142
08/20/05	9	21.4	**0.004**	0.28	**0.0015**	0.059	0.7	2.66	**0.01**	0.61		0.08	0.2	1.79	0.007	0.007	134
08/20/05	10	20.7	**0.004**	0.3	**0.0015**	0.034	1.2	2.49	0.02	0.377		0.08	0.2	1.76	0.005	0.008	154
	Mean	23.4	0	0.25	0.0015	0.029	0.52	2.16	0.05	0.261		0.068	0.45	1.4	0.007	0.011	136
	Median	23.3	0.004	0.25	0.0015	0.024	0.225	2.11	0.05	0.145		0.065	0.45	1.4	0.007	0.008	134
	St. Deviation	1.5	0	0.05	0	0.015	0.59	0.33	0.035	0.201	NA	0.009	0.28	0.4	0.003	0.008	18
	# of values	21	21	21	10	21	10	21	21	21	0	10	21	21	21	10	10
	Minimum	20.7	0.0025	0.14	0.0015	0.012	0.15	1.61	0.01	0.0638		0.06	0.1	0.8	0.002	0.007	111
	Maximum	26	0.007	0.35	0.0015	0.069	1.9	2.71	0.122	0.652		0.08	1.16	2.11	0.01	0.032	172
	% of values undetected		91%	5%	100%	5%	50%		18%						50%		
	# of values between MDL and MRL		1	21		5	2		1				1	2	11	9	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
North Fork Koktuli River (NK100A)-Thymallus arcticus Pallus-MUSCLE-Age ADULT																	
Sample Date	**Fish ID #**																
09/12/07	1	19.4	**0.01**	1.03	**0.0015**	**0.004**	0.7	2.58	0.126	0.479		**0.01**	0.13	2	**0.0025**	**0.0025**	17.5
09/12/07	2	20.6	0.03	1.1	**0.0015**	**0.004**	0.6	2.6	0.151	0.457		0.03	0.28	2.6	**0.0025**	0.013	17.8
09/12/07	3	19.5	**0.01**	1.39	**0.0015**	**0.004**	0.6	2.08	0.09	0.392		**0.01**	0.12	3	**0.0025**	**0.0025**	18.6
09/13/07	4	19.8	**0.01**	1.27	**0.0015**	**0.004**	0.7	1.74	0.601	0.415		**0.01**	0.08	3.2	**0.0025**	0.007	15.3
09/17/07	6	19.1	**0.01**	0.13	**0.001**	**0.004**	**0.2**	1.81	0.108	0.375		**0.01**	0.07	3.1	**0.0025**	0.012	13.4
09/17/07	7	18	**0.01**	0.22	**0.001**	**0.005**	**0.25**	1.58	0.036	0.694		**0.01**	0.23	1.9	**0.003**	0.012	17.3
09/17/07	8	19.5	**0.01**	0.08	**0.001**	**0.0045**	**0.2**	1.88	**0.009**	0.699		**0.01**	0.15	2.2	**0.0025**	0.014	14.6
09/17/07	9	19	**0.01**	0.14	**0.001**	**0.0045**	**0.25**	1.75	**0.009**	0.445		**0.01**	0.16	2.5	**0.0025**	0.013	16.6
09/17/07	10	19	**0.01**	0.24	**0.001**	**0.004**	**0.2**	1.93	0.032	0.561		**0.01**	0.14	2.8	**0.0025**	0.019	14.9
	Mean	19.3	0.012	0.62	0.0012	0.0042	0.41	1.99	0.13	0.502		0.012	0.15	2.6	0.0026	0.011	16.2
	Median	19.4	0.01	0.24	0.001	0.004	0.25	1.88	0.09	0.457		0.01	0.14	2.6	0.0025	0.012	16.6
	St. Deviation	0.7	0.007	0.56	0.0003	0.0004	0.23	0.36	0.18	0.123	NA	0.007	0.07	0.5	0.0002	0.005	1.7
	# of values	9	9	9	9	9	9	9	9	9	0	9	9	9	9	9	9
	Minimum	18	0.01	0.08	0.001	0.004	0.2	1.58	0.009	0.375		0.01	0.07	1.9	0.0025	0.0025	13.4
	Maximum	20.6	0.03	1.39	0.0015	0.005	0.7	2.6	0.601	0.699		0.03	0.28	3.2	0.003	0.019	18.6
	% of values undetected		89%		100%	100%	56%		22%			89%			100%	22%	
	# of values between MDL and MRL		1	5			4					1	7			6	
North Fork Koktuli River (NK100B)-Salvelinus malma Walbaum-WHOLE-Age adult																	
Sample Date	**Fish ID #**																
08/20/05	5	24.1	**0.004**	0.16	**0.0015**	0.067	1.5	3.01	**0.01**	0.0908		**0.025**	2.3	1.63	0.019	0.022	102
	Mean	24.1	0.004	0.16	0.0015	0.067	1.5	3.01	0.01	0.0908		0.025	2.3	1.63	0.019	0.022	102
	Median	24.1	0.004	0.16	0.0015	0.067	1.5	3.01	0.01	0.0908		0.025	2.3	1.63	0.019	0.022	102
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
	Minimum	24.1	0.004	0.16	0.0015	0.067	1.5	3.01	0.01	0.0908		0.025	2.3	1.63	0.019	0.022	102
	Maximum	24.1	0.004	0.16	0.0015	0.067	1.5	3.01	0.01	0.0908		0.025	2.3	1.63	0.019	0.022	102
	% of values undetected		100%		100%				100%			100%					
	# of values between MDL and MRL			1											1		

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
North Fork Koktuli River (NK100B)-Salvelinus malma Walbaum-WHOLE-Age juv																	
Sample Date	**Fish ID #**																
08/29/04	1	22.6	**0.005**	**0.35**		0.023		3.09	0.094	0.0855			3.98	2.1	**0.01**		
08/29/04	2	23.8	**0.005**	**0.32**		**0.01**		2.51	0.064	0.0742			0.76	2	**0.01**		
08/29/04	3	25.9	**0.011**	1.37		0.035		4.69	0.626	0.0693			35.2	2	**0.01**		
08/29/04	4	24.7	**0.0025**	**0.19**		**0.014**		2.68	0.082	0.15			0.51	2	**0.01**		
08/29/04	5	21.9	**0.011**	**0.29**		0.021		2.69	0.107	0.113			3.5	2.1	**0.01**		
08/29/04	6	21.5	**0.008**	**0.27**		0.027		2.48	0.165	0.117			1.95	2.1	**0.01**		
08/29/04	7	23.4	**0.0025**	**0.26**		0.031		2.34	0.099	0.153			5.3	2.4	**0.002**		
08/29/04	8	23.8	**0.005**	**0.31**		**0.013**		2.9	0.136	0.103			4.7	1.7	**0.01**		
08/29/04	9	22	**0.007**	**0.42**		**0.018**		2.8	0.15	0.127			3.33	2.6	**0.01**		
08/29/04	10	23.3	**0.007**	0.57		0.02		2.76	0.184	0.0644			3.91	2.1	**0.01**		
08/29/04	201	20.8	**0.0025**	**0.22**		**0.016**		3.55	0.077	0.148			1.19	1.1	**0.01**		
08/20/05	1	25	**0.004**	**0.29**	**0.0015**	**0.013**	0.8	6.01	0.08	0.105		0.05	1.4	2.53	**0.004**	**0.011**	116
08/20/05	2	23.7	**0.008**	**0.45**	**0.011**	**0.015**	12.9	9.19	0.15	0.0709		0.11	35.3	2.42	**0.012**	**0.014**	110
08/20/05	3	22.9	**0.004**	**0.21**	**0.0015**	**0.01**	1.9	7.55	**0.01**	0.0864		0.06	2.3	3.16	**0.008**	**0.011**	142
08/20/05	4	23.2	**0.009**	0.7	**0.019**	0.027	19.3	4.81	0.2	0.101		0.15	19.5	1.68	**0.016**	0.025	129
08/20/05	6	25.2	**0.004**	**0.48**	**0.009**	**0.014**	6.5	4.69	0.1	0.0895		0.06	8	2.46	**0.01**	**0.018**	99.1
08/20/05	7	26.5	**0.004**	**0.33**	**0.0015**	**0.006**	1.3	2.71	**0.01**	0.0808		**0.025**	3.2	2.7	**0.008**	**0.008**	104
08/20/05	8	25.3	**0.009**	4.12	0.035	0.021	38.3	5.2	0.3	0.0677		0.13	37.1	2.09	**0.015**	0.024	82.8
08/20/05	9	21.3	**0.01**	0.71	**0.017**	**0.016**	15.4	3.87	0.28	0.0978		0.09	14.3	2	**0.014**	**0.015**	104
08/20/05	10	23.4	**0.004**	**0.35**	**0.004**	**0.013**	6.2	3.04	0.06	0.106		0.07	7.1	2.73	**0.007**	**0.013**	129
	Mean	23.5	0	0.61	0.0111	0.018	11.4	3.98	0.15	0.1		0.083	9.6	2.2	0.01	0.015	113
	Median	23.4	0.005	0.34	0.009	0.016	6.5	3.065	0.1035	0.0994		0.07	3.945	2.1	0.01	0.014	110
	St. Deviation	1.6	0	0.87	0.0112	0.007	12	1.85	0.14	0.028	NA	0.041	12.2	0.4	0.003	0.006	18
	# of values	20	20	20	9	20	9	20	20	20	0	9	20	20	20	9	9
	Minimum	20.8	0.0025	0.19	0.0015	0.006	0.8	2.34	0.01	0.0644		0.025	0.51	1.1	0.002	0.008	82.8
	Maximum	26.5	0.011	4.12	0.035	0.035	38.3	9.19	0.626	0.153		0.15	37.1	3.16	0.016	0.025	142
	% of values undetected		38%	5%	33%	5%			10%			11%			52%		
	# of values between MDL and MRL		12	15	5	12			1						10	7	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

Sample Date	Fish ID #	Total Solids (percent)	Antimony (mg/kg)	Arsenic (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Methyl Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Zinc (mg/kg)
North Fork Koktuli River (NK100B)-Thymallus arcticus Pallus-MUSCLE-Age ADULT																	
09/17/08	1	23.8	**0.0035**	0.21	**0.003**	**0.002**	**0.03**	1.69	**0.009**	0.396		0.02	0.07	1.75	0.008	0.021	15
09/17/08	2	23.8	**0.0035**	0.14	**0.003**	**0.002**	**0.03**	2.16	**0.0085**	0.309		0.01	0.06	1.81	**0.003**	0.016	17
09/17/08	3	23.5	**0.0035**	0.1	**0.003**	**0.0025**	0.25	1.5	**0.002**	0.388		**0.0035**	0.17	0.98	**0.003**	0.019	15.6
09/17/08	4	23.6	**0.0035**	0.18	**0.0035**	0.005	0.34	1.5	0.158	0.226		**0.0035**	0.09	1.74	**0.0035**	0.007	14.8
09/17/08	5	22	**0.021**	0.11	**0.003**	**0.002**	0.28	1.51	0.138	0.6		0.028	0.16	1.01	0.014	0.037	16.3
09/17/08	6	22.7	**0.004**	0.13	**0.0035**	0.005	0.19	1.99	0.156	0.423		0.014	0.09	1.76	**0.0035**	0.015	16
09/17/08	7	23.8	**0.004**	0.17	**0.0035**	**0.0025**	**0.035**	1.93	0.161	0.317		0.008	0.06	1.65	**0.0035**	0.005	15.4
09/17/08	8	23.4	**0.0035**	0.16	**0.003**	**0.0025**	**0.03**	1.6	**0.002**	0.247		**0.0035**	0.06	1.66	**0.003**	0.012	13.4
09/17/08	9	23.7	**0.0035**	0.09	**0.0035**	**0.0025**	**0.035**	1.7	**0.002**	0.441		**0.0035**	0.05	0.98	**0.0035**	0.01	16.7
09/17/08	10	23.4	**0.004**	0.08	**0.0035**	**0.0025**	**0.035**	1.62	**0.002**	0.593		**0.004**	0.04	0.8	**0.0035**	0.018	16.4
Mean		23.4	0.005	0.14	0.0033	0.0029	0.13	1.72	0.06	0.394		0.01	0.09	1.41	0.005	0.016	15.7
Median		23.55	0.0035	0.135	0.00325	0.0025	0.035	1.655	0.00875	0.392		0.006	0.065	1.655	0.0035	0.0155	15.8
St. Deviation		0.6	0.005	0.04	0.0003	0.0012	0.13	0.23	0.08	0.128	NA	0.008	0.05	0.41	0.004	0.009	1.1
# of values		10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10
Minimum		22	0.0035	0.08	0.003	0.002	0.03	1.5	0.002	0.226		0.0035	0.04	0.8	0.003	0.005	13.4
Maximum		23.8	0.021	0.21	0.0035	0.005	0.34	2.16	0.161	0.6		0.028	0.17	1.81	0.014	0.037	17
% of values undetected			100%		100%	80%	60%		60%			50%			80%		
# of values between MDL and MRL				10		2						5	10	1	2	7	
North Fork Koktuli River (NK100C)-Oncorhynchus kisutch-WHOLE-Age JUV																	
08/22/05	1	23	**0.004**	0.26	**0.0015**	0.036	0.4	2.27	0.02	0.137		0.09	0.7	1.99	0.006	0.01	118
08/22/05	2	22.4	**0.004**	0.25	**0.0015**	0.021	0.5	3.11	**0.01**	0.0834		0.08	0.4	2.14	0.009	0.009	123
08/22/05	3	21.3	**0.004**	0.23	**0.0015**	0.033	0.9	3.08	0.03	0.0926		0.09	0.4	1.52	0.008	0.013	144
08/22/05	4	23.5	**0.004**	0.15	**0.0015**	0.024	0.5	2.55	**0.01**	0.12		0.09	0.6	2.13	0.007	0.007	117
08/22/05	5	22.7	**0.004**	0.47	**0.0015**	0.028	1.8	12.3	0.07	0.136		0.08	1.8	1.43	0.006	0.017	113
08/22/05	6	24.4	**0.004**	0.22	**0.0015**	0.013	0.7	2.29	**0.01**	0.0936		0.06	0.7	1.43	0.005	0.006	105
08/22/05	7	25.2	**0.004**	0.16	**0.0015**	0.035	**0.15**	3.31	**0.01**	0.124		0.08	0.8	1.81	0.007	0.008	96.2
08/22/05	8	24.6	**0.004**	0.18	**0.0015**	0.03	0.7	2.7	**0.01**	0.158		0.1	0.5	2.07	0.009	0.007	97.4
08/22/05	9	22.2	**0.004**	0.2	**0.0015**	0.012	0.8	2.52	**0.01**	0.117		0.06	0.4	1.76	0.004	0.01	103
08/22/05	10	21	**0.004**	0.22	**0.0015**	0.028	1	9.38	0.03	0.144		0.09	1.1	1.54	0.009	0.009	116
Mean		23	0.004	0.23	0.0015	0.026	0.7	4.4	0.021	0.121		0.08	0.7	1.78	0.007	0.01	113
Median		22.85	0.004	0.22	0.0015	0.028	0.7	2.89	0.01	0.122		0.085	0.65	1.785	0.007	0.009	114.5
St. Deviation		1.4	0	0.09	0	0.008	0.4	3.5	0.019	0.024	NA	0.01	0.4	0.29	0.0018	0.003	14
# of values		10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10
Minimum		21	0.004	0.15	0.0015	0.012	0.15	2.27	0.01	0.0834		0.06	0.4	1.43	0.004	0.006	96.2
Maximum		25.2	0.004	0.47	0.0015	0.036	1.8	12.3	0.07	0.158		0.1	1.8	2.14	0.009	0.017	144
% of values undetected			100%		100%		10%		60%								
# of values between MDL and MRL				10		2	1								10	10	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
North Fork Koktuli River (NK100C)-Thymallus arcticus Pallus-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/31/04	1	24.8	**0.01**	0.5		**0.016**		3.04	0.153	0.0992			3.53	3	**0.008**		
08/31/04	2	24.3	**0.007**	**0.27**		**0.013**		2.84	0.066	0.0875			1.74	3.1	**0.006**		
08/31/04	3	24.2	**0.0025**	**0.24**		**0.016**		2.86	0.059	0.159			0.69	3	**0.012**		
08/31/04	4	23.3	**0.008**	**0.25**		0.025		9.07	0.132	0.0725			2.38	2.5	**0.009**		
08/31/04	5	23.8	**0.0025**	**0.17**		0.035		5.19	0.069	0.116			0.58	1.9	**0.008**		
08/31/04	6	23.3	**0.0025**	**0.33**		0.035		4.39	0.113	0.138			0.83	2.2	**0.01**		
08/31/04	7	24	**0.0025**	**0.19**		0.022		4.08	0.085	0.0787			0.53	2.3	**0.008**		
08/31/04	8	21.7	**0.0025**	**0.25**		0.023		4.94	0.108	0.125			0.64	2.5	**0.008**		
08/31/04	9	22.1	**0.0025**	**0.19**		0.031		4.81	0.08	0.0957			0.53	2	**0.006**		
08/31/04	10	22.2	**0.0025**	**0.19**		0.023		5.25	0.086	0.0784			0.63	2.7	**0.007**		
08/31/04	201	23.7	**0.005**	**0.32**		0.025		4.91	0.12	0.141			0.8	2.7	**0.012**		
	Mean	23.4	0	0.26		0.024		4.67	0.1	0.108			1.2	2.5	0.0085		
	Median	23.7	0.0025	0.25		0.023		4.81	0.086	0.0992			0.69	2.5	0.008		
	St. Deviation	1	0	0.09	NA	0.007	NA	1.73	0.03	0.029	NA	NA	1	0.4	0.0021	NA	NA
	# of values	11	11	11	0	11	0	11	11	11	0	0	11	11	11	0	0
	Minimum	21.7	0.0025	0.17		0.013		2.84	0.059	0.0725		0	0.53	1.9	0.006		
	Maximum	24.8	0.01	0.5		0.035	0	9.07	0.153	0.159		0	3.53	3.1	0.012		
	% of values undetected		58%	8%		8%			8%						8%		
	# of values between MDL and MRL		4	10		3									11		

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
North Fork Koktuli River (NK119A)-Salvelinus malma Walbaum-WHOLE-Age juv																	
Sample Date	**Fish ID #**																
08/29/04	1	24.4	**0.0025**	0.18		0.017		4.66	0.182	0.076			1.24	1.3	0.007		
08/29/04	3	24.5	**0.0025**	0.16		0.022		3.56	0.191	0.0906			0.69	1.4	**0.002**		
08/29/04	4	23.8	**0.0025**	0.18		0.014		5.23	0.267	0.0306			0.48	1.1	**0.002**		
08/29/04	5	26.7	**0.0025**	0.25		0.015		4.71	0.204	0.0662			0.73	1.5	**0.002**		
08/29/04	6	25.5	0.007	0.27		0.015		5.14	0.294	0.0532			0.93	1.6	0.005		
08/29/04	7	25.2	**0.0025**	0.25		0.019		5.8	0.232	0.0647			1.77	2	0.004		
08/29/04	8	24.3	**0.0025**	0.2		0.014		3.58	0.15	0.0822			1.67	1.8	0.005		
08/29/04	9	24.5	0.01	0.54		0.039		5.02	0.389	0.0629			6.61	2.4	0.008		
08/29/04	10	23.3	**0.0025**	0.23		0.022		4.08	0.18	0.096			1.9	1.6	0.004		
08/29/04	201	24.3	**0.0025**	0.17		0.011		6.16	0.178	0.054			0.88	2.2	0.009		
08/21/05	1	23.1	**0.004**	0.19	**0.0015**	0.016	0.5	5.84	0.05	0.0901		**0.025**	1.1	2.22	0.004	0.017	121
08/21/05	2	22.4	**0.004**	0.15	**0.0015**	0.013	**0.15**	3.21	0.02	0.11		**0.025**	0.6	2.69	0.002	0.009	113
08/21/05	3	22.4	**0.004**	0.54	0.019	0.028	12.6	5.71	0.17	0.0961		0.12	16	2.28	0.007	0.02	127
08/21/05	4	21.8	**0.004**	0.19	**0.0015**	0.016	2.5	3.44	0.03	0.058		0.06	2.2	2.08	0.005	0.018	111
08/21/05	5	24.3	**0.004**	0.62	0.018	0.031	21.6	7.64	0.22	0.0602		0.13	24.4	1.98	0.008	0.026	142
08/21/05	6	23.3	**0.004**	0.15	**0.0015**	0.013	3.3	4.43	0.02	0.068		**0.025**	2.5	1.69	0.004	0.013	125
08/21/05	7	24.6	**0.004**	0.26	0.005	0.01	3	5.22	0.04	0.0629		0.05	3.2	2.16	0.007	0.018	111
08/21/05	8	22.9	**0.004**	0.19	**0.0015**	0.013	1.3	2.59	**0.01**	0.0615		**0.025**	1.1	1.73	0.003	0.017	110
08/21/05	9	20.6	**0.004**	0.22	**0.0015**	0.022	0.4	3.01	**0.01**	0.0656		0.07	0.7	2.4	0.005	0.019	135
08/21/05	10	23.5	**0.004**	0.45	0.007	0.015	7	4.11	0.08	0.0735		0.1	7.8	2.19	0.005	0.019	99.6
	Mean	23.8	0	0.27	0.0058	0.018	5.2	4.66	0.15	0.071		0.063	4	1.9	0.005	0.018	119
	Median	24.05	0.004	0.21	0.0015	0.0155	2.75	4.685	0.174	0.0659		0.055	1.455	1.99	0.005	0.018	117
	St. Deviation	1.4	0	0.14	0.007	0.007	6.9	1.25	0.11	0.019	NA	0.041	6	0.4	0.002	0.004	13
	# of values	20	20	20	10	20	10	20	20	20	0	10	20	20	20	10	10
	Minimum	20.6	0.0025	0.15	0.0015	0.01	0.15	2.59	0.01	0.0306		0.025	0.48	1.1	0.002	0.009	99.6
	Maximum	26.7	0.01	0.62	0.019	0.039	21.6	7.64	0.389	0.11		0.13	24.4	2.69	0.009	0.026	142
	% of values undetected		90%	5%	60%	5%	10%		10%			40%			19%		
	# of values between MDL and MRL		2	17	4	14	1								17	8	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

Sample Date	Fish ID #	Total Solids (percent)	Antimony (mg/kg)	Arsenic (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Methyl Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Zinc (mg/kg)
South Fork Koktuli River (SK100A)-Oncorhynchus kisutch & tshawytscha-WHOLE-Age JUV																	
08/29/04	1	27.5	**0.006**	0.52		0.05		8.59	0.098	0.0778			1.81	2.3	**0.011**		
08/29/04	2	25.9	**0.0025**	**0.38**		0.028		2.9	0.057	0.0984			1.11	2.6	**0.002**		
08/29/04	3	23.6	**0.0025**	**0.32**		0.043		2.58	0.049	0.377			1.21	3	**0.007**		
08/29/04	4	23.4	**0.0025**	**0.22**		0.035		3.15	0.029	0.195			1.02	2.1	**0.007**		
08/29/04	5	25.8	**0.0025**	**0.43**		**0.019**		2.9	0.053	0.118			0.84	2.5	**0.008**		
08/29/04	6	23.8	**0.0025**	**0.3**		0.029		3.47	0.042	0.145			0.85	2.5	**0.005**		
08/29/04	7	25.6	**0.0025**	**0.23**		0.022		3.11	0.067	0.163			0.81	1.6	**0.006**		
08/29/04	8	23.3	**0.0025**	**0.24**		0.03		3.24	0.059	0.133			0.83	2.5	**0.004**		
08/29/04	9	25.9	**0.0025**	**0.24**		0.028		3.1	0.03	0.108			0.74	3	**0.002**		
08/29/04	10	26.5	**0.0025**	**0.26**		0.028		2.87	0.046	0.113			0.76	2.1	**0.002**		
08/29/04	201	24	**0.0025**	**0.21**		0.051		4.46	0.05	0.105			0.95	1.8	**0.002**		
Mean		25	0	0.3		0.033		3.67	0.053	0.148			1	2.4	0.005		
Median		25.6	0.0025	0.26		0.029		3.11	0.05	0.118			0.85	2.5	0.005		
St. Deviation		1.4	0	0.1	NA	0.011	NA	1.7	0.019	0.083	NA	NA	0	0.4	0.003	NA	NA
# of values		11	11	11	0	11	0	11	11	11	0	0	11	11	11	0	0
Minimum		23.3	0.0025	0.21		0.019		2.58	0.029	0.0778			0.74	1.6	0.002		
Maximum		27.5	0.006	0.52		0.051		8.59	0.098	0.377			1.81	3	0.011		
% of values undetected			83%			8%									42%		
# of values between MDL and MRL			1	11		1			1						7		

Sample Date	Fish ID #																
South Fork Koktuli River (SK100A)-Oncorhynchus kisutch-WHOLE-Age JUV																	
08/20/05	1	23.6	**0.004**	**0.31**	**0.0015**	**0.018**	1.6	6.23	0.03	0.0902		0.06	1.3	1.12	**0.006**	**0.01**	148
08/20/05	2	22	**0.004**	**0.29**	**0.0015**	0.044	1.2	4.51	0.02	0.163		0.07	1.1	1.46	**0.004**	**0.012**	161
08/20/05	3	23.3	**0.004**	**0.3**	**0.0015**	0.034	0.6	2.57	0.03	0.157		0.06	1.1	1.58	**0.001**	**0.018**	162
08/20/05	4	23.7	**0.004**	**0.28**	**0.0015**	0.032	0.7	4.05	0.02	0.178		0.06	1	1.56	**0.004**	**0.018**	155
08/20/05	5	23.6	**0.004**	**0.4**	**0.0015**	0.051	1.2	2.46	0.04	0.163		0.1	0.8	1.83	**0.004**	0.023	131
08/20/05	6	23.3	**0.004**	**0.43**	**0.0015**	0.029	1.3	2.25	0.04	0.116		0.08	0.4	2.67	**0.004**	**0.007**	159
08/20/05	7	21.8	**0.004**	**0.44**	**0.0015**	0.022	1.1	2.55	0.02	0.12		0.07	0.4	2.59	**0.003**	**0.007**	125
08/20/05	8	21.5	**0.004**	**0.31**	**0.0015**	0.066	0.8	2.89	0.05	0.355		0.08	0.3	2.03	**0.004**	**0.008**	166
08/20/05	9	22.3	**0.004**	**0.27**	**0.0015**	0.033	1.5	2.65	0.05	0.193		0.09	0.7	3.67	**0.001**	**0.009**	134
08/20/05	10	20.7	**0.004**	**0.45**	**0.0015**	0.041	1	2.71	0.03	0.159		0.08	0.6	2.36	**0.005**	**0.008**	197
Mean		22.6	0.004	0.35	0.0015	0.037	1.1	3.29	0.033	0.169		0.08	0.8	2.09	0.0036	0.012	154
Median		22.8	0.004	0.31	0.0015	0.0335	1.15	2.68	0.03	0.161		0.075	0.75	1.93	0.004	0.0095	157
St. Deviation		1.1	0	0.07	0	0.014	0.3	1.27	0.012	0.072	NA	0.01	0.3	0.75	0.0016	0.006	21
# of values		10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10
Minimum		20.7	0.004	0.27	0.0015	0.018	0.6	2.25	0.02	0.0902		0.06	0.3	1.12	0.001	0.007	125
Maximum		23.7	0.004	0.45	0.0015	0.066	1.6	6.23	0.05	0.355		0.1	1.3	3.67	0.006	0.023	197
% of values undetected			100%		100%										20%		
# of values between MDL and MRL				10		1									8	9	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
South Fork Koktuli River (SK100A)-Thymallus arcticus Pallus-MUSCLE-Age ADULT																	
Sample Date	**Fish ID #**																
09/16/08	1	21.6	**0.004**	0.18	**0.0035**	**0.0025**	0.84	1.75	**0.002**	0.62		0.016	0.19	2.36	0.017	0.011	18.2
09/16/08	2	22.6	0.112	0.23	**0.0035**	0.014	**0.035**	1.9	0.098	0.469		0.061	0.16	2.82	0.019	0.051	15.6
09/16/08	3	21.1	0.01	0.15	**0.0035**	**0.0025**	**0.035**	1.88	0.005	0.626		0.015	0.07	2.75	**0.0035**	0.01	17
09/16/08	4	21.1	**0.0035**	0.23	**0.003**	**0.002**	**0.03**	1.36	**0.002**	0.414		0.01	0.05	3.23	**0.003**	0.015	15.4
09/16/08	5	21	**0.0035**	0.2	**0.003**	**0.002**	**0.03**	1.37	**0.002**	0.309		0.008	0.04	2.52	**0.003**	0.006	17.2
09/16/08	6	22.7	**0.004**	0.21	**0.0035**	**0.0025**	7.28	1.84	0.017	0.619		0.063	3.04	2.62	**0.0035**	0.007	15.9
09/16/08	7	22.6	**0.004**	0.18	**0.0035**	**0.0025**	0.51	1.52	0.005	0.301		0.015	0.28	3.25	**0.0035**	0.011	20
09/16/08	8	21.5	**0.0035**	0.25	**0.003**	**0.002**	0.94	1.89	0.005	0.532		0.014	0.44	2.14	**0.003**	0.007	16.1
09/16/08	9	22.5	**0.0035**	0.2	**0.003**	**0.002**	0.64	2.04	0.005	0.539		0.016	0.3	1.99	**0.003**	0.01	16
09/16/08	10	21.1	**0.0035**	0.15	**0.003**	**0.0025**	0.49	1.31	0.006	0.354		0.014	0.23	2.03	**0.003**	0.011	20.2
Mean		21.8	0.02	0.2	0.0033	0.003	1.1	1.69	0.015	0.478		0.023	0.5	2.57	0.006	0.014	17.2
Median		21.55	0.00375	0.2	0.00325	0.0025	0.5	1.795	0.005	0.5005		0.015	0.21	2.57	0.00325	0.0105	16.55
St. Deviation		0.7	0.03	0.03	0.0003	0.004	2.2	0.27	0.03	0.128	NA	0.021	0.9	0.45	0.006	0.013	1.8
# of values		10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10
Minimum		21	0.0035	0.15	0.003	0.002	0.03	1.31	0.002	0.301		0.008	0.04	1.99	0.003	0.006	15.4
Maximum		22.7	0.112	0.25	0.0035	0.014	7.28	2.04	0.098	0.626		0.063	3.04	3.25	0.019	0.051	20.2
% of values undetected			80%		100%	90%	40%		30%						80%		
# of values between MDL and MRL			1	10		1			6			8	5		1	9	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
South Fork Koktuli River (SK100B)-Oncorhynchus kisutch-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/26/04	1	23.1	**0.0025**	0.29		0.036		3.09	0.034	0.0631			0.88	2.4	**0.002**		
08/26/04	2	24.9	**0.0025**	0.17		0.028		2.31	0.038	0.0876			0.92	2.2	**0.002**		
08/26/04	3	24.1	0.005	0.21		0.047		3.25	0.042	0.089			0.85	2.7	0.005		
08/26/04	4	23	0.005	0.22		0.06		3.58	0.088	0.113			0.96	2.5	0.004		
08/26/04	5	24.2	**0.0025**	0.28		0.043		3.33	0.09	0.0745			0.73	2	**0.002**		
08/26/04	6	25.6	**0.0025**	0.22		0.036		2.99	0.07	0.0918			1	2.2	**0.002**		
08/26/04	7	24.9	**0.0025**	0.32		0.057		3.36	0.103	0.0534			0.75	2.4	0.004		
08/26/04	8	22.6	**0.0025**	0.16		0.043		5.23	0.087	0.0681			0.79	2.2	**0.002**		
08/26/04	9	24.6	**0.0025**	0.16		0.041		9.25	0.042	0.0496			0.87	1.9	**0.002**		
08/26/04	10	26.9	**0.0025**	0.23		0.036		2.96	0.04	0.0816			0.67	2.6	**0.002**		
08/26/04	201	25.8	**0.0025**	0.34		0.042		2.55	0.042	0.122			0.82	1.6	**0.002**		
08/20/05	1	23	**0.004**	0.26	**0.0015**	0.088	0.6	2.23	**0.01**	0.122		0.06	0.3	2.84	0.003	0.008	114
08/20/05	2	22.6	**0.004**	0.26	**0.0015**	0.042	1.1	3.25	0.05	0.0877		0.07	1	1.77	**0.001**	0.011	135
08/20/05	3	22.6	**0.004**	0.28	**0.0015**	0.074	0.6	3.21	0.03	0.121		0.07	0.7	2.6	**0.001**	0.013	172
08/20/05	4	22.2	**0.004**	0.23	**0.0015**	0.046	1.5	4.27	0.03	0.127		0.07	0.8	2.65	**0.001**	0.012	159
08/20/05	5	25.4	**0.004**	0.25	**0.0015**	0.037	2.2	2.68	**0.01**	0.355		0.05	0.5	4.03	0.002	0.016	138
08/20/05	6	23.3	0.011	0.23	**0.0015**	0.052	1.1	6.9	0.03	0.107		0.08	1	2.26	0.009	0.018	148
08/20/05	7	23.5	**0.004**	0.28	**0.0015**	0.045	0.8	2.46	0.03	0.0737		0.08	0.5	2.83	0.004	0.008	121
08/20/05	8	25.3	**0.004**	0.42	**0.0015**	0.057	0.4	4.99	0.12	0.0684		0.12	0.3	1.5	0.014	0.022	111
08/20/05	9	22	**0.004**	0.34	**0.0015**	0.089	**0.15**	4.13	0.05	0.195		0.1	0.2	1.29	0.013	0.011	134
08/20/05	10	21.2	**0.004**	0.22	**0.0015**	0.071	0.5	7.12	0.02	0.11		0.07	0.6	2.24	0.004	0.01	132
	Mean	23.8	0	0.26	0.0015	0.051	0.9	3.96	0.05	0.108		0.077	1	2.3	0.004	0.013	136
	Median	23.5	0.004	0.25	0.0015	0.045	0.7	3.25	0.042	0.089		0.07	0.79	2.26	0.002	0.0115	134.5
	St. Deviation	1.5	0	0.06	0	0.017	0.6	1.82	0.03	0.065	NA	0.02	0	0.6	0.004	0.005	19
	# of values	21	21	21	10	21	10	21	21	21	0	10	21	21	21	10	10
	Minimum	21.2	0.0025	0.16	0.0015	0.028	0.15	2.23	0.01	0.0496		0.05	0.2	1.29	0.001	0.008	111
	Maximum	26.9	0.011	0.42	0.0015	0.089	2.2	9.25	0.12	0.355		0.12	1	4.03	0.014	0.022	172
	% of values undetected		86%	5%	100%	5%	10%		9%						55%		
	# of values between MDL and MRL		3	21			1		1						10	9	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

Sample Date	Fish ID #	Total Solids (percent)	Antimony (mg/kg)	Arsenic (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Methyl Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Zinc (mg/kg)
South Fork Koktuli River (SK100B)-Thymallus arcticus Pallus-MUSCLE-Age ADULT																	
09/13/07	1	19.6	**0.01**	1.42	**0.0015**	0.009	0.6	2.85	0.006	0.369		**0.01**	0.05	3.2	0.006	**0.0025**	16.6
09/13/07	2	20	**0.01**	1.15	**0.0015**	0.009	**0.25**	2.47	0.022	0.4		0.03	0.08	2.9	**0.0025**	0.008	13.4
09/13/07	3	20.2	**0.01**	1.41	**0.0015**	0.008	**0.25**	2.58	0.014	0.656		**0.01**	0.06	3.4	**0.0025**	0.007	15.1
09/13/07	4	20.2	**0.01**	1.01	**0.0015**	0.008	0.6	1.93	0.022	0.229		**0.01**	0.05	2.6	**0.0025**	0.015	14.3
09/13/07	5	26.6	**0.01**	1.24	**0.0015**	0.01	**0.25**	2.29	0.04	0.477		**0.01**	0.11	3.1	**0.0025**	0.01	16
09/13/07	6	23	**0.01**	1.25	**0.0015**	**0.004**	0.5	2.92	0.073	0.3		**0.01**	0.03	2.9	**0.0025**	0.009	14.1
09/13/07	7	19.7	**0.01**	1.18	**0.0015**	0.01	0.5	1.95	0.039	0.599		**0.01**	0.06	3	**0.0025**	0.007	15.7
09/13/07	8	20.8	**0.01**	1.18	**0.0015**	0.01	0.7	1.95	0.106	0.36		**0.01**	0.03	3.2	**0.0025**	0.012	15.6
09/13/07	9	20.2	**0.01**	1.05	**0.0015**	0.008	**0.25**	2.06	0.015	0.555		**0.01**	0.04	2.7	**0.0025**	0.016	15
09/13/07	10	20.1	**0.01**	1.28	**0.0015**	**0.0035**	**0.25**	1.89	**0.0025**	0.597		0.02	0.04	3.3	**0.0025**	0.008	13.6
Mean		21	0.01	1.22	0.0015	0.008	0.42	2.29	0.03	0.454		0.013	0.06	3	0.0029	0.009	14.9
Median		20.2	0.01	1.21	0.0015	0.0085	0.375	2.175	0.022	0.4385		0.01	0.05	3.05	0.0025	0.0085	15.05
St. Deviation		2.2	0	0.13	0	0.002	0.18	0.39	0.03	0.144	NA	0.007	0.02	0.3	0.0011	0.004	1.1
# of values		10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10
Minimum		19.6	0.01	1.01	0.0015	0.0035	0.25	1.89	0.0025	0.229		0.01	0.03	2.6	0.0025	0.0025	13.4
Maximum		26.6	0.01	1.42	0.0015	0.01	0.7	2.92	0.106	0.656		0.03	0.11	3.4	0.006	0.016	16.6
% of values undetected			100%		100%	20%	50%		10%			80%			90%	10%	
# of values between MDL and MRL						8	5		3			2	10		1	9	
South Fork Koktuli River (SK100C)-Oncorhynchus kisutch-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/22/05	1	22.3	**0.004**	0.36	**0.0015**	0.256	0.5	3.43	0.08	0.0673		0.16	0.4	2.71	0.011	0.02	164
08/22/05	2	21.1	**0.004**	0.48	**0.0015**	0.532	1.5	3.72	0.17	0.088		0.17	0.6	2.91	0.038	0.02	155
08/22/05	3	21.4	**0.004**	0.33	**0.0015**	0.178	0.8	3.55	0.07	0.0655		0.15	0.5	1.98	0.008	0.018	146
08/22/05	4	21.9	**0.004**	0.26	**0.0015**	0.24	0.9	3.02	0.06	0.073		0.12	0.5	2.29	0.007	0.018	151
08/22/05	5	21.4	**0.004**	0.26	**0.0015**	0.161	0.5	2.89	0.03	0.0675		0.09	0.3	2.78	0.005	0.015	150
08/22/05	6	21.1	**0.004**	0.39	**0.0015**	0.31	0.7	3.51	0.08	0.068		0.13	0.3	2.46	0.006	0.022	134
08/22/05	7	22.1	**0.004**	0.32	**0.0015**	0.266	0.8	3.72	0.06	0.0921		0.1	0.5	2.76	0.005	0.013	142
08/22/05	8	21.5	**0.004**	0.27	**0.0015**	0.149	0.4	2.89	0.02	0.0666		0.12	0.4	2.53	**0.001**	0.014	146
08/22/05	9	22.6	**0.004**	0.29	**0.0015**	0.148	0.4	3.24	0.04	0.064		0.09	0.4	2.8	0.006	0.018	138
08/22/05	10	21.1	**0.004**	0.25	**0.0015**	0.167	**0.15**	4.07	0.03	0.0757		0.08	0.5	2.74	0.006	0.016	148
Mean		21.7	0.004	0.32	0.0015	0.241	0.7	3.4	0.06	0.0728		0.12	0.44	2.6	0.009	0.017	147
Median		21.45	0.004	0.305	0.0015	0.209	0.6	3.47	0.06	0.06775		0.12	0.45	2.725	0.006	0.018	147
St. Deviation		0.5	0	0.07	0	0.117	0.4	0.39	0.04	0.0098	NA	0.03	0.1	0.28	0.01	0.003	9
# of values		10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10
Minimum		21.1	0.004	0.25	0.0015	0.148	0.15	2.89	0.02	0.064		0.08	0.3	1.98	0.001	0.013	134
Maximum		22.6	0.004	0.48	0.0015	0.532	1.5	4.07	0.17	0.0921		0.17	0.6	2.91	0.038	0.022	164
% of values undetected			100%		100%		10%								10%		
# of values between MDL and MRL				10			2								8	7	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
South Fork Koktuli River (SK100F)-Esox lucius linnaeus-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/31/04	1	19.9	**0.0025**	0.22		0.015		2.9	**0.01**	0.0453			0.9	1.5	**0.002**		
08/31/04	2	20.6	**0.0025**	0.14		0.007		2.83	**0.01**	0.0778			0.72	1.4	**0.002**		
08/31/04	3	21.3	**0.0025**	0.17		0.016		2.07	**0.01**	0.0456			0.61	1.6	**0.002**		
08/31/04	4	22.5	**0.0025**	0.16		0.012		2.05	**0.01**	0.0644			0.65	1.7	**0.002**		
08/31/04	5	20.9	**0.0025**	0.12		0.013		2.15	**0.01**	0.0828			0.75	1	**0.002**		
08/31/04	6	21.8	**0.0025**	0.12		0.016		2.16	**0.01**	0.0703			0.75	1.2	**0.002**		
08/31/04	7	21.2	**0.0025**	0.15		0.01		2.33	0.022	0.0767			0.91	1	**0.002**		
08/31/04	8	20.8	**0.0025**	0.24		0.018		2.9	**0.01**	0.0558			0.81	1.4	**0.002**		
08/31/04	9	20.6	**0.0025**	0.13		0.011		2.5	**0.01**	0.0736			0.72	1.1	**0.002**		
08/31/04	10	20.8	**0.0025**	0.17		0.013		1.99	**0.01**	0.0716			0.57	1.2	**0.002**		
08/31/04	201	21.6	**0.0025**	0.11		0.007		1.96	0.009	0.0722			1.29	1.4	**0.002**		
08/22/05	1	20.9	**0.004**	0.29	**0.0015**	0.026	0.6	5.8	**0.01**	0.0412		**0.025**	1.1	2.4	0.003	0.016	147
08/22/05	2	20.6	**0.004**	0.21	**0.0015**	0.016	0.8	2.14	**0.01**	0.119		**0.025**	0.6	2.5	0.002	0.014	122
08/22/05	3	19.8	**0.004**	0.21	**0.0015**	0.037	3.8	4.13	**0.01**	0.0424		0.06	0.5	2.7	**0.001**	0.015	138
08/22/05	4	20.8	**0.004**	0.14	**0.0015**	0.024	1.1	2.63	**0.01**	0.0553		**0.025**	0.5	2.3	**0.001**	0.015	137
08/22/05	5	21	**0.004**	0.45	**0.0015**	0.023	0.6	11.2	**0.01**	0.041		**0.025**	1.1	2.6	0.002	0.029	161
08/22/05	6	21.5	**0.004**	0.28	**0.0015**	0.033	4.3	3.63	0.06	0.047		0.1	2.8	2.9	0.002	0.018	129
08/22/05	7	20.8	**0.004**	0.18	**0.0015**	0.021	1.2	3.02	**0.01**	0.0719		**0.025**	1	3.1	0.003	0.013	106
08/22/05	8	20.2	**0.004**	0.16	**0.0015**	0.01	0.7	3.75	**0.01**	0.0493		**0.025**	0.5	2.8	**0.001**	0.013	99.9
08/22/05	9	19.3	**0.004**	0.23	**0.0015**	0.032	3.5	2.56	0.02	0.0547		0.06	0.7	1.9	**0.001**	0.017	182
08/22/05	10	21.7	**0.004**	0.15	**0.0015**	0.013	**0.15**	2.5	**0.01**	0.0818		**0.025**	0.4	2.3	**0.001**	0.012	99.7
	Mean	20.9	0.003	0.19	0.0015	0.018	1.7	3.2	0.013	0.064		0.04	0.9	1.9	0.002	0.016	132
	Median	20.8	0.0025	0.17	0.0015	0.016	0.95	2.56	0.01	0.0644		0.025	0.72	1.7	0.002	0.015	133
	St. Deviation	0.7	0.001	0.08	0	0.009	1.6	2	0.011	0.019	NA	0.026	0.5	0.7	0.001	0.005	27
	# of values	21	21	21	10	21	10	21	21	21	0	10	21	21	21	10	10
	Minimum	19.3	0.0025	0.11	0.0015	0.007	0.15	1.96	0.009	0.041		0.025	0.4	1	0.001	0.012	99.7
	Maximum	22.5	0.004	0.45	0.0015	0.037	4.3	11.2	0.06	0.119		0.1	2.8	3.1	0.003	0.029	182
	% of values undetected		100%	5%	100%	5%	10%		82%			70%			77%		
	# of values between MDL and MRL			21		14			1						5	9	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
South Fork Koktuli River (SK100F)-Thymallus arcticus Pallus-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/31/04	1	22.8	**0.0025**	0.13		0.018		3.97	0.02	0.0961			1.7	3.4	0.005		
08/31/04	2	23.1	**0.0025**	0.23		0.013		3.07	0.039	0.0697			1.57	5	**0.002**		
08/31/04	3	22.6	**0.0025**	0.15		0.017		4.03	0.066	0.0914			1.63	3.3	**0.002**		
08/31/04	4	23.9	**0.0025**	0.13		0.008		2.84	0.02	0.0744			1.44	3.8	**0.002**		
08/31/04	5	22	**0.0025**	0.41		0.028		3.37	0.032	0.0999			1.73	3.3	**0.002**		
08/31/04	6	22.6	**0.0025**	0.19		0.011		2.69	0.02	0.0964			1.2	3.6	0.004		
08/31/04	7	22.4	**0.0025**	0.28		0.017		3.3	0.021	0.0862			1.1	4.1	**0.002**		
08/31/04	8	21.6	**0.0025**	0.17		0.03		3.75	0.025	0.122			1.27	2.8	**0.002**		
08/31/04	9	21.5	**0.0025**	0.19		0.029		3.76	**0.01**	0.0807			0.89	2.1	**0.002**		
08/31/04	10	22.1	**0.0025**	0.25		0.013		3.27	**0.01**	0.0804			1.13	2.5	**0.002**		
08/31/04	201	22.7	**0.0025**	0.37		0.012		3.3	0.017	0.0516			0.88	3	**0.002**		
08/22/05	1	24.2	**0.004**	0.13	**0.0015**	0.023	0.6	3.1	**0.01**	0.0615		0.09	0.6	2.6	0.013	0.025	77.5
08/22/05	2	20.2	**0.004**	0.2	**0.0015**	0.031	1.1	5.68	**0.01**	0.0837		0.1	0.4	3.7	0.004	0.015	120
08/22/05	3	20.1	**0.004**	0.21	**0.0015**	0.033	1.1	6.37	**0.01**	0.0692		0.07	0.2	3.1	0.005	0.014	114
08/22/05	4	19.9	**0.004**	0.32	**0.0015**	0.041	0.9	5.89	0.03	0.0669		0.14	0.4	4	0.004	0.016	113
08/22/05	5	20.2	**0.004**	0.22	**0.0015**	0.026	1	3.45	**0.01**	0.0796		0.11	0.3	3.7	0.004	0.016	98.2
08/22/05	6	19.5	**0.004**	0.28	**0.0015**	0.041	0.7	4.3	0.03	0.0669		0.11	0.3	4.7	0.004	0.017	106
08/22/05	7	20.2	**0.004**	0.28	**0.0015**	0.038	0.8	4.97	0.02	0.0651		0.09	0.3	4	0.003	0.014	114
08/22/05	8	19.5	**0.004**	0.21	**0.0015**	0.025	1	5.65	**0.01**	0.0885		0.09	0.3	3.9	0.004	0.016	103
08/22/05	9	20.4	**0.004**	0.21	**0.0015**	0.024	1.2	5.29	0.03	0.0671		0.07	0.3	3.7	0.004	0.01	104
08/22/05	10	17.4	**0.004**	0.26	**0.0015**	0.041	0.9	4.19	**0.01**	0.0685		0.09	0.2	3.5	0.004	0.017	118
	Mean	21.4	0.003	0.23	0.0015	0.025	0.93	4.11	0.021	0.079		0.096	0.8	3.5	0.004	0.016	107
	Median	21.6	0.0025	0.21	0.0015	0.025	0.95	3.76	0.02	0.0796		0.09	0.88	3.6	0.004	0.016	109.5
	St. Deviation	1.7	0.001	0.08	0	0.011	0.19	1.1	0.014	0.016	NA	0.021	0.6	0.7	0.002	0.004	12
	# of values	21	21	21	10	21	10	21	21	21	0	10	21	21	21	10	10
	Minimum	17.4	0.0025	0.13	0.0015	0.008	0.6	2.69	0.01	0.0516		0.07	0.2	2.1	0.002	0.01	77.5
	Maximum	24.2	0.004	0.41	0.0015	0.041	1.2	6.37	0.066	0.122		0.14	1.73	5	0.013	0.025	120
	% of values undetected		100%	5%	100%	5%			41%						45%		
	# of values between MDL and MRL			21		8			1						12	9	
South Fork Koktuli River (SK100G)-Thymallus arcticus Pallus-MUSCLE-Age JUV																	
Sample Date	**Fish ID #**																
09/17/08	1	22.1	**0.0035**	0.25	**0.003**	0.027	**0.03**	2.17	0.211			0.029 J	0.13	2.63	**0.003**	0.02	44
09/17/08	2	22.3	**0.004**	0.24	**0.0035**	0.009	0.035	2.27	0.06	0.113		0.023 J	0.08	2.15	**0.0035**	0.01	44.8
09/17/08	3	21.7	**0.004**	0.26	**0.0035**	0.008	0.035	2.53	**0.0095**	0.227		0.032 J	0.08	2.1	**0.0035**	0.024	31.6
09/17/08	4	21.2	**0.0035**	0.23	**0.003**	0.011	0.035	2.07	0.148	0.21		0.022 J	0.07	1.69	**0.003**	0.01	36.9
	Mean	21.8	0.0038	0.25	0.0033	0.014	0.034	2.26	0.11	0.18		0.027	0.09	2.14	0.0033	0.016	39.3
	Median	21.9	0.00375	0.245	0.00325	0.01	0.035	2.22	0.104	0.21		0.026	0.08	2.125	0.00325	0.015	40.45
	St. Deviation	0.5	0.0003	0.01	0.0003	0.009	0.003	0.2	0.09	0.06	NA	0.005	0.03	0.38	0.0003	0.007	6.3
	# of values	4	4	4	4	4	4	4	4	3	0	4	4	4	4	4	4
	Minimum	21.2	0.0035	0.23	0.003	0.008	0.03	2.07	0.0095	0.113		0.022	0.07	1.69	0.003	0.01	31.6
	Maximum	22.3	0.004	0.26	0.0035	0.027	0.035	2.53	0.211	0.227		0.032	0.13	2.63	0.0035	0.024	44.8
	% of values undetected		100%		100%		100%		25%						100%		
	# of values between MDL and MRL			4		3						4	4			2	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
South Fork Koktuli River (SK100G)-Thymallus arcticus Pallus-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/31/04	1	23.9	0.007	**0.25**		0.016		2.79	0.029	0.0834			1.39	3.4	**0.002**		
08/31/04	2	24.1	**0.0025**	**0.25**		0.011		3.19	0.013	0.0909			0.88	3.1	**0.002**		
08/31/04	3	24.4	**0.0025**	**0.25**		0.013		3.66	0.016	0.156			0.86	3.1	**0.002**		
08/31/04	4	23.6	**0.0025**	**0.25**		0.014		3.14	0.019	0.251			0.92	2.3	0.005		
08/31/04	5	24	**0.0025**	**0.25**		0.01		4.37	0.014	0.238			0.82	3.1	**0.002**		
08/31/04	6	23	**0.0025**	**0.25**		0.01		3.4	0.013	0.184			0.98	2.9	**0.002**		
08/31/04	7	22.8	**0.0025**	**0.25**		0.019		3.7	0.033	0.268			1.12	2.5	**0.002**		
08/31/04	8	24.1	**0.0025**	**0.25**		0.018		3.16	0.028	0.0925			1.01	2.5	**0.002**		
08/31/04	9	22	**0.0025**	**0.25**		0.023		3.9	0.015	0.17			0.72	2.4	**0.002**		
08/31/04	10	24.4	**0.0025**	**0.255**		0.014		3.29	0.018	0.138			1.01	2.8	**0.002**		
08/31/04	201	21.6	**0.0025**	0.26		0.032		5.78	0.029	0.189			1.06	3.1	0.009		
08/24/05	1	22.5	**0.004**	0.1	**0.0015**	0.007	5.3	3.69	0.03	0.225		0.11	0.5	1.5	0.011	0.018	102
08/24/05	2	22.8	**0.004**	0.12	**0.0015**	0.007	1.7	3.58	**0.01**	0.273		0.08	0.8	2	0.008	0.018	97.8
08/24/05	3	24.4	**0.004**	0.13	**0.0015**	0.006	0.5	2.64	0.02	0.187		0.06	0.3	3	0.004	0.014	91.7
08/24/05	4	23.8	**0.004**	0.16	**0.0015**	0.01	0.5	3.83	0.02	0.19		0.08	0.3	2.6	0.008	0.019	101
08/24/05	5	23.7	**0.004**	0.14	**0.0015**	0.01	0.8	8.67	0.04	0.227		0.08	0.7	2.6	0.008	0.019	96.9
08/24/05	6	23	**0.004**	0.11	**0.0015**	0.006	2.3	4.69	0.03	0.202		0.08	0.4	2.4	0.011	0.018	96.8
08/24/05	7	25.1	**0.004**	0.12	**0.0015**	0.005	0.7	4.64	**0.01**	0.179		**0.025**	0.3	2.5	0.006	0.013	75.6
08/24/05	8	22.4	**0.004**	0.11	**0.0015**	0.008	0.7	3.68	**0.01**	0.21		0.06	0.4	2.1	0.009	0.016	109
08/24/05	9	21.1	**0.004**	0.14	**0.0015**	0.016	1.1	4.15	0.03	0.201		0.07	0.7	2.1	0.01	0.017	93.6
08/24/05	10	21	**0.004**	0.13	**0.0015**	0.009	0.6	7.41	0.05	0.202		0.07	2.8	2.6	0.009	0.019	96.2
	Mean	23.2	0	0.19	0.0015	0.013	1.4	4.16	0.02	0.188		0.07	1	2.6	0.006	0.017	96
	Median	23.6	0.004	0.25	0.0015	0.01	0.75	3.69	0.02	0.19		0.075	0.82	2.6	0.005	0.018	96.85
	St. Deviation	1.1	0	0.07	0	0.007	1.5	1.48	0.01	0.054	NA	0.02	1	0.5	0.004	0.002	9
	# of values	21	21	21	10	21	10	21	21	21	0	10	21	21	21	10	10
	Minimum	21	0.0025	0.1	0.0015	0.005	0.5	2.64	0.01	0.0834		0.025	0.3	1.5	0.002	0.013	75.6
	Maximum	25.1	0.007	0.26	0.0015	0.032	5.3	8.67	0.05	0.273		0.11	2.8	3.4	0.011	0.019	109
	% of values undetected		95%	50%	100%	5%			14%			10%			45%		
	# of values between MDL and MRL		1	11		19			8						12	10	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
South Fork Koktuli River (SK119A)-Oncorhynchus kisutch-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/26/04	1	25.7	**0.0025**	0.11		0.057		3.13	0.674	0.0298			0.83	1.3	0.008		
08/26/04	2	25	**0.0025**	0.1		0.092		4.02	0.109	0.0332			0.57	1.2	0.008		
08/26/04	3	24.9	**0.0025**	0.12		0.054		3.57	0.07	0.0274			0.64	1	0.008		
08/26/04	4	25.8	0.007	0.11		0.058		2.81	0.122	0.0344			0.61	0.9	0.006		
08/26/04	5	24.9	**0.0025**	0.12		0.051		3.23	0.06	0.0357			0.52	0.9	0.006		
08/26/04	6	23.7	**0.0025**	0.2		0.07		4.18	0.122	0.0385			0.61	1.3	0.01		
08/26/04	7	25.5	**0.0025**	0.12		0.068		3.45	0.107	0.0358			1.42	1	0.011		
08/26/04	8	25.4	**0.0025**	0.12		0.06		3.32	0.115	0.0391			0.53	1.3	0.006		
08/26/04	9	24.1	**0.0025**	0.14		0.079		5.17	0.112	0.0227			0.54	1.5	0.01		
08/26/04	10	24.6	**0.0025**	0.16		0.081		3.19	0.103	0.027			0.57	1.5	0.01		
08/26/04	201	25.6	**0.0025**	0.15		0.067		2.94	0.134	0.0402			0.63	1.5	0.008		
08/20/05	1	23.6	**0.004**	0.23	**0.0015**	0.077	0.4	2.21	0.07	0.0489		0.09	0.2	2.2	0.01	0.014	114
08/20/05	2	26	**0.004**	0.15	**0.0015**	0.063	0.9	3.47	0.03	0.141		0.05	0.5	2.2	0.007	0.073	143
08/20/05	3	23.2	**0.004**	0.17	**0.0015**	0.082	6.8	4.63	0.03	0.0462		0.1	0.8	2	0.006	0.01	159
08/20/05	4	23.7	**0.004**	0.22	**0.0015**	0.043	0.7	3.14	0.02	0.0736		0.07	0.5	2.9	0.008	0.011	109
08/20/05	5	26.1	**0.004**	0.16	**0.0015**	0.046	0.6	2.66	**0.01**	0.0542		**0.025**	0.4	1.6	0.005	0.013	98.8
08/20/05	6	27.4	**0.004**	0.15	**0.0015**	0.072	0.7	2.4	**0.01**	0.136		0.06	0.6	2	0.009	0.039	127
08/20/05	7	22.6	**0.008**	0.23	**0.003**	0.059	**0.3**	2.47	**0.02**	0.046		**0.05**	**0.1**	2.6	0.006	0.012	109
08/20/05	8	22.5	**0.008**	0.27	**0.003**	0.084	**0.3**	2.8	0.07	0.0668		0.13	**0.1**	3.1	0.013	0.012	123
08/20/05	9	23.3	**0.004**	0.2	**0.0015**	0.122	0.7	3.23	0.06	0.0221		0.1	0.2	2.3	0.016	0.012	117
08/20/05	10	22.8	**0.004**	0.12	**0.0015**	0.101	0.6	5.28	0.24	0.0456		0.08	0.3	2	0.009	0.011	136
	Mean	24.6	0.004	0.16	0.0018	0.07	1.2	3.4	0.11	0.05		0.08	1	1.7	0.009	0.021	124
	Median	24.9	0.004	0.15	0.0015	0.068	0.65	3.23	0.07	0.0391		0.075	0.54	1.5	0.008	0.012	120
	St. Deviation	1.3	0.002	0.05	0.0006	0.02	2	0.84	0.14	0.032	NA	0.03	0	0.6	0.003	0.02	18
	# of values	21	21	21	10	21	10	21	21	21	0	10	21	21	21	10	10
	Minimum	22.5	0.0025	0.1	0.0015	0.043	0.3	2.21	0.01	0.0221		0.025	0.1	0.9	0.005	0.01	98.8
	Maximum	27.4	0.008	0.27	0.003	0.122	6.8	5.28	0.674	0.141		0.13	1.42	3.1	0.016	0.073	159
	% of values undetected		95%	5%	100%	5%	20%		14%			20%	9%				
	# of values between MDL and MRL		1	21			1		1					2	22	8	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Upper Talarik Creek (UT100B)-Oncorhynchus kisutch-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/30/04	1	29.1	0.005	0.39		0.014		4.38	0.121	0.286			1.75	0.5	0.008		
08/30/04	2	28.3	0.005	0.42		0.021		2.5	0.12	0.247			0.9	0.2	0.008		
08/30/04	3	29	0.0025	0.39		0.023		2.83	0.082	0.18			0.8	0.2	0.007		
08/30/04	4	25.9	0.0025	0.38		0.01		2.85	0.055	0.214			0.45	0.2	0.011		
08/30/04	5	27.2	0.0025	0.42		0.008		2.58	0.077	0.245			0.59	0.2	0.008		
08/30/04	6	28.4	0.0025	0.3		0.012		2.51	0.054	0.153			0.39	0.2	0.009		
08/30/04	7	27	0.0025	0.38		0.017		2.7	0.051	0.178			0.43	0.2	0.01		
08/30/04	8	28.6	0.0025	0.31		0.013		2.27	0.041	0.201			0.29	0.5	0.007		
08/30/04	9	27.4	0.0025	0.34		0.019		2.54	0.086	0.119			0.51	0.2	0.008		
08/30/04	10	25.4	0.0025	0.5		0.016		2.66	0.095	0.221			0.44	0.2	0.008		
08/30/04	201	28.7	0.0025	0.39		0.007		2.09	0.065	0.0928			0.54	0.2	0.005		
08/21/05	1	26.8	0.004	0.45	0.0015	0.01	3.5	2.36	0.05	0.2		0.06	0.7	1.2	0.004	0.007	111
08/21/05	2	26.4	0.004	0.5	0.0015	0.01	2.6	4.04	0.03	0.208		0.05	0.5	1.8	0.005	0.011	114
08/21/05	3	26.2	0.004	0.38	0.0015	0.012	1.2	5.14	0.03	0.24		0.06	0.3	1.5	0.006	0.009	123
08/21/05	4	25	0.004	0.43	0.0015	0.008	3.4	2.98	0.06	0.231		0.06	1.1	2.2	0.005	0.011	123
08/21/05	5	25.4	0.004	0.5	0.0015	0.012	0.9	3.16	0.05	0.193		0.025	0.3	2.3	0.005	0.009	107
08/21/05	6	23.7	0.004	0.5	0.0015	0.007	1.4	4.79	0.05	0.208		0.05	0.6	0.5	0.005	0.01	127
08/21/05	7	26.4	0.004	0.63	0.0015	0.017	1	3.19	0.05	0.22		0.06	0.4	0.5	0.007	0.009	125
08/21/05	8	25.8	0.004	0.74	0.0015	0.008	2.1	2.45	0.06	0.201		0.06	1.3	0.5	0.005	0.011	115
08/21/05	9	24.8	0.004	0.45	0.0015	0.012	1.2	3.14	0.04	0.199		0.05	0.5	0.5	0.004	0.009	116
08/21/05	10	23	0.004	0.67	0.0015	0.015	1.3	6	0.07	0.244		0.06	0.6	0.15	0.007	0.009	136
	Mean	26.6	0.003	0.45	0.0015	0.013	1.9	3.2	0.06	0.204		0.054	1	0.7	0.007	0.01	120
	Median	26.4	0.004	0.42	0.0015	0.012	1.35	2.83	0.055	0.208		0.06	0.51	0.5	0.007	0.009	119.5
	St. Deviation	1.7	0.001	0.11	0	0.005	1	1.05	0.03	0.044	NA	0.011	0	0.7	0.002	0.001	9
	# of values	21	21	21	10	21	10	21	21	21	0	10	21	21	21	10	10
	Minimum	23	0.0025	0.3	0.0015	0.007	0.9	2.09	0.03	0.0928		0.025	0.29	0.15	0.004	0.007	107
	Maximum	29.1	0.005	0.74	0.0015	0.023	3.5	6	0.121	0.286		0.06	1.75	2.3	0.011	0.011	136
	% of values undetected		91%		100%	5%						10%		64%	5%		
	# of values between MDL and MRL		2	15		19			1					2	21	10	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Upper Talarik Creek (UT100B)-Thymallus arcticus Pallus-MUSCLE-Age ADULT																	
Sample Date	**Fish ID #**																
08/27/07	1	22.1	**0.01**	0.82	**0.0015**	**0.01**	**0.25**	3.02	**0.012**	0.376		**0.01**	**0.06**	2.1	**0.0025**	**0.011**	17.1
08/27/07	2	22.9	**0.04**	0.57	**0.005**	**0.01**	**0.25**	2.75	0.063	0.565		**0.04**	**0.11**	1.9	**0.0025**	0.027	14.5
08/27/07	3	23.6	**0.01**	0.68	**0.0015**	**0.01**	**0.25**	2.81	**0.013**	0.569		**0.01**	0.46	2	**0.0025**	**0.01**	13.3
08/27/07	4	21.2	**0.01**	0.76	**0.0015**	**0.01**	**0.25**	2.95	**0.018**	0.577		**0.01**	**0.11**	1.8	**0.0025**	**0.01**	21.8
08/27/07	5	23.2	**0.01**	0.69	**0.0015**	**0.0095**	**0.25**	3.13	**0.008**	0.512		**0.01**	**0.05**	1.7	**0.0025**	**0.007**	16.7
08/27/07	6	21.6	**0.01**	0.89	**0.0015**	**0.0095**	**0.25**	3.01	**0.007**	0.28		**0.01**	**0.05**	2.5	**0.0025**	**0.006**	17.7
08/27/07	7	21	**0.01**	0.94	**0.0015**	**0.01**	**0.25**	4.07	**0.013**	0.849		**0.01**	**0.04**	2	**0.0025**	**0.009**	22.8
08/27/07	8	23.3	**0.01**	1.11	**0.0015**	**0.0095**	**0.25**	3.32	**0.008**	0.331		**0.01**	**0.13**	2.5	**0.0025**	**0.01**	21.7
08/27/07	9	21.5	**0.01**	1.1	**0.0015**	0.023	**0.6**	4.68	0.081	0.449		**0.01**	0.25	2.2	**0.0025**	**0.016**	22.2
08/27/07	10	21.9	**0.01**	0.67	**0.0015**	**0.0095**	**0.25**	3.61	0.083	0.564		**0.01**	**0.04**	1.4	**0.0025**	**0.017**	17.1
08/27/07	11	22.6	**0.01**	0.81	**0.0015**	**0.01**	**0.25**	4.23	0.03	0.614		**0.01**	**0.05**	2	**0.0025**	**0.014**	14.9
08/27/07	12	21.6	**0.01**	0.65	**0.0015**	**0.0095**	**0.25**	3.35	0.037	0.4		**0.01**	**0.08**	1.9	**0.0025**	**0.016**	15.8
	Mean	22.2	0.013	0.8	0.0	0.0	0.3	3.4	0.0	0.5		0.0	0.1	2.0	0.0	0.0	18.0
	Median	22	0.01	0.785	0.0015	0.01	0.25	3.225	0.0155	0.538		0.01	0.07	2	0.0025	0.0105	17.1
	St. Deviation	0.9	0.009	0.2	0.0	0.0	0.1	0.6	0.0	0.2	NA	0.0	0.1	0.3	0.0	0.0	3.3
	# of values	12	12	12	12	12	12	12	12	12	0	12	12	12	12	12	12
	Minimum	21	0.01	0.57	0.0015	0.0095	0.25	2.75	0.007	0.28		0.01	0.04	1.4	0.0025	0.006	13.3
	Maximum	23.6	0.04	1.11	0.005	0.023	0.6	4.68	0.083	0.849		0.04	0.46	2.5	0.0025	0.027	22.8
	% of values undetected		92%		92%	92%	92%					92%			100%		
	# of values between MDL and MRL		1		1		1		7			1	10			11	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Upper Talarik Creek (UT100C)-Oncorhynchus kisutch-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/30/04	1	28.5	0.006	0.41		0.009		2.64	0.052	0.252			0.36	**0.2**	0.012		
08/30/04	2	25.8	**0.0025**	0.41		0.015		2.52	0.128	0.148			0.41	**0.2**	0.009		
08/30/04	3	28.1	**0.0025**	0.26		0.013		2.06	0.077	0.261			1.05	**0.2**	0.007		
08/30/04	4	26.7	**0.0025**	0.35		0.01		2.45	0.089	0.143			0.79	**0.2**	0.009		
08/30/04	5	27.7	**0.0025**	0.31		0.009		2.31	0.102	0.152			0.69	**0.2**	0.007		
08/30/04	6	25.7	**0.0025**	0.35		0.012		2.19	0.125	0.108			0.56	**0.2**	0.006		
08/30/04	7	27	**0.0025**	0.48		0.008		1.96	0.04	0.211			0.45	**0.2**	0.006		
08/30/04	8	26.4	**0.0025**	0.54		0.018		3.75	0.07	0.249			0.43	0.8	0.016		
08/30/04	9	27.2	**0.0025**	0.21		0.01		1.75	0.046	0.319			0.34	0.5	0.005		
08/30/04	10	26.9	**0.0025**	0.41		0.015		2.44	0.1	**0.0004**			0.47	0.4	0.008		
08/30/04	201	28.5	**0.0025**	0.45		0.011		2.28	0.102	0.229			0.62	**0.2**	0.008		
08/21/05	1	27.6	**0.004**	0.47	**0.0015**	0.011	0.9	3.58	0.04	0.247		0.06	0.8	1	0.007	0.007	115
08/21/05	2	27.5	0.01	1	0.006	0.012	2.3	3.3	0.11	0.183		0.09	2.3	**0.15**	0.006	0.01	119
08/21/05	3	25.2	**0.004**	0.52	**0.0015**	0.012	1.5	3.96	0.05	0.179		0.07	0.6	1.1	0.006	0.007	118
08/21/05	4	26.4	**0.004**	0.41	**0.0015**	0.007	0.8	2.53	0.04	0.2		0.06	0.4	1	0.006	0.007	118
08/21/05	5	22.6	**0.004**	0.53	**0.0015**	0.017	1.2	3.32	0.06	0.233		0.1	0.4	1.3	0.008	0.012	165
08/21/05	6	26.5	**0.004**	0.66	**0.0015**	0.012	1.4	2.9	0.05	0.17		0.07	0.9	1.1	0.007	0.009	151
08/21/05	7	23.3	**0.004**	0.46	**0.0015**	0.013	1.5	7.05	0.07	0.186		0.07	0.9	0.5	0.005	0.011	137
08/21/05	8	25	**0.004**	0.46	**0.0015**	0.01	1.3	2.44	0.02	0.2		0.06	0.3	0.5	0.005	0.008	139
08/21/05	9	24.4	**0.004**	0.63	**0.0015**	0.015	0.7	2.93	0.03	0.202		0.06	0.5	0.5	0.006	0.009	146
08/21/05	10	24.4	**0.004**	0.38	**0.0015**	0.012	0.9	2.51	0.05	0.18		0.06	0.6	**0.15**	0.006	0.007	149
	Mean	26.3	0	0.5	0.002	0.012	1.3	2.9	0.07	0.193		0.07	1	0.5	0.007	0.009	136
	Median	26.5	0.004	0.45	0.0015	0.012	1.25	2.52	0.06	0.2		0.065	0.56	0.4	0.007	0.0085	138
	St. Deviation	1.6	0	0.2	0.0014	0.003	0.5	1.12	0.03	0.065	NA	0.014	0	0.4	0.003	0.002	17
	# of values	21	21	21	10	21	10	21	21	21	0	10	21	21	21	10	10
	Minimum	22.6	0.0025	0.21	0.0015	0.007	0.7	1.75	0.02	0.0004		0.06	0.3	0.15	0.005	0.007	115
	Maximum	28.5	0.01	1	0.006	0.018	2.3	7.05	0.128	0.319		0.1	2.3	1.3	0.016	0.012	165
	% of values undetected		91%		90%	5%				5%				45%	5%		
	# of values between MDL and MRL		2	16	1	21			1					6	21	10	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Upper Talarik Creek (UT100D)-Oncorhynchus kisutch-WHOLE-Age JUV																	
Sample Date	**Fish ID #**																
08/30/04	1	26.1	**0.0025**	0.12		0.012		3.29	0.026	0.255			1.63	0.4	0.005		
08/30/04	2	26.6	**0.0025**	0.17		0.007		2.79	0.026	0.174			0.41	**0.2**	**0.002**		
08/30/04	3	24.5	**0.0025**	0.28		0.012		2.69	0.045	0.251			1	**0.2**	0.005		
08/30/04	4	24.8	**0.0025**	0.17		0.015		2.75	0.024	0.244			0.53	**0.2**	0.004		
08/30/04	5	26	**0.0025**	0.16		0.011		2.32	0.04	0.172			0.49	**0.2**	**0.002**		
08/30/04	6	24.5	**0.0025**	0.14		0.013		2.63	0.043	0.237			0.54	**0.2**	0.005		
08/30/04	7	26.9	**0.0025**	0.13		0.013		2.43	0.038	0.235			0.47	**0.2**	0.004		
08/30/04	8	26.5	0.014	0.16		0.015		2.52	0.027	0.3			0.4	**0.2**	**0.002**		
08/30/04	9	24.2	**0.0025**	0.17		0.012		3.14	0.054	0.214			0.53	**0.2**	0.004		
08/30/04	10	24.1	**0.0025**	0.14		0.01		2.94	0.054	0.141			0.57	**0.2**	0.005		
08/30/04	201	24.8	0.01	0.23		0.008		2.34	0.055	0.289			0.79	1.4	0.006		
08/21/05	1	23.1	**0.004**	0.28	**0.0015**	0.012	0.8	2.88	0.02	0.205		0.07	0.4	0.9	0.003	0.01	168
08/21/05	2	23.3	**0.004**	0.31	**0.0015**	0.016	0.9	2.64	0.04	0.231		0.07	0.4	0.6	0.005	0.01	163
08/21/05	3	21	**0.004**	0.25	**0.0015**	0.013	1.1	7.19	0.03	0.184		0.07	0.5	1.3	0.004	0.007	155
08/21/05	4	24.5	**0.004**	0.25	**0.0015**	0.017	1.3	3.13	0.04	0.221		0.07	0.6	1.4	0.004	0.012	149
08/21/05	5	25.1	**0.004**	0.2	**0.0015**	0.013	0.7	3.14	0.03	0.148		0.06	0.4	1.4	0.003	0.016	147
08/21/05	6	22.3	**0.004**	0.27	**0.0015**	0.018	2.5	3.08	0.04	0.267		0.09	0.3	1.2	0.007	0.016	183
08/21/05	7	25.5	**0.004**	0.19	**0.0015**	0.011	0.6	2.31	0.02	0.151		0.06	0.3	0.8	0.003	0.008	132
08/21/05	8	25.6	**0.004**	0.28	**0.0015**	0.013	1.7	2.59	0.03	0.174		0.06	0.5	0.6	0.005	0.009	130
08/21/05	9	25.8	**0.004**	0.17	**0.0015**	0.014	0.8	2.24	0.03	0.173		0.07	0.3	0.7	0.003	0.01	122
08/21/05	10	23.6	**0.004**	0.26	**0.0015**	0.017	0.8	3.61	0.05	0.215		0.06	0.5	0.8	0.004	0.014	169
	Mean	24.7	0.004	0.21	0.0015	0.013	1.1	2.98	0.036	0.213		0.068	1	0.6	0.004	0.011	152
	Median	24.8	0.004	0.19	0.0015	0.013	0.85	2.75	0.038	0.215		0.07	0.5	0.6	0.004	0.01	152
	St. Deviation	1.5	0.003	0.06	0	0.003	0.6	1.03	0.011	0.046	NA	0.009	0	0.5	0.001	0.003	20
	# of values	21	21	21	10	21	10	21	21	21	0	10	21	21	21	10	10
	Minimum	21	0.0025	0.12	0.0015	0.007	0.6	2.24	0.02	0.141		0.06	0.3	0.2	0.002	0.007	122
	Maximum	26.9	0.014	0.31	0.0015	0.018	2.5	7.19	0.055	0.3		0.09	1.63	1.4	0.007	0.016	183
	% of values undetected		91%	5%	100%	5%			5%					41%	18%		
	# of values between MDL and MRL		2	21		21								7	18	10	
Upper Talarik Creek (UT100E)-Salvelinus malma Walbaum-WHOLE-Age Adult																	
Sample Date	**Fish ID #**																
08/24/05	1	27.4	0.009	0.31	0.005	0.007	3.1	5.71	0.05	0.0549		0.07	3	3.5	0.011	0.007	66.9
08/24/05	4	25.6	0.02	0.3	0.006	0.008	6.1	5.99	0.06	0.181		0.08	5	3.5	0.008	0.012	88.9
08/24/05	8	26.8	**0.004**	0.21	**0.0015**	0.005	1	7.14	**0.01**	0.0858		**0.025**	0.6	3	0.008	0.008	63.4
08/24/05	9	23.6	**0.004**	0.19	**0.0015**	0.011	1.4	9.89	**0.01**	0.282		**0.025**	1	2.3	0.006	0.007	101
08/24/05	10	27.7	**0.004**	0.29	**0.0015**	0.007	1.5	10.8	0.04	0.0765		0.05	1.5	5.5	0.013	0.01	90.7
	Mean	26.2	0.008	0.26	0.0031	0.008	2.6	7.9	0.034	0.136		0.05	2.2	3.6	0.009	0.009	82
	Median	26.8	0.004	0.29	0.0015	0.007	1.5	7.14	0.04	0.0858		0.05	1.5	3.5	0.008	0.008	88.9
	St. Deviation	1.7	0.007	0.06	0.0022	0.002	2.1	2.3	0.023	0.095	NA	0.025	1.8	1.2	0.003	0.002	16
	# of values	5	5	5	5	5	5	5	5	5	0	5	5	5	5	5	5
	Minimum	23.6	0.004	0.19	0.0015	0.005	1	5.71	0.01	0.0549		0.025	0.6	2.3	0.006	0.007	63.4
	Maximum	27.7	0.02	0.31	0.006	0.011	6.1	10.8	0.06	0.282		0.08	5	5.5	0.013	0.012	101
	% of values undetected		60%		60%				40%			40%					
	# of values between MDL and MRL		2	5	2	5									5	5	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Upper Talarik Creek (UT100E)-Salvelinus malma Walbaum-WHOLE-Age Juv																	
Sample Date	**Fish ID #**																
08/26/04	1	29.9	**0.0025**	0.22		**0.0025**		2.63	0.052	0.0416			0.25	2.2	0.004		
08/26/04	2	26.8	**0.005**	0.34		0.022		3.7	0.11	0.0494			0.68	2.1	0.011		
08/26/04	3	26.2	**0.0025**	0.2		0.007		3.17	0.161	0.0622			0.45	2.3	0.008		
08/26/04	4	28.3	**0.0025**	0.24		0.007		2.67	0.108	0.0429			0.78	2.7	0.008		
08/26/04	5	27.3	**0.0025**	0.27		**0.0025**		3.06	0.072	0.0704			0.39	1.7	0.006		
08/24/05	2	26.9	**0.004**	0.38	0.006	0.008	3	8.13	0.09	0.058		0.07	2.5	3.1	0.007	0.009	61.9
08/24/05	3	24.8	**0.004**	0.28	**0.0015**	0.01	2.3	7.65	**0.01**	0.0781		0.06	0.9	5.4	0.019	0.012	101
08/24/05	5	25	**0.004**	0.32	0.005	0.008	1.6	5.2	0.04	0.0607		**0.025**	1.1	3.8	0.01	0.014	67.4
08/24/05	6	26.1	**0.004**	0.36	**0.0015**	0.01	1.7	5.14	0.05	0.0607		0.06	1.7	3.2	0.012	0.01	66
08/24/05	7	26.7	**0.004**	0.22	**0.0015**	0.005	1.3	3.56	**0.01**	0.0661		**0.025**	5.1	4.1	0.005	0.008	76.2
Mean		26.8	0.0035	0.28	0.0031	0.008	2	4.49	0.07	0.059		0.048	1.4	3.1	0.009	0.011	75
Median		26.75	0.004	0.275	0.0015	0.0075	1.7	3.63	0.062	0.0607		0.06	0.84	2.9	0.008	0.01	67.4
St. Deviation		1.5	0.0009	0.06	0.0022	0.006	0.7	2.01	0.05	0.0116	NA	0.021	1.5	1.1	0.004	0.002	16
# of values		10	10	10	5	10	5	10	10	10	0	5	10	10	10	5	5
Minimum		24.8	0.0025	0.2	0.0015	0.0025	1.3	2.63	0.01	0.0416		0.025	0.25	1.7	0.004	0.008	61.9
Maximum		29.9	0.005	0.38	0.006	0.022	3	8.13	0.161	0.0781		0.07	5.1	5.4	0.019	0.014	101
% of values undetected			100%		60%	20%			20%			40%					
# of values between MDL and MRL				10	2	8									10	5	
Upper Talarik Creek (UT100E)-Salvelinus malma Walbaum-WHOLE-Age Not Spec																	
Sample Date	**Fish ID #**																
08/28/04	6	26.2	**0.0025**	0.21		0.008		3.11	0.03	0.056			0.27	2.4	0.006		
08/28/04	7	27.5	**0.0025**	0.11		**0.0025**		3.44	0.08	0.0863			0.4	1.1	0.006		
08/28/04	8	27.6	0.011	0.22		0.006		2.61	0.106	0.0517			0.89	0.7	0.006		
08/31/04	9	27	0.008	0.28		0.01		3.53	0.041	0.0944			0.87	4.1	0.01		
08/31/04	10	28.7	**0.0025**	0.19		0.008		2.42	0.019	0.077			0.31	2.1	**0.002**		
08/31/04	201	28.7	0.012	0.27		0.006		3.09	0.038	0.0613			0.92	2.3	0.011		
Mean		27.6	0.006	0.21		0.007		3.03	0.05	0.0711			0.6	2.1	0.007		
Median		27.55	0.00525	0.215		0.007		3.1	0.0395	0.06915			0.635	2.2	0.006		
St. Deviation		1	0.004	0.06	NA	0.003	NA	0.44	0.03	0.0174	NA	NA	0.3	1.2	0.003	NA	NA
# of values		6	6	6	0	6	0	6	6	6	0	0	6	6	6	0	0
Minimum		26.2	0.0025	0.11		0.0025		2.42	0.019	0.0517			0.27	0.7	0.002		
Maximum		28.7	0.012	0.28		0.01		3.53	0.106	0.0944			0.92	4.1	0.011		
% of values undetected			57%			29%									29%		
# of values between MDL and MRL			3	6		5			1					1	5		

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Upper Talarik Creek (UT119A)-Salvelinus malma Walbaum-WHOLE-Age Adult																	
Sample Date	**Fish ID #**																
08/24/05	1	23	**0.017**	0.83	**0.004**	0.02	5.7	9.64	0.1	0.129		0.07	9	3.6	**0.017**	**0.01**	123
08/24/05	3	24	**0.004**	0.7	**0.0015**	**0.015**	2.5	6	0.06	0.114		0.06	3.7	2.3	**0.008**	**0.01**	88
08/24/05	4	26.5	**0.004**	**0.43**	**0.0015**	**0.012**	1.5	6.68	0.04	0.0511		**0.025**	1.2	2.9	**0.006**	**0.007**	90.5
08/24/05	5	23.8	**0.004**	0.67	**0.0015**	0.03	1	3.03	0.06	0.142		0.08	0.4	3.5	**0.012**	**0.011**	116
08/24/05	6	24	**0.004**	**0.46**	**0.0015**	**0.018**	1.7	13.6	0.03	0.133		**0.025**	1.9	2.9	**0.006**	**0.007**	90.1
08/24/05	10	23.3	**0.004**	0.67	**0.0015**	0.029	1.2	7.73	0.03	0.154		0.05	1.1	2.1	**0.016**	**0.012**	119
	Mean	24	0.006	0.63	0.0019	0.021	2.3	7.8	0.05	0.121		0.052	2.9	2.9	0.011	0.01	104
	Median	23.9	0.004	0.67	0.0015	0.019	1.6	7.205	0.05	0.131		0.055	1.55	2.9	0.01	0.01	103.25
	St. Deviation	1	0.005	0.15	0.001	0.007	1.8	3.6	0.03	0.037	NA	0.023	3.2	0.6	0.005	0.002	16
	# of values	6	6	6	6	6	6	6	6	6	0	6	6	6	6	6	6
	Minimum	23	0.004	0.43	0.0015	0.012	1	3.03	0.03	0.0511		0.025	0.4	2.1	0.006	0.007	88
	Maximum	26.5	0.017	0.83	0.004	0.03	5.7	13.6	0.1	0.154		0.08	9	3.6	0.017	0.012	123
	% of values undetected		83%		83%							33%					
	# of values between MDL and MRL		1	2	1	3									6	6	
Upper Talarik Creek (UT119A)-Salvelinus malma Walbaum-WHOLE-Age Juv																	
Sample Date	**Fish ID #**																
08/24/05	2	21.9	**0.004**	1.15	**0.0015**	0.036	1.5	9.76	0.06	0.1		0.08	1.7	3.5	**0.018**	**0.018**	130
08/24/05	7	26.8	**0.004**	1.27	**0.005**	0.021	4	10.2	0.1	0.211		0.07	5.9	3	**0.011**	**0.012**	97.5
08/24/05	8	17.1	**0.004**	0.77	**0.0015**	0.027	1.3	3.79	0.07	0.148		0.07	1.2	2.5	**0.012**	**0.013**	125
08/24/05	9	16.3	**0.004**	0.8	**0.0015**	0.04	1	5.08	0.07	0.0887		0.07	0.4	3	**0.016**	**0.011**	122
	Mean	20.5	0.004	1.0	0.0024	0.031	2.0	7.2	0.08	0.137		0.073	2.3	3.0	0.014	0.014	119
	Median	19.5	0.004	0.975	0.0015	0.0315	1.4	7.42	0.07	0.124		0.07	1.45	3	0.014	0.0125	123.5
	St. Deviation	4.9	0	0.3	0.0018	0.009	1.4	3.2	0.02	0.056	NA	0.005	2.5	0.4	0.003	0.003	14
	# of values	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4
	Minimum	16.3	0.004	0.77	0.0015	0.021	1	3.79	0.06	0.0887		0.07	0.4	2.5	0.011	0.011	97.5
	Maximum	26.8	0.004	1.27	0.005	0.04	4	10.2	0.1	0.211		0.08	5.9	3.5	0.018	0.018	130
	% of values undetected		100%		75%												
	# of values between MDL and MRL				1										4	4	

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

		Total Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Methyl Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Upper Talarik Creek (UT119A)-Salvelinus malma Walbaum-WHOLE-Age Not Spec																	
Sample Date	**Fish ID #**																
08/31/04	1	28	**0.0025**	**0.25**		**0.01**		6.51	0.027	0.0808			0.43	2.1	**0.011**		
08/31/04	2	28.3	**0.0025**	**0.25**		**0.01**		5.5	0.052	0.0668			0.41	2	**0.01**		
08/31/04	3	31.8	**0.0025**	**0.25**		**0.0025**		5.44	**0.019**	0.0453			0.29	1.4	**0.006**		
08/31/04	4	28.6	**0.0025**	**0.25**		**0.01**		4.74	0.059	0.0371			0.62	1.5	**0.004**		
08/31/04	5	23.7	**0.0025**	**0.25**		**0.01**		4.31	0.143	0.261			0.47	1.8	0.026		
08/31/04	6	26.5	**0.008**	0.57		**0.01**		4.25	0.086	0.0748			1.47	2.8	**0.013**		
08/31/04	7	27.1	**0.008**	0.59		**0.007**		4.95	0.079	0.0276			1.61	2.2	**0.013**		
08/31/04	8	29.5	**0.008**	0.64		**0.013**		6.64	0.157	0.125			2.91	1.6	**0.008**		
08/31/04	9	29.1	**0.0025**	**0.25**		**0.005**		4.1	0.022	0.043			0.72	2.6	**0.007**		
08/31/04	10	26.8	**0.007**	0.83		**0.013**		8.86	0.103	0.0716			2.12	2.2	**0.01**		
08/31/04	201	25.8	**0.0025**	0.52		**0.009**		4.55	0.041	0.085			0.98	1.8	**0.007**		
	Mean	27.7	0.004	0.42		0.009		5.44	0.07	0.083			1.1	2	0.01		
	Median	28	0.0025	0.25		0.01		4.95	0.059	0.0716			0.72	2	0.01		
	St. Deviation	2.1	0.003	0.21	NA	0.003	NA	1.42	0.05	0.065	NA	NA	0.8	0.4	0.006	NA	NA
	# of values	11	11	11	0	11	0	11	11	11	0	0	11	11	11	0	0
	Minimum	23.7	0.0025	0.25		0.0025		4.1	0.019	0.0276			0.29	1.4	0.004		
	Maximum	31.8	0.008	0.83		0.013		8.86	0.157	0.261			2.91	2.8	0.026		
	% of values undetected		67%	50%		17%			8%						8%		
	# of values between MDL and MRL		4			10			1						10		

Upper Talarik Creek (UT138)-Salvelinus malma Walbaum-WHOLE-Age Juv																	
Sample Date	**Fish ID #**																
08/31/04	1	27.4	**0.0025**	**0.2**		**0.0025**		9.93	0.028	0.0355			0.9	**0.4**	**0.007**		
08/31/04	2	25.7	**0.0025**	**0.18**		**0.006**		3.43	0.025	0.065			0.86	1.4	**0.006**		
08/31/04	3	24	**0.009**	**0.36**		**0.016**		3.84	0.115	0.0964			3.75	**0.7**	**0.007**		
08/31/04	4	27.9	**0.006**	**0.43**		**0.0025**		3.37	0.14	0.0809			2.25	2	**0.009**		
08/31/04	5	29.2	**0.0025**	**0.22**		**0.0025**		3.22	**0.011**	0.071			0.57	2.1	**0.011**		
08/31/04	6	27	0.085	**0.2**		**0.012**		10.1	0.048	0.0619			0.84	1.2	**0.006**		
08/31/04	7	25.9	**0.0025**	**0.24**		**0.008**		6.03	0.063	0.0805			1.87	**0.6**	**0.007**		
08/31/04	8	26.6	**0.0025**	**0.2**		**0.006**		4.29	0.052	0.057			0.67	**0.9**	**0.004**		
08/31/04	9	26.7	**0.0025**	**0.16**		**0.009**		4.82	0.054	0.0446			0.59	1	**0.004**		
08/31/04	10	27.6	**0.0025**	**0.22**		**0.0025**		4.24	0.04	0.0492			0.64	1	**0.007**		
08/31/04	201	27.2	**0.0025**	**0.19**		**0.013**		4.49	0.037	0.0434			0.58	**0.2**	**0.006**		
	Mean	26.8	0.011	0.24		0.007		5.3	0.06	0.0623			1	1	0.007		
	Median	27	0.0025	0.2		0.006		4.29	0.048	0.0619			0.84	1	0.007		
	St. Deviation	1.3	0.025	0.08	NA	0.005	NA	2.5	0.04	0.0187	NA	NA	1	0.6	0.002	NA	NA
	# of values	11	11	11	0	11	0	11	11	11	0	0	11	11	11	0	0
	Minimum	24	0.0025	0.16		0.0025		3.22	0.011	0.0355			0.57	0.2	0.004		
	Maximum	29.2	0.085	0.43		0.016		10.1	0.14	0.0964			3.75	2.1	0.011		
	% of values undetected		75%	8%		42%								8%	8%		
	# of values between MDL and MRL		2	11		7			2					4	11		

Appendix 10.3A
Freshwater Fish Samples Results Summary, Mine Study Area, 2004-2008

Sample Date	Fish ID #	Total Solids percent	Antimony mg/kg	Arsenic mg/kg	Beryllium mg/kg	Cadmium mg/kg	Chromium mg/kg	Copper mg/kg	Lead mg/kg	Mercury mg/kg	Methyl Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Selenium mg/kg	Silver mg/kg	Thallium mg/kg	Zinc mg/kg
Upper Talarik Creek (UT138A)-Oncorhynchus tshawytscha-WHOLE-Age JUV																	
08/24/05	1	25.3	**0.004**	**0.18**	**0.0015**	**0.014**	1.2	2.26	**0.01**	0.0822		0.06	0.98	1.1	**0.005**	**0.01**	117
08/24/05	2	22.5	**0.004**	**0.24**	**0.0015**	0.02	1.1	2.32	0.03	0.106		0.07	0.78	1.4	**0.005**	**0.01**	137
08/24/05	3	25.6	**0.004**	**0.34**	**0.0015**	0.021	1.1	2.51	0.03	0.112		0.08	1.04	1.5	**0.006**	**0.01**	134
08/24/05	4	23.9	**0.004**	**0.38**	**0.0015**	0.024	0.9	2.49	**0.01**	0.17		0.07	0.83	1.5	**0.004**	**0.01**	139
08/24/05	5	24.9	**0.004**	**0.27**	**0.0015**	**0.018**	1.3	2.54	0.03	0.0863		0.08	1.01	1.4	**0.005**	**0.01**	125
08/24/05	6	25.6	**0.004**	**0.26**	**0.0015**	**0.014**	0.9	2.42	0.02	0.166		0.06	1	**0.5**	**0.005**	**0.01**	103
08/24/05	7	23.0	**0.004**	**0.3**	**0.0015**	**0.011**	1.4	3.47	0.06	0.0749		0.06	0.84	1.2	**0.004**	**0.01**	131
08/24/05	8	24.4	**0.004**	**0.27**	**0.0015**	0.023	1	2.61	0.03	0.172		0.07	0.82	1.4	**0.005**	**0.01**	142
08/24/05	9	25.4	**0.004**	**0.33**	**0.0015**	0.02	0.7	2.49	0.03	0.0974		0.08	1	1.3	**0.007**	**0.01**	146
08/24/05	10	21.5	**0.004**	**0.24**	**0.0015**	0.023	1.6	11.6	0.05	0.0986		0.08	1.31	**0.5**	**0.006**	**0.01**	135
Mean		24.2	0.004	0.28	0.0015	0.019	1.1	3.5	0.03	0.117		0.071	1	1.2	0.0052	0.01	131
Median		24.65	0.004	0.27	0.0015	0.02	1.1	2.5	0.03	0.1023		0.07	0.99	1.35	0.005	0.01	134.5
St. Deviation		1.4	0	0.06	0	0.004	0.3	2.9	0.016	0.038	NA	0.009	0.2	0.4	0.0009	0	13
# of values		10	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10
Minimum		21.5	0.004	0.18	0.0015	0.011	0.7	2.26	0.01	0.0749		0.06	0.78	0.5	0.004	0.01	103
Maximum		25.6	0.004	0.38	0.0015	0.024	1.6	11.6	0.06	0.172		0.08	1.31	1.5	0.007	0.01	146
% of values undetected			100%		100%				20%					20%		100%	
# of values between MDL and MRL				10		4									10		

Key: All results are calculated on dry weight basis with exception of percent solids which is calculated on a wet weight basis.
Bold Results = Parameter undetected by test, value shown is 1/2 MDL or 1/2 MRL.
If result was not detected at the lab MDL, the value shown is 1/2 MDL.
If result was flagged U or UJ by validation, the value shown is 1/2 MRL.
Green Results = Estimate result reported by laboratory below reporting limit (MRL).
NA = calculation not applicable.
MDL = Method Detection Limit.
MRL = Method Reporting Limit.

APPENDIX 10.3B

Results of Statistical Comparison of Concentrations of Trace Elements in Whole-body Fish Samples between Species, Mine Study Area, 2004-2005

Appendix 10.3B
Results of Statistical Comparison of Concentrations of Trace Elements in Whole-body Fish Samples between Species

		North Fork Koktuli River					South Fork Koktuli River					Upper Talarik Creek				
Element	**Species**	**CO**	**CO&CH**	**AG**	**DV**	**NP**	**CO**	**CO&CH**	**AG**	**DV**	**NP**	**CO**	**CO&CH**	**AG**	**DV**	**NP**
Antimony	**CO**		.023, .059	.254, .314	0.701	NA		0.001	0.027	NA	0.041		NA	NA	0.206	NA
	CO&CH	.023, .059		.930, .938	0.015	NA	0.001		0.031	NA	.059, .123	NA		NA	NA	NA
	AG	.254, .314	.930, .938		0.201	NA	0.027	0.031		NA	0.796	NA	NA		NA	NA
	DV	0.701	0.015	0.201		NA	NA	NA	NA		NA	0.206	NA	NA		NA
	NP	NA	NA	NA	NA		0.041	.059, .123	0.796	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.047	NA	NA	0.422	NA
Arsenic	**CO**		.156, .159	.289, .314	0.087	NA		0.138	0.031	NA	0.01		NA	NA	0.36	NA
	CO&CH	.156, .159		.968, .969	0.255	NA	0.138		0.01	NA	.001, 0	NA		NA	NA	NA
	AG	.289, .314	.968, .969		0.394	NA	0.031	0.010		NA	0.236	NA	NA		NA	NA
	DV	0.087	0.255	0.394		NA	NA	NA	NA		NA	0.360	NA	NA		NA
	NP	NA	NA	NA	NA		0.010	.001, 0	0.236	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.060	NA	NA	0.763	NA
Beryllium	**CO**		1, 1	NA	.009, .028	NA		NA	0.313	NA	.475, .821		NA	NA	0.01	NA
	CO&CH	1, 1		NA	.009, .028	NA	NA		NA	NA	NA	NA		NA	NA	NA
	AG	NA	NA		NA	NA	0.313	NA		NA	1	NA	NA		NA	NA
	DV	.009, .028	.009, .028	NA		NA	NA	NA	NA		NA	0.010	NA	NA		NA
	NP	NA	NA	NA	NA		.475, .821	NA	1	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.564, .890	NA	NA	.059, .198	NA
Cadmium	**CO**		.949, .950	.548, .557	0.030	NA		0	0	NA	0		NA	NA	0	NA
	CO&CH	.949, .950		.591, .611	0.002	NA	0		0.001	NA	.001, 0	NA		NA	NA	NA
	AG	.548, .557	.591, .611		0.025	NA	0	0.001		NA	1	NA	NA		NA	NA
	DV	0.030	0.002	0.025		NA	NA	NA	NA		NA	0	NA	NA		NA
	NP	NA	NA	NA	NA		0	.001, 0	1	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	NA	NA	0.001	NA
Chromium	**CO**		.099, .105	NA	.003, .002	NA		NA	0.152	NA	.243, .254		NA	NA	0.006	NA
	CO&CH	.099, .105		NA	0, 0	NA	NA		NA	NA	NA	NA		NA	NA	NA
	AG	NA	NA		NA	NA	0.152	NA		NA	.740, .746	NA	NA		NA	NA
	DV	.003, .002	0, 0	NA		NA	NA	NA	NA		NA	0.006	NA	NA		NA
	NP	NA	NA	NA	NA		.243, .254	NA	.740, .746	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.562, .569	NA	NA	.003, .002	NA
Copper	**CO**		0, 0	.091, .099	0.102	NA		0.853	0.002	NA	0.005		NA	NA	0	NA
	CO&CH	0, 0		0, 0	0	NA	0.853		0.023	NA	.028, .027	NA		NA	NA	NA
	AG	.091, .099	0, 0		0.446	NA	0.002	0.023		NA	0	NA	NA		NA	NA
	DV	0.102	0	0.446		NA	NA	NA	NA		NA	0	NA	NA		NA
	NP	NA	NA	NA	NA		0.005	.028, .027	0	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.312	NA	NA	0	NA
Lead	**CO**		.013, .013	0, 0	0	NA		0.951	0	NA	0		NA	NA	0.829	NA
	CO&CH	.013, .013		.001, .001	0.001	NA	0.951		0	NA	0, 0	NA		NA	NA	NA
	AG	0, 0	.001, .001		0.352	NA	0	0		NA	0	NA	NA		NA	NA
	DV	0	0.001	0.352		NA	NA	NA	NA		NA	0.829	NA	NA		NA
	NP	NA	NA	NA	NA		0	0, 0	0	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.003	NA	NA	0.011	NA
Mercury	**CO**		.183, .186	.360, .387	0.001	NA		0.003	0	NA	0.114		NA	NA	0	NA
	CO&CH	.183, .186		.035, .034	0	NA	0.003		0.357	NA	0, 0	NA		NA	NA	NA
	AG	.360, .387	.035, .034		0.027	NA	0	0.357		NA	0	NA	NA		NA	NA
	DV	0.001	0	0.027		NA	NA	NA	NA		NA	0	NA	NA		NA
	NP	NA	NA	NA	NA		0.114	0, 0	0	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	NA	NA	0.005	NA

Element	Species	North Fork Koktuli River					South Fork Koktuli River					Upper Talarik Creek				
		CO	CO&CH	AG	DV	NP	CO	CO&CH	AG	DV	NP	CO	CO&CH	AG	DV	NP
Molybdenum	CO		.016, .019	NA	.239, .248	NA		NA	0.95	NA	0, 0		NA	NA	0.429	NA
	CO&CH	.016, .019		NA	.639, .650	NA	NA		NA	NA	NA	NA		NA	NA	NA
	AG	NA	NA		NA	NA	0.950	NA		NA	.001, 0	NA	NA		NA	NA
	DV	.239, .248	.639, .650	NA		NA	NA	NA	NA		NA	0.429	NA	NA		NA
	NP	NA	NA	NA	NA		0, 0	NA	.001, 0	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.041, .054	NA	NA	.044, .049	NA
Nickel	CO		.05, .053	.244, .251	0	NA		0	0.04	NA	0.025		NA	NA	0	NA
	CO&CH	.05, .053		.003, .002	0	NA	0		0.262	NA	.029, .027	NA		NA	NA	NA
	AG	.244, .251	.003, .002		0.003	NA	0.040	0.262		NA	0.959	NA	NA		NA	NA
	DV	0	0	0.003		NA	NA	NA	NA		NA	0	NA	NA		NA
	NP	NA	NA	NA	NA		0.025	.029, .027	0.959	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	NA	NA	0.843	NA
Selenium	CO		.010, .009	.001, 0	0.061	NA		0.232	0	NA	0.255		NA	NA	0	NA
	CO&CH	.010, .009		0, 0	0	NA	0.232		0.004	NA	.074, .074	NA		NA	NA	NA
	AG	.001, 0	0, 0		0.004	NA	0	0.004		NA	0	NA	NA		NA	NA
	DV	0.061	0	0.004		NA	NA	NA	NA		NA	0	NA	NA		NA
	NP	NA	NA	NA	NA		0.255	.074, .074	0	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.001	NA	NA	0.001	NA
Silver	CO		.620, .633	.143, .152	0.641	NA		0.636	0.064	NA	0		NA	NA	0	NA
	CO&CH	.620, .633		.224, .238	0.988	NA	0.636		0.537	NA	0, .001	NA		NA	NA	NA
	AG	.143, .152	.224, .238		0.359	NA	0.064	0.537		NA	0	NA	NA		NA	NA
	DV	0.641	0.988	0.359		NA	NA	NA	NA		NA	0	NA	NA		NA
	NP	NA	NA	NA	NA		0	0, .001	0	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.268	NA	NA	0	NA
Thallium	CO		.590, .631	NA	.001, 0	NA		NA	0.034	NA	.219, .224		NA	NA	0.351	NA
	CO&CH	.590, .631		NA	.001, .001	NA	NA		NA	NA	NA	NA		NA	NA	NA
	AG	NA	NA		NA	NA	0.034	NA		NA	.223, .231	NA	NA		NA	NA
	DV	.001, 0	.001, .001	NA		NA	NA	NA	NA		NA	0.351	NA	NA		NA
	NP	NA	NA	NA	NA		.219, .224	NA	.223, .231	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.258, .286	NA	NA	.642, .681	NA
Zinc	CO		.008, .007	NA	.692, .713	NA		NA	0	NA	.291, .296		NA	NA	0	NA
	CO&CH	.008, .007		NA	.009, .007	NA	NA		NA	NA	NA	NA		NA	NA	NA
	AG	NA	NA		NA	NA	0	NA		NA	.002, .001	NA	NA		NA	NA
	DV	.692, .713	.009, .007	NA		NA	NA	NA	NA		NA	0	NA	NA		NA
	NP	NA	NA	NA	NA		.291, .296	NA	.002, .001	NA		NA	NA	NA	NA	
	CH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.755, .770	NA	NA	0, 0	NA

Key:

	Not compared (same species)
	Difference is significant (*P* >0.05) based on Mann-Whitney test
NA	Not applicable; species not sampled in river or trace element not analyzed in species from river (if sampled only in 2004)
Grey font	Double value (combination represented twice in matrix)

Notes:

Be, Cr, Mb, Tl, and Zn analyzed only in 2005.

Where one *P*-value is provided, it is a 2-tailed test result. Where two *P*-values are provided, the first is a 2-tailed test result, and the second is a 2*(1-tailed) test result.

Abbreviations:

CO = Coho Salmon (*Oncorhynchus kisutch*)

CO&CH = Coho and Chinook Salmon (*Oncorhynchus kisutch & tshawytscha*)--values are provided separately by species as applicable.

AG = Arctic Grayling (*Thymallus arcticus Pallus*)

DV = Dolly Varden (*Salvelinus malma Walbaum*)

NP = Northern Pike (*Esox lucius linnaeus*)

CH = Chinook Salmon (*Oncorhynchus tshawytscha*)

APPENDIX 10.3C

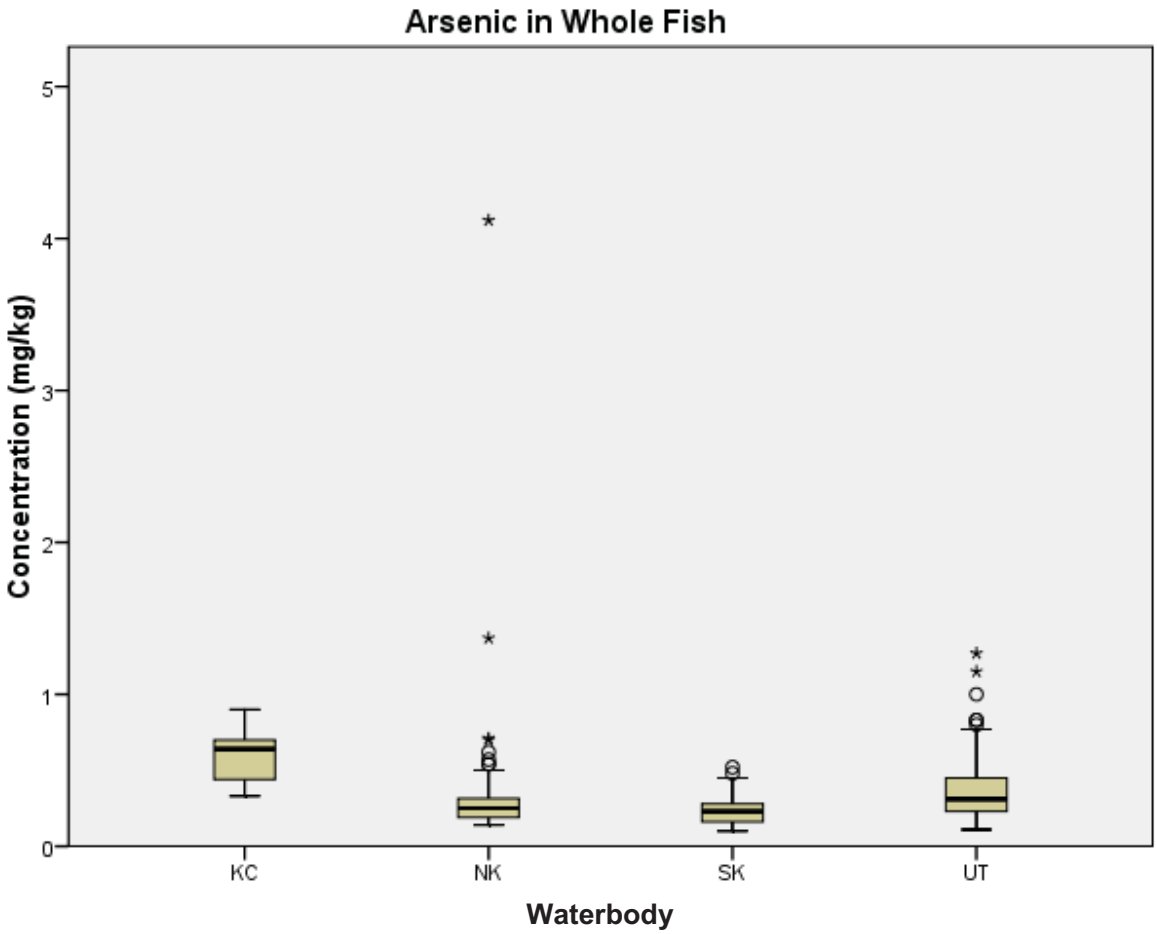
Box-and-Whisker Plots of Fish Data—Whole-body, Liver, and Muscle Tissue Samples, Mine Study Area, 2004-2008

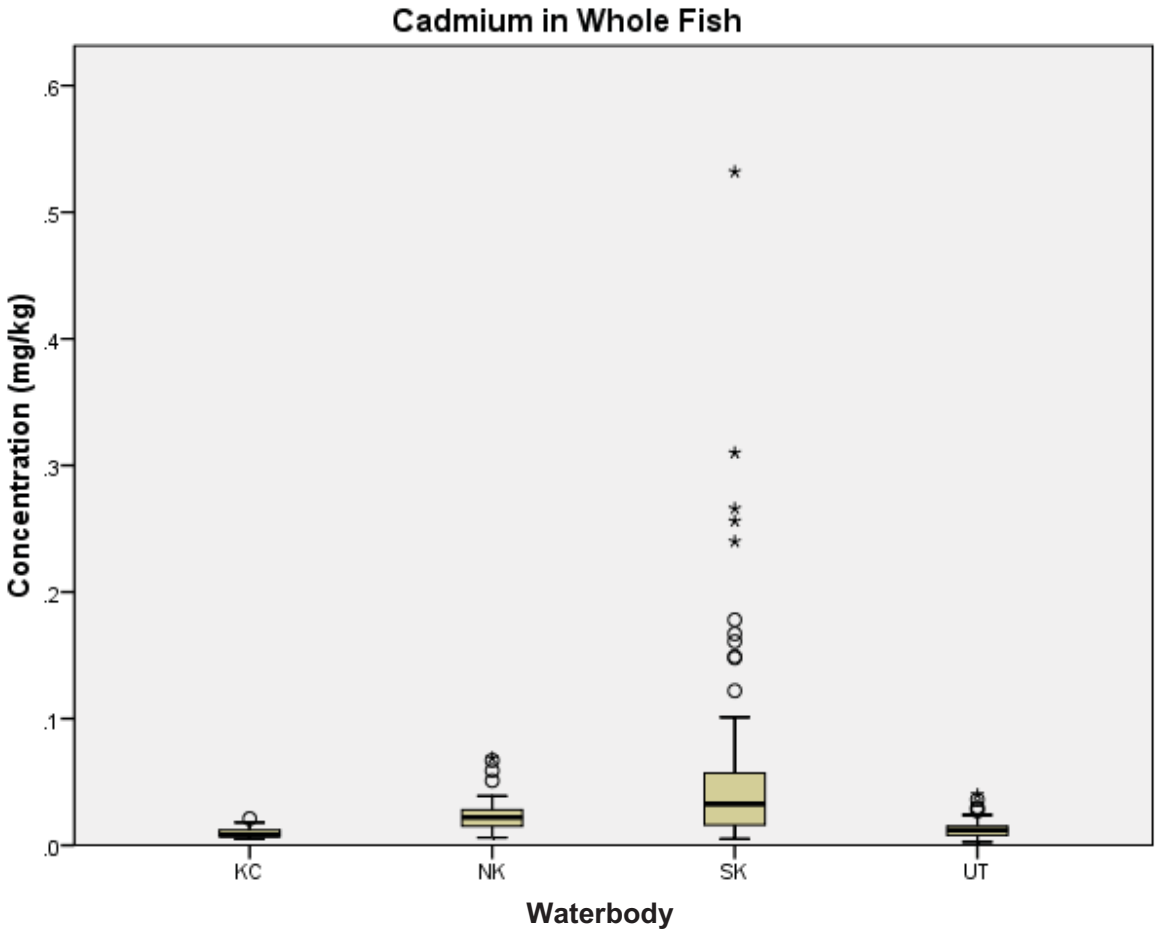
Box Plot Legend: This legend applies to all soil boxplots for the mine study area.

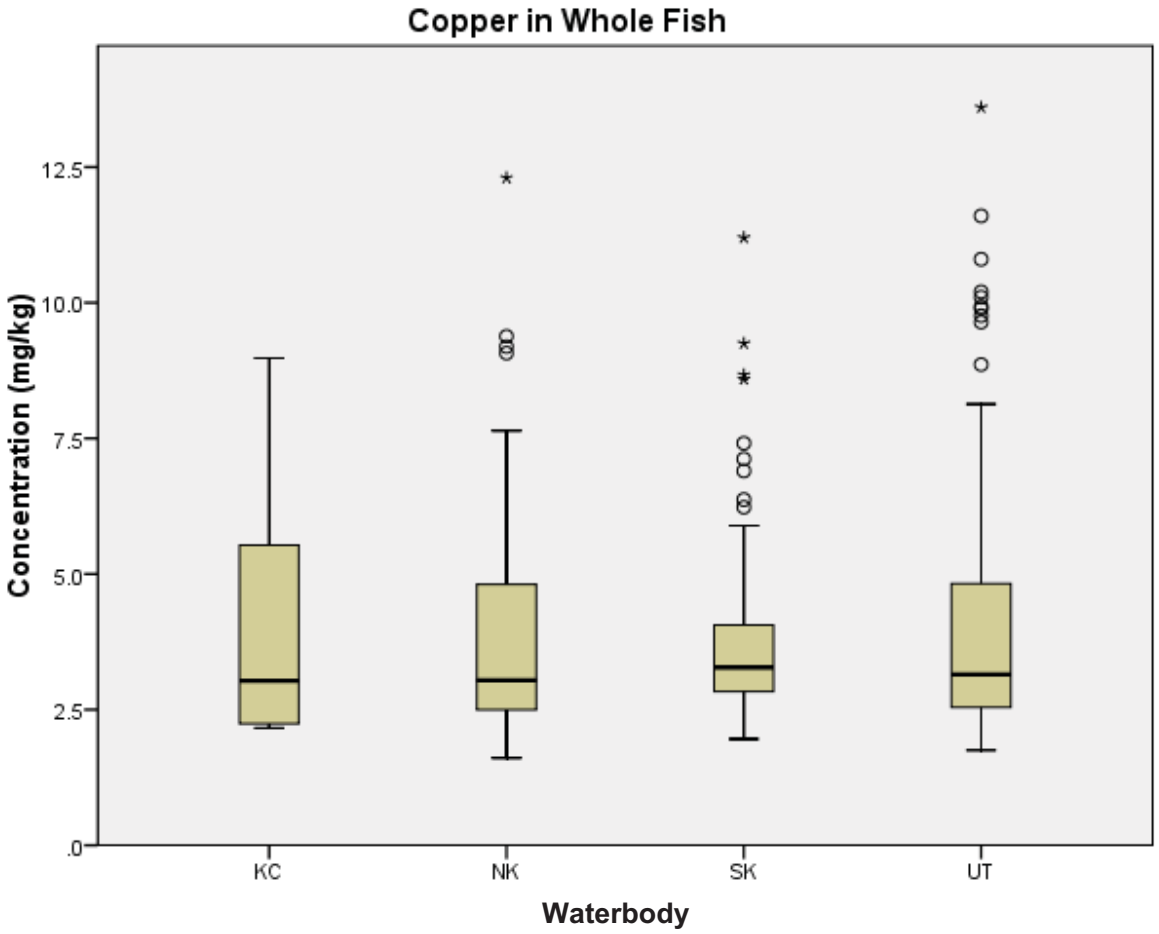
Median 25%-75% Non-outlier Range Outliers Extremes

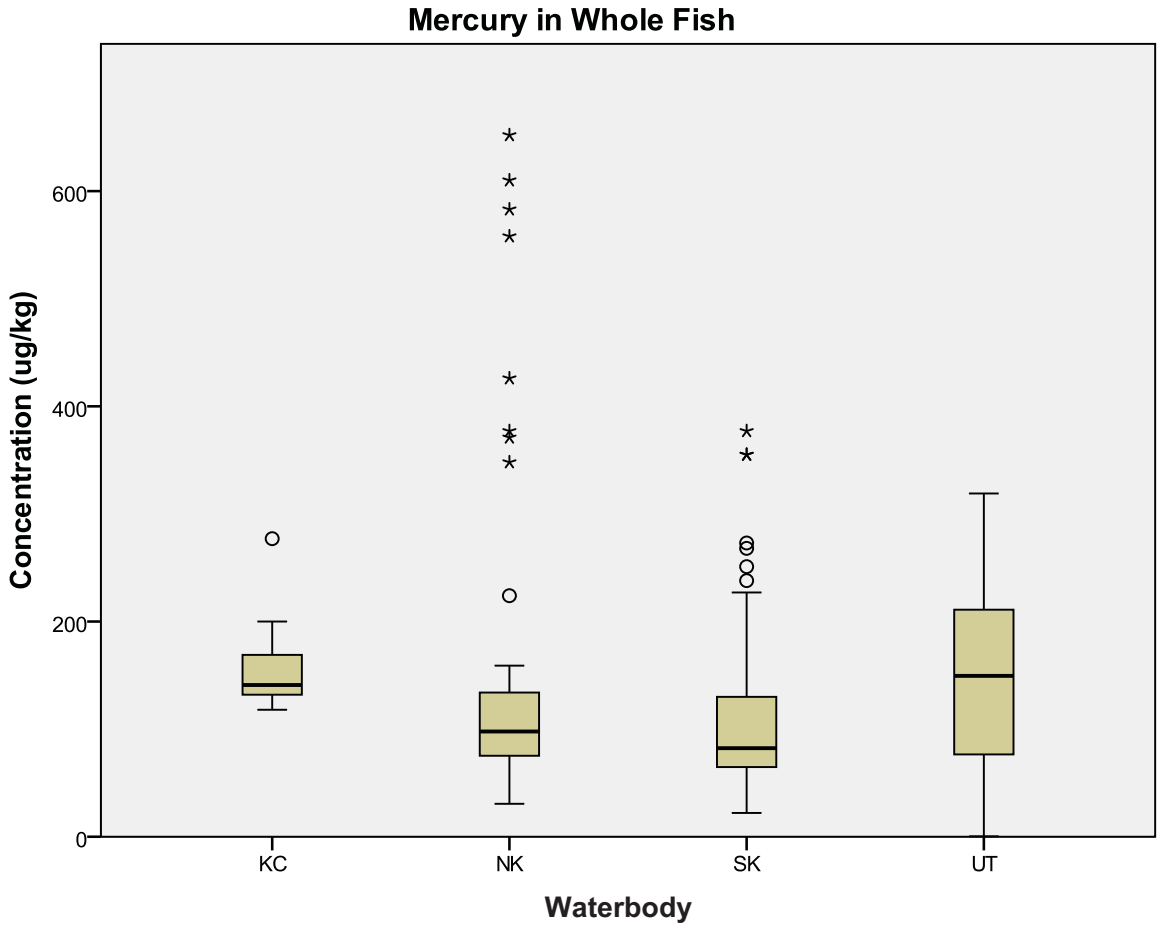
Box plots were created only for analytes detected in at least 80 percent of samples.

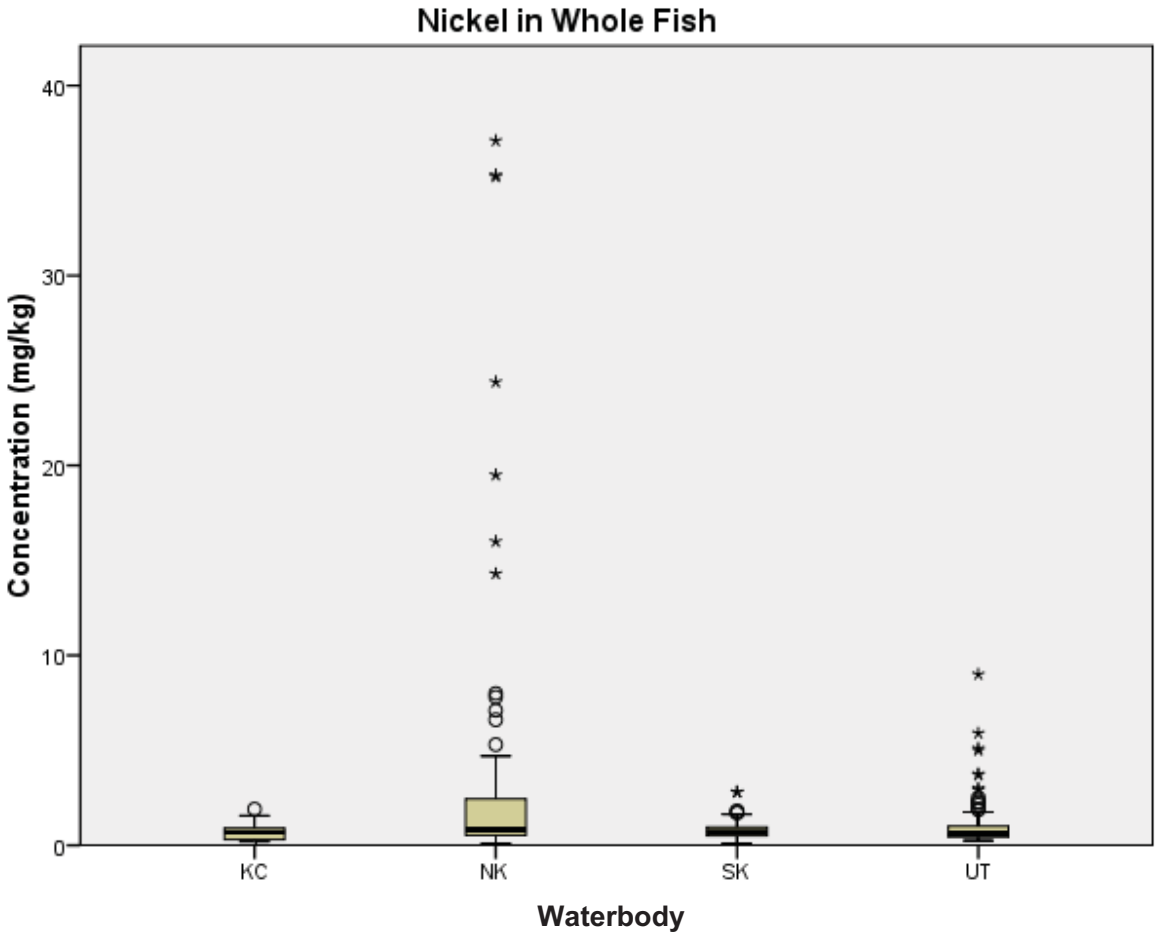
Abbreviations: mg/kg = milligrams per kilogram, ug/kg = micrograms per kilogram, KC = Kaskanak Creek, NK = North Fork Koktuli River, SK = South Fork Koktuli River, UT = Upper Talarik River.

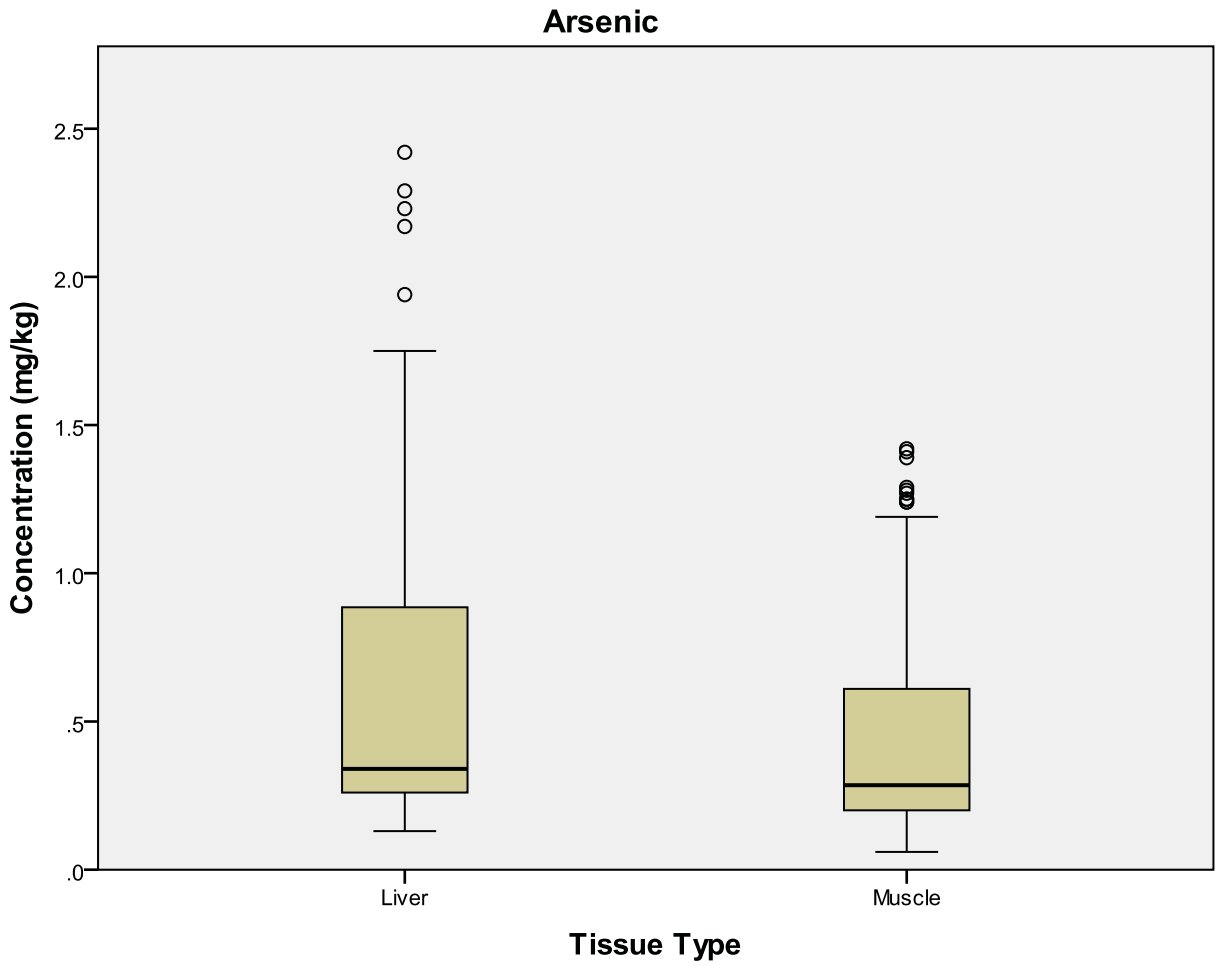


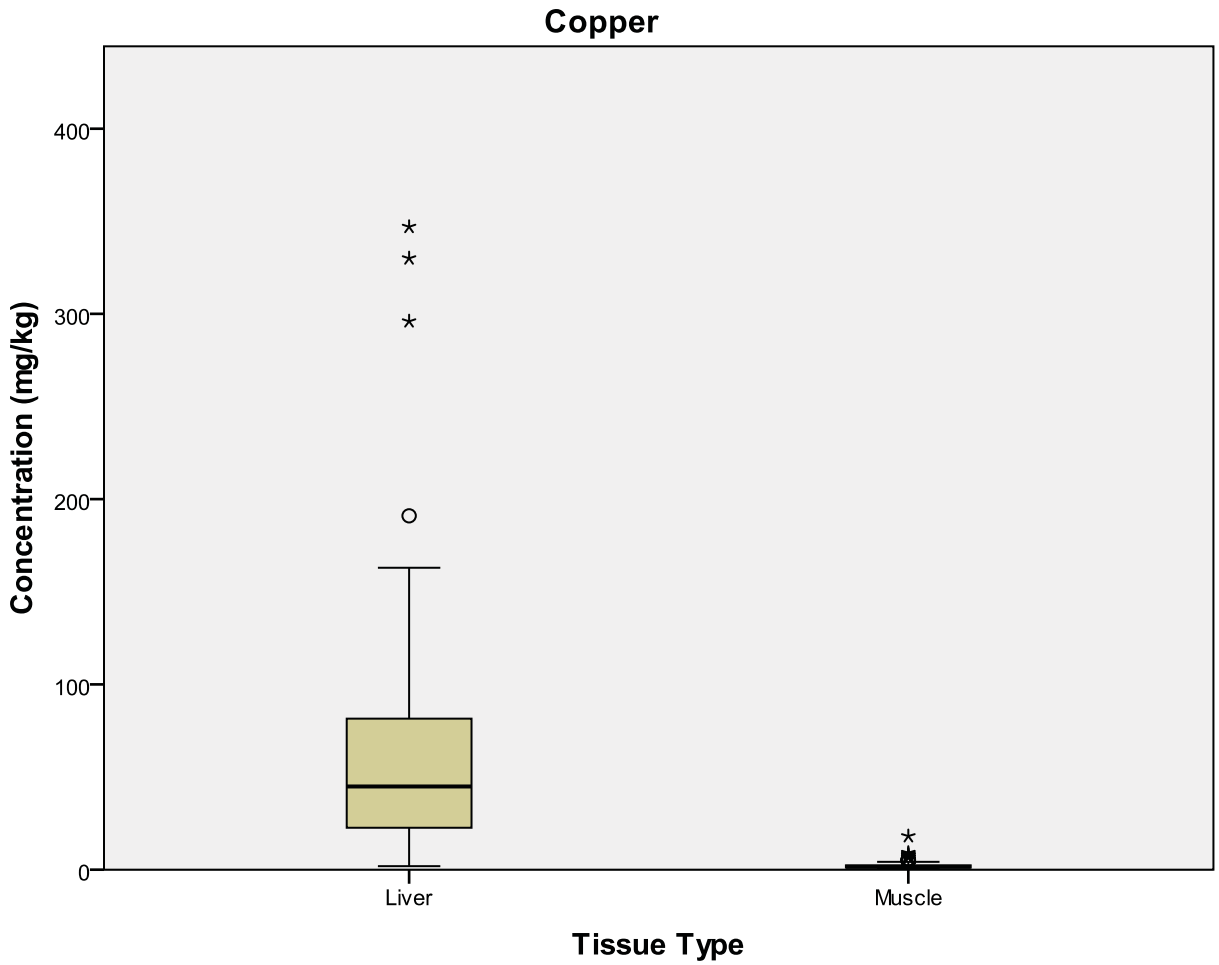

Cadmium in Whole Fish
Concentration (mg/kg)
.6
.5
.4
.3
.2
.1
.0
KC
NK
SK
UT
Waterbody

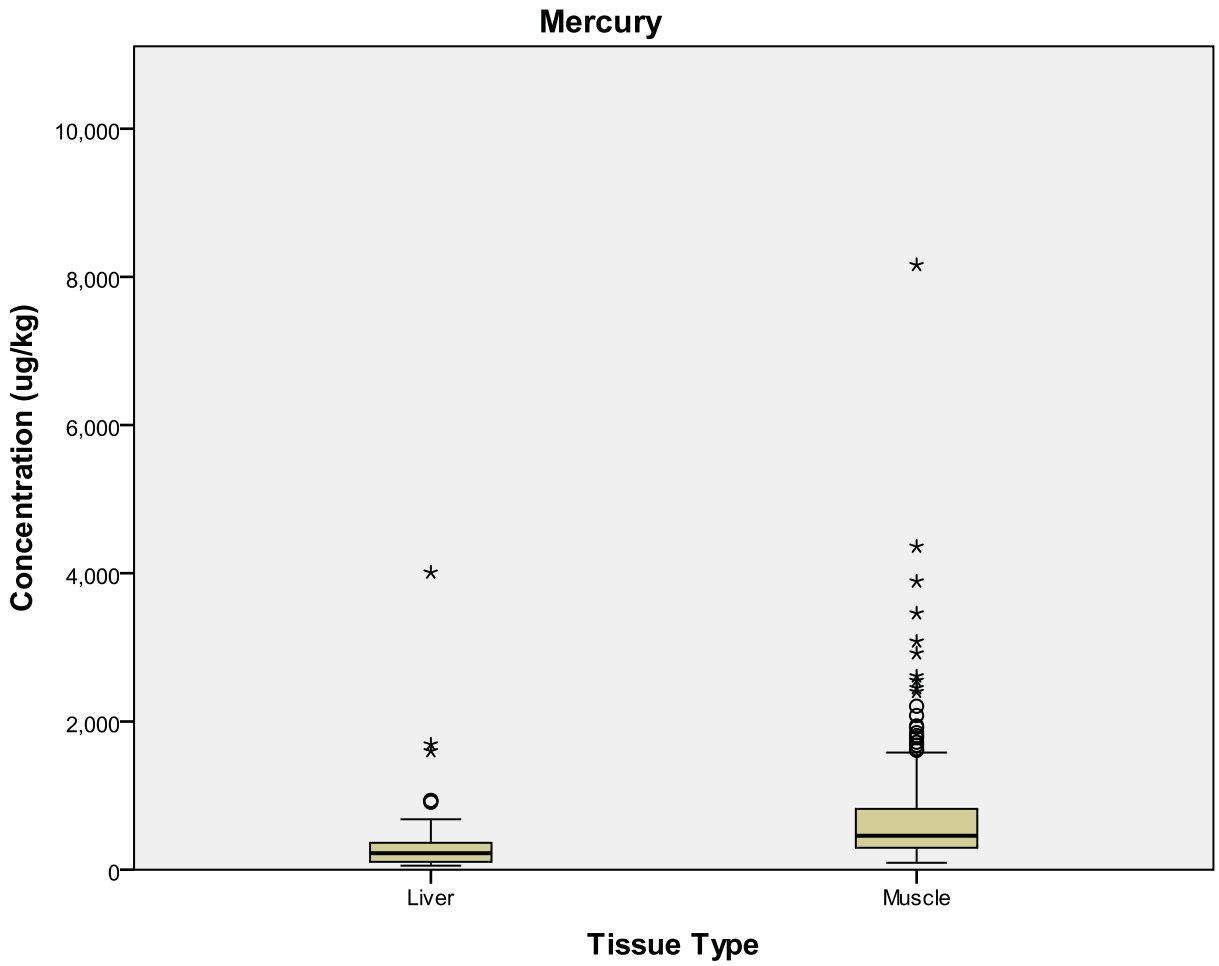

Copper in Whole Fish
Concentration (mg/kg)
12.5
10.0
7.5
5.0
2.5
.0
KC
NK
SK
UT
Waterbody

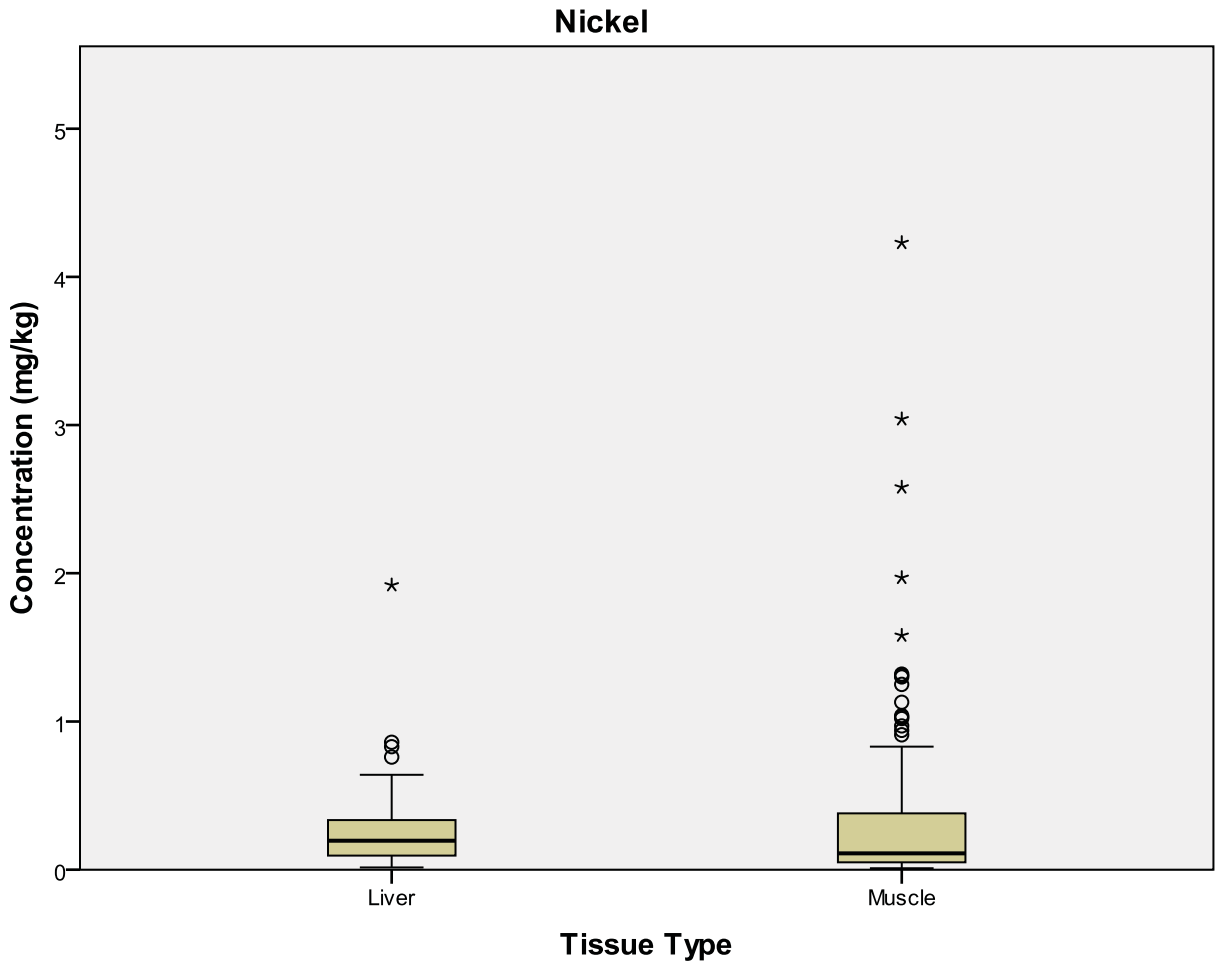

Mercury in Whole Fish
Concentration (ug/kg)
600
400
200
0
KC
NK
SK
UT
Waterbody

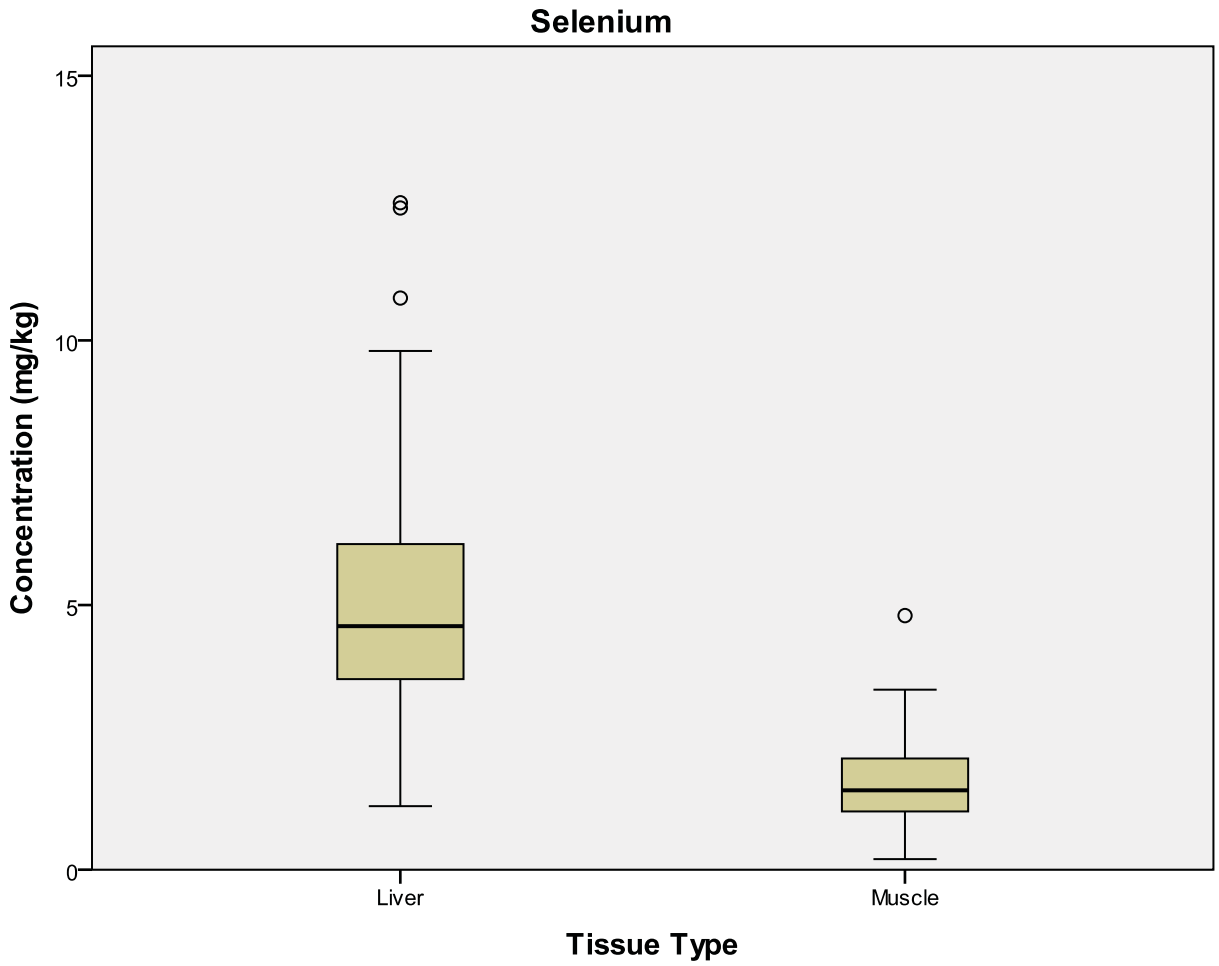

Nickel in Whole Fish
Concentration (mg/kg)
40
30
20
10
0
KC
NK
SK
UT
Waterbody


Arsenic
Concentration (mg/kg)
2.5
2.0
1.5
1.0
.5
.0
Liver
Muscle
Tissue Type


Copper
Concentration (mg/kg)
400
300
200
100
0
Liver
Muscle
Tissue Type


Mercury
Concentration (ug/kg)
10,000
8,000
6,000
4,000
2,000
0
Liver
Muscle
Tissue Type


Nickel
Concentration (mg/kg)
0
1
2
3
4
5
Liver
Muscle
Tissue Type


Selenium
Concentration (mg/kg)
15
10
5
0
Liver
Muscle
Tissue Type

10.4 Soil/Vegetation—Transportation-corridor Study Area

10.4.1 Introduction

The following sections present the findings of the 2004 trace elements study for soil and vegetation in the transportation-corridor study area within the Bristol Bay Drainages. Soil and terrestrial vegetation were sampled in 2004 to assess the spatial and temporal variability of NOCs in the transportation-corridor study area. A subset of soil samples also was analyzed for petroleum-range hydrocarbons.

The target analytes for the trace elements study are 26 trace elements and other NOCs, including compounds such as cyanide, as well as cations, anions, and petroleum-range hydrocarbons.

10.4.2 Study Objectives

The objectives of the soil and vegetation portions of the trace elements program for the transportation-corridor study area are as follows:

- Define the vegetation species present.
- Collect baseline data on the existing natural levels of trace elements, anions, and cations in surface soil and vegetation.
- Evaluate naturally occurring biogenic fingerprints associated with petroleum-range hydrocarbons in surface soil.
- Determine the organic content in surface soils.

10.4.3 Study Area

The transportation-corridor study area in the Bristol Bay drainages (referred to herein as the transportation-corridor study area) follows a 1-mile-wide corridor between the mine study area and the boundary of the Bristol Bay and Cook Inlet drainages (Figure 10.4-1). (The corresponding trace elements study for the Cook Inlet drainages is discussed in Chapter 35.)

10.4.4 Scope of Work

Field work for this study was conducted by Bristol Environmental & Engineering Services Corporation according to the approach described in the Pebble Project consolidated study program (Appendix E of this environmental baseline document). The work for the trace elements study of soil and vegetation for the transportation-corridor study area was as follows:

- Collection of 17 soil samples from the upper 6 inches of the soil profile at 17 locations (TE1 through TE17; Figure 10.4-1) in August 2004, and analysis for trace elements, anions and cations, petroleum-range hydrocarbons, and TOC.
- Collection of 121 vegetation samples from 17 locations (TE1 through TE17; Figure 10.4-1) in August 2004, and analysis for trace elements, anions, cations, and TOC. Fruit tissue (berries) and vegetative tissues (leaves and shoots) were combined in these samples.

- Collection of 10 fruit tissue samples and 10 vegetative tissue samples from five locations (TE-01, TE-05, TE-08, TE-12, TE-17) in September 2004, and analysis for trace elements, anions, cations, and TOC. The locations where the most fruit were observed during August were sampled again in September. In September, fruit tissue was collected separately and segregated from vegetative tissue (both fruit tissue and vegetative tissue were collected from two species at each site).

The soil sampling effort was designed to determine the spatial distribution of NOCs in the study area. Soil samples were collected in 2004 at regular intervals—approximately one sample for every 4 miles—along the possible transportation corridor (Figure 10.4-1).

Vegetation sampling was intended to define the species present and the baseline NOC concentrations in and on vegetation, particularly with regard to vegetation that may be a food source for upland mammals, birds, or humans. Vegetation used traditionally for medicinal purposes also was sampled. The types of vegetation sampled were trees, shrubs, grasses and sedges, forbs, mosses, and lichens, including berry-producing plants. Vegetation samples were collected from the same locations where soil samples were collected (Figure 10.4-1).

The list of trace elements and anions and cations included in the study are the same as those listed in Table 10.1-1 for the mine study area, and encompasses 26 trace elements and six anions and cations (ammonia [as N], cyanide, chloride, fluoride, sodium, and sulfate).

10.4.5 Methods

In general, methods for sample collection were consistent with those outlined in the consolidated study program for Pebble Project (Appendix E of this environmental baseline document). QA/QC protocols followed procedures outlined in the QAPP (Appendix G of this environmental baseline document). The procedures for the sample collection were the same as those used in the mine study area (Section 10.1.5), unless otherwise stated below. General soil type and color were documented. The laboratory analyses for the soil and plant samples are listed in Table 10.1-1. A photographic log of the sampling work is provided in Appendix 10.4A (no photographs of sampling locations TE12 through TE17 are available because of a camera malfunction).

10.4.5.1 Soil

Soil samples were collected as a composite sample from the top 6 inches below the soil surface. Similar amounts of soil were collected from four random locations within a 3-foot-square area adjacent to the vegetation sampling area. The soil was collected with a gloved hand or trowel and was placed into a stainless steel bowl. The soil was mixed and rocks were removed by hand, and the soil was placed into the sample container. The bowl, trowel, and other tools used were washed with an Alconox detergent and water solution and rinsed with deionized water between samples, and gloves were changed between samples.

10.4.5.2 Vegetation

At each vegetation sample site, a sample area encompassing a 10-foot radius of typical vegetation for the area was designated. All observed plant species within each sample area were documented. Four to nine

species were sampled at each location. Approximately 50 grams (weighed on a portable scale) of leaves, berries, shoots, and/or other edible/browsable portions of the plant were collected and placed into a resealable plastic bag. Gloves were worn and were changed between samples. If scissors or shears were used, they were washed with an Alconox detergent and deionized water solution and rinsed with deionized water between samples.

In August 2004, all edible portions of plants (leaves, shoots, and fruit [berries]) were collected as a single sample. In September 2004, at five of the sample sites fruit was collected separately and was segregated from vegetative tissue (leaves and shoots) to maintain consistency with sampling procedures used in the mine study area. This procedure also allowed comparison of NOC concentrations between vegetative and fruit tissues.

Table 10.4-1 lists the plant species sampled in the transportation-corridor study area in the Bristol Bay drainages and shows which species were sampled in each habitat type.

10.4.6 Data Reduction

This section summarizes how the raw data were processed and evaluated.

10.4.6.1 Soil

Summary statistics were compiled for soil. Only primary sample data were used for analyses. Non-detect results (analyte not detected above the method detection limit) were included as one-half the method detection limit; non-detect results flagged with a “U” or “UJ” qualifier were included as one-half the method reporting limit. The data summary includes the following statistics:

- The FODs.
- Minimum and maximum detected concentrations.
- Minimum and maximum MDLs and MRLs.
- Mean and median concentrations.
- Standard deviations and CVs.

10.4.6.2 Vegetation

Data for each NOC and plant species were sorted and evaluated to examine differences between species and across habitat types. Only data for primary samples were evaluated. Summary statistics were compiled for each plant type (i.e., trees, shrubs, etc.) and analyte. Non-detect results were included as one-half the MDL, and non-detect results flagged with a “U” or “UJ” qualifier are included as one-half the MRL. The data summaries include the following statistics:

- FODs.
- Minimum and maximum detected concentrations.
- Minimum and maximum MDLs and MRLs.
- Mean and median concentrations.

- Standard deviations and CVs.

10.4.7 Results and Discussion

10.4.7.1 Soil

Seventeen soil samples were collected from the transportation-corridor study area and analyzed for all 26 trace elements referenced on Table 10.1-1, anions and cations (including sodium, which was measured using the test method for trace elements), and total organic carbon. Consistent with the goal of evaluating petroleum-range hydrocarbons in approximately 10 percent of soil samples, one sample was analyzed for petroleum-range hydrocarbons as DRO and RRO.

The soil data are summarized in Table 10.4-2. The raw soil data are presented in Appendix 10.4B. Soil data are presented on a dry weight basis with the exception of total solids data, which are presented on a wet weight basis. For readability, concentrations greater than 1,000 mg/kg were rounded to the nearest hundred for the following discussion.

Trace Elements

All but one of the 26 trace elements for which samples were analyzed was detected in at least one soil sample; only bismuth was not detected in any soil samples. Eleven trace elements were detected in 100 percent of the samples, and another five trace elements detected in at least 82 percent (but less than 100 percent) of all samples (Table 10.4-2). Beryllium was detected in 59 percent of samples. Antimony, arsenic, cadmium, and molybdenum were each detected in between 20 and 50 percent of samples. Boron, silver, thallium, and tin were each detected in only one sample (6 percent).

Aluminum and iron were present at the highest concentrations on average (mean concentrations of 8,300 and 9,000 mg/kg, respectively), with levels of calcium and magnesium being the next highest (mean concentrations of 2,500 and 977 mg/kg, respectively). This hierarchy is consistent with relative concentrations reported for a variety of soil types across the United States (Shacklette and Boerngen, 1984; as discussed in Section 10.1.7.1). All other trace elements had substantially lower mean concentrations. Of the remaining trace elements, only potassium (238 mg/kg) and manganese (88.7 mg/kg) had mean concentrations above 30 mg/kg.

Individual elements vary greatly in concentration across sampling locations, and within a given location concentrations vary among elements. These differences were generally less pronounced in the transportation-corridor study area than in the mineral-rich soils of the mine study area. The range of CVs for trace elements in samples from the transportation-corridor study area (0.48 to 2.69) was higher than the range for the mine study area (0.65 to 3.27), but only five elements in the transportation-corridor study area exceeded a CV of 1.0 (versus 12 in the mine study area; Table 10.1-3). The average CV for all trace elements was 0.91 for the transportation-corridor study area, substantially lower than the 1.27 calculated for the mine study area.

Anions and Cations

Anions and cations are grouped together for this evaluation. The anions are chloride, cyanide, fluoride, and sulfate, and the cations are ammonia (as nitrogen) and sodium. The FODs for these analytes in

transportation-corridor study area ranged from 100 percent for ammonia (as nitrogen) to 24 percent for fluoride (Table 10.4-2). Only fluoride, at 24 percent, was detected at a frequency below 75 percent.

CVs ranged from 0.35 for sodium to 3.14 for sulfate.

Ammonia (as nitrogen) had the highest mean concentration at 411 mg/kg, with sodium next highest at an mean concentration of 297 mg/kg. Cyanide was present at the lowest concentrations, with a mean of 0.11 mg/kg.

Petroleum-range Hydrocarbons

There was only one soil sample from the transportation-corridor study area analyzed for petroleum-range hydrocarbons. DRO and RRO. Both mixtures were detected in the soil sample at 1,500 mg/kg and 9,200 mg/kg for DRO and RRO, respectively (Table 10.4-2). Hydrocarbons can be present in soil as a result of either biogenic breakdown of vegetative material or releases of petroleum. Because no development has occurred in the area where this soil sample was collected, the petroleum-range hydrocarbons detected are assumed to originate from biogenic sources. Biogenic hydrocarbon materials have characteristics similar to DRO and RRO and respond in the tests for those analytes, but biogenic hydrocarbons are differentiated by their chromatographic patterns.

This sample was collected at sampling location TE-03 (Figure 10.4-1) in the moist tundra/shrub thicket (MTST) type of habitat. The DRO and RRO concentrations in the soil sample from the transportation-corridor study area were higher than the concentrations reported for soil samples from mine study area (which had mean concentrations of 209 for DRO and 2,000 for RRO; Table 10.1-5), likely because of the greater density and biomass of vegetative material in the MTST habitat relative to habitats in the mine study area.

Total Organic Carbon

TOC was detected in all 17 samples at a mean concentration of 18 percent (Table 10.4-2) and exhibited wide variability in concentration (from 0.13 to 45.7 percent) across locations. The presence and variability of TOC could affect the bioavailability and toxicity of some trace elements because of the tendency of some trace elements to form complexes with organic materials.

The habitat types observed in the transportation-corridor study area were MTST, open spruce forest/shrub thicket (SFST), spruce hardwood forest (SHF), and lowland shrub thicket/forest and alpine tundra (STAT). Based on evaluation of the raw data (Appendix 10.4B), TOC content averaged the highest in the SFST habitat (mean content of 28.1 percent, maximum content of 45.7 percent) and lowest in the STAT habitat (mean content of 9.55 percent), although the lowest observed content for an individual sample (0.13 percent) was in the SHF habitat.

10.4.7.2 Vegetation

Three predominant plant community types were identified in the study area from literature: high brush, upland spruce hardwood forest, and alpine tundra barren ground. These plant communities intermix in the study area, forming the four habitat types mentioned above.

The dominant species in high-brush habitats ranged from dense willows along streams (i.e., shrub thicket habitat) to dense alder above the timberline (forest and alpine tundra). Trees such as quaking aspen, Alaskan paper birch, and white spruce were present but widely scattered. Upland spruce hardwood forests are dense, mixed forests composed of white spruce, Alaska paper birch, quaking aspen, black cottonwood, and balsam poplar. Alpine tundra contains barren ground habitat, reflecting the higher elevation areas devoid of vegetation (with the exception of reindeer lichen present on some of the rocks). These areas have little topsoil, and the ground surface is typically rocky, including large boulders and/or small diameter cobbles.

In 2004, 131 vegetation samples were collected from the transportation-corridor study area and analyzed for trace elements, anions, and cations. The species collected and the number of samples of each are shown in Table 10.4-1.

Roughly half (48 percent) of the sampled vegetation were shrubs. Grasses and lichens were the least frequently sampled species (around 5 percent each). Mosses, forbs, and trees ranged from approximately 8 to 13 percent of total samples. In addition, 10 fruit tissue samples (roughly 8 percent of total samples) were collected from three of the berry producing shrub species. The species that were sampled and the proportions of each were based on available vegetation across the sample locations. A higher proportion of tree species were sampled in the transportation-corridor study area than in the mine study area, consistent with the different habitat types present in the two areas.

Summary statistics regarding the vegetation samples from the transportation-corridor study area, including mean concentrations and ranges of concentrations detected, are presented in Table 10.4-2. The statistics for each plant type are in Tables 10.4-3 through 10.4-9. Minimum, maximum, and mean concentrations for individual species by habitat type are in Tables 10.4-10 through 10.4-13. Summary statistics for all fruit tissue samples combined and all vegetative tissue samples combined across species for each habitat type also are presented in these tables. The analytical data for vegetation samples are presented in Appendix 10.4C. (In Appendix 10.4C, sample species is identified by scientific name only. Table 10.4-1 provides both common and scientific names for sampled plant species.) Data are presented on a dry weight basis, with the exception of total solids data, which are presented on a wet weight basis.

The following discussion summarizes the data evaluation for vegetation samples. For ease of readability, concentrations greater than 1,000 mg/kg were rounded to the nearest hundred for presentation in the following discussion.

Trace Elements

All 26 trace elements analyzed were detected in at least some vegetation samples (Tables 10.4-3 through 10.4-9). Tin was detected in only three samples (2 percent of all vegetation samples), all of which were from the shrub plant type (Table 10.4-8). Aside from tin, only the fruit tissue and grass plant types (Tables 10.4-3 and 10.4-5, respectively) had trace elements for which there were no detections above the MDL; these elements were arsenic, beryllium, bismuth, selenium, and tin for fruit tissue, and arsenic, beryllium, and bismuth for grass plant types. In each of the plant types, the essential nutrients calcium, potassium, and magnesium typically had the highest mean concentrations. Variability differed between the plant types, ranging from grasses, which had CVs greater than 1.0 for only two elements, up to shrubs, for which 13 elements had CVs greater than 1.0.

Fruit Tissue: Fruit tissue samples were collected from three plant species—crowberry, bog blueberry, and lingonberry. Of the 26 trace elements for which vegetation samples were analyzed, 21 were detected in at least some fruit tissue samples. Arsenic, beryllium, bismuth, selenium, and tin were not detected in any fruit tissue samples (Table 10.4-3). Fifteen elements were present above MDLs in 100 percent of the fruit tissue samples, and thallium was detected in all but one sample (90 percent of samples). Boron, cadmium, and silver were detected in 60 percent of all samples. Chromium and mercury were detected in 20 and 40 percent of all samples, respectively.

Potassium was present at the highest mean concentration (5,200 mg/kg), with calcium and magnesium at next highest mean concentrations (983 mg/kg and 443 mg/kg, respectively). Aluminum (mean of 226 mg/kg) and manganese (mean of 178 mg/kg) were the only other elements with mean concentrations above 100 mg/kg. Iron had a mean concentration of 83.4 mg/kg. All other elements had mean concentrations below 11 mg/kg.

Variability in concentrations among fruit tissue samples was low for most trace elements, with CVs higher than 1.0 for only three of the 21 detected elements—aluminum, cadmium, and molybdenum (Table 10.4-3). The lowest variability was for nickel (CV of 0.17), and the highest was for aluminum (CV of 1.34). The mean CV among all trace elements detected in berry samples was 0.59.

Forbs: Six species of forbs were sampled—meadow horsetail, cloudberry, wild celery, lupine, fireweed, and spreading wood fern. Of the 26 trace elements for which samples were analyzed, 25 were detected in at least some forb samples. Fourteen trace elements were present above MDLs in 100 percent of forb samples (Table 10.4-4). Three trace elements—molybdenum, thallium, and vanadium—were present in between 75 and 90 percent of samples. Antimony, cadmium, and chromium were detected in 59 to 65 percent of samples. Arsenic, beryllium, bismuth, selenium, and silver were detected in less than 50 percent of samples. Tin was not detected in any forb samples.

Calcium, potassium, and magnesium had the highest mean concentrations in forbs (14,500 mg/kg, 15,000 mg/kg, and 4,100 mg/kg, respectively). Aluminum and manganese had substantially lower mean concentrations (126 mg/kg and 288 mg/kg, respectively). Iron had a mean concentration of 97.7 mg/kg. All other trace elements had mean concentrations that were less than 33 mg/kg.

Variability in concentrations among the forbs group was high for 48 percent of the detected trace elements, with 12 of the 25 detected elements having CVs higher than 1.0 (Table 10.4-4). The lowest variability was for magnesium, with a CV of 0.41, and the highest was for arsenic, with a CV of 3.15. The mean CV among all trace elements detected in forb samples was 1.05.

Grasses and sedges: One grass species and two sedge species were sampled. Of the 26 trace elements for which samples were analyzed, all except arsenic, beryllium, bismuth, and tin were detected in at least one grass or sedge sample. Fourteen trace elements were present above MDLs in 100 percent of grass/sedge samples (Table 10.4-5). Boron, molybdenum, and vanadium were present in 83 or 67 percent of the samples. Cadmium and thallium were present in 50 percent of the samples. Antimony, selenium, and silver were detected in less than 35 percent of the samples.

Calcium and potassium had the highest mean concentrations (4,000 and 11,100 mg/kg, respectively). The mean concentrations for magnesium and manganese were lower (985 and 387 mg/kg, respectively), and the mean concentrations for all other trace elements were less than 75 mg/kg.

Variability in concentrations among the grasses and sedges was high (CV of 1.0 or greater) only for antimony and nickel, with CVs of 1.20 and 1.16, respectively (Table 10.4-5). All other CVs were less than 1.0, with the lowest CV being 0.088 for mercury. The mean CV among all trace elements detected in grass or sedge samples was 0.55.

Lichens: Only a single species of lichen—reindeer lichen—was sampled in the transportation–corridor study area. All but one of the 26 trace elements for which samples were analyzed were detected in lichen samples. Eighteen trace elements were present above MDLs in 100 percent of the samples (Table 10.4-6). Antimony, selenium, and thallium were present in 57 to 86 percent of the samples Beryllium and boron were each present in 43 percent of the samples. Molybdenum was detected in 29 percent of samples. Bismuth was detected in only 14 percent (i.e., one sample). Tin was not detected in any lichen samples.

Calcium and potassium were present at the highest concentrations in lichens, with mean concentrations of 1,300 mg/kg and 1,000 mg/kg, respectively. Magnesium and manganese had the next highest mean concentrations of 374 mg/kg and 227 mg/kg, respectively. Aluminum and iron had mean concentrations of 174 mg/kg and 161 mg/kg, respectively. Mean concentrations for all other trace elements were less than 20 mg/kg.

Only three of the trace elements had CVs greater than 1.0—magnesium, manganese, and molybdenum having CVs greater than 1.0 (Table 10.4-6). Manganese had the highest CV in the lichen type at 1.83, while the lowest CV was for arsenic at 0.17. The mean CV among all trace elements detected in lichens was 0.64.

Mosses: One species of moss—green terrestrial moss— was sampled. Twenty-five of the 26 trace elements for which samples were analyzed were detected above MDLs in at least some moss samples (Table 10.4-7). Fifteen trace elements were present in 100 percent of the samples. Arsenic, chromium, and vanadium were detected in 91 percent (10 samples) of the samples. Antimony, boron, cadmium, molybdenum, and selenium were detected in 55 to 73 percent of samples. Beryllium and bismuth were detected in 45 and 36 percent of samples, respectively. Tin was not detected in any moss samples.

Calcium and potassium were present at the highest concentrations, with mean concentrations of 4,300 mg/kg and 2,600 mg/kg, respectively. Magnesium had the next highest mean concentration at 980 mg/kg). Aluminum and manganese also had mean concentrations above 300 mg/kg (874 and 346 mg/kg, respectively). Mean concentrations for all other trace elements were less than 30 mg/kg.

More than one-third (10 of 25) of the trace elements detected in moss samples had CVs greater than 1.0 (Table 10.4-7). Arsenic had the highest CV at 1.82, while mercury had the lowest at 0.25. The mean CV among all trace elements detected in mosses was 0.94.

Shrubs: The shrub plant type had the highest number of samples (63) and species (10) collected among all the plant types. This was the only plant type in which all 26 trace elements for which samples were analyzed were detected above MDLs. Thirteen trace elements were present in 100 percent of shrub samples, and aluminum was detected in 97 percent of the samples (Table 10.4-8). Antimony, cadmium, molybdenum, and vanadium were detected in 52 to 89 percent of the samples. Chromium, selenium, silver, and thallium were detected in 16 to 46 percent of the samples. Arsenic, beryllium, bismuth, and tin were detected in less than 10 percent of the samples.

Calcium, potassium, and magnesium had the highest mean concentrations (5,500 mg/kg, 5,100 mg/kg, and 1,600 mg/kg, respectively). Manganese was next highest, with a mean concentration of 717 mg/kg. All other elements had mean concentrations less than 55 mg/kg.

One-half (13 of 26) of the trace elements had CVs greater than 1.0 for the shrub type (Table 10.4-8). This is a higher proportion of high variability than any other plant type. This high proportion may be a result of more species being sampled in the shrub type than in any other plant type. Silver had the highest CV at 2.89, while copper had the lowest CV at 0.20. The mean CV for all trace elements in shrub samples was 1.09.

Trees: Four species of trees were sampled. All but one of the 26 trace elements for which samples were analyzed were detected above MDLs in the tree samples. Thirteen trace elements were present in 100 percent of the samples, and three elements—boron, silver, and vanadium—were detected in 82 to 94 percent of the samples (Table 10.4-9). Cadmium, chromium, and thallium were detected in 53 to 65 percent of the samples, and antimony was detected in 41 percent of the samples. Arsenic, beryllium, bismuth, molybdenum, and selenium were detected in less than 30 percent of the samples. Tin was the only trace element not detected in any tree samples.

Calcium, potassium, and magnesium again had the highest mean concentrations (5,700 mg/kg, 6,700 mg/kg, and 1,100 mg/kg, respectively). The mean concentration for manganese was 329 mg/kg. Mean concentrations for all other trace elements were less than 75 mg/kg.

Eight trace elements (about 30 percent) had CVs greater than 1.0 for the tree plant type. The highest CV was 2.43 for both antimony and selenium, and the lowest CV was for mercury at 0.20. The mean CV among all trace elements detected in tree samples was 1.05.

Comparison among Plant Types, Tissue Types, and Habitat Types: Among all trace elements, the mean CVs for shrubs, forbs, and trees were the highest among the different plant types (CV for both forbs and trees was 1.05, CV for shrubs was 1.09). Lower variability was seen in moss samples (mean CV of 0.94), and the lowest variability was seen in grasses and sedges (mean CV of 0.55). Fruit tissue and lichen samples also had low variability in concentrations, with mean CVs of 0.59 and 0.64, respectively. The trees had fewer trace elements with high variability (CV greater than 1.0) than the shrubs, forbs, and mosses, but more than the fruit tissue, grasses and sedges, and lichens.

Differences in variability among plant types may be related to differences in uptake patterns for different plant types or species, or to differences in partitioning between vegetative and fruit tissues within a given species. Differences in variability also could be related to the substrates in which different plant types grow and the corresponding NOC distributions in root-zone soil. The number of species within each plant type and the similarity or dissimilarity of those species to one another also may explain the differences in variability across types. A larger number of sample species would be more likely to capture a wide range of chemical uptakes than would fewer sample species.

As described in Section 10.4.5.2, all edible portions of vegetation sampled (vegetative and fruit tissues) were mixed together in the sample, except for 10 samples each of fruit tissue and of vegetative tissue that were collected during the September 2004 sampling event. Comparison of mean concentrations in vegetative tissue and in fruit tissue samples from the three species for which fruit tissue were segregated demonstrates that concentrations of trace elements in the vegetative tissues of plants are not indicative of

concentrations in fruit tissue (Table 10.4-10). For barium, boron, cadmium, calcium, cobalt, magnesium, manganese, mercury, selenium, vanadium, and zinc, the mean concentrations in fruit tissue were lower than mean concentrations in vegetative tissue for all three species, but mean concentrations were higher in fruit tissue than in vegetative tissue for antimony, iron, nickel, and thallium. For the remaining trace elements, the differences were species dependent. For example, aluminum was higher in fruit tissue from crowberry and lingonberry, but was higher in the vegetative tissue from bog blueberry. Mean copper concentrations were higher in the fruit tissue from crowberry, but were higher in the vegetative tissue from both bog blueberry and lingonberry. Lead and molybdenum showed the opposite trend—higher in fruit tissue from bog blueberry and lingonberry, and higher in vegetative tissue from crowberry. These differences between concentrations in vegetative and berry tissue samples for the same species reflect a different pattern than was found for vegetation samples from the mine study area. For example, for the mine study area, iron concentrations were lower in fruit tissue than in vegetative tissues, but for the transportation-corridor study area iron concentrations were higher in fruit tissues than in vegetative tissues.

Interpretation of these results indicates that concentrations of trace elements vary greatly between individual samples, between plant species at a given location, and between vegetative and fruit tissues of a given species. A comparison of concentrations in soil samples and vegetation samples collected from the same locations showed that the elemental profile in vegetation is different from that in soil and is different in different plant species.

Vegetation data also were assessed in terms of habitat. Minimum, maximum, and mean concentrations of NOCs by habitat type and plant species are presented in Tables 10.4-11 through 10.4-14. In some instances, concentrations of a trace element were highest in a given species across all habitats. For example, in all four habitat types, mean concentrations of aluminum and iron were higher in green terrestrial moss than in vegetative tissues of any other species; this was least pronounced in the SFST habitat. Mean potassium concentrations for all four habitats were lower in reindeer lichen relative to other species. Birch species typically had higher mean zinc concentrations than other plant species, although the specific birch species exhibiting the highest mean zinc concentrations differed between habitats. Calcium, potassium, and magnesium concentrations were generally high across all habitats and species. In some cases, concentrations of an element in a plant species were higher in some habitats and lower in others. For example, the mean manganese concentration in reindeer lichen in the SHF habitat type was 5 to 35 times higher than in other habitats, and the mean concentration of molybdenum in crowberries (both vegetative and fruit tissues) in the MTST habitat was 3 to 4 times lower than in the other habitats. Tin was not detected in vegetation samples from any habitat except the STAT habitat.

These comparisons demonstrate the complexity and variability of naturally occurring concentrations of trace elements in vegetation.

Anions and Cations

Except for cyanide, all anions and cations were detected in at least 70 percent of samples in each plant type (Tables 10.4-3 through 10.4-9). Cyanide was detected in less than 50 percent of samples in each plant type. Sulfate and chloride had the highest mean concentrations for each of plant type (116 to 6,900 mg/kg for sulfate, and 78.4 to 6,400 mg/kg for chloride). Cyanide had the lowest concentrations for each plant type (mean concentrations of 0.16 to 0.35 mg/kg) and was the only anion/cation with a mean concentration below 1.0 mg/kg for each plant type.

Variability in anion and cation concentrations differed between plant types. The fruit tissue, grass, lichen, and moss plant types had only one anion or cation each with a CV greater than 1.0. The anions and cations with high variability differed between plant types. In fruit tissue and lichen samples, chloride was the only anion or cation with a CV over 1.0, while only fluoride showed high variability in grass and moss samples. Shrubs showed high variability for the most anions and cations, with four—cyanide, fluoride, ammonia as nitrogen, and sulfate—having CVs greater than 1.0. Fluoride, sodium, and sulfate had CVs greater than 1.0 in forb samples, and fluoride and ammonia as nitrogen had CVs greater than 1.0 in tree samples. Analytes with low variability also differed between plant types. No general trends were observed in anion and cation variability.

Minimum, maximum, and mean concentrations of NOCs by habitat type and plant species are presented in Tables 10.4-11 through 10.4-14. Among the anions and cations, chloride and sulfate generally had the highest mean concentrations and cyanide the lowest mean concentrations for all species combined in each habitat type. As exhibited by the CVs for the anions and cations, fluoride concentrations generally varied the most among species in each habitat; however, sodium and sulfate each had the highest CV for one habitat type. While species-specific differences were observed within each habitat type, no consistent trends across habitats were apparent from review of the data.

10.4.8 Summary

The Bristol Bay drainages portion of the transportation-corridor study area covers a 1-mile-wide corridor between the mine study area and the boundary between the Bristol Bay and Cook Inlet drainages. Objectives and sampling methods for the soil and vegetation study in the transportation-corridor study area were generally the same as those used in the mine study area (Section 10.1. 2 for objectives and Section 10.1.5 for methods).

Sampling was conducted in August and September 2004 and consisted of collecting soil and vegetation samples from 17 locations (Figure 10.4-1). Seventeen soil and 131 vegetation samples were collected and analyzed. The vegetation samples represented 25 species, including three with fruit (berries), and six types of plants—trees, shrubs, forbs, grasses and sedges, mosses, and lichens.

All NOCs for which soil samples were analyzed, except bismuth, were detected in at least one sample. Petroleum-range hydrocarbons (determined by analyses for DRO and RRO) were present at detectable concentrations in the one soil sample analyzed for these parameters. The presence of DRO and RRO is assumed to reflect biogenic sources of hydrocarbons. Concentrations in soil, particularly for sulfate, exhibited a wide variability.

All NOCs for which vegetation samples were analyzed were detected in at least one sample. Evaluation of the analytical results indicated a wide variability in NOC concentrations among and within species, vegetative and fruit tissue types, and habitats types. The high degree of variability in NOC concentrations in vegetation samples, combined with the small number of samples for individual species, precludes identification of clear correlations or trends.

10.4.9 References

Shacklette, H.T, and J.G. Boerngen, 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States. U.S. Geological Survey Professional Paper 1270.

TABLES

TABLE 10.4-1
Plant Species Sampled, by Habitat Type, Transportation-corridor Study Area

Common Name	Scientific Name	n	Habitat Type: Moist Tundra/ Shrub Thicket (MTST)	Open Spruce Forest/ Shrub Thicket (SFST)	Spruce Hardwood Forest (SHF)	Lowland Shrub Thicket/ Forest and Alpine Tundra
TREE VEGETATIVE TISSUES						
Mountain alder	*Alnus crispa*	1			X	
White spruce	*Picea glauca*	4		X	X	X
Black spruce	*Picea mariana*	9	X	X		X
Paper birch (Kenai birch)	*Betula papyrifera*	3		X	X	
Total Tree Vegetation Tissues		**17**				
SHRUB VEGETATIVE TISSUES						
Narrow leaf Labrador tea	*Ledum palustre*	9	X	X	X	X
Crowberry	*Empetrum nigrum*	17	X	X	X	X
Bog blueberry	*Vaccinium uliginosum*	15	X	X	X	X
Lingonberry (low bush cranberry)	*Vaccinium vitis-idaea*	7		X	X	
Shrub birch	*Betula glandulosa*	3	X	X		
Dwarf birch	*Betula nana*	7	X	X	X	X
Diamond leaf willow	*Salix planifolia*	1				X
Feltleaf willow	*Salix alaxensis*	1			X	
Barren-ground willow	*Salix brachycarpa*	2	X			
Sweet gale	*Myrica gale*	1		X		
Total Shrub Vegetative Tissues		**63**				
FORB VEGETATIVE TISSUES						
Wormwood	*Artemisia tilesii*	1			X	
Meadow horsetail	*Equisitum pratense*	5		X	X	X
Cloudberry	*Rubus chamaemorus*	2		X		X
Lupine	*Lupinus nootkatensis*	1	X			
Fireweed	*Chamerion angustifolium*	6		X	X	X
Spreading wood fern	*Dryopteris expansa*	2			X	X
Total Forb Vegetative Tissues		**17**				
GRASS and SEDGE VEGETATIVE TISSUES						
Sedges (species not identified)		1		X		
Blue joint grass	*Calamagrostis sp.*	4		X	X	X
Northern water sedge	*Carex aquatilis*	1				X
Total Grass and Sedge Vegetative Tissues		**6**				
MOSS: VEGETATIVE TISSUES						
Green terrestrial moss	*Ptilium crista-castrensis*	11	X	X	X	X
Total Moss Vegetative Tissues		**11**				
LICHEN VEGETATIVE TISSUES						
Reindeer lichen (caribou moss)	*Cladina rangiferina*	7	X	X	X	X
Total Lichen Vegetative Tissues		**7**				
FRUIT TISSUE						
Crowberry fruit tissue	*Empetrum nigrum*	4	X	X	X	X
Bog blueberry fruit tissue	*Vaccinium uliginosum*	3	X	X		X
Lingonberry (low bush cranberry) fruit tissue	*Vaccinium vitis-idaea*	3		X	X	
Total Fruit Tissues		**10**				

TABLE 10.4-2
Soil, Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Organic Compounds[c]									
Diesel-range Organics	1 / 1	100%	1520 - 1520	58.6 - 58.6	586 - 586	1520	1520	NA	NA
Residual-range Organics	1 / 1	100%	9220 - 9220	58.6 - 58.6	586 - 586	9220	9220	NA	NA
Trace Elements[c]									
Aluminum	17 / 17	100%	1350 - 24300	0.62 - 56.4	1.99 - 182	8281	6840	6360	0.77
Antimony	6 / 17	35%	0.055 - 1.29	0.031 - 0.28	0.10 - 0.91	0.14	0.055	0.30	2.17
Arsenic	8 / 17	47%	1.47 - 50.1	0.57 - 3.72	1.79 - 11.8	4.40	1.47	11.8	2.69
Barium	17 / 17	100%	8.36 - 53.7	0.094 - 0.61	0.30 - 1.96	29.2	24.7	14.8	0.51
Beryllium	10 / 17	59%	0.070 - 0.26	0.031 - 0.20	0.10 - 0.65	0.11	0.10	0.073	0.66
Bismuth	0 / 17	0%	NA - NA	0.062 - 0.41	0.20 - 1.31	NA	NA	NA	NA
Boron	1 / 17	6%	7.95 - 7.95	3.09 - 20.3	9.97 - 65.3	4.13	3.82	2.22	0.54
Cadmium	7 / 17	41%	0.076 - 0.59	0.062 - 0.41	0.20 - 1.31	0.14	0.10	0.13	0.95
Calcium	17 / 17	100%	469 - 8130	9.37 - 123	29.9 - 394	2491	1860	1983	0.80
Chromium	17 / 17	100%	0.93 - 21.4	0.12 - 0.78	0.40 - 2.61	5.25	3.84	4.84	0.92
Cobalt	16 / 17	94%	0.63 - 6.56	0.15 - 0.98	0.50 - 3.27	1.92	1.41	1.54	0.80
Copper	17 / 17	100%	2.06 - 18.2	0.18 - 1.18	0.60 - 3.92	7.84	7.37	3.80	0.48
Iron	17 / 17	100%	1830 - 23200	4.41 - 282	14.2 - 909	8986	6370	6947	0.77
Lead	17 / 17	100%	0.72 - 6.30	0.062 - 0.41	0.20 - 1.31	2.15	1.62	1.39	0.65
Magnesium	17 / 17	100%	117 - 3960	9.37 - 123	29.9 - 394	977	497	1114	1.14
Manganese	17 / 17	100%	13.8 - 382	0.062 - 0.81	0.20 - 2.63	88.7	52.8	98.1	1.11
Mercury	15 / 17	88%	0.034 - 0.19	0.012 - 0.081	0.041 - 0.27	0.081	0.087	0.047	0.57
Molybdenum	4 / 17	24%	0.58 - 2.03	0.31 - 2.03	1.00 - 6.53	0.58	0.40	0.50	0.86
Nickel	16 / 17	94%	0.46 - 9.79	0.062 - 0.41	0.20 - 1.31	2.44	1.86	2.28	0.93
Potassium	14 / 17	82%	114 - 734	30.9 - 407	99.7 - 1310	238	204	156	0.66
Selenium	15 / 17	88%	0.19 - 2.06	0.15 - 0.98	0.50 - 3.27	0.63	0.54	0.47	0.75
Silver	1 / 17	6%	0.14 - 0.14	0.031 - 0.20	0.10 - 0.65	0.060	0.050	0.038	0.64
Thallium	1 / 17	6%	0.081 - 0.081	0.0062 - 0.041	0.020 - 0.13	0.012	0.0077	0.018	1.50
Tin	1 / 17	6%	2.83 - 2.83	0.31 - 2.03	1.00 - 6.53	1.32	1.04	0.75	0.57
Vanadium	17 / 17	100%	7.05 - 60.7	0.94 - 8.54	2.99 - 27.3	28.0	24.1	17.2	0.61
Zinc	17 / 17	100%	5.85 - 39.9	0.31 - 2.03	1.00 - 6.53	18.3	15.0	10.9	0.59
Anions and Cations[c]									
Ammonia (as nitrogen)	17 / 17	100%	5.62 - 1030	2.30 - 40.1	7.30 - 127	411	349	261	0.63
Chloride	13 / 17	76%	0.44 - 9.69	0.31 - 1.96	1.00 - 6.33	2.20	1.63	2.48	1.13
Cyanide	14 / 17	82%	0.049 - 0.21	0.024 - 0.13	0.049 - 0.27	0.11	0.11	0.064	0.58
Fluoride	4 / 17	24%	0.31 - 1.37	0.31 - 1.96	1.00 - 6.33	0.52	0.38	0.35	0.68
Sodium	16 / 17	94%	124 - 508	30.9 - 407	99.7 - 1310	297	304	105	0.35
Sulfate	16 / 17	94%	1.08 - 341	0.31 - 1.96	1.00 - 6.33	26.0	4.10	81.7	3.14

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Chemical Properties [c]									
Total Organic Carbon [d]	17 / 17	100%	0.13 - 45.7	0.026 - 1.74	0.052 - 3.48	18.2	15.1	12.4	0.68

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the average, median, and standard deviation, non-detect results reported as zero values were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

d. Unit of measure for detects, method detection limits, method reporting limits, average, and median is percent, rather than mg/kg.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.4-3
Fruit Tissue, Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements[c]									
Aluminum	10 / 10	100%	17.7 - 902	4.00 - 7.20	5.00 - 9.00	226	84.0	304	1.34
Antimony	10 / 10	100%	0.12 - 0.32	0.020 - 0.020	0.050 - 0.060	0.21	0.21	0.056	0.26
Arsenic	0 / 10	0%	NA - NA	0.040 - 0.060	0.45 - 0.56	NA	NA	NA	NA
Barium	10 / 10	100%	2.00 - 16.6	0.10 - 0.20	0.50 - 0.90	6.96	5.50	4.66	0.67
Beryllium	0 / 10	0%	NA - NA	0.0030 - 0.0030	0.018 - 0.022	NA	NA	NA	NA
Bismuth	0 / 10	0%	NA - NA	0.0060 - 0.0080	0.045 - 0.056	NA	NA	NA	NA
Boron	6 / 10	60%	6.90 - 12.1	0.10 - 0.20	5.00 - 9.00	6.65	7.60	3.83	0.58
Cadmium	6 / 10	60%	0.0080 - 0.10	0.0060 - 0.0080	0.045 - 0.056	0.026	0.0095	0.034	1.29
Calcium	10 / 10	100%	686 - 1800	1.50 - 2.70	5.00 - 9.00	983	781	432	0.44
Chromium	2 / 10	20%	0.30 - 0.40	0.20 - 0.50	1.00 - 1.80	0.18	0.13	0.11	0.61
Cobalt	10 / 10	100%	0.030 - 0.070	0.010 - 0.010	0.020 - 0.020	0.042	0.040	0.014	0.33
Copper	10 / 10	100%	1.48 - 5.26	0.020 - 0.020	0.090 - 0.11	2.90	2.56	1.25	0.43
Iron	10 / 10	100%	54.6 - 149	0.30 - 0.50	2.00 - 3.60	83.4	76.0	25.8	0.31
Lead	10 / 10	100%	0.090 - 0.23	0.020 - 0.020	0.040 - 0.060	0.17	0.19	0.042	0.25
Magnesium	10 / 10	100%	316 - 733	1.00 - 1.80	2.00 - 3.60	443	394	127	0.29
Manganese	10 / 10	100%	29.0 - 572	0.020 - 0.050	0.50 - 0.90	178	94	170	0.95
Mercury	4 / 10	40%	0.011 - 0.016	0.010 - 0.010	0.019 - 0.020	0.0080	0.0050	0.0041	0.51
Molybdenum	10 / 10	100%	0.021 - 0.56	0.0070 - 0.0090	0.045 - 0.056	0.14	0.10	0.16	1.11
Nickel	10 / 10	100%	7.30 - 12.0	0.040 - 0.040	0.18 - 0.22	9.51	9.04	1.62	0.17
Potassium	10 / 10	100%	3920 - 6620	2.50 - 4.50	199 - 360	5196	5050	1035	0.20
Selenium	0 / 10	0%	NA - NA	0.10 - 0.10	0.90 - 1.10	NA	NA	NA	NA
Silver	6 / 10	60%	0.0050 - 0.015	0.0030 - 0.0030	0.018 - 0.023	0.0060	0.0055	0.0049	0.82
Thallium	9 / 10	90%	0.0020 - 0.013	0.0020 - 0.0020	0.018 - 0.022	0.0074	0.0085	0.0043	0.58
Tin	0 / 10	0%	NA - NA	1.00 - 1.80	5.00 - 9.00	NA	NA	NA	NA
Vanadium	10 / 10	100%	0.040 - 0.21	0.030 - 0.030	0.18 - 0.22	0.088	0.070	0.053	0.60
Zinc	10 / 10	100%	6.40 - 24.5	0.10 - 0.30	1.00 - 1.80	10.8	7.95	5.96	0.55

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	10 / 10	100%	14.0 - 135	6.80 - 6.80	12.0 - 12.0	44.8	26.5	37.3	0.83
Chloride	7 / 10	70%	32.1 - 1160	4.00 - 8.00	25.0 - 50.0	411	39.9	512	1.25
Cyanide	1 / 10	10%	0.50 - 0.50	0.30 - 0.30	0.80 - 0.80	0.19	0.15	0.11	0.60
Fluoride	7 / 10	70%	0.40 - 1.50	0.30 - 0.70	2.50 - 5.00	0.72	0.65	0.40	0.55
Sodium	10 / 10	100%	15.8 - 108	1.50 - 2.70	10.0 - 18.0	41.0	28.3	31.9	0.78
Sulfate	10 / 10	100%	2070 - 4630	23.0 - 230	50.0 - 500	3401	3480	948	0.28

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the average, median, and standard deviation, non-detect results reported as zero values were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.4-4
Forbs, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements[c]									
Aluminum	17 / 17	100%	11.2 - 562	3.90 - 8.00	4.90 - 10.0	126	56.2	155	1.23
Antimony	10 / 17	59%	0.020 - 0.060	0.020 - 0.020	0.050 - 0.050	0.029	0.030	0.016	0.57
Arsenic	6 / 17	35%	0.050 - 2.24	0.050 - 0.050	0.49 - 0.50	0.17	0.025	0.53	3.15
Barium	17 / 17	100%	1.10 - 94.8	0.10 - 0.20	0.50 - 1.00	32.5	25.6	27.1	0.84
Beryllium	7 / 17	41%	0.0040 - 0.12	0.0030 - 0.0030	0.020 - 0.020	0.013	0.0015	0.031	2.35
Bismuth	1 / 17	6%	0.0080 - 0.0080	0.0070 - 0.010	0.050 - 0.050	0.0077	0.0035	0.0083	1.08
Boron	17 / 17	100%	10.9 - 59.0	0.10 - 1.00	4.90 - 10.0	25.9	21.8	13.9	0.54
Cadmium	11 / 17	65%	0.0080 - 0.29	0.0070 - 0.0070	0.049 - 0.050	0.058	0.025	0.083	1.43
Calcium	17 / 17	100%	4350 - 32300	1.00 - 15.0	4.90 - 50.0	14512	11700	8963	0.62
Chromium	10 / 17	59%	0.30 - 1.20	0.20 - 0.50	1.00 - 2.00	0.41	0.30	0.32	0.78
Cobalt	17 / 17	100%	0.060 - 1.75	0.010 - 0.010	0.020 - 0.020	0.40	0.19	0.45	1.15
Copper	17 / 17	100%	2.51 - 12.6	0.020 - 0.020	0.10 - 0.10	4.69	3.85	2.49	0.53
Iron	17 / 17	100%	29.9 - 253	0.30 - 1.50	1.90 - 4.00	97.7	79.4	62.1	0.64
Lead	17 / 17	100%	0.030 - 0.81	0.020 - 0.020	0.050 - 0.050	0.15	0.070	0.20	1.40
Magnesium	17 / 17	100%	1930 - 8200	0.20 - 2.00	1.90 - 4.00	4102	3920	1687	0.41
Manganese	17 / 17	100%	32.0 - 1360	0.020 - 0.20	0.49 - 1.00	288	109	399	1.39
Mercury	17 / 17	100%	0.020 - 0.17	0.0090 - 0.010	0.017 - 0.020	0.076	0.076	0.049	0.65
Molybdenum	14 / 17	82%	0.050 - 1.91	0.010 - 0.010	0.050 - 0.050	0.53	0.25	0.62	1.17
Nickel	17 / 17	100%	0.49 - 7.42	0.040 - 0.040	0.20 - 0.20	2.21	1.77	1.73	0.78
Potassium	17 / 17	100%	5650 - 34200	2.40 - 150	194 - 2000	15014	11500	8906	0.59
Selenium	6 / 17	35%	0.30 - 0.60	0.10 - 0.10	1.00 - 1.00	0.18	0.050	0.19	1.05
Silver	8 / 17	47%	0.0040 - 0.020	0.0030 - 0.0040	0.019 - 0.020	0.0047	0.0015	0.0054	1.14
Thallium	13 / 17	76%	0.0020 - 0.11	0.0020 - 0.0020	0.020 - 0.020	0.025	0.012	0.032	1.28
Tin	0 / 17	0%	NA - NA	1.00 - 3.00	4.90 - 10.0	NA	NA	NA	NA
Vanadium	15 / 17	88%	0.13 - 0.97	0.030 - 0.030	0.20 - 0.20	0.29	0.19	0.24	0.85
Zinc	17 / 17	100%	8.00 - 67.2	0.10 - 0.30	1.00 - 2.00	25.6	21.0	17.0	0.67

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	17 / 17	100%	49.8 - 2290	0.80 - 78.0	1.90 - 128	630	454	561	0.89
Chloride	17 / 17	100%	1350 - 17800	30.0 - 600	190 - 3800	6405	4460	4888	0.76
Cyanide	1 / 17	6%	0.11 - 0.11	0.090 - 0.32	0.30 - 1.10	0.25	0.20	0.19	0.75
Fluoride	17 / 17	100%	0.60 - 1720	0.20 - 35.0	2.00 - 205	189	1.80	470	2.49
Sodium	17 / 17	100%	13.9 - 1940	1.50 - 5.00	9.70 - 20.0	199	42.9	457	2.30
Sulfate	17 / 17	100%	374 - 29500	30.0 - 750	190 - 3800	6938	4130	7917	1.14

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the average, median, and standard deviation, non-detect results reported as zero values were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.4-5
Grasses, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements[c]									
Aluminum	6 / 6	100%	4.90 - 77.9	3.90 - 5.00	4.90 - 5.00	37.1	35.4	31.8	0.86
Antimony	2 / 6	33%	0.030 - 0.090	0.020 - 0.020	0.050 - 0.050	0.027	0.010	0.032	1.20
Arsenic	0 / 6	0%	NA - NA	0.050 - 0.050	0.49 - 0.50	NA	NA	NA	NA
Barium	6 / 6	100%	12.6 - 60.7	0.10 - 0.10	0.50 - 0.50	33.7	29.7	17.8	0.53
Beryllium	0 / 6	0%	NA - NA	0.0030 - 0.0030	0.020 - 0.020	NA	NA	NA	NA
Bismuth	0 / 6	0%	NA - NA	0.0070 - 0.010	0.049 - 0.050	NA	NA	NA	NA
Boron	5 / 6	83%	3.10 - 21.6	0.10 - 1.00	4.90 - 10.0	11.4	11.5	7.87	0.69
Cadmium	3 / 6	50%	0.022 - 0.047	0.0070 - 0.0070	0.049 - 0.050	0.029	0.025	0.0092	0.32
Calcium	6 / 6	100%	1490 - 5190	1.00 - 1.50	4.90 - 5.00	3957	4340	1428	0.36
Chromium	6 / 6	100%	0.30 - 1.10	0.20 - 0.30	1.00 - 1.00	0.75	0.85	0.29	0.39
Cobalt	6 / 6	100%	0.040 - 0.090	0.010 - 0.010	0.020 - 0.020	0.073	0.085	0.023	0.31
Copper	6 / 6	100%	2.27 - 5.37	0.020 - 0.020	0.10 - 0.10	3.46	2.90	1.24	0.36
Iron	6 / 6	100%	40.7 - 110	0.30 - 1.50	2.00 - 2.00	72.0	63.2	30.0	0.42
Lead	6 / 6	100%	0.050 - 0.21	0.020 - 0.020	0.050 - 0.050	0.12	0.090	0.066	0.57
Magnesium	6 / 6	100%	703 - 1210	0.30 - 1.00	2.00 - 2.00	985	1000	215	0.22
Manganese	6 / 6	100%	129 - 907	0.020 - 0.20	0.49 - 0.50	387	313	280	0.72
Mercury	6 / 6	100%	0.028 - 0.036	0.0080 - 0.010	0.016 - 0.020	0.032	0.032	0.0028	0.088
Molybdenum	5 / 6	83%	0.19 - 1.70	0.010 - 0.010	0.050 - 0.050	0.74	0.69	0.62	0.84
Nickel	6 / 6	100%	0.59 - 7.00	0.040 - 0.040	0.20 - 0.20	2.17	0.93	2.53	1.16
Potassium	6 / 6	100%	9120 - 14200	2.50 - 150	196 - 200	11135	10420	2158	0.19
Selenium	1 / 6	17%	0.20 - 0.20	0.10 - 0.10	1.00 - 1.00	0.075	0.050	0.061	0.82
Silver	2 / 6	33%	0.0040 - 0.0050	0.0030 - 0.0040	0.020 - 0.020	0.0026	0.0018	0.0015	0.59
Thallium	3 / 6	50%	0.0050 - 0.021	0.0020 - 0.0020	0.020 - 0.020	0.0078	0.0070	0.0075	0.96
Tin	0 / 6	0%	NA - NA	1.00 - 3.00	4.90 - 10.0	NA	NA	NA	NA
Vanadium	4 / 6	67%	0.060 - 0.23	0.030 - 0.030	0.20 - 0.20	0.14	0.11	0.073	0.53
Zinc	6 / 6	100%	11.7 - 31.2	0.10 - 0.30	1.00 - 1.00	22.8	22.1	7.59	0.33

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	6 / 6	100%	38.1 - 1980	0.80 - 78.0	1.90 - 178	901	959	664	0.74
Chloride	6 / 6	100%	1310 - 4700	30.0 - 80.0	190 - 500	2738	2550	1340	0.49
Cyanide	2 / 6	33%	0.21 - 0.40	0.10 - 0.32	0.40 - 1.10	0.34	0.33	0.19	0.54
Fluoride	6 / 6	100%	0.30 - 441	0.20 - 35.0	2.00 - 205	74.8	2.15	179	2.40
Sodium	6 / 6	100%	10.1 - 42.1	1.50 - 5.00	9.80 - 10.0	22.8	20.2	12.8	0.56
Sulfate	6 / 6	100%	386 - 2010	30.0 - 230	190 - 500	1113	947	705	0.63

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the average, median, and standard deviation, non-detect results reported as zero values were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.4-6
Lichens, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements[c]									
Aluminum	7 / 7	100%	116 - 356	3.90 - 4.90	4.90 - 5.00	174	155	84.2	0.48
Antimony	6 / 7	86%	0.030 - 0.16	0.020 - 0.020	0.050 - 0.050	0.058	0.040	0.047	0.80
Arsenic	7 / 7	100%	0.080 - 0.13	0.050 - 0.050	0.49 - 0.50	0.11	0.10	0.018	0.17
Barium	7 / 7	100%	3.50 - 31.4	0.10 - 0.10	0.50 - 0.50	13.8	12.0	8.72	0.63
Beryllium	3 / 7	43%	0.0040 - 0.0060	0.0030 - 0.0030	0.020 - 0.020	0.0030	0.0015	0.0020	0.65
Bismuth	1 / 7	14%	0.012 - 0.012	0.0070 - 0.010	0.049 - 0.050	0.011	0.0050	0.0098	0.87
Boron	3 / 7	43%	0.40 - 6.80	0.10 - 1.00	4.90 - 9.90	2.51	2.45	2.12	0.84
Cadmium	7 / 7	100%	0.021 - 0.051	0.0070 - 0.0070	0.049 - 0.050	0.029	0.023	0.011	0.38
Calcium	7 / 7	100%	414 - 4080	1.00 - 1.50	4.90 - 5.00	1292	982	1249	0.97
Chromium	7 / 7	100%	0.30 - 1.00	0.20 - 0.30	1.00 - 1.00	0.51	0.40	0.23	0.46
Cobalt	7 / 7	100%	0.050 - 0.13	0.010 - 0.010	0.020 - 0.020	0.093	0.10	0.028	0.30
Copper	7 / 7	100%	0.93 - 3.55	0.020 - 0.020	0.10 - 0.10	1.46	1.15	0.93	0.63
Iron	7 / 7	100%	109 - 278	0.30 - 1.50	1.90 - 2.00	161	149	57.2	0.36
Lead	7 / 7	100%	0.42 - 0.98	0.020 - 0.020	0.050 - 0.050	0.65	0.69	0.19	0.30
Magnesium	7 / 7	100%	179 - 1300	0.20 - 1.00	1.90 - 2.00	374	220	409	1.09
Manganese	7 / 7	100%	17.0 - 1160	0.020 - 0.10	0.49 - 0.50	227	55.0	416	1.83
Mercury	7 / 7	100%	0.021 - 0.074	0.0090 - 0.010	0.018 - 0.020	0.036	0.028	0.018	0.50
Molybdenum	2 / 7	29%	0.020 - 0.16	0.010 - 0.010	0.050 - 0.050	0.044	0.025	0.051	1.18
Nickel	7 / 7	100%	0.37 - 1.28	0.040 - 0.040	0.20 - 0.20	0.84	0.90	0.40	0.47
Potassium	7 / 7	100%	657 - 2690	2.40 - 148	194 - 200	1013	756	741	0.73
Selenium	4 / 7	57%	0.10 - 0.20	0.10 - 0.10	1.00 - 1.00	0.11	0.10	0.067	0.63
Silver	7 / 7	100%	0.0050 - 0.010	0.0030 - 0.0030	0.019 - 0.020	0.0073	0.0070	0.0018	0.25
Thallium	5 / 7	71%	0.0040 - 0.012	0.0020 - 0.0020	0.020 - 0.020	0.008	0.01	0.0030	0.36
Tin	0 / 7	0%	NA - NA	1.00 - 3.00	4.90 - 9.90	NA	NA	NA	NA
Vanadium	7 / 7	100%	0.25 - 0.67	0.030 - 0.030	0.20 - 0.20	0.40	0.36	0.14	0.35
Zinc	7 / 7	100%	9.90 - 44.6	0.10 - 0.20	1.00 - 1.00	16.8	12.4	12.4	0.74

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	7 / 7	100%	8.30 - 50.1	1.20 - 3.10	2.00 - 5.10	21.9	13.1	15.2	0.69
Chloride	7 / 7	100%	26.0 - 298	4.00 - 25.0	21.0 - 165	78.4	39.0	98.4	1.25
Cyanide	3 / 7	43%	0.10 - 0.19	0.090 - 0.20	0.30 - 0.70	0.16	0.11	0.083	0.51
Fluoride	7 / 7	100%	0.30 - 4.30	0.20 - 1.20	2.00 - 12.0	1.71	1.90	1.37	0.80
Sodium	7 / 7	100%	30.4 - 96.7	1.50 - 4.90	9.70 - 10.0	45.4	33.7	24.5	0.54
Sulfate	7 / 7	100%	49.0 - 235	10.0 - 75.0	21.0 - 170	116	82.0	75.5	0.65

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the average, median, and standard deviation, non-detect results reported as zero values were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.4-7

Mosses, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements[c]									
Aluminum	11 / 11	100%	53.0 - 3040	4.00 - 5.00	5.00 - 5.00	874	339	1110	1.27
Antimony	8 / 11	73%	0.020 - 0.15	0.020 - 0.020	0.050 - 0.050	0.062	0.050	0.052	0.84
Arsenic	10 / 11	91%	0.060 - 2.40	0.050 - 0.050	0.49 - 0.50	0.38	0.14	0.69	1.82
Barium	11 / 11	100%	10.5 - 49.2	0.10 - 0.10	0.50 - 0.50	23.6	22.9	11.8	0.50
Beryllium	5 / 11	45%	0.0040 - 0.073	0.0030 - 0.0030	0.019 - 0.020	0.014	0.0015	0.023	1.63
Bismuth	4 / 11	36%	0.0090 - 0.013	0.0070 - 0.010	0.049 - 0.050	0.0082	0.0035	0.0068	0.83
Boron	6 / 11	55%	1.90 - 19.2	0.10 - 1.00	5.00 - 10.0	5.91	2.50	6.25	1.06
Cadmium	8 / 11	73%	0.051 - 0.39	0.0070 - 0.0070	0.049 - 0.050	0.091	0.061	0.10	1.14
Calcium	11 / 11	100%	1310 - 12900	1.00 - 1.50	5.00 - 5.00	4306	2810	3544	0.82
Chromium	10 / 11	91%	0.50 - 27.9	0.20 - 0.30	1.00 - 1.00	5.08	0.80	8.79	1.73
Cobalt	11 / 11	100%	0.070 - 1.29	0.010 - 0.010	0.020 - 0.020	0.48	0.26	0.47	0.98
Copper	11 / 11	100%	1.63 - 7.16	0.020 - 0.020	0.10 - 0.10	3.70	3.32	1.99	0.54
Iron	11 / 11	100%	81.8 - 3800	0.30 - 1.50	2.00 - 2.00	909	487	1198	1.32
Lead	11 / 11	100%	0.38 - 1.65	0.020 - 0.020	0.050 - 0.050	0.89	0.96	0.48	0.54
Magnesium	11 / 11	100%	563 - 1650	0.20 - 1.00	2.00 - 2.00	980	923	378	0.39
Manganese	11 / 11	100%	20.4 - 771	0.020 - 0.20	0.50 - 0.50	346	323	268	0.77
Mercury	11 / 11	100%	0.038 - 0.10	0.0090 - 0.010	0.018 - 0.020	0.071	0.071	0.018	0.25
Molybdenum	8 / 11	73%	0.030 - 1.39	0.010 - 0.010	0.050 - 0.050	0.25	0.15	0.39	1.61
Nickel	11 / 11	100%	0.60 - 14.1	0.040 - 0.040	0.19 - 0.20	3.43	1.59	4.10	1.20
Potassium	11 / 11	100%	684 - 4780	2.50 - 150	198 - 200	2648	2790	1296	0.49
Selenium	7 / 11	64%	0.10 - 0.30	0.10 - 0.10	1.00 - 1.00	0.15	0.20	0.088	0.60
Silver	11 / 11	100%	0.0050 - 0.031	0.0030 - 0.0040	0.020 - 0.020	0.014	0.014	0.0093	0.64
Thallium	11 / 11	100%	0.0030 - 0.041	0.0020 - 0.0020	0.019 - 0.020	0.014	0.011	0.011	0.78
Tin	0 / 11	0%	NA - NA	1.00 - 3.00	5.00 - 10.0	NA	NA	NA	NA
Vanadium	10 / 11	91%	0.21 - 4.95	0.030 - 0.030	0.19 - 0.20	1.43	1.00	1.75	1.22
Zinc	11 / 11	100%	6.80 - 73.9	0.10 - 0.30	1.00 - 1.00	28.8	23.7	17.2	0.60

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	11 / 11	100%	5.80 - 62.2	0.80 - 3.10	1.90 - 7.10	23.5	14.6	19.9	0.85
Chloride	11 / 11	100%	41.0 - 588	5.00 - 30.0	34.0 - 190	261	168	209	0.80
Cyanide	3 / 11	27%	0.11 - 0.80	0.090 - 0.32	0.30 - 1.10	0.35	0.30	0.24	0.68
Fluoride	10 / 11	91%	0.30 - 944	0.20 - 14.0	1.50 - 82.0	145	3.40	291	2.01
Sodium	11 / 11	100%	48.3 - 419	1.50 - 5.00	9.90 - 10.0	150	110	124	0.83
Sulfate	11 / 11	100%	42.0 - 327	7.00 - 45.0	14.0 - 100	170	143	110	0.65

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the average, median, and standard deviation, non-detect results reported as zero values were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.4-8

Shrubs, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements[c]									
Aluminum	61 / 63	97%	4.50 - 373	3.90 - 7.80	4.90 - 9.80	53.5	38.5	57.2	1.07
Antimony	33 / 63	52%	0.020 - 0.61	0.020 - 0.020	0.050 - 0.050	0.056	0.025	0.090	1.61
Arsenic	3 / 63	5%	0.080 - 0.26	0.050 - 0.050	0.49 - 0.50	0.031	0.025	0.032	1.03
Barium	63 / 63	100%	5.50 - 119	0.10 - 0.10	0.50 - 0.50	43.4	42.6	25.1	0.58
Beryllium	3 / 63	5%	0.0090 - 0.016	0.0030 - 0.0030	0.020 - 0.020	0.0021	0.0015	0.0026	1.27
Bismuth	5 / 63	8%	0.0070 - 0.12	0.0070 - 0.010	0.049 - 0.050	0.0084	0.0035	0.015	1.83
Boron	63 / 63	100%	7.40 - 38.4	0.10 - 1.00	4.90 - 10.0	17.9	17.7	6.72	0.37
Cadmium	45 / 63	71%	0.0070 - 0.77	0.0070 - 0.0070	0.049 - 0.050	0.096	0.025	0.16	1.66
Calcium	63 / 63	100%	2710 - 15500	1.00 - 1.50	4.90 - 5.00	5505	5300	1931	0.35
Chromium	24 / 63	38%	0.30 - 0.90	0.20 - 0.50	1.00 - 2.00	0.24	0.15	0.18	0.76
Cobalt	63 / 63	100%	0.030 - 2.18	0.010 - 0.010	0.020 - 0.020	0.19	0.080	0.42	2.21
Copper	63 / 63	100%	1.93 - 5.91	0.020 - 0.020	0.10 - 0.10	3.80	3.71	0.77	0.20
Iron	63 / 63	100%	21.6 - 196	0.30 - 1.50	1.90 - 2.00	39.1	31.1	27.5	0.70
Lead	63 / 63	100%	0.020 - 0.72	0.020 - 0.020	0.050 - 0.050	0.13	0.090	0.13	1.03
Magnesium	63 / 63	100%	869 - 5080	0.20 - 1.00	1.90 - 2.00	1628	1420	655	0.40
Manganese	63 / 63	100%	66.8 - 2510	0.020 - 1.50	0.49 - 5.00	717	502	562	0.78
Mercury	63 / 63	100%	0.023 - 0.10	0.0070 - 0.010	0.015 - 0.020	0.044	0.042	0.014	0.32
Molybdenum	44 / 63	70%	0.024 - 2.96	0.0080 - 0.010	0.050 - 0.050	0.21	0.070	0.50	2.40
Nickel	63 / 63	100%	0.32 - 11.4	0.040 - 0.040	0.20 - 0.20	1.42	1.07	1.46	1.03
Potassium	63 / 63	100%	2290 - 20400	2.40 - 150	194 - 200	5086	4380	2934	0.58
Selenium	10 / 63	16%	0.10 - 0.40	0.10 - 0.10	1.00 - 1.00	0.067	0.050	0.058	0.85
Silver	17 / 63	27%	0.0030 - 0.094	0.0030 - 0.0040	0.019 - 0.020	0.0041	0.0015	0.012	2.89
Thallium	29 / 63	46%	0.0020 - 0.26	0.0020 - 0.0020	0.020 - 0.020	0.019	0.0030	0.045	2.39
Tin	3 / 63	5%	3.00 - 6.30	1.00 - 3.00	4.90 - 10.0	2.55	2.50	0.55	0.21
Vanadium	56 / 63	89%	0.050 - 0.38	0.030 - 0.030	0.20 - 0.20	0.14	0.12	0.071	0.50
Zinc	63 / 63	100%	10.6 - 296	0.10 - 0.30	1.00 - 2.00	35.0	23.8	41.8	1.19

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	60 / 63	95%	1.70 - 639	0.80 - 34.0	1.90 - 60.0	71.1	19.4	111	1.57
Chloride	63 / 63	100%	11.0 - 1820	4.00 - 50.0	21.0 - 340	348	249	330	0.95
Cyanide	9 / 63	14%	0.10 - 4.20	0.090 - 0.32	0.30 - 1.10	0.33	0.20	0.54	1.65
Fluoride	52 / 63	83%	0.30 - 2660	0.20 - 70.0	1.90 - 410	241	0.60	541	2.25
Sodium	49 / 63	78%	6.10 - 57.8	1.50 - 5.00	9.70 - 10.0	16.1	14.2	10.9	0.68
Sulfate	63 / 63	100%	47.0 - 9300	10.0 - 150	21.0 - 820	659	383	1226	1.86

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the average, median, and standard deviation, non-detect results reported as zero values were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.4-9
Trees, Vegetative Tissue Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements[c]									
Aluminum	17 / 17	100%	7.00 - 161	3.90 - 5.00	4.90 - 5.00	62.2	60.0	50.3	0.81
Antimony	7 / 17	41%	0.020 - 0.47	0.020 - 0.020	0.050 - 0.050	0.045	0.020	0.11	2.43
Arsenic	2 / 17	12%	0.050 - 0.52	0.050 - 0.050	0.49 - 0.99	0.056	0.025	0.12	2.16
Barium	17 / 17	100%	4.20 - 103	0.10 - 0.10	0.50 - 0.50	32.8	32.9	24.7	0.76
Beryllium	3 / 17	18%	0.0030 - 0.012	0.0030 - 0.0030	0.019 - 0.020	0.0028	0.0015	0.0033	1.20
Bismuth	2 / 17	12%	0.011 - 0.11	0.0070 - 0.010	0.050 - 0.050	0.013	0.0035	0.026	1.98
Boron	16 / 17	94%	5.40 - 30.9	0.10 - 1.00	4.90 - 10.0	10.6	8.50	7.23	0.68
Cadmium	9 / 17	53%	0.0090 - 0.39	0.0070 - 0.0070	0.049 - 0.050	0.043	0.014	0.094	2.19
Calcium	17 / 17	100%	818 - 11900	1.00 - 1.50	4.90 - 5.00	5670	5520	2730	0.48
Chromium	10 / 17	59%	0.30 - 1.20	0.20 - 0.30	1.00 - 1.00	0.35	0.30	0.30	0.86
Cobalt	17 / 17	100%	0.030 - 0.33	0.010 - 0.010	0.020 - 0.020	0.12	0.10	0.072	0.61
Copper	17 / 17	100%	2.25 - 5.73	0.020 - 0.020	0.10 - 0.10	3.15	3.25	0.85	0.27
Iron	17 / 17	100%	23.0 - 163	0.30 - 1.50	1.90 - 2.00	45.8	34.8	36.1	0.79
Lead	17 / 17	100%	0.030 - 0.18	0.020 - 0.020	0.050 - 0.050	0.098	0.10	0.045	0.46
Magnesium	17 / 17	100%	343 - 3490	0.30 - 1.00	1.90 - 2.00	1073	699	825	0.77
Manganese	17 / 17	100%	27.1 - 754	0.020 - 1.50	0.49 - 5.00	329	265	208	0.63
Mercury	17 / 17	100%	0.033 - 0.076	0.0080 - 0.011	0.017 - 0.022	0.052	0.049	0.010	0.20
Molybdenum	5 / 17	29%	0.020 - 0.25	0.010 - 0.010	0.050 - 0.050	0.035	0.020	0.059	1.71
Nickel	17 / 17	100%	0.56 - 3.42	0.040 - 0.040	0.19 - 0.20	1.53	1.37	0.89	0.58
Potassium	17 / 17	100%	4230 - 10500	2.40 - 150	194 - 200	6664	6420	1564	0.23
Selenium	4 / 17	24%	0.10 - 1.80	0.10 - 0.10	1.00 - 2.00	0.17	0.050	0.42	2.43
Silver	15 / 17	88%	0.0030 - 0.041	0.0030 - 0.0040	0.019 - 0.020	0.010	0.0080	0.0092	0.89
Thallium	11 / 17	65%	0.0020 - 0.031	0.0020 - 0.0020	0.019 - 0.020	0.0089	0.0050	0.0087	0.98
Tin	0 / 17	0%	NA - NA	1.00 - 3.00	4.90 - 10.0	NA	NA	NA	NA
Vanadium	14 / 17	82%	0.080 - 0.57	0.030 - 0.15	0.19 - 4.95	0.18	0.14	0.12	0.68
Zinc	17 / 17	100%	14.8 - 474	0.10 - 0.30	1.00 - 1.00	73.2	51.5	105	1.44

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Anions and Cations[c]									
Ammonia (as nitrogen)	17 / 17	100%	2.50 - 230	0.80 - 6.20	1.90 - 11.0	36.4	11.4	62.0	1.70
Chloride	17 / 17	100%	160 - 613	4.00 - 35.0	21.0 - 205	375	391	129	0.34
Cyanide	6 / 17	35%	0.17 - 0.80	0.090 - 0.32	0.30 - 1.10	0.33	0.30	0.22	0.66
Fluoride	14 / 17	82%	0.30 - 1230	0.20 - 35.0	2.00 - 205	194	0.70	435	2.24
Sodium	15 / 17	88%	10.8 - 62.2	1.50 - 5.00	9.70 - 10.0	24.8	21.6	15.5	0.62
Sulfate	17 / 17	100%	95.0 - 856	10.0 - 90.0	21.0 - 205	281	225	208	0.74

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the average, median, and standard deviation, non-detect results reported as zero values were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.4-10

Comparison of Concentrations in Fruit and Vegetative Tissues, by Species, Transportation-corridor Study Area

	CROWBERRY			BOG BLUEBERRY			LINGONBERRY		
Analyte	Mean Concentration, Fruit Tissues [a] (mg/kg)	Mean Concentration, Vegetative Tissues [a] (mg/kg)	Fruit/ Vegetative Tissue Ratio [b]	Mean Concentration, Fruit Tissues [a] (mg/kg)	Mean Concentration, Vegetative Tissues [a] (mg/kg)	Fruit/ Vegetative Tissue Ratio [b]	Mean Concentration, Fruit Tissues [a] (mg/kg)	Mean Concentration, Vegetative Tissues [a] (mg/kg)	Fruit/ Vegetative Tissue Ratio [b]
Trace Elements									
Aluminum	393	46.9	8.4	70.2	70.8	0.99	160	76.8	2.1
Antimony	0.20	0.051	3.9	0.26	0.056	4.6	0.17	0.17	1.1
Arsenic	0.025	0.025	1.0	0.023	0.046	0.50	0.027	0.025	1.1
Barium	4.93	39.6	0.12	12.9	46.3	0.28	3.70	46.3	0.080
Beryllium	0.0015	0.0015	1.0	0.0015	0.0015	1.0	0.0015	0.0015	1.0
Bismuth	0.0089	0.0063	1.4	0.0098	0.014	0.72	0.0037	0.0068	0.54
Boron	2.50	22.1	0.11	10.9	21.6	0.50	7.966667	13.0	0.61
Cadmium	0.0046	0.013	0.36	0.071	0.25	0.29	0.0098	0.031	0.32
Calcium	750	5,872	0.13	1,540	6,032	0.26	737	5,183	0.14
Chromium	0.18	0.24	0.72	0.15	0.25	0.59	0.20	0.10	2.0
Cobalt	0.035	0.085	0.41	0.057	0.10	0.55	0.037	0.064	0.57
Copper	4.04	3.72	1.1	2.46	4.17	0.59	1.81	3.06	0.59
Iron	95.5	43.9	2.2	72.7	30.8	2.4	77.9	25.1	3.1
Lead	0.16	0.19	0.86	0.18	0.14	1.3	0.17	0.13	1.3
Magnesium	390	1,403	0.28	603	1,819	0.33	353	1,261	0.28
Manganese	58.6	573	0.10	252	763	0.33	264	1,499	0.18
Mercury	0.0083	0.036	0.23	0.0050	0.044	0.11	0.011	0.041	0.26
Molybdenum	0.10	0.18	0.56	0.28	0.15	1.8	0.056	0.056	1.0
Nickel	9.15	1.35	6.8	9.31	1.19	7.8	10.2	2.64	3.9
Potassium	6,280	3,526	1.8	4,953	4,939	1.0	3,993	4,017	0.99
Selenium	0.050	0.053	0.94	0.050	0.053	0.94	0.050	0.057	0.88
Silver	0.0038	0.0021	1.8	0.011	0.0086	1.3	0.0037	0.0047	0.78
Thallium	0.0080	0.0034	2.4	0.0043	0.0028	1.5	0.0097	0.0054	1.8
Tin	2.50	2.58	0.97	3.17	2.69	1.2	2.62	2.49	1.1
Vanadium	0.11	0.18	0.59	0.060	0.11	0.53	0.090	0.094	0.95
Zinc	7.53	15.8	0.48	18.7	37.7	0.50	7.37	22.7	0.32
Anions and Cations									
Ammonia (as nitrogen)	73.8	5.56	**13**	25.0	78.3	0.32	26.0	10.9	2.4
Chloride	996	548	1.8	37.3	249	0.15	3.33	67.4	0.049
Cyanide	0.24	0.29	0.82	0.15	0.29	0.52	0.15	0.13	1.2
Fluoride	0.79	142	0.0056	0.78	361	0.0022	0.55	199	0.0028
Sodium	71.3	23.2	3.1	24.1	10.3	2.3	17.4	13.9	1.3
Sulfate	2,900	539	5.4	3,240	561	5.8	4,230	522	8.1

Notes:

a. When calculating the mean, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit. All data presented on a dry weight basis.

b. Berry mean concentration divided by vegetative mean concentration. Ratios greater than 10 are shown in bold font.

mg/kg = milligram per kilogram.

TABLE 10.4-11
Data Summary for Vegetation in the Moist Tundra/Shrub Thicket Habitat, Transportation-corridor Study Area, 2004

Analyte [a]	Shrub Birch Vegetative Tissues n=1 Mean [b]	Dwarf Birch Vegetative Tissues n=1 Mean [b]	Reindeer Lichen Vegetative Tissues n=2 Minimum	Reindeer Lichen Vegetative Tissues n=2 Maximum	Reindeer Lichen Vegetative Tissues n=2 Mean [b]	Crowberry Vegetative Tissues n=4 Minimum	Crowberry Vegetative Tissues n=4 Maximum	Crowberry Vegetative Tissues n=4 Mean [b]	Crowberry Fruit Tissues n=1 Mean [b]
Trace Elements									
Aluminum	**16.6**	**12.0**	155	183	**169**	22.1	52.7	**39.1**	**22.7**
Antimony	**NA**	**0.030**	0.040	0.050	**0.045**	0.020	0.12	**0.040**	**0.23**
Arsenic	**NA**	**NA**	0.10	0.13	**0.12**	NA	NA	**NA**	**NA**
Barium	**11.8**	**20.1**	12.0	13.6	**12.8**	32.7	72.7	**45.8**	**5.70**
Beryllium	**NA**	**NA**	0.0050	0.0060	**0.0055**	NA	NA	**NA**	**NA**
Bismuth	**0.0080**	**NA**	NA	NA	**NA**	NA	NA	**NA**	**NA**
Boron	**7.40**	**12.0**	NA	NA	**NA**	19.1	23.4	**21.4**	**NA**
Cadmium	**0.016**	**0.11**	0.021	0.033	**0.027**	0.0090	0.011	**0.0084**	**NA**
Calcium	**2990**	**2730**	735	761	**748**	5560	7270	**6250**	**698**
Chromium	**0.30**	**0.50**	0.50	0.60	**0.55**	0.40	0.60	**0.30**	**NA**
Cobalt	**0.070**	**0.22**	0.10	0.11	**0.11**	0.070	0.12	**0.083**	**0.030**
Copper	**4.09**	**4.02**	0.93	1.22	**1.08**	3.25	3.94	**3.67**	**4.27**
Iron	**56.9**	**39.6**	165	178	**172**	28.5	51.7	**35.8**	**79.9**
Lead	**0.040**	**0.090**	0.56	0.72	**0.64**	0.10	0.16	**0.14**	**0.19**
Magnesium	**1820**	**1690**	200	253	**227**	1230	1530	**1393**	**354**
Manganese	**426**	**600**	36.8	80.4	**58.6**	464	709	**597**	**70.2**
Mercury	**0.081**	**0.044**	0.021	0.040	**0.031**	0.023	0.045	**0.038**	**0.011**
Molybdenum	**NA**	**NA**	NA	NA	**NA**	0.048	0.090	**0.058**	**0.059**
Nickel	**1.15**	**0.89**	0.47	0.48	**0.48**	0.86	1.57	**1.21**	**8.80**
Potassium	**6740**	**5150**	657	739	**698**	2420	3900	**3368**	**5900**
Selenium	**0.10**	**0.10**	0.10	0.10	**0.075**	0.10	0.10	**0.063**	**NA**
Silver	**NA**	**0.0040**	0.0080	0.010	**0.0090**	0.0030	0.0030	**0.0020**	**0.0050**
Thallium	**0.0030**	**0.0030**	0.0060	0.011	**0.0085**	0.0040	0.0060	**0.0030**	**0.0020**
Tin	**NA**	**NA**	NA	NA	**NA**	NA	NA	**NA**	**NA**
Vanadium	**0.13**	**0.080**	0.45	0.47	**0.46**	0.14	0.24	**0.21**	**0.040**
Zinc	**15.1**	**141**	9.90	14.3	**12.1**	11.8	14.3	**12.8**	**8.00**
Anions/Cations									
Ammonia (as nitrogen)	**264**	**156**	10.8	13.1	**12.0**	2.70	3.80	**3.20**	**25.0**
Chloride	**69.0**	**135**	29.0	42.0	**35.5**	345	470	**427**	**1160**
Cyanide	**NA**	**NA**	0.19	0.19	**0.25**	0.90	0.90	**0.39**	**0.50**
Fluoride	**1080**	**1.00**	0.30	0.60	**0.45**	0.30	1320	**331**	**0.90**
Sodium	**NA**	**NA**	30.4	33.7	**32.1**	14.3	15.7	**15.2**	**51.2**
Sulfate	**91.0**	**151**	53.0	82.0	**67.5**	136	1560	**504**	**2220**

Narrow Leaf Labrador Tea Vegetative Tissues n=2			Lupine Vegetative Tissues n=1	Black Spruce Vegetative Tissues n=3		
Minimum	Maximum	Mean [b]	Mean [b]	Minimum	Maximum	Mean [b]
22.3	49.4	**35.9**	**330**	42.5	136	**91.0**
0.020	0.030	**0.025**	**0.030**	0.030	0.030	**0.023**
NA	NA	**NA**	**0.050**	NA	NA	**NA**
72.2	95.1	**83.7**	**84.5**	8.60	36.5	**26.8**
NA	NA	**NA**	**0.056**	0.0030	0.0030	**0.0020**
NA	NA	**NA**	**NA**	NA	NA	**NA**
13.3	14.4	**13.9**	**11.5**	8.00	11.1	**9.20**
0.0080	0.0080	**0.0058**	**0.0090**	0.0090	0.0090	**0.0053**
4190	4600	**4395**	**11700**	5000	5660	**5373**
0.30	0.50	**0.40**	**0.50**	0.30	0.60	**0.47**
0.050	0.080	**0.065**	**0.35**	0.080	0.11	**0.090**
3.56	3.71	**3.64**	**6.36**	2.29	3.47	**2.72**
26.9	41.1	**34.0**	**66.5**	28.3	37.1	**33.3**
0.070	0.18	**0.13**	**0.050**	0.10	0.12	**0.11**
932	1240	**1086**	**4260**	695	937	**842**
499	883	**691**	**109**	27.1	237	**159**
0.041	0.044	**0.043**	**0.032**	0.048	0.049	**0.049**
0.11	0.11	**0.058**	**0.080**	NA	NA	**NA**
0.59	0.88	**0.74**	**1.77**	0.92	1.45	**1.25**
2910	4130	**3520**	**5650**	5530	8290	**7353**
NA	NA	**NA**	**NA**	NA	NA	**NA**
0.0050	0.0050	**0.0033**	**NA**	0.0080	0.018	**0.013**
0.060	0.11	**0.083**	**0.0020**	0.0040	0.031	**0.014**
NA	NA	**NA**	**NA**	NA	NA	**NA**
0.12	0.26	**0.19**	**0.14**	0.13	0.19	**0.16**
18.6	23.8	**21.2**	**24.2**	31.5	75.5	**54.1**
5.10	5.30	**5.20**	**404**	4.00	7.40	**6.07**
160	173	**167**	**1960**	310	540	**443**
NA	NA	**NA**	**NA**	NA	NA	**NA**
0.30	0.60	**0.45**	**17.4**	0.40	0.90	**0.67**
32.6	32.6	**18.8**	**1940**	12.0	25.4	**19.7**
97.0	141	**119**	**3690**	149	340	**253**

Analyte [a]	Green Terrestrial Moss Vegetative Tissues n = 2			Barren-Ground Willow Vegetative Tissues n = 2			Bog Blueberry Vegetative Tissues n = 4		
	Minimum	Maximum	Mean [b]	Minimum	Maximum	Mean [b]	Minimum	Maximum	Mean [b]
Trace Elements									
Aluminum	90.0	2520	**1305**	75.3	98.1	**86.7**	49.9	113	**80.3**
Antimony	0.090	0.090	**0.050**	0.030	0.070	**0.050**	0.030	0.13	**0.058**
Arsenic	0.29	0.29	**0.16**	NA	NA	**NA**	0.11	0.11	**0.046**
Barium	29.0	30.0	**29.5**	49.8	59.1	**54.5**	21.7	85.6	**60.7**
Beryllium	0.034	0.034	**0.018**	0.0090	0.015	**0.012**	NA	NA	**NA**
Bismuth	0.0090	0.010	**0.0095**	NA	NA	**NA**	0.010	0.12	**0.035**
Boron	NA	NA	**NA**	12.7	20.1	**16.4**	20.9	28.4	**22.9**
Cadmium	0.061	0.068	**0.065**	0.35	0.39	**0.37**	0.13	0.43	**0.26**
Calcium	2260	3550	**2905**	6450	9190	**7820**	5360	8330	**6373**
Chromium	1.00	1.00	**0.58**	0.30	0.50	**0.40**	0.50	0.50	**0.30**
Cobalt	0.090	1.29	**0.69**	1.91	1.99	**1.95**	0.060	0.27	**0.14**
Copper	2.44	4.16	**3.30**	3.24	4.13	**3.69**	3.56	4.72	**4.00**
Iron	93.0	1660	**877**	46.7	54.2	**50.5**	23.6	33.1	**29.5**
Lead	0.39	0.96	**0.68**	0.040	0.080	**0.060**	0.040	0.47	**0.19**
Magnesium	657	1140	**899**	1680	5080	**3380**	1800	2370	**2050**
Manganese	20.4	744	**382**	110	204	**157**	372	1050	**617**
Mercury	0.072	0.088	**0.080**	0.052	0.058	**0.055**	0.036	0.055	**0.049**
Molybdenum	0.10	0.10	**0.063**	NA	NA	**NA**	0.049	0.11	**0.064**
Nickel	0.71	1.73	**1.22**	2.35	3.22	**2.79**	0.79	1.77	**1.28**
Potassium	1470	2620	**2045**	9670	12100	**10885**	2290	7210	**4893**
Selenium	0.20	0.20	**0.13**	0.10	0.10	**0.075**	NA	NA	**NA**
Silver	0.014	0.024	**0.019**	0.0050	0.0050	**0.0033**	0.0040	0.0040	**0.0023**
Thallium	0.018	0.020	**0.019**	0.0070	0.0070	**0.0040**	0.0040	0.0040	**0.0018**
Tin	NA	NA	**NA**	NA	NA	**NA**	NA	NA	**NA**
Vanadium	0.26	1.12	**0.69**	0.11	0.13	**0.12**	0.070	0.17	**0.11**
Zinc	23.7	31.8	**27.8**	23.2	32.1	**27.7**	34.1	43.8	**36.9**
Anions/Cations									
Ammonia (as nitrogen)	6.60	10.4	**8.50**	135	224	**180**	41.0	111	**64.9**
Chloride	145	158	**152**	358	1040	**699**	248	306	**274**
Cyanide	0.11	0.11	**0.21**	NA	NA	**NA**	0.60	0.60	**0.31**
Fluoride	3.60	118	**60.8**	1.30	1.30	**0.80**	0.40	2660	**665**
Sodium	48.3	170	**109**	14.0	24.9	**19.5**	10.8	15.8	**9.13**
Sulfate	73.0	101	**87.0**	1280	1960	**1620**	78.0	1190	**565**

Notes:

a. All units reported in milligrams per kilogram (mg/kg). Data presented on a dry weight basis.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

CV = coefficient of variation

n = sample size.

NA = Not applicable; analyte not detected.

SD = standard deviation

Bog Blueberry Fruit Tissues n = 1 Mean [b]	All Species, Fruit Tissues n = 2 Mean [b]	All Species, Vegetative Tissues n = 22 Minimum	Maximum	Mean [b]	Median [b]	SD [b]	CV
30.0	**26.4**	12.0	2520	**196**	75.2	524	2.68
0.24	**0.24**	0.020	0.13	**0.040**	0.030	0.035	0.88
NA	**NA**	0.050	0.29	**0.050**	0.025	0.062	1.23
13.2	**9.45**	8.60	95.1	**44.7**	36.0	27.0	0.60
NA	**NA**	0.0030	0.056	**0.0068**	0.0015	0.013	1.93
NA	**NA**	0.0080	0.12	**0.011**	0.0050	0.024	2.16
9.80	**6.15**	7.40	28.4	**13.9**	13.0	7.82	0.56
0.10	**0.052**	0.0080	0.43	**0.099**	0.019	0.14	1.41
1070	**884**	735	11700	**5262**	5495	2591	0.49
NA	**NA**	0.30	1.00	**0.41**	0.50	0.22	0.54
0.040	**0.035**	0.050	1.99	**0.34**	0.10	0.58	1.73
2.48	**3.38**	0.93	6.36	**3.49**	3.69	1.15	0.33
54.6	**67.3**	23.6	1660	**127**	38.4	345	2.72
0.20	**0.20**	0.040	0.96	**0.22**	0.12	0.25	1.13
518	**436**	200	5080	**1602**	1405	1149	0.72
80.7	**75.5**	20.4	1050	**411**	436	296	0.72
NA	**0.0080**	0.021	0.088	**0.048**	0.047	0.016	0.33
0.12	**0.089**	0.048	0.11	**0.043**	0.025	0.036	0.83
8.08	**8.44**	0.47	3.22	**1.27**	1.07	0.66	0.52
5260	**5580**	657	12100	**4861**	4020	2960	0.61
NA	**NA**	0.10	0.20	**0.068**	0.050	0.036	0.53
0.015	**0.010**	0.0030	0.024	**0.0061**	0.0035	0.0063	1.04
0.0030	**0.0025**	0.0020	0.11	**0.014**	0.0040	0.025	1.83
NA	**NA**	NA	NA	NA	NA	NA	NA
0.060	**0.050**	0.070	1.12	**0.23**	0.15	0.23	0.99
16.8	**12.4**	9.90	141	**32.7**	24.0	28.8	0.88
	NA						
27.0	**26.0**	2.70	404	**69.3**	10.6	107	1.54
33.8	**597**	29.0	1960	**382**	299	416	1.09
NA	**0.33**	0.11	0.90	**0.30**	0.30	0.17	0.55
NA	**0.63**	0.30	2660	**237**	0.80	646	2.73
15.9	**33.6**	10.8	1940	**112**	15.6	410	3.66
3910	**3065**	53.0	3690	**580**	155	885	1.53

TABLE 10.4-12

Data Summary for Vegetation in the Spruce Hardwood Forest Habitat, Transportation Corridor, Bristol Bay Drainage, 2004

	Mountain Alder Vegetative Tissues n=1	Worm Wood Vegetative Tissues n=1	Dwarf Birch Vegetative Tissues n = 2			Paper Birch Vegetative Tissues n=2			Blue Joint Grass Vegetative Tissues n=2			Fireweed Vegetative Tissues n=3			Reindeer Lichen Vegetative Tissues n=2		
Analyte [a]	Mean [b]	Mean [b]	Minimum	Maximum	Mean [b]	Minimum	Maximum	Mean [b]	Minimum	Maximum	Mean [b]	Minimum	Maximum	Mean [b]	Minimum	Maximum	Mean [b]
Trace Elements																	
Aluminum	**60.0**	**102**	4.50	8.10	**6.30**	7.10	9.80	**8.45**	61.9	77.9	**69.9**	11.4	562	**215**	119	124	**122**
Antimony	**NA**	**NA**	0.060	0.060	**0.043**	NA	NA	**NA**	0.030	0.030	**0.020**	0.030	0.030	**0.022**	0.16	0.16	**0.093**
Arsenic	**NA**	**NA**	NA	NA	**NA**	NA	NA	**NA**	NA	NA	**NA**	0.060	0.060	**0.037**	0.080	0.090	**0.085**
Barium	**7.80**	**14.7**	8.00	17.0	**12.5**	6.80	103	**54.9**	12.6	21.4	**17.0**	10.2	28.7	**19.6**	9.20	31.4	**20.3**
Beryllium	**0.011**	**0.0050**	NA	NA	**NA**	NA	NA	**NA**	NA	NA	**NA**	0.12	0.12	**0.041**	NA	NA	**NA**
Bismuth	**0.011**	**0.0080**	NA	NA	**NA**	NA	NA	**NA**	NA	NA	**NA**	NA	NA	**NA**	0.012	0.012	**0.0078**
Boron	**NA**	**19.2**	9.60	18.8	**14.2**	6.20	30.9	**18.6**	18.3	18.3	**10.4**	12.3	59.0	**27.9**	NA	NA	**NA**
Cadmium	**0.014**	**0.29**	0.083	0.083	**0.054**	0.011	0.39	**0.20**	0.047	0.047	**0.036**	0.019	0.032	**0.025**	0.021	0.033	**0.027**
Calcium	**11900**	**13100**	2970	3770	**3370**	2350	10200	**6275**	1490	5190	**3340**	6810	31000	**16403**	994	4080	**2537**
Chromium	**0.70**	**0.80**	0.40	0.40	**0.25**	NA	NA	**NA**	0.80	0.90	**0.85**	0.40	0.40	**0.22**	0.30	0.40	**0.35**
Cobalt	**0.33**	**0.19**	0.11	0.11	**0.11**	0.070	0.13	**0.10**	0.040	0.090	**0.065**	0.080	0.34	**0.17**	0.050	0.080	**0.065**
Copper	**5.73**	**12.6**	4.28	5.91	**5.10**	3.54	4.01	**3.78**	2.98	5.37	**4.18**	2.96	6.78	**4.53**	1.21	3.55	**2.38**
Iron	**163**	**148**	33.8	35.3	**34.6**	35.5	37.5	**36.5**	40.7	110	**75.4**	38.9	253	**115**	109	120	**115**
Lead	**0.070**	**0.49**	0.050	0.070	**0.060**	0.030	0.060	**0.045**	0.070	0.18	**0.13**	0.040	0.81	**0.31**	0.69	0.75	**0.72**
Magnesium	**1840**	**2180**	1270	1650	**1460**	1240	3490	**2365**	703	900	**802**	2340	4390	**3160**	179	1300	**740**
Manganese	**265**	**105**	113	375	**244**	267	367	**317**	129	297	**213**	46.6	171	**99.4**	44.8	1160	**602**
Mercury	**0.076**	**0.039**	0.041	0.052	**0.047**	0.044	0.056	**0.050**	0.032	0.034	**0.033**	0.10	0.12	**0.11**	0.027	0.074	**0.051**
Molybdenum	**0.25**	**1.91**	0.090	0.090	**0.048**	0.050	0.050	**0.028**	1.17	1.17	**0.60**	0.39	1.49	**0.64**	0.020	0.16	**0.090**
Nickel	**1.84**	**1.59**	0.53	0.77	**0.65**	0.91	1.05	**0.98**	0.59	0.87	**0.73**	0.89	2.37	**1.44**	0.90	1.20	**1.05**
Potassium	**10500**	**23900**	4960	6030	**5495**	5490	6470	**5980**	9120	14200	**11660**	7340	17400	**11520**	791	2690	**1741**
Selenium	**NA**	**NA**	NA	NA	**NA**	0.20	0.20	**0.13**	NA	NA	**NA**	NA	NA	**NA**	0.20	0.20	**0.13**
Silver	**0.0050**	**0.016**	NA	NA	**NA**	0.0030	0.0030	**0.0023**	NA	NA	**NA**	0.0050	0.0050	**0.0027**	0.0050	0.0060	**0.0055**
Thallium	**NA**	**NA**	NA	NA	**NA**	0.0050	0.0050	**0.0030**	0.0090	0.0090	**0.0050**	0.0020	0.017	**0.010**	0.0060	0.012	**0.0090**
Tin	**NA**	**NA**	NA	NA	**NA**	NA	NA	**NA**	NA	NA	**NA**	NA	NA	**NA**	NA	NA	**NA**
Vanadium	**0.17**	**0.32**	0.080	0.080	**0.090**	0.090	0.14	**0.12**	0.23	0.23	**0.17**	0.19	0.39	**0.23**	0.25	0.29	**0.27**
Zinc	**14.8**	**23.8**	26.1	296	**161**	44.8	474	**259**	11.7	24.7	**18.2**	8.00	67.2	**28.7**	15.0	44.6	**29.8**
Anions and Cations																	
Ammonia (as nitrogen)	**34.0**	**49.8**	110	197	**154**	139	230	**185**	38.1	1060	**549**	99.9	354	**268**	8.30	12.8	**10.6**
Chloride	**505**	**3310**	85.0	105	**95.0**	194	229	**212**	2050	3050	**2550**	1350	5820	**3877**	39.0	298	**169**
Cyanide	**NA**	**NA**	NA	NA	**NA**	NA	NA	**NA**	0.21	0.21	**0.38**	0.11	0.11	**0.24**	0.10	0.11	**0.11**
Fluoride	**1230**	**1720**	0.40	0.40	**0.50**	NA	NA	**NA**	0.30	441	**221**	0.60	986	**329**	1.90	4.30	**3.10**
Sodium	**NA**	**13.9**	12.8	12.9	**12.9**	10.8	16.9	**13.9**	10.1	33.7	**21.9**	20.8	130	**60.8**	32.5	96.7	**64.6**
Sulfate	**225**	**2480**	197	325	**261**	110	280	**195**	458	940	**699**	1980	5820	**3363**	132	235	**184**

Analyte [a]	Spreading Wood Fern Vegetative Tissues n=1 Mean [b]	Crowberry Vegetative Tissues n=5 Minimum	Crowberry Vegetative Tissues n=5 Maximum	Crowberry Vegetative Tissues n=5 Mean [b]	Crowberry Fruit Tissues n=1 Mean [b]	Meadow Horsetail Vegetative Tissues n=1 Mean [b]	Narrow Leaf Labrador Tea Vegetative Tissues n=2 Minimum	Narrow Leaf Labrador Tea Vegetative Tissues n=2 Maximum	Narrow Leaf Labrador Tea Vegetative Tissues n=2 Mean [b]	White Spruce Vegetative Tissues n=2 Minimum	White Spruce Vegetative Tissues n=2 Maximum	White Spruce Vegetative Tissues n=2 Mean [b]	Green Terrestrial Moss Vegetative Tissues n=3 Minimum	Green Terrestrial Moss Vegetative Tissues n=3 Maximum	Green Terrestrial Moss Vegetative Tissues n=3 Mean [b]	Feltleaf Willow Vegetative n=1 Mean [b]	Bog Blueberry Vegetative Tissues n=3 Minimum	Bog Blueberry Vegetative Tissues n=3 Maximum	Bog Blueberry Vegetative Tissues n=3 Mean [b]
Trace Elements																				
Aluminum	**291**	17.6	41.7	**30.5**	**24.8**	**56.2**	15.3	25.5	**20.4**	74.5	101	**87.8**	133	2060	**906**	**17.4**	35.5	70.4	**52.4**
Antimony	**0.030**	0.030	0.18	**0.051**	**0.25**	**NA**	NA	NA	**NA**	0.020	0.020	**0.023**	0.040	0.13	**0.073**	**NA**	0.030	0.030	**0.022**
Arsenic	**NA**	NA	NA	**NA**	**NA**	**0.060**	NA	NA	**NA**	NA	NA	**NA**	0.10	0.48	**0.24**	**NA**	NA	NA	**NA**
Barium	**67.1**	18.4	43.7	**36.7**	**5.30**	**31.7**	46.8	96.6	**71.7**	4.20	32.9	**18.6**	10.5	27.5	**17.7**	**5.50**	28.9	36.3	**33.0**
Beryllium	**0.0090**	NA	NA	**NA**	**NA**	**0.0080**	NA	NA	**NA**	NA	NA	**NA**	0.073	0.073	**0.025**	**NA**	NA	NA	**NA**
Bismuth	**NA**	NA	NA	**NA**	**NA**	**NA**	NA	NA	**NA**	NA	NA	**NA**	0.013	0.013	**0.0067**	**0.0070**	NA	NA	**NA**
Boron	**29.4**	12.4	31.7	**20.5**	**NA**	**34.5**	9.50	14.8	**12.2**	5.40	6.30	**5.85**	17.4	17.4	**7.47**	**21.3**	12.1	25.5	**17.8**
Cadmium	**NA**	0.0070	0.019	**0.014**	**NA**	**0.0080**	0.0070	0.0070	**0.0053**	0.010	0.010	**0.018**	0.080	0.39	**0.20**	**0.61**	0.059	0.77	**0.31**
Calcium	**4350**	4940	7510	**6288**	**760**	**19600**	2880	4990	**3935**	818	4840	**2829**	1570	12900	**5583**	**15500**	5290	6020	**5713**
Chromium	**NA**	NA	NA	**NA**	**NA**	**NA**	0.30	0.30	**0.23**	0.30	0.30	**0.23**	0.70	27.9	**10.5**	**NA**	0.40	0.40	**0.22**
Cobalt	**0.19**	0.050	0.090	**0.068**	**0.030**	**0.78**	0.030	0.050	**0.040**	0.030	0.060	**0.045**	0.17	1.18	**0.55**	**0.22**	0.050	0.070	**0.060**
Copper	**4.18**	3.11	4.30	**3.66**	**3.99**	**3.79**	3.28	3.73	**3.51**	2.25	3.33	**2.79**	1.63	7.16	**4.60**	**5.86**	2.55	4.93	**3.87**
Iron	**44.6**	26.1	39.8	**30.7**	**69.5**	**217**	22.1	28.5	**25.3**	23.0	29.8	**26.4**	155	3800	**1481**	**63.7**	21.8	26.8	**23.9**
Lead	**0.090**	0.090	0.19	**0.14**	**0.090**	**0.040**	0.070	0.090	**0.080**	0.040	0.15	**0.095**	1.06	1.51	**1.22**	**0.060**	0.030	0.060	**0.047**
Magnesium	**3890**	1130	1630	**1388**	**391**	**1930**	1060	1120	**1090**	343	652	**498**	563	1650	**1045**	**2260**	1150	2290	**1793**
Manganese	**680**	192	565	**377**	**50.0**	**258**	600	718	**659**	94.9	103	**99.0**	33.4	323	**215**	**66.8**	402	505	**463**
Mercury	**0.063**	0.028	0.041	**0.034**	**0.012**	**0.033**	0.031	0.032	**0.032**	0.043	0.057	**0.050**	0.066	0.080	**0.071**	**0.050**	0.028	0.044	**0.035**
Molybdenum	**NA**	0.030	0.73	**0.22**	**0.040**	**0.48**	0.30	0.30	**0.15**	NA	NA	**NA**	0.030	1.39	**0.48**	**2.96**	0.040	0.12	**0.062**
Nickel	**0.98**	0.92	1.72	**1.21**	**7.30**	**2.95**	0.40	0.72	**0.56**	0.77	3.25	**2.01**	1.52	14.1	**6.98**	**1.61**	0.73	1.59	**1.04**
Potassium	**11500**	2530	4470	**3290**	**6270**	**29000**	4410	4560	**4485**	4230	4880	**4555**	933	2810	**1934**	**20400**	2990	6750	**4910**
Selenium	**NA**	NA	NA	**NA**	**NA**	**0.40**	NA	NA	**NA**	NA	NA	**NA**	0.10	0.20	**0.17**	**NA**	NA	NA	**NA**
Silver	**NA**	NA	NA	**NA**	**0.0070**	**NA**	NA	NA	**NA**	0.0070	0.0080	**0.0075**	0.0060	0.031	**0.017**	**NA**	0.0030	0.0030	**0.0020**
Thallium	**0.0030**	0.0020	0.0070	**0.0032**	**0.0080**	**0.042**	0.052	0.11	**0.083**	0.0040	0.0050	**0.0045**	0.0040	0.011	**0.0077**	**NA**	0.0040	0.0040	**0.0020**
Tin	**NA**	NA	NA	**NA**	**NA**	**NA**	NA	NA	**NA**	NA	NA	**NA**	NA	NA	**NA**	**NA**	NA	NA	**NA**
Vanadium	**0.22**	0.11	0.27	**0.16**	**0.050**	**0.13**	0.12	0.14	**0.13**	0.19	0.19	**0.15**	0.43	4.72	**2.05**	**0.14**	0.080	0.13	**0.10**
Zinc	**40.3**	13.4	32.6	**18.1**	**6.40**	**16.5**	21.9	26.0	**24.0**	22.5	60.5	**41.5**	16.0	73.9	**40.4**	**14.8**	29.4	66.6	**44.4**
Anions and Cations																			
Ammonia (as nitrogen)	**356**	1.70	4.00	**3.00**	**59.0**	**492**	2.00	3.40	**2.70**	2.50	4.80	**3.65**	5.80	62.2	**40.7**	**73.7**	43.8	140	**102**
Chloride	**3440**	325	786	**569**	**1030**	**6030**	177	223	**200**	249	408	**329**	41.0	94.0	**60.3**	**1820**	140	200	**180**
Cyanide	**NA**	NA	NA	**NA**	**NA**	**NA**	NA	NA	**NA**	0.17	0.17	**0.36**	0.40	0.40	**0.33**	**NA**	NA	NA	**NA**
Fluoride	**1.20**	0.30	0.60	**0.54**	**1.50**	**10.0**	NA	NA	**NA**	0.30	0.30	**0.45**	0.30	399	**133**	**1170**	0.30	0.30	**0.50**
Sodium	**158**	14.9	40.4	**26.2**	**84.4**	**30.1**	NA	NA	**NA**	39.5	39.5	**22.2**	49.2	110	**69.8**	**23.0**	10.9	10.9	**6.97**
Sulfate	**626**	483	1030	**631**	**2680**	**6030**	91.0	201	**146**	103	856	**480**	42.0	321	**205**	**9300**	339	545	**441**

Analyte [a]	Lingonberry Vegetative Tissues n=3 Minimum	Maximum	Mean [b]	Lingonberry Fruit Tissues n=1 Mean [b]	All Species, Fruit Tissues n=2 Mean [b]	All Species, Vegetative Tissues n=34 Minimum	Maximum	Mean [b]	Median [b]	SD [b]	CV
Trace Elements											
Aluminum	69.9	85.5	**77.4**	**43.9**	**34.4**	4.50	2060	**149**	61.0	361	2.42
Antimony	0.16	0.61	**0.27**	**0.20**	**0.23**	0.020	0.61	**0.057**	0.025	0.11	1.91
Arsenic	NA	NA	**NA**	**NA**	**NA**	0.060	0.48	**0.050**	0.025	0.081	1.63
Barium	45.7	48.4	**47.3**	**4.40**	**4.85**	4.20	103	**31.0**	28.8	23.4	0.76
Beryllium	NA	NA	**NA**	**NA**	**NA**	0.0050	0.12	**0.0079**	0.0015	0.023	2.97
Bismuth	NA	NA	**NA**	**NA**	**NA**	0.0070	0.013	**0.0051**	0.0035	0.0044	0.85
Boron	11.1	14.4	**12.7**	**8.70**	**5.60**	5.40	59.0	**15.7**	13.5	11.8	0.75
Cadmium	0.010	0.013	**0.0088**	**0.015**	**0.0093**	0.0070	0.77	**0.098**	0.025	0.18	1.84
Calcium	4370	5490	**4933**	**686**	**723**	818	31000	**7011**	5240	6047	0.86
Chromium	NA	NA	**NA**	**NA**	**NA**	0.30	27.9	**1.17**	0.15	4.75	4.07
Cobalt	0.050	0.050	**0.050**	**0.030**	**0.030**	0.030	1.18	**0.16**	0.075	0.23	1.45
Copper	1.93	3.53	**2.77**	**2.00**	**3.00**	1.21	12.6	**4.15**	3.76	2.02	0.49
Iron	22.2	37.9	**28.0**	**68.3**	**68.9**	21.8	3800	**187**	37.7	645	3.45
Lead	0.090	0.37	**0.20**	**0.19**	**0.14**	0.030	1.51	**0.27**	0.090	0.37	1.39
Magnesium	996	1430	**1182**	**316**	**354**	179	4390	**1603**	1325	944	0.59
Manganese	870	1550	**1187**	**187**	**119**	33.4	1550	**395**	294	356	0.90
Mercury	0.026	0.044	**0.037**	**0.011**	**0.012**	0.026	0.12	**0.051**	0.042	0.025	0.49
Molybdenum	0.024	0.12	**0.050**	**0.021**	**0.031**	0.020	2.96	**0.36**	0.045	0.67	1.86
Nickel	0.84	11.4	**4.51**	**8.86**	**8.08**	0.40	14.1	**2.03**	1.06	2.90	1.43
Potassium	3240	4440	**3677**	**3920**	**5095**	791	29000	**7227**	4720	6620	0.92
Selenium	NA	NA	**NA**	**NA**	**NA**	0.10	0.40	**0.079**	0.050	0.075	0.94
Silver	0.015	0.015	**0.0060**	**0.0080**	**0.0075**	0.0030	0.031	**0.0046**	0.0015	0.0062	1.34
Thallium	0.0020	0.0040	**0.0033**	**0.0060**	**0.0070**	0.0020	0.11	**0.010**	0.0040	0.021	2.11
Tin	NA	NA	**NA**	**NA**	**NA**	NA	NA	NA	NA	NA	NA
Vanadium	0.070	0.14	**0.097**	**0.070**	**0.060**	0.070	4.72	**0.32**	0.14	0.79	2.45
Zinc	16.3	23.2	**20.6**	**6.60**	**6.50**	8.00	474	**49.1**	23.5	89.7	1.83
Anions and Cations											
Ammonia (as nitrogen)	2.10	11.0	**4.57**	**19.0**	**39.0**	1.70	1060	**120**	41.0	209	1.74
Chloride	15.7	297	**119**	**NA**	**516**	15.7	6030	**1111**	298	1673	1.51
Cyanide	0.10	0.10	**0.098**	**NA**	**NA**	0.10	0.40	**0.21**	0.11	0.21	0.98
Fluoride	0.40	0.40	**0.53**	**0.60**	**1.05**	0.30	1720	**176**	0.60	430	2.45
Sodium	12.4	20.7	**15.5**	**16.6**	**50.5**	10.1	158	**32.4**	20.7	37.0	1.14
Sulfate	419	852	**613**	**4100**	**3390**	42.0	9300	**1165**	471	2005	1.72

a. All units reported in milligrams per kilogram (mg/kg). Data presented on Notes:
b. When calculating the mean, median, and standard deviation, non-detect results reported as zero values were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.
CV = coefficient of variation
n = sample size.
NA = Not applicable; analyte not detected.
SD = standard deviation

TABLE 10.4-13

Data Summary for Vegetation in the Lowland Shrub Thicket/Forest and Alpine Tundra Habitat, Transportation-corridor Study Area, 2004

	Dwarf Birch Vegetative Tissues n=2			Blue Joint Grass Vegetative Tissues n=1	Northern Water Sedge Vegetative Tissues n=1	Fireweed Vegetative Tissues n=2			Reindeer Lichen Vegetative Tissues n=1	Spreading Wood Fern Vegetative Tissues n=1
Analyte [a]	Minimum	Maximum	Mean [b]	Mean [b]	Mean [b]	Minimum	Maximum	Mean [b]	Mean [b]	Mean [b]
Trace Elements										
Aluminum	10.7	102	**56.4**	**55.9**	**7.10**	122	212	**167**	**356**	**257**
Antimony	0.10	0.10	**0.055**	**0.090**	**NA**	0.050	0.060	**0.055**	**0.060**	**0.050**
Arsenic	NA	NA	**NA**	**NA**	**NA**	NA	NA	**NA**	**0.12**	**NA**
Barium	9.90	12.8	**11.4**	**32.9**	**60.7**	12.8	40.5	**26.7**	**3.50**	**94.8**
Beryllium	NA	NA	**NA**	**NA**	**NA**	0.0040	0.0040	**0.0028**	**NA**	**0.0040**
Bismuth	NA	NA	**NA**	**NA**	**NA**	NA	NA	**NA**	**NA**	**NA**
Boron	10.4	26.3	**18.4**	**13.7**	**21.6**	10.9	15.0	**13.0**	**6.80**	**19.4**
Cadmium	0.062	0.062	**0.044**	**NA**	**NA**	NA	NA	**NA**	**0.051**	**NA**
Calcium	3010	3560	**3285**	**3300**	**3790**	9100	9170	**9135**	**414**	**5660**
Chromium	0.50	0.50	**0.30**	**0.90**	**1.10**	0.40	1.20	**0.80**	**1.00**	**0.80**
Cobalt	0.27	0.29	**0.28**	**0.090**	**0.050**	0.13	0.13	**0.13**	**0.11**	**0.16**
Copper	3.24	4.81	**4.03**	**4.64**	**2.68**	4.56	4.65	**4.61**	**1.12**	**3.64**
Iron	40.0	93.9	**67.0**	**64.5**	**108**	92.1	137	**115**	**278**	**111**
Lead	0.050	0.090	**0.070**	**0.070**	**0.050**	0.13	0.18	**0.16**	**0.98**	**0.11**
Magnesium	1330	2190	**1760**	**1200**	**1100**	2900	5000	**3950**	**250**	**8200**
Manganese	785	1890	**1338**	**329**	**195**	81.8	102	**91.9**	**17.0**	**235**
Mercury	0.047	0.053	**0.050**	**0.036**	**0.032**	0.15	0.17	**0.16**	**0.028**	**0.076**
Molybdenum	NA	NA	**NA**	**0.19**	**0.77**	0.070	1.50	**0.79**	**NA**	**0.12**
Nickel	0.71	1.40	**1.06**	**0.99**	**0.60**	0.99	1.70	**1.35**	**0.37**	**1.81**
Potassium	5940	6800	**6370**	**9740**	**13300**	7890	9230	**8560**	**692**	**7990**
Selenium	0.10	0.10	**0.075**	**NA**	**NA**	NA	NA	**NA**	**0.20**	**NA**
Silver	0.0050	0.0050	**0.0033**	**0.0040**	**0.0050**	0.0040	0.0040	**0.0028**	**0.0090**	**0.0040**
Thallium	0.021	0.021	**0.011**	**0.0050**	**NA**	0.0090	0.0090	**0.0050**	**0.0040**	**0.030**
Tin	NA	NA	**NA**	**NA**	**NA**	NA	NA	**NA**	**NA**	**NA**
Vanadium	0.32	0.32	**0.21**	**0.23**	**NA**	0.28	0.34	**0.31**	**0.67**	**0.81**
Zinc	103	126	**115**	**18.9**	**31.2**	21	23.9	**22.5**	**10.9**	**17.8**
Anions/Cations										
Ammonia (as nitrogen)	256	419	**338**	**1060**	**410**	512	1010	**761**	**27.1**	**569**
Chloride	110	120	**115**	**1540**	**1310**	2010	2910	**2460**	**79.0**	**5510**
Cyanide	NA	NA	**NA**	**NA**	**NA**	NA	NA	**NA**	**NA**	**NA**
Fluoride	0.40	1000	**500**	**2.80**	**0.40**	1.00	1.10	**1.05**	**0.70**	**1.80**
Sodium	10.5	19.5	**15.0**	**42.1**	**22.3**	42.6	42.8	**42.7**	**57.7**	**189**
Sulfate	383	455	**419**	**386**	**2010**	2070	4130	**3100**	**200**	**5120**

Crowberry Vegetative Tissues n=4			Crowberry Fruit Tissues n=1	Meadow Horsetail Vegetative Tissues n=1	Narrow Leaf Labrador Tea Vegetative Tissues n=1	White Spruce Vegetative Tissues n=1	Black Spruce Vegetative Tissues n=3		
Minimum	Maximum	Mean [b]	Mean [b]	Mean [b]	Mean [b]	Mean [b]	Minimum	Maximum	Mean [b]
16.7	238	**95.0**	**902**	**21.6**	**11.5**	**74.5**	30.4	161	**74.1**
0.060	0.17	**0.078**	**0.18**	**0.040**	**NA**	**0.050**	0.47	0.47	**0.16**
NA	NA	**NA**	**NA**	**NA**	**NA**	**NA**	0.050	0.050	**0.033**
23.9	47.0	**35.7**	**6.00**	**30.2**	**57.9**	**65.6**	23.6	49.5	**36.0**
NA	NA	**NA**	**NA**	**NA**	**NA**	**NA**	NA	NA	**NA**
NA	NA	**NA**	**NA**	**NA**	**NA**	**NA**	NA	NA	**NA**
16.1	38.4	**22.6**	**NA**	**27.8**	**9.10**	**21.5**	9.20	10.0	**9.63**
0.013	0.013	**0.022**	**0.0080**	**NA**	**NA**	**NA**	NA	NA	**NA**
4010	5870	**4890**	**838**	**19200**	**4530**	**3620**	5010	6540	**5690**
0.30	0.60	**0.38**	**0.40**	**0.50**	**NA**	**0.70**	0.30	1.20	**0.60**
0.060	0.17	**0.098**	**0.050**	**1.12**	**0.050**	**0.15**	0.070	0.14	**0.097**
3.44	5.10	**4.34**	**5.26**	**4.06**	**2.95**	**3.31**	2.40	3.25	**2.81**
26.0	196	**83.7**	**149**	**64.3**	**26.6**	**52.7**	27.0	107	**56.3**
0.090	0.72	**0.29**	**0.23**	**0.040**	**0.10**	**0.070**	0.060	0.18	**0.14**
1120	1360	**1278**	**425**	**3920**	**1020**	**639**	629	1020	**780**
275	965	**634**	**29.0**	**111**	**1430**	**523**	520	591	**546**
0.030	0.044	**0.037**	**NA**	**0.025**	**0.040**	**0.046**	0.049	0.067	**0.061**
0.060	0.53	**0.19**	**0.12**	**0.88**	**0.060**	**0.070**	NA	NA	**NA**
0.57	3.05	**1.45**	**11.3**	**2.33**	**0.47**	**1.15**	0.56	1.43	**0.93**
2970	4380	**3693**	**6620**	**34200**	**3400**	**7280**	5720	6480	**6207**
NA	NA	**NA**	**NA**	**0.60**	**NA**	**NA**	0.10	0.10	**0.067**
0.0040	0.0060	**0.0033**	**NA**	**0.0080**	**NA**	**0.0040**	0.0090	0.041	**0.021**
NA	NA	**NA**	**0.0090**	**0.035**	**0.097**	**NA**	0.0020	0.016	**0.011**
3.90	3.90	**2.84**	**NA**	**NA**	**NA**	**NA**	NA	NA	**NA**
0.27	0.38	**0.21**	**0.21**	**NA**	**NA**	**0.24**	0.33	0.33	**0.18**
12.8	28.4	**19.5**	**8.20**	**15.4**	**21.7**	**54.3**	46.3	52.3	**50.0**
5.00	19.4	**10.4**	**76.0**	**776**	**7.70**	**12.9**	5.20	11.5	**8.97**
265	878	**584**	**794**	**13300**	**137**	**327**	441	613	**504**
NA	NA	**NA**	**NA**	**NA**	**NA**	**0.20**	NA	NA	**NA**
0.30	0.80	**0.43**	**0.40**	**2.60**	**0.40**	**0.60**	0.30	884	**295**
11.8	44.0	**30.7**	**108**	**67.1**	**NA**	**37.5**	29.5	62.2	**42.4**
183	1210	**561**	**4630**	**20300**	**168**	**143**	145	376	**244**

Analyte [a]	Green Terrestrial Moss Vegetative Tissues n=4 Minimum	Green Terrestrial Moss Vegetative Tissues n=4 Maximum	Green Terrestrial Moss Vegetative Tissues n=4 Mean [b]	Cloudberry Vegetative Tissues n=1 Mean [b]	Diamond Leaf Willow Vegetative Tissues n=1 Mean [b]	Bog Blueberry Vegetative Tissues n=4 Minimum	Bog Blueberry Vegetative Tissues n=4 Maximum	Bog Blueberry Vegetative Tissues n=4 Mean [b]	Bog Blueberry Fruit Tissues n=1 Mean [b]	All Species, Fruit Tissues n=2 Mean [b]
Trace Elements										
Aluminum	53.0	3040	**965**	**26.9**	**373**	55.2	97.2	**76.7**	**17.7**	**460**
Antimony	0.020	0.15	**0.058**	**0.020**	**NA**	0.040	0.17	**0.068**	**0.32**	**0.25**
Arsenic	0.060	0.35	**0.17**	**NA**	**NA**	NA	NA	**NA**	**NA**	**NA**
Barium	12.9	49.2	**22.5**	**2.50**	**25.0**	29.0	49.3	**39.5**	**9.00**	**7.50**
Beryllium	0.0070	0.025	**0.0088**	**NA**	**0.016**	NA	NA	**NA**	**NA**	**NA**
Bismuth	0.012	0.012	**0.0056**	**NA**	**NA**	NA	NA	**NA**	**NA**	**NA**
Boron	1.90	19.2	**7.30**	**15.4**	**18.3**	17.6	27.6	**23.7**	**12.1**	**7.30**
Cadmium	0.077	0.077	**0.038**	**0.23**	**NA**	0.082	0.43	**0.19**	**0.061**	**0.035**
Calcium	1310	4990	**2798**	**4610**	**7730**	4720	7710	**6045**	**1750**	**1294**
Chromium	0.50	15.4	**5.48**	**NA**	**0.90**	0.30	0.60	**0.38**	**NA**	**0.33**
Cobalt	0.070	1.05	**0.39**	**0.060**	**2.18**	0.090	0.12	**0.10**	**0.060**	**0.055**
Copper	1.63	7.12	**3.38**	**3.22**	**4.01**	4.37	5.45	**4.80**	**3.19**	**4.23**
Iron	81.8	2270	**766**	**122**	**131**	29.7	46.1	**37.0**	**91.3**	**120**
Lead	0.38	1.65	**0.96**	**0.050**	**0.12**	0.070	0.57	**0.21**	**0.14**	**0.19**
Magnesium	664	1640	**950**	**2570**	**2810**	1350	1910	**1550**	**558**	**492**
Manganese	45.4	582	**356**	**1180**	**81.5**	432	1430	**730**	**103**	**66.0**
Mercury	0.038	0.084	**0.060**	**0.076**	**0.060**	0.036	0.049	**0.044**	**NA**	**NA**
Molybdenum	0.15	0.26	**0.14625**	**0.31**	**0.38**	0.06	0.42	**0.22**	**0.56**	**0.34**
Nickel	0.60	4.21	**1.77**	**0.49**	**2.62**	0.87	2.04	**1.41**	**12.0**	**11.7**
Potassium	684	4780	**3344**	**14400**	**14900**	2800	7860	**5435**	**4840**	**5730**
Selenium	0.20	0.30	**0.15**	**NA**	**0.20**	0.10	0.10	**0.063**	**NA**	**NA**
Silver	0.0050	0.027	**0.012**	**0.02**	**NA**	0.0030	0.0030	**0.0019**	**0.013**	**0.0073**
Thallium	0.0030	0.013	**0.0083**	**NA**	**NA**	0.0020	0.0020	**0.0013**	**NA**	**0.0050**
Tin	NA	NA	**NA**	**NA**	**3.00**	6.30	6.30	**3.20**	**NA**	**NA**
Vanadium	0.26	4.95	**1.69**	**0.97**	**0.35**	0.080	0.22	**0.13**	**0.070**	**0.14**
Zinc	6.80	39.0	**22.0**	**28.8**	**40.7**	24.3	45.3	**32.6**	**14.7**	**11.5**
Anions/Cations										
Ammonia (as nitrogen)	7.00	27.0	**15.6**	**249**	**639**	61.0	135	**87.7**	**26.0**	**51.0**
Chloride	168	588	**453**	**4230**	**1170**	228	362	**278**	**32.1**	**413**
Cyanide	0.80	0.80	**0.54**	**NA**	**NA**	NA	NA	**NA**	**NA**	**NA**
Fluoride	0.60	944	**237**	**0.80**	**1.70**	0.50	1270	**318**	**1.20**	**0.80**
Sodium	80.3	419	**247**	**35.3**	**57.8**	7.50	31.2	**14.6**	**34.3**	**71.2**
Sulfate	46.0	327	**158**	**1340**	**3230**	298	621	**449**	**3050**	**3840**

Notes:

a. All units reported in milligrams per kilogram (mg/kg). Data presented on a dry weight basis.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

CV = coefficient of variation

n = sample size.

NA = Not applicable; analyte not detected.

SD = standard deviation

All Species, Vegetative Tissues n=28					
Minimum	Maximum	Mean [b]	Median [b]	SD [b]	CV
7.10	3040	**228**	79.8	570	2.49
0.020	0.47	**0.066**	0.050	0.092	1.39
0.050	0.35	**0.049**	0.025	0.069	1.40
2.50	94.8	**33.9**	31.6	21.2	0.63
0.0040	0.025	**0.0032**	0.0015	0.0052	1.60
0.012	0.012	**0.0046**	0.0035	0.0043	0.94
1.90	38.4	**16.4**	16.9	8.48	0.52
0.013	0.43	**0.059**	0.025	0.086	1.47
414	19200	**5346**	4855	3417	0.64
0.30	15.4	**1.25**	0.50	2.94	2.35
0.050	2.18	**0.26**	0.12	0.46	1.73
1.12	7.12	**3.76**	3.79	1.27	0.34
26.0	2270	**180**	76.5	425	2.36
0.040	1.65	**0.30**	0.12	0.41	1.39
250	8200	**1806**	1335	1638	0.91
17.0	1890	**553**	467	468	0.85
0.025	0.17	**0.057**	0.047	0.033	0.58
0.060	1.50	**0.24**	0.095	0.34	1.40
0.37	4.21	**1.32**	0.99	0.90	0.68
684	34200	**7295**	6180	6381	0.87
0.10	0.60	**0.10**	0.050	0.12	1.17
0.0030	0.041	**0.0071**	0.0040	0.0089	1.24
0.0020	0.097	**0.010**	0.0020	0.019	1.93
3.00	6.30	**2.31**	2.50	0.99	0.43
0.080	4.95	**0.47**	0.24	0.93	1.97
6.80	126	**34.3**	25.3	26.3	0.77
5.00	1060	**230**	44.1	320	1.40
79.0	13300	**1412**	528	2660	1.88
0.20	0.80	**0.39**	0.25	0.18	0.46
0.30	1270	**147**	0.80	369	2.51
7.50	419	**68.8**	36.6	97.8	1.42
46.0	20300	**1619**	385	3879	2.40

TABLE 10.4-14

Data Summary for Vegetation in the Open Spruce Forest/Shrub Thicket Habitat, Transportation-corridor Study Area, 2004

	Shrub Birch Vegetative Tissues n=2			Dwarf Birch Vegetative Tissues n=2			Paper Birch Vegetative Tissues n=1	Blue Joint Grass Vegetative Tissues n=1	Fireweed Vegetative Tissues n=1	Reindeer Lichen Vegetative Tissues n=2			Crowberry Vegetative Tissues n=4		
Analyte [a]	**Minimum**	**Maximum**	**Mean [b]**	**Minimum**	**Maximum**	**Mean [b]**	**Mean [b]**	**Mean [b]**	**Mean [b]**	**Minimum**	**Maximum**	**Mean [b]**	**Minimum**	**Maximum**	**Mean [b]**
Trace Elements															
Aluminum	19.7	19.7	**10.9**	6.90	13.2	**10.1**	**7.00**	**4.90**	**14.8**	116	165	**141**	16.3	47.3	**27.1**
Antimony	0.020	0.020	**0.015**	0.030	0.030	**0.020**	**NA**	**NA**	**NA**	0.030	0.040	**0.035**	0.020	0.11	**0.038**
Arsenic	NA	NA	**NA**	NA	NA	**NA**	**0.52**	**NA**	**0.090**	0.10	0.12	**0.11**	NA	NA	**NA**
Barium	9.80	54.0	**31.9**	6.40	26.5	**16.5**	**46.1**	**26.4**	**16.7**	10.6	16.2	**13.4**	29.6	68.4	**40.8**
Beryllium	NA	NA	**NA**	NA	NA	**NA**	**NA**	**NA**	**NA**	0.0040	0.0040	**0.0028**	NA	NA	**NA**
Bismuth	NA	NA	**NA**	NA	NA	**NA**	**0.11**	**NA**	**NA**	NA	NA	**NA**	NA	NA	**NA**
Boron	7.70	21.7	**14.7**	9.10	20.6	**14.9**	**21.1**	**3.10**	**42.0**	0.40	0.50	**0.45**	18.8	35.9	**24.3**
Cadmium	0.023	0.056	**0.040**	0.025	0.035	**0.030**	**0.11**	**0.022**	**0.015**	0.021	0.023	**0.022**	0.0080	0.011	**0.0065**
Calcium	4390	4700	**4545**	2710	2990	**2850**	**7090**	**5080**	**16200**	982	1080	**1031**	5190	6890	**5955**
Chromium	0.30	0.30	**0.20**	NA	NA	**NA**	**NA**	**0.50**	**NA**	0.40	0.40	**0.40**	0.30	0.30	**0.19**
Cobalt	0.10	0.11	**0.11**	0.070	0.15	**0.11**	**0.23**	**0.080**	**0.18**	0.070	0.13	**0.10**	0.060	0.14	**0.098**
Copper	3.12	3.69	**3.41**	2.97	4.42	**3.70**	**3.26**	**2.27**	**7.50**	1.06	1.15	**1.11**	2.89	3.53	**3.24**
Iron	36.3	37.4	**36.9**	31.1	36.1	**33.6**	**55.9**	**47.0**	**67.4**	128	149	**139**	24.1	32.4	**28.7**
Lead	0.040	0.070	**0.055**	0.050	0.13	**0.090**	**0.14**	**0.11**	**0.12**	0.42	0.45	**0.44**	0.080	0.54	**0.21**
Magnesium	2190	2840	**2515**	1430	2280	**1855**	**2570**	**1210**	**4290**	216	220	**218**	1220	1840	**1558**
Manganese	184	593	**389**	262	381	**322**	**529**	**466**	**166**	55.0	194	**125**	235	1300	**734**
Mercury	0.044	0.069	**0.057**	0.042	0.071	**0.057**	**0.049**	**0.028**	**0.14**	0.027	0.032	**0.030**	0.024	0.047	**0.034**
Molybdenum	0.090	0.090	**0.058**	0.060	0.060	**0.043**	**0.060**	**0.61**	**NA**	NA	NA	**NA**	0.10	0.37	**0.24**
Nickel	0.45	2.79	**1.62**	0.44	2.45	**1.45**	**1.69**	**7.00**	**2.52**	1.19	1.28	**1.24**	0.56	3.42	**1.57**
Potassium	4980	7010	**5995**	4890	6830	**5860**	**6040**	**9350**	**13500**	756	768	**762**	3030	4290	**3815**
Selenium	0.40	0.40	**0.23**	0.30	0.30	**0.18**	**1.80**	**NA**	**0.30**	0.10	0.10	**0.075**	NA	NA	**NA**
Silver	0.0030	0.0030	**0.0025**	0.0080	0.0080	**0.0050**	**NA**	**NA**	**NA**	0.0060	0.0070	**0.0065**	NA	NA	**NA**
Thallium	NA	NA	**NA**	NA	NA	**NA**	**NA**	**0.021**	**0.043**	NA	NA	**NA**	0.0040	0.0040	**0.0063**
Tin	NA	NA	**NA**	NA	NA	**NA**	**NA**	**NA**	**NA**	NA	NA	**NA**	NA	NA	**NA**
Vanadium	0.15	0.16	**0.16**	0.050	0.10	**0.075**	**0.57**	**0.11**	**0.17**	0.34	0.36	**0.35**	0.10	0.25	**0.16**
Zinc	13.4	83.6	**48.5**	25.7	53.6	**39.7**	**83.2**	**19.4**	**44.0**	10.6	12.4	**11.5**	10.6	14.9	**12.0**
Anions/Cations															
Ammonia (as nitrogen)	91.0	204	**148**	32.0	44.7	**38.4**	**95.0**	**1980**	**2290**	31.4	50.1	**40.8**	2.70	8.20	**6.33**
Chloride	122	183	**153**	94.0	124	**109**	**160**	**3780**	**6820**	26.0	36.0	**31.0**	537	752	**609**
Cyanide	0.12	0.12	**0.11**	4.20	4.20	**2.20**	**0.80**	**NA**	**NA**	NA	NA	**NA**	0.60	0.60	**0.26**
Fluoride	2.00	1210	**606**	1.70	684	**343**	**2.60**	**2.60**	**3.00**	2.00	2.20	**2.10**	0.50	1080	**271**
Sodium	10.1	20.2	**15.2**	14.4	15.6	**15.0**	**13.7**	**18.1**	**30.1**	32.9	33.8	**33.4**	14.0	33.1	**20.0**
Sulfate	112	120	**116**	47.0	247	**147**	**670**	**1930**	**374**	49.0	60.0	**54.5**	164	1090	**438**

Crowberry Fruit Tissues n=1 Mean [b]	Meadow Horsetail Vegetative Tissues n=3 Minimum	Meadow Horsetail Vegetative Tissues n=3 Maximum	Meadow Horsetail Vegetative Tissues n=3 Mean [b]	Narrow Leaf Labrador Tea Vegetative Tissues n=4 Minimum	Narrow Leaf Labrador Tea Vegetative Tissues n=4 Maximum	Narrow Leaf Labrador Tea Vegetative Tissues n=4 Mean [b]	Sweet Gale Vegetative Tissues n=1 Mean [b]	White Spruce Vegetative Tissues n=1 Mean [b]
624	11.2	18.4	**14.3**	14.8	30.7	**22.4**	**NA**	**60.4**
0.15	0.050	0.050	**0.023**	0.030	0.030	**0.015**	**0.050**	**0.020**
NA	0.11	2.24	**0.79**	NA	NA	**NA**	**0.080**	**NA**
2.70	22.2	48.9	**32.2**	59.8	119	**87.5**	**5.50**	**39.3**
NA	NA	NA	**NA**	NA	NA	**NA**	**NA**	**NA**
NA	NA	NA	**NA**	NA	NA	**NA**	**NA**	**NA**
NA	21.8	44.3	**30.6**	11.2	17.1	**13.5**	**8.40**	**8.40**
NA	0.014	0.052	**0.030**	0.0080	0.0080	**0.0046**	**0.017**	**0.022**
705	20000	32300	**26133**	3660	5300	**4748**	**7380**	**5670**
NA	0.30	0.80	**0.47**	0.30	0.30	**0.19**	**NA**	**NA**
0.030	0.53	1.75	**0.96**	0.040	0.080	**0.065**	**0.16**	**0.15**
2.64	2.51	3.26	**2.97**	3.12	4.09	**3.65**	**2.49**	**3.10**
83.7	29.9	79.4	**54.7**	24.1	29.3	**26.6**	**88.4**	**34.8**
0.14	0.030	0.14	**0.070**	0.070	0.090	**0.075**	**0.020**	**0.12**
389	3630	6580	**5400**	869	1120	**1014**	**2630**	**699**
85.3	32.0	91.4	**68.1**	292	1890	**764**	**238**	**754**
NA	0.020	0.024	**0.022**	0.029	0.048	**0.037**	**0.10**	**0.041**
0.19	0.22	1.24	**0.57**	0.070	0.22	**0.13**	**2.74**	**NA**
9.21	2.66	7.42	**5.05**	0.32	1.48	**0.97**	**1.56**	**2.97**
6330	7780	29600	**17993**	3740	4920	**4408**	**4810**	**8160**
NA	0.40	0.40	**0.40**	NA	NA	**NA**	**NA**	**NA**
NA	0.0050	0.0050	**0.0038**	NA	NA	**NA**	**NA**	**0.012**
0.013	0.016	0.11	**0.072**	0.024	0.26	**0.14**	**NA**	**NA**
NA	NA	NA	**NA**	NA	NA	**NA**	**NA**	**NA**
0.13	0.14	0.21	**0.17**	0.090	0.17	**0.12**	**0.15**	**0.17**
7.50	11.0	14.1	**12.2**	15.1	24.2	**20.5**	**23.3**	**51.3**
135	454	1370	**995**	5.40	16.5	**12.4**	**215**	**24.2**
1000	10400	17800	**14500**	124	306	**201**	**1180**	**467**
NA	NA	NA	**NA**	0.30	0.30	**0.18**	**1.10**	**0.50**
NA	1.30	463	**156**	1.60	783	**197**	**1.30**	**1.60**
41.7	69.0	359	**204**	9.30	14.2	**9.96**	**30.4**	**45.6**
2070	8730	29500	**18110**	133	258	**183**	**986**	**109**

	Black Spruce Vegetative Tissues n=3			Green Terrestrial Moss Vegetative Tissues n=2			Cloudberry Vegetative Tissues n=1	Sedge species Vegetative Tissues n=1	Bog Blueberry Vegetative Tissues n=4			Bog Blueberry Fruit Tissues n=1	Lingonberry Vegetative Tissues n=4		
Analyte [a]	**Minimum**	**Maximum**	**Mean** [b]	**Minimum**	**Maximum**	**Mean** [b]	**Mean** [b]	**Mean** [b]	**Minimum**	**Maximum**	**Mean** [b]	**Mean** [b]	**Minimum**	**Maximum**	**Mean** [b]
Trace Elements															
Aluminum	12.8	142	**56.2**	89.1	339	**214**	**24.3**	**14.8**	24.0	111	**69.2**	**163**	49.6	107	**76.5**
Antimony	0.020	0.020	**0.013**	0.12	0.12	**0.065**	**0.030**	**NA**	0.060	0.20	**0.070**	**0.21**	0.080	0.26	**0.090**
Arsenic	NA	NA	**NA**	0.060	2.40	**1.23**	**NA**	**NA**	0.26	0.26	**0.084**	**NA**	NA	NA	**NA**
Barium	15.5	24.8	**20.9**	22.9	34.2	**28.6**	**1.10**	**47.9**	32.0	70.3	**48.9**	**16.6**	20.7	64.5	**45.6**
Beryllium	0.012	0.012	**0.0050**	0.0040	0.0040	**0.0028**	**NA**	**NA**	NA	NA	**NA**	**NA**	NA	NA	**NA**
Bismuth	NA	NA	**NA**	NA	NA	**NA**	**NA**	**NA**	NA	NA	**NA**	**NA**	NA	NA	**NA**
Boron	5.50	10.5	**7.40**	3.30	5.10	**4.20**	**39.7**	**9.30**	16.1	29.3	**20.9**	**10.7**	10.7	15.2	**13.2**
Cadmium	0.0090	0.011	**0.0078**	0.051	0.058	**0.055**	**0.14**	**0.028**	0.15	0.44	**0.24**	**0.051**	0.019	0.13	**0.047**
Calcium	2310	7800	**5570**	5050	8570	**6810**	**6410**	**4890**	3930	7520	**5918**	**1800**	5060	5780	**5370**
Chromium	0.30	0.30	**0.17**	0.50	0.80	**0.65**	**NA**	**0.30**	NA	NA	**NA**	**NA**	NA	NA	**NA**
Cobalt	0.080	0.11	**0.097**	0.14	0.55	**0.35**	**0.070**	**0.090**	0.060	0.14	**0.11**	**0.070**	0.040	0.11	**0.075**
Copper	2.26	3.53	**2.83**	3.32	3.44	**3.38**	**2.63**	**2.81**	3.51	4.54	**3.94**	**1.72**	2.84	3.58	**3.29**
Iron	24.5	26.9	**25.7**	89.2	655	**372**	**82.9**	**61.9**	23.9	36.3	**31.3**	**72.1**	21.6	25.6	**22.9**
Lead	0.050	0.12	**0.083**	0.38	0.52	**0.45**	**0.040**	**0.21**	0.030	0.15	**0.093**	**0.20**	0.040	0.13	**0.083**
Magnesium	552	733	**631**	943	1110	**1027**	**4910**	**797**	1320	2560	**1878**	**733**	1270	1400	**1320**
Manganese	129	239	**194**	205	771	**488**	**1360**	**907**	428	2060	**1169**	**572**	1080	2510	**1733**
Mercury	0.033	0.054	**0.046**	0.071	0.10	**0.087**	**0.079**	**0.030**	0.025	0.051	**0.044**	**NA**	0.034	0.068	**0.045**
Molybdenum	0.020	0.020	**0.017**	0.20	0.34	**0.27**	**0.050**	**1.70**	0.080	0.38	**0.24**	**0.16**	0.048	0.10	**0.061**
Nickel	0.66	3.42	**1.96**	0.71	6.53	**3.62**	**1.01**	**2.99**	0.61	1.24	**1.00**	**7.85**	0.58	2.20	**1.24**
Potassium	5450	7980	**6520**	2790	3070	**2930**	**9440**	**11100**	2920	6030	**4513**	**4760**	3400	5240	**4273**
Selenium	0.20	0.20	**0.10**	0.20	0.20	**0.13**	**NA**	**0.20**	NA	NA	**NA**	**NA**	0.10	0.10	**0.063**
Silver	0.0070	0.016	**0.011**	0.0050	0.016	**0.011**	**NA**	**NA**	0.0050	0.094	**0.027**	**0.0060**	0.010	0.010	**0.0038**
Thallium	0.0040	0.026	**0.013**	0.014	0.041	**0.028**	**NA**	**NA**	0.0030	0.0030	**0.0060**	**0.0090**	0.0060	0.011	**0.0070**
Tin	NA	NA	**NA**	NA	NA	**NA**	**NA**	**NA**	NA	NA	**NA**	**NA**	NA	NA	**NA**
Vanadium	0.080	0.12	**0.11**	0.21	1.26	**0.74**	**0.19**	**0.060**	0.090	0.12	**0.11**	**0.050**	0.070	0.14	**0.093**
Zinc	17.2	72.9	**42.3**	23.6	28.1	**25.9**	**57.2**	**30.8**	29.0	44.6	**38.5**	**24.5**	21.8	27.8	**24.4**
Anions/Cations															
Ammonia (as nitrogen)	5.40	13.7	**10.2**	16.9	39.7	**28.3**	**222**	**857**	24.4	144	**64.9**	**22.0**	3.70	30.0	**15.7**
Chloride	285	391	**332**	180	401	**291**	**4240**	**4700**	210	286	**247**	**45.9**	11.0	48.6	**28.7**
Cyanide	0.21	0.60	**0.30**	NA	NA	**NA**	**NA**	**0.40**	0.80	0.80	**0.31**	**NA**	NA	NA	**NA**
Fluoride	1.50	1170	**391**	2.80	117	**59.9**	**1.40**	**1.70**	0.60	1480	**371**	**0.80**	0.30	1390	**348**
Sodium	13.6	26.7	**20.4**	75.8	163	**119**	**42.9**	**10.6**	11.4	17.9	**9.81**	**22.2**	6.10	16.1	**12.6**
Sulfate	95.0	385	**262**	149	295	**222**	**7370**	**954**	446	1050	**758**	**2760**	99.0	948	**454**

Notes:

a. All units reported in milligrams per kilogram (mg/kg). Data presented on a dry weight basis.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

CV = coefficient of variation

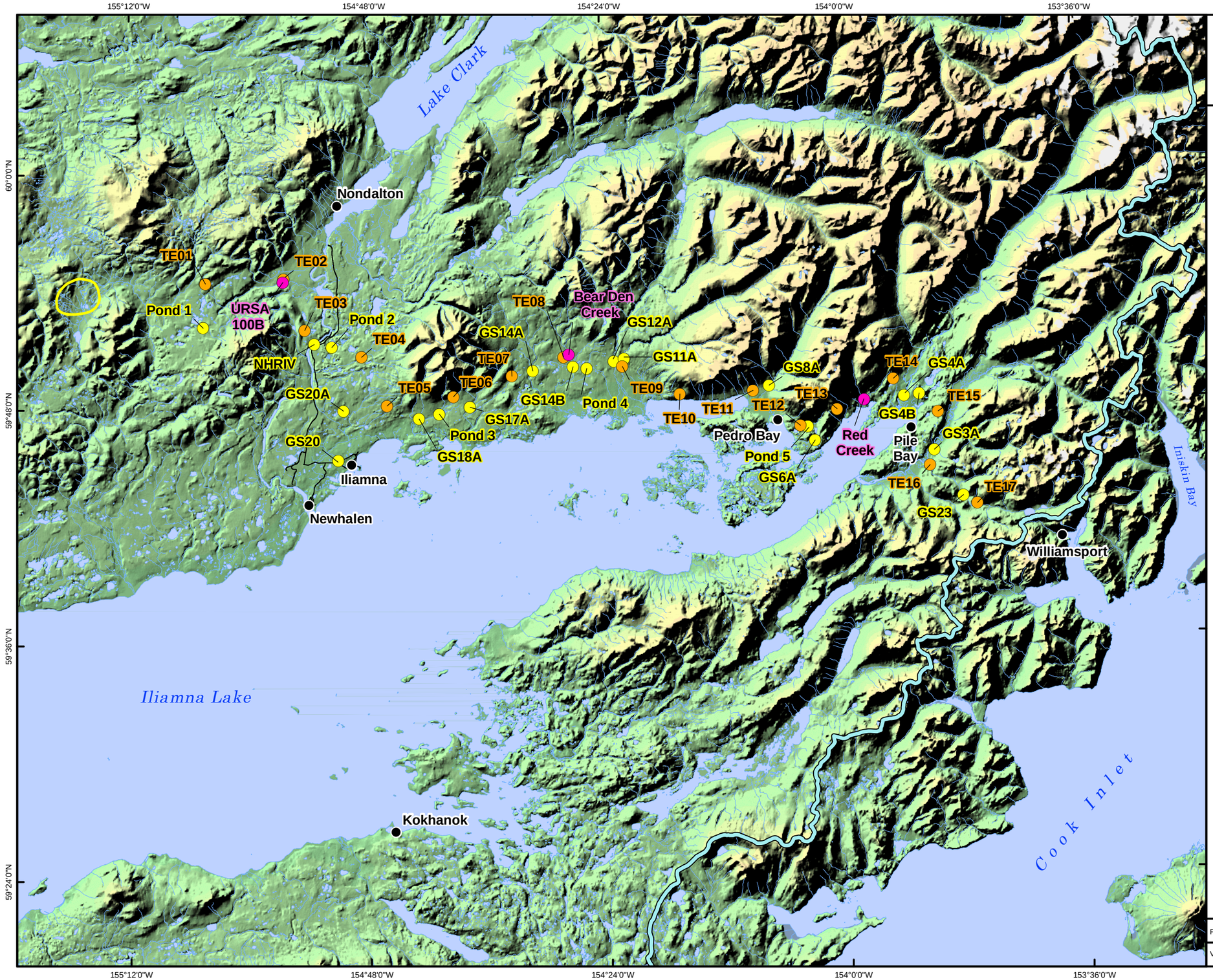
n = sample size.

NA = Not applicable; analyte not detected.

SD = standard deviation

Lingonberry Fruit Tissues n=2			All Species, Fruit Tissues n=4	All Species, Vegetative Tissues n=37					
Minimum	Maximum	Mean [b]	Mean [b]	Minimum	Maximum	Mean [b]	Median [b]	SD [b]	CV
124	312	**218**	**306**	4.90	339	**50.6**	23.5	64.8	1.28
0.12	0.20	**0.16**	**0.17**	0.020	0.26	**0.037**	0.010	0.055	1.47
NA	NA	**NA**	**NA**	0.060	2.40	**0.18**	0.025	0.53	2.93
2.00	4.70	**3.35**	**6.50**	1.10	119	**38.2**	32.0	26.2	0.69
NA	NA	**NA**	**NA**	0.0040	0.012	**0.0019**	0.0015	0.0018	0.94
NA	NA	**NA**	**NA**	0.11	0.11	**0.014**	0.0050	0.019	1.32
6.90	8.30	**7.60**	**7.10**	0.40	44.3	**16.3**	14.9	11.1	0.68
0.011	0.011	**0.0073**	**0.017**	0.0080	0.44	**0.053**	0.022	0.083	1.58
723	802	**763**	**1008**	982	32300	**7196**	5300	6385	0.89
0.30	0.30	**0.23**	**0.16**	0.30	0.80	**0.23**	0.15	0.18	0.79
0.040	0.040	**0.040**	**0.045**	0.040	1.75	**0.18**	0.10	0.30	1.61
1.48	1.94	**1.71**	**1.95**	1.06	7.50	**3.27**	3.26	1.02	0.31
71.6	93.7	**82.7**	**80.3**	21.6	655	**61.6**	32.4	105	1.70
0.13	0.18	**0.16**	**0.16**	0.020	0.54	**0.14**	0.090	0.14	1.00
347	396	**372**	**466**	216	6580	**1878**	1320	1493	0.79
300	305	**303**	**316**	32.0	2510	**688**	428	671	0.98
0.016	0.016	**0.011**	**0.0078**	0.020	0.14	**0.048**	0.041	0.026	0.53
0.059	0.089	**0.074**	**0.12**	0.020	2.74	**0.28**	0.090	0.54	1.90
10.8	10.9	**10.9**	**9.69**	0.32	7.42	**2.05**	1.28	1.82	0.89
3970	4090	**4030**	**4788**	756	29600	**6353**	4920	5061	0.80
NA	NA	**NA**	**NA**	0.10	1.80	**0.16**	0.050	0.30	1.84
NA	NA	**NA**	**0.0026**	0.0030	0.094	**0.0067**	0.0020	0.015	2.28
0.010	0.013	**0.012**	**0.011**	0.0030	0.26	**0.030**	0.010	0.053	1.80
NA	NA	**NA**	**NA**	NA	NA	NA	NA	NA	NA
0.070	0.13	**0.10**	**0.095**	0.050	1.26	**0.18**	0.13	0.21	1.12
7.60	7.90	**7.75**	**11.9**	10.6	83.6	**29.9**	23.6	19.8	0.66
			NA						
14.0	45.0	**29.5**	**54.0**	2.70	2290	**260**	30.0	553	2.13
NA	NA	**NA**	**263**	11.0	17800	**1928**	285	4172	2.16
NA	NA	**NA**	**NA**	0.12	4.20	**0.35**	0.15	0.69	1.95
0.70	0.70	**0.53**	**0.55**	0.30	1480	**228**	2.00	457	2.01
15.8	19.9	**17.9**	**24.9**	6.10	359	**38.9**	16.1	66.3	1.70
4230	4360	**4295**	**3355**	47.0	29500	**2052**	295	5568	2.71

FIGURES

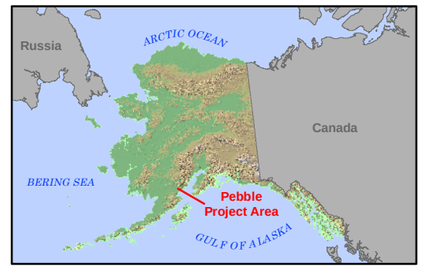


THE pebble PARTNERSHIP

Figure 10.4-1
Trace Elements Study,
Sampling Locations for Soil,
Vegetation, Sediment, and Fish,
Transportation-corridor Study Area, 2004-2008

Legend

- TE15 — Soil and Vegetation Collection Locations Station Label Example
- GS23 — Sediment Collection Locations Station Label Example
- Creek — Fish Tissue Collection Locations Station Label Example
- Communities
- General Deposit Location
- Bristol Bay and Cook Inlet Drainages Boundary



Miles
0 5 10 15

Kilometers
0 5 10 15 20

N

Scale 1:365,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

File: RDI_SLR_SampLocs_TransCorridor_Fig10_4-1_11X17_1of1_D03.mxd	Date: May 19, 2011
Version: 3	Author: RDI-MRA, LS

APPENDICES

APPENDIX 10.4A

Photographic Log, Soil and Vegetation Sampling, Transportation-corridor Study Area



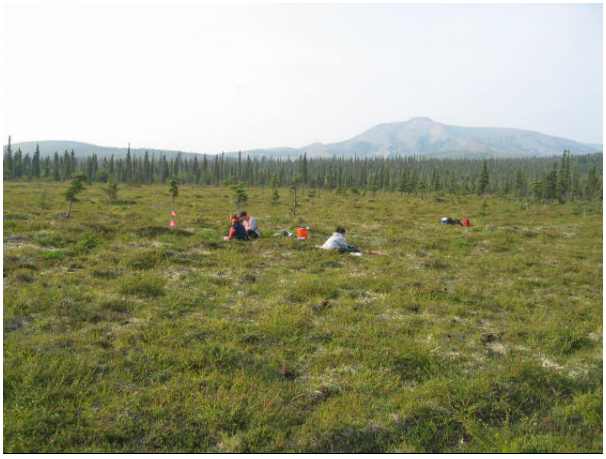
2004 Sample Site TE01



2004 Sample Site TE01



2004 Sample Site TE01



2004 Sample Site TE02



2004 Sample Site TE02



2004 Sample Site TE02



2004 Sample Site TE03



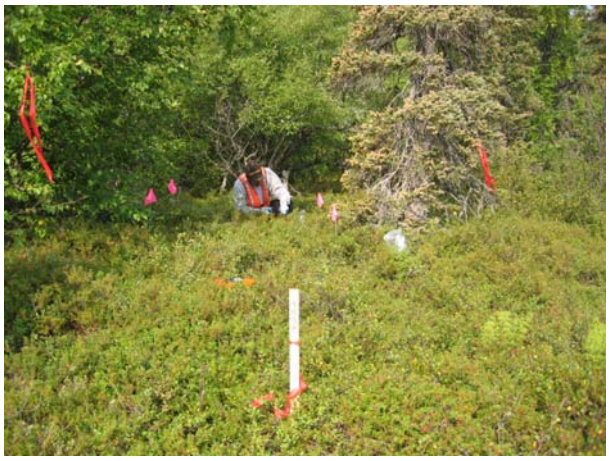
2004 Sample Site TE03



2004 Sample Site TE03



2004 Sample Site TE03



2004 Sample Site TE03



2004 Sample Site TE04



2004 Sample Site TE05



2004 Sample Site TE05



2004 Sample Site TE06



2004 Sample Site TE06



2004 Sample Site TE06



2004 Sample Site TE07



2004 Sample Site TE07



2004 Sample Site TE07



2004 Sample Site TE08



2004 Sample Site TE09



2004 Sample Site TE09



2004 Sample Site TE09



2004 Sample Site TE09



2004 Sample Site TE10



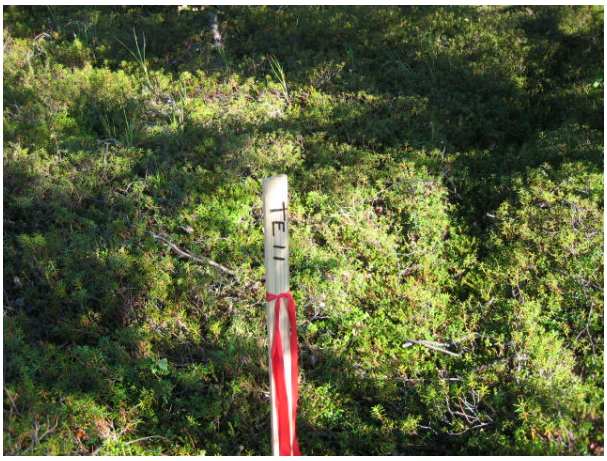
2004 Sample Site TE10



2004 Sample Site TE10



2004 Sample Site TE10



2004 Sample Site TE11



2004 Sample Site TE11



2004 Sample Site TE11

APPENDIX 10.4B

Soil Samples Results Summary, Transportation-corridor Study Area, 2004

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	percent	percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TE01												
Sample Date												
08/17/04	53.6	14.7	**0.2785**	**0.2785**	2.01	0.2	353	13200	**0.141**	5.18	53.7	0.262
Mean	53.6	14.7	0.2785	0.2785	2.01	0.2	353	13200	0.141	5.18	53.7	0.262
Median	53.6	14.7	0.2785	0.2785	2.01	0.2	353	13200	0.141	5.18	53.7	0.262
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	53.6	14.7	0.2785	0.2785	2.01	0.2	353	13200	0.141	5.18	53.7	0.262
Maximum	53.6	14.7	0.2785	0.2785	2.01	0.2	353	13200	0.141	5.18	53.7	0.262
% of values undetected			100%	100%					100%			
# of values between MDL and MRL												
TE02												
Sample Date												
08/17/04	46.3	15.1	**0.331**	**0.331**	8.54	0.2	336	7030	**0.144**	**1.92**	40.7	**0.12**
Mean	46.3	15.1	0.331	0.331	8.54	0.2	336	7030	0.144	1.92	40.7	0.12
Median	46.3	15.1	0.331	0.331	8.54	0.2	336	7030	0.144	1.92	40.7	0.12
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	46.3	15.1	0.331	0.331	8.54	0.2	336	7030	0.144	1.92	40.7	0.12
Maximum	46.3	15.1	0.331	0.331	8.54	0.2	336	7030	0.144	1.92	40.7	0.12
% of values undetected			100%	100%								
# of values between MDL and MRL									1	1		1
TE03												
Sample Date												
08/17/04	36.9	33.7	**0.889**	**0.4175**	**1.43**	**0.11**	275	2740	**0.0407**	**0.75**	50.6	**0.0407**
Mean	36.9	33.7	0.889	0.4175	1.43	0.11	275	2740	0.0407	0.75	50.6	0.0407
Median	36.9	33.7	0.889	0.4175	1.43	0.11	275	2740	0.0407	0.75	50.6	0.0407
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	36.9	33.7	0.889	0.4175	1.43	0.11	275	2740	0.0407	0.75	50.6	0.0407
Maximum	36.9	33.7	0.889	0.4175	1.43	0.11	275	2740	0.0407	0.75	50.6	0.0407
% of values undetected				100%					100%	100%		100%
# of values between MDL and MRL			1		1	1						

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TE01												
Sample Date												
08/17/04	**0.0565**	**7.95**	**0.129**	1730	21.4	6.56	8.98	23200	6.3	3960	278	0.116
Mean	0.0565	7.95	0.129	1730	21.4	6.56	8.98	23200	6.3	3960	278	0.116
Median	0.0565	7.95	0.129	1730	21.4	6.56	8.98	23200	6.3	3960	278	0.116
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0565	7.95	0.129	1730	21.4	6.56	8.98	23200	6.3	3960	278	0.116
Maximum	0.0565	7.95	0.129	1730	21.4	6.56	8.98	23200	6.3	3960	278	0.116
% of values undetected	100%											
# of values between MDL and MRL		1	1									
TE02												
Sample Date												
08/17/04	**0.0645**	**3.22**	**0.131**	1440	8.3	2.54	6.58	9020	2.87	1800	111	**0.0716**
Mean	0.0645	3.22	0.131	1440	8.3	2.54	6.58	9020	2.87	1800	111	0.0716
Median	0.0645	3.22	0.131	1440	8.3	2.54	6.58	9020	2.87	1800	111	0.0716
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0645	3.22	0.131	1440	8.3	2.54	6.58	9020	2.87	1800	111	0.0716
Maximum	0.0645	3.22	0.131	1440	8.3	2.54	6.58	9020	2.87	1800	111	0.0716
% of values undetected	100%	100%										
# of values between MDL and MRL			1									1
TE03												
Sample Date												
08/17/04	**0.0815**	**4.07**	**0.171**	1480	3.84	1.48	7.37	5580	2.19	453	45.6	0.12
Mean	0.0815	4.07	0.171	1480	3.84	1.48	7.37	5580	2.19	453	45.6	0.12
Median	0.0815	4.07	0.171	1480	3.84	1.48	7.37	5580	2.19	453	45.6	0.12
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0815	4.07	0.171	1480	3.84	1.48	7.37	5580	2.19	453	45.6	0.12
Maximum	0.0815	4.07	0.171	1480	3.84	1.48	7.37	5580	2.19	453	45.6	0.12
% of values undetected	100%	100%										
# of values between MDL and MRL			1									

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TE01										
Sample Date										
08/17/04	**0.58**	9.79	401	**0.62**	**0.144**	203	**0.00565**	**0.91**	55.8	39.9
Mean	0.58	9.79	401	0.62	0.144	203	0.00565	0.91	55.8	39.9
Median	0.58	9.79	401	0.62	0.144	203	0.00565	0.91	55.8	39.9
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.58	9.79	401	0.62	0.144	203	0.00565	0.91	55.8	39.9
Maximum	0.58	9.79	401	0.62	0.144	203	0.00565	0.91	55.8	39.9
% of values undetected							100%	100%		
# of values between MDL and MRL	1			1	1					
TE02										
Sample Date										
08/17/04	**0.322**	4.86	342	**0.358**	**0.0322**	**124**	**0.00645**	**1.04**	23.6	29.1
Mean	0.322	4.86	342	0.358	0.0322	124	0.00645	1.04	23.6	29.1
Median	0.322	4.86	342	0.358	0.0322	124	0.00645	1.04	23.6	29.1
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.322	4.86	342	0.358	0.0322	124	0.00645	1.04	23.6	29.1
Maximum	0.322	4.86	342	0.358	0.0322	124	0.00645	1.04	23.6	29.1
% of values undetected	100%				100%		100%	100%		
# of values between MDL and MRL				1		1				
TE03										
Sample Date										
08/17/04	**0.407**	2.15	**203.5**	**0.53**	**0.1315**	**203.5**	**0.00815**	2.83	21.2	12.7
Mean	0.407	2.15	203.5	0.53	0.1315	203.5	0.00815	2.83	21.2	12.7
Median	0.407	2.15	203.5	0.53	0.1315	203.5	0.00815	2.83	21.2	12.7
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.407	2.15	203.5	0.53	0.1315	203.5	0.00815	2.83	21.2	12.7
Maximum	0.407	2.15	203.5	0.53	0.1315	203.5	0.00815	2.83	21.2	12.7
% of values undetected	100%		100%		100%	100%	100%			
# of values between MDL and MRL				1						

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE04												
Sample Date												
08/20/04	54.2	17.5	2.27	**0.2775**	2.38	0.16	403	6570	**0.0981**	**2.5**	49.7	**0.142**
Mean	54.2	17.5	2.27	0.2775	2.38	0.16	403	6570	0.0981	2.5	49.7	0.142
Median	54.2	17.5	2.27	0.2775	2.38	0.16	403	6570	0.0981	2.5	49.7	0.142
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	54.2	17.5	2.27	0.2775	2.38	0.16	403	6570	0.0981	2.5	49.7	0.142
Maximum	54.2	17.5	2.27	0.2775	2.38	0.16	403	6570	0.0981	2.5	49.7	0.142
% of values undetected				100%								
# of values between MDL and MRL									1	1		1
TE05												
Sample Date												
08/20/04	29.9	28.9	**1.59**	**0.515**	4.78	0.14	384	8540	**0.0505**	**0.93**	19.6	**0.125**
Mean	29.9	28.9	1.59	0.515	4.78	0.14	384	8540	0.0505	0.93	19.6	0.125
Median	29.9	28.9	1.59	0.515	4.78	0.14	384	8540	0.0505	0.93	19.6	0.125
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	29.9	28.9	1.59	0.515	4.78	0.14	384	8540	0.0505	0.93	19.6	0.125
Maximum	29.9	28.9	1.59	0.515	4.78	0.14	384	8540	0.0505	0.93	19.6	0.125
% of values undetected				100%					100%	100%		
# of values between MDL and MRL			1									1
TE06												
Sample Date												
08/20/04	14.7	45.7	9.69	**0.98**	341	**0.0145**	770	3910	**0.1015**	**1.86**	28.4	**0.1015**
Mean	14.7	45.7	9.69	0.98	341	0.0145	770	3910	0.1015	1.86	28.4	0.1015
Median	14.7	45.7	9.69	0.98	341	0.0145	770	3910	0.1015	1.86	28.4	0.1015
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	14.7	45.7	9.69	0.98	341	0.0145	770	3910	0.1015	1.86	28.4	0.1015
Maximum	14.7	45.7	9.69	0.98	341	0.0145	770	3910	0.1015	1.86	28.4	0.1015
% of values undetected				100%		100%			100%	100%		100%
# of values between MDL and MRL												

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE04												
Sample Date												
08/20/04	**0.0555**	**2.785**	**0.0555**	1450	6.8	2.07	7.37	10200	4.2	763	70.6	0.111
Mean	0.0555	2.785	0.0555	1450	6.8	2.07	7.37	10200	4.2	763	70.6	0.111
Median	0.0555	2.785	0.0555	1450	6.8	2.07	7.37	10200	4.2	763	70.6	0.111
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0555	2.785	0.0555	1450	6.8	2.07	7.37	10200	4.2	763	70.6	0.111
Maximum	0.0555	2.785	0.0555	1450	6.8	2.07	7.37	10200	4.2	763	70.6	0.111
% of values undetected	100%	100%	100%									
# of values between MDL and MRL												
TE05												
Sample Date												
08/20/04	**0.101**	**5.05**	**0.101**	1480	7.18	1.65	8.82	9100	2.77	351	52.8	0.135
Mean	0.101	5.05	0.101	1480	7.18	1.65	8.82	9100	2.77	351	52.8	0.135
Median	0.101	5.05	0.101	1480	7.18	1.65	8.82	9100	2.77	351	52.8	0.135
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.101	5.05	0.101	1480	7.18	1.65	8.82	9100	2.77	351	52.8	0.135
Maximum	0.101	5.05	0.101	1480	7.18	1.65	8.82	9100	2.77	351	52.8	0.135
% of values undetected	100%	100%	100%									
# of values between MDL and MRL												
TE06												
Sample Date												
08/20/04	**0.2025**	**10.15**	**0.2025**	3990	3.25	**0.49**	10.7	1830	1.52	298	25.1	**0.102**
Mean	0.2025	10.15	0.2025	3990	3.25	0.49	10.7	1830	1.52	298	25.1	0.102
Median	0.2025	10.15	0.2025	3990	3.25	0.49	10.7	1830	1.52	298	25.1	0.102
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.2025	10.15	0.2025	3990	3.25	0.49	10.7	1830	1.52	298	25.1	0.102
Maximum	0.2025	10.15	0.2025	3990	3.25	0.49	10.7	1830	1.52	298	25.1	0.102
% of values undetected	100%	100%	100%			100%						
# of values between MDL and MRL												1

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE04										
Sample Date										
08/20/04	**0.2785**	3.19	307	**0.577**	**0.09**	355	**0.00555**	**0.9**	32.4	14.5
Mean	0.2785	3.19	307	0.577	0.09	355	0.00555	0.9	32.4	14.5
Median	0.2785	3.19	307	0.577	0.09	355	0.00555	0.9	32.4	14.5
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.2785	3.19	307	0.577	0.09	355	0.00555	0.9	32.4	14.5
Maximum	0.2785	3.19	307	0.577	0.09	355	0.00555	0.9	32.4	14.5
% of values undetected	100%				100%		100%	100%		
# of values between MDL and MRL				1						
TE05										
Sample Date										
08/20/04	**0.505**	1.96	**260**	**0.538**	**0.0505**	508	**0.0101**	**1.63**	31.7	19.1
Mean	0.505	1.96	260	0.538	0.0505	508	0.0101	1.63	31.7	19.1
Median	0.505	1.96	260	0.538	0.0505	508	0.0101	1.63	31.7	19.1
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.505	1.96	260	0.538	0.0505	508	0.0101	1.63	31.7	19.1
Maximum	0.505	1.96	260	0.538	0.0505	508	0.0101	1.63	31.7	19.1
% of values undetected	100%				100%		100%	100%		
# of values between MDL and MRL			1	1						
TE06										
Sample Date										
08/20/04	**1.015**	1.38	**101.5**	**1.41**	**0.1015**	**334**	**0.02025**	**3.265**	**7.56**	21.7
Mean	1.015	1.38	101.5	1.41	0.1015	334	0.02025	3.265	7.56	21.7
Median	1.015	1.38	101.5	1.41	0.1015	334	0.02025	3.265	7.56	21.7
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	1.015	1.38	101.5	1.41	0.1015	334	0.02025	3.265	7.56	21.7
Maximum	1.015	1.38	101.5	1.41	0.1015	334	0.02025	3.265	7.56	21.7
% of values undetected	100%		100%		100%		100%	100%		
# of values between MDL and MRL				1		1			1	

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE07												
Sample Date												
08/20/04	27.6	33.9	**3.06**	**1.37**	42.5	0.09	1030	7650	1.29	50.1	48.4	**0.0555**
Mean	27.6	33.9	3.06	1.37	42.5	0.09	1030	7650	1.29	50.1	48.4	0.0555
Median	27.6	33.9	3.06	1.37	42.5	0.09	1030	7650	1.29	50.1	48.4	0.0555
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	27.6	33.9	3.06	1.37	42.5	0.09	1030	7650	1.29	50.1	48.4	0.0555
Maximum	27.6	33.9	3.06	1.37	42.5	0.09	1030	7650	1.29	50.1	48.4	0.0555
% of values undetected												100%
# of values between MDL and MRL			1	1								
TE08												
Sample Date												
08/17/04	52.6	14.4	**0.285**	**0.845**	1.93	**0.0135**	286	24300	**0.0622**	**1.47**	23.3	0.229
Mean	52.6	14.4	0.285	0.845	1.93	0.0135	286	24300	0.0622	1.47	23.3	0.229
Median	52.6	14.4	0.285	0.845	1.93	0.0135	286	24300	0.0622	1.47	23.3	0.229
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	52.6	14.4	0.285	0.845	1.93	0.0135	286	24300	0.0622	1.47	23.3	0.229
Maximum	52.6	14.4	0.285	0.845	1.93	0.0135	286	24300	0.0622	1.47	23.3	0.229
% of values undetected			100%			100%						
# of values between MDL and MRL				1					1	1		
TE09												
Sample Date												
08/17/04	97.5	0.131	**0.441**	**0.311**	1.19	**0.015**	**5.62**	8540	0.119	**1.56**	24.4	0.234
Mean	97.5	0.131	0.441	0.311	1.19	0.015	5.62	8540	0.119	1.56	24.4	0.234
Median	97.5	0.131	0.441	0.311	1.19	0.015	5.62	8540	0.119	1.56	24.4	0.234
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	97.5	0.131	0.441	0.311	1.19	0.015	5.62	8540	0.119	1.56	24.4	0.234
Maximum	97.5	0.131	0.441	0.311	1.19	0.015	5.62	8540	0.119	1.56	24.4	0.234
% of values undetected						100%						
# of values between MDL and MRL			1	1			1			1		

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE07												
Sample Date												
08/20/04	**0.1105**	**5.55**	**0.1105**	8130	5.65	**1.41**	12	5310	1.62	583	36.7	0.186
Mean	0.1105	5.55	0.1105	8130	5.65	1.41	12	5310	1.62	583	36.7	0.186
Median	0.1105	5.55	0.1105	8130	5.65	1.41	12	5310	1.62	583	36.7	0.186
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.1105	5.55	0.1105	8130	5.65	1.41	12	5310	1.62	583	36.7	0.186
Maximum	0.1105	5.55	0.1105	8130	5.65	1.41	12	5310	1.62	583	36.7	0.186
% of values undetected	100%	100%	100%									
# of values between MDL and MRL						1						
TE08												
Sample Date												
08/17/04	**0.057**	**2.85**	**0.188**	2200	4.79	2.37	5.81	15000	1.87	907	122	0.0869
Mean	0.057	2.85	0.188	2200	4.79	2.37	5.81	15000	1.87	907	122	0.0869
Median	0.057	2.85	0.188	2200	4.79	2.37	5.81	15000	1.87	907	122	0.0869
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.057	2.85	0.188	2200	4.79	2.37	5.81	15000	1.87	907	122	0.0869
Maximum	0.057	2.85	0.188	2200	4.79	2.37	5.81	15000	1.87	907	122	0.0869
% of values undetected	100%	100%										
# of values between MDL and MRL			1									
TE09												
Sample Date												
08/17/04	**0.0309**	**1.545**	**0.0756**	5590	4.41	4.3	8.73	22500	2.8	3240	382	**0.0061**
Mean	0.0309	1.545	0.0756	5590	4.41	4.3	8.73	22500	2.8	3240	382	0.0061
Median	0.0309	1.545	0.0756	5590	4.41	4.3	8.73	22500	2.8	3240	382	0.0061
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0309	1.545	0.0756	5590	4.41	4.3	8.73	22500	2.8	3240	382	0.0061
Maximum	0.0309	1.545	0.0756	5590	4.41	4.3	8.73	22500	2.8	3240	382	0.0061
% of values undetected	100%	100%										100%
# of values between MDL and MRL			1									

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE07										
Sample Date										
08/20/04	**1.54**	2.65	**55.5**	2.06	**0.0555**	400	**0.01105**	**1.78**	26.7	15
Mean	1.54	2.65	55.5	2.06	0.0555	400	0.01105	1.78	26.7	15
Median	1.54	2.65	55.5	2.06	0.0555	400	0.01105	1.78	26.7	15
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	1.54	2.65	55.5	2.06	0.0555	400	0.01105	1.78	26.7	15
Maximum	1.54	2.65	55.5	2.06	0.0555	400	0.01105	1.78	26.7	15
% of values undetected			100%		100%		100%	100%		
# of values between MDL and MRL	1									
TE08										
Sample Date										
08/17/04	**0.285**	1.86	**161**	**0.716**	**0.092**	402	0.0806	**0.92**	48.7	23.3
Mean	0.285	1.86	161	0.716	0.092	402	0.0806	0.92	48.7	23.3
Median	0.285	1.86	161	0.716	0.092	402	0.0806	0.92	48.7	23.3
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.285	1.86	161	0.716	0.092	402	0.0806	0.92	48.7	23.3
Maximum	0.285	1.86	161	0.716	0.092	402	0.0806	0.92	48.7	23.3
% of values undetected	100%				100%			100%		
# of values between MDL and MRL			1	1						
TE09										
Sample Date										
08/17/04	**0.1545**	2.2	734	**0.186**	**0.04985**	147	**0.0031**	**0.4985**	60.7	35.8
Mean	0.1545	2.2	734	0.186	0.04985	147	0.0031	0.4985	60.7	35.8
Median	0.1545	2.2	734	0.186	0.04985	147	0.0031	0.4985	60.7	35.8
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.1545	2.2	734	0.186	0.04985	147	0.0031	0.4985	60.7	35.8
Maximum	0.1545	2.2	734	0.186	0.04985	147	0.0031	0.4985	60.7	35.8
% of values undetected	100%				100%		100%	100%		
# of values between MDL and MRL				1						

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE10												
Sample Date												
08/21/04	52.1	11.2	**0.662**	**0.2935**	**1.08**	0.1	349	5120	**0.02965**	**0.545**	8.86	**0.108**
Mean	52.1	11.2	0.662	0.2935	1.08	0.1	349	5120	0.02965	0.545	8.86	0.108
Median	52.1	11.2	0.662	0.2935	1.08	0.1	349	5120	0.02965	0.545	8.86	0.108
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	52.1	11.2	0.662	0.2935	1.08	0.1	349	5120	0.02965	0.545	8.86	0.108
Maximum	52.1	11.2	0.662	0.2935	1.08	0.1	349	5120	0.02965	0.545	8.86	0.108
% of values undetected				100%					100%	100%		
# of values between MDL and MRL			1		1							1
TE11												
Sample Date												
08/21/04	68.4	5.26	2.05	**0.2235**	**0.2235**	0.072	180	1350	**0.02205**	**0.4055**	8.36	**0.02205**
Mean	68.4	5.26	2.05	0.2235	0.2235	0.072	180	1350	0.02205	0.4055	8.36	0.02205
Median	68.4	5.26	2.05	0.2235	0.2235	0.072	180	1350	0.02205	0.4055	8.36	0.02205
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	68.4	5.26	2.05	0.2235	0.2235	0.072	180	1350	0.02205	0.4055	8.36	0.02205
Maximum	68.4	5.26	2.05	0.2235	0.2235	0.072	180	1350	0.02205	0.4055	8.36	0.02205
% of values undetected				100%	100%				100%	100%		100%
# of values between MDL and MRL												
TE12												
Sample Date												
08/21/04	37.8	22.7	**1.63**	**0.395**	2.96	**0.049**	477	2690	**0.0397**	**0.73**	33.5	**0.0397**
Mean	37.8	22.7	1.63	0.395	2.96	0.049	477	2690	0.0397	0.73	33.5	0.0397
Median	37.8	22.7	1.63	0.395	2.96	0.049	477	2690	0.0397	0.73	33.5	0.0397
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	37.8	22.7	1.63	0.395	2.96	0.049	477	2690	0.0397	0.73	33.5	0.0397
Maximum	37.8	22.7	1.63	0.395	2.96	0.049	477	2690	0.0397	0.73	33.5	0.0397
% of values undetected				100%					100%	100%		100%
# of values between MDL and MRL			1			1						

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE10												
Sample Date												
08/21/04	**0.0595**	**2.965**	**0.0595**	2330	1.51	1.4	6.28	8630	1.41	497	84.7	**0.0412**
Mean	0.0595	2.965	0.0595	2330	1.51	1.4	6.28	8630	1.41	497	84.7	0.0412
Median	0.0595	2.965	0.0595	2330	1.51	1.4	6.28	8630	1.41	497	84.7	0.0412
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0595	2.965	0.0595	2330	1.51	1.4	6.28	8630	1.41	497	84.7	0.0412
Maximum	0.0595	2.965	0.0595	2330	1.51	1.4	6.28	8630	1.41	497	84.7	0.0412
% of values undetected	100%	100%	100%									
# of values between MDL and MRL												1
TE11												
Sample Date												
08/21/04	**0.0441**	**2.205**	**0.0441**	469	1.17	**0.629**	2.06	2840	0.883	198	48.8	**0.034**
Mean	0.0441	2.205	0.0441	469	1.17	0.629	2.06	2840	0.883	198	48.8	0.034
Median	0.0441	2.205	0.0441	469	1.17	0.629	2.06	2840	0.883	198	48.8	0.034
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0441	2.205	0.0441	469	1.17	0.629	2.06	2840	0.883	198	48.8	0.034
Maximum	0.0441	2.205	0.0441	469	1.17	0.629	2.06	2840	0.883	198	48.8	0.034
% of values undetected	100%	100%	100%									
# of values between MDL and MRL						1						1
TE12												
Sample Date												
08/21/04	**0.0795**	**3.97**	0.593	4440	1.46	**1.03**	4.99	2960	1.09	287	19.4	**0.0918**
Mean	0.0795	3.97	0.593	4440	1.46	1.03	4.99	2960	1.09	287	19.4	0.0918
Median	0.0795	3.97	0.593	4440	1.46	1.03	4.99	2960	1.09	287	19.4	0.0918
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0795	3.97	0.593	4440	1.46	1.03	4.99	2960	1.09	287	19.4	0.0918
Maximum	0.0795	3.97	0.593	4440	1.46	1.03	4.99	2960	1.09	287	19.4	0.0918
% of values undetected	100%	100%										
# of values between MDL and MRL						1						1

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE10										
Sample Date										
08/21/04	**0.631**	0.88	196	**0.349**	**0.02965**	222	**0.00595**	**0.955**	24.1	12.5
Mean	0.631	0.88	196	0.349	0.02965	222	0.00595	0.955	24.1	12.5
Median	0.631	0.88	196	0.349	0.02965	222	0.00595	0.955	24.1	12.5
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.631	0.88	196	0.349	0.02965	222	0.00595	0.955	24.1	12.5
Maximum	0.631	0.88	196	0.349	0.02965	222	0.00595	0.955	24.1	12.5
% of values undetected					100%		100%	100%		
# of values between MDL and MRL	1			1						
TE11										
Sample Date										
08/21/04	**0.2205**	0.463	204	**0.1065**	**0.02205**	186	**0.0044**	**0.71**	11.6	7.74
Mean	0.2205	0.463	204	0.1065	0.02205	186	0.0044	0.71	11.6	7.74
Median	0.2205	0.463	204	0.1065	0.02205	186	0.0044	0.71	11.6	7.74
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.2205	0.463	204	0.1065	0.02205	186	0.0044	0.71	11.6	7.74
Maximum	0.2205	0.463	204	0.1065	0.02205	186	0.0044	0.71	11.6	7.74
% of values undetected	100%			100%	100%		100%	100%		
# of values between MDL and MRL										
TE12										
Sample Date										
08/21/04	**0.397**	0.777	**210**	**0.482**	**0.0397**	344	**0.00795**	**1.28**	10.6	34.3
Mean	0.397	0.777	210	0.482	0.0397	344	0.00795	1.28	10.6	34.3
Median	0.397	0.777	210	0.482	0.0397	344	0.00795	1.28	10.6	34.3
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.397	0.777	210	0.482	0.0397	344	0.00795	1.28	10.6	34.3
Maximum	0.397	0.777	210	0.482	0.0397	344	0.00795	1.28	10.6	34.3
% of values undetected	100%				100%		100%	100%		
# of values between MDL and MRL			1	1						

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE13												
Sample Date												
08/19/04	40.6	28.1	3.99	**0.382**	11	**0.21**	882	16500	**0.0382**	**1.49**	13.5	**0.0382**
Mean	40.6	28.1	3.99	0.382	11	0.21	882	16500	0.0382	1.49	13.5	0.0382
Median	40.6	28.1	3.99	0.382	11	0.21	882	16500	0.0382	1.49	13.5	0.0382
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	40.6	28.1	3.99	0.382	11	0.21	882	16500	0.0382	1.49	13.5	0.0382
Maximum	40.6	28.1	3.99	0.382	11	0.21	882	16500	0.0382	1.49	13.5	0.0382
% of values undetected				100%					100%			100%
# of values between MDL and MRL						1				1		
TE14												
Sample Date												
08/19/04	27.4	17.1	**2.13**	**0.55**	6.42	0.095	493	1680	**0.0555**	**1.03**	23.3	**0.0555**
Mean	27.4	17.1	2.13	0.55	6.42	0.095	493	1680	0.0555	1.03	23.3	0.0555
Median	27.4	17.1	2.13	0.55	6.42	0.095	493	1680	0.0555	1.03	23.3	0.0555
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	27.4	17.1	2.13	0.55	6.42	0.095	493	1680	0.0555	1.03	23.3	0.0555
Maximum	27.4	17.1	2.13	0.55	6.42	0.095	493	1680	0.0555	1.03	23.3	0.0555
% of values undetected				100%					100%	100%		100%
# of values between MDL and MRL			1									
TE15												
Sample Date												
08/19/04	37.5	9.70	6.13	**1.16**	6.00	0.110	327	5710	**0.0397**	**0.73**	24.7	**0.0968**
Mean	37.5	9.70	6.13	1.16	6.00	0.110	327	5710	0.0397	0.73	24.7	0.0968
Median	37.5	9.70	6.13	1.16	6.00	0.110	327	5710	0.0397	0.73	24.7	0.0968
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	37.5	9.70	6.13	1.16	6.00	0.110	327	5710	0.0397	0.73	24.7	0.0968
Maximum	37.5	9.70	6.13	1.16	6.00	0.110	327	5710	0.0397	0.73	24.7	0.0968
% of values undetected									100%	100%		
# of values between MDL and MRL				1								1

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE13												
Sample Date												
08/19/04	**0.0765**	**3.82**	**0.0765**	625	2.53	**0.765**	11	4920	1.47	117	21.3	0.107
Mean	0.0765	3.82	0.0765	625	2.53	0.765	11	4920	1.47	117	21.3	0.107
Median	0.0765	3.82	0.0765	625	2.53	0.765	11	4920	1.47	117	21.3	0.107
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0765	3.82	0.0765	625	2.53	0.765	11	4920	1.47	117	21.3	0.107
Maximum	0.0765	3.82	0.0765	625	2.53	0.765	11	4920	1.47	117	21.3	0.107
% of values undetected	100%	100%	100%									
# of values between MDL and MRL						1						
TE14												
Sample Date												
08/19/04	**0.112**	**5.55**	**0.246**	2160	**0.925**	**0.756**	3.18	2320	0.723	254	13.8	**0.0219**
Mean	0.112	5.55	0.246	2160	0.925	0.756	3.18	2320	0.723	254	13.8	0.0219
Median	0.112	5.55	0.246	2160	0.925	0.756	3.18	2320	0.723	254	13.8	0.0219
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.112	5.55	0.246	2160	0.925	0.756	3.18	2320	0.723	254	13.8	0.0219
Maximum	0.112	5.55	0.246	2160	0.925	0.756	3.18	2320	0.723	254	13.8	0.0219
% of values undetected	100%	100%										100%
# of values between MDL and MRL			1		1	1						
TE15												
Sample Date												
08/19/04	**0.0795**	**3.97**	**0.0795**	1970	3.42	**1.06**	6.70	3780	1.11	658	33.8	**0.0463**
Mean	0.0795	3.97	0.0795	1970	3.42	1.06	6.70	3780	1.11	658	33.8	0.0463
Median	0.0795	3.97	0.0795	1970	3.42	1.06	6.70	3780	1.11	658	33.8	0.0463
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.0795	3.97	0.0795	1970	3.42	1.06	6.70	3780	1.11	658	33.8	0.0463
Maximum	0.0795	3.97	0.0795	1970	3.42	1.06	6.70	3780	1.11	658	33.8	0.0463
% of values undetected	100%	100%	100%									
# of values between MDL and MRL						1						1

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE13										
Sample Date										
08/19/04	**0.382**	1.69	**169**	**0.841**	**0.0382**	275	**0.00765**	**1.23**	12.7	5.85
Mean	0.382	1.69	169	0.841	0.0382	275	0.00765	1.23	12.7	5.85
Median	0.382	1.69	169	0.841	0.0382	275	0.00765	1.23	12.7	5.85
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.382	1.69	169	0.841	0.0382	275	0.00765	1.23	12.7	5.85
Maximum	0.382	1.69	169	0.841	0.0382	275	0.00765	1.23	12.7	5.85
% of values undetected	100%				100%		100%	100%		
# of values between MDL and MRL			1	1						
TE14										
Sample Date										
08/19/04	**0.555**	**0.359**	**152**	**0.270**	**0.0555**	**301**	**0.0112**	**1.80**	**7.05**	6.64
Mean	0.555	0.359	152	0.270	0.0555	301	0.0112	1.80	7.05	6.64
Median	0.555	0.359	152	0.270	0.0555	301	0.0112	1.80	7.05	6.64
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.555	0.359	152	0.270	0.0555	301	0.0112	1.80	7.05	6.64
Maximum	0.555	0.359	152	0.2695	0.0555	301	0.0112	1.80	7.05	6.64
% of values undetected	100%	100%		1.000	100%		100%	100%		
# of values between MDL and MRL			1			1			1	
TE15										
Sample Date										
08/19/04	**0.397**	1.47	**146**	**0.571**	**0.0397**	313	**0.00795**	**1.28**	21.2	8.49
Mean	0.397	1.47	146	0.571	0.03965	313	0.00795	1.28	21.2	8.49
Median	0.397	1.47	146	0.571	0.03965	313	0.00795	1.28	21.2	8.49
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.397	1.47	146	0.571	0.03965	313	0.00795	1.28	21.2	8.49
Maximum	0.397	1.47	146	0.571	0.03965	313	0.00795	1.28	21.2	8.49
% of values undetected	100%				100%		100%	100%		
# of values between MDL and MRL			1	1						

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Total Solids	Total Organic Carbon	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium
	Wet	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE16												
Sample Date												
08/19/04	62.4	6.66	1.74	**0.244**	5.04	0.130	254	6840	**0.0239**	**0.439**	14.2	**0.0704**
Mean	62.4	6.66	1.74	0.244	5.04	0.130	254	6840	0.0239	0.439	14.2	0.0704
Median	62.4	6.66	1.74	0.244	5.04	0.130	254	6840	0.0239	0.439	14.2	0.0704
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	62.4	6.66	1.74	0.244	5.04	0.130	254	6840	0.0239	0.439	14.2	0.0704
Maximum	62.4	6.66	1.74	0.244	5.04	0.130	254	6840	0.0239	0.439	14.2	0.0704
% of values undetected				100%					100%	100%		
# of values between MDL and MRL												1
TE17												
Sample Date												
08/19/04	70.8	4.72	**0.214**	**0.214**	4.10	0.16	190	18400	**0.0547**	3.11	30.6	0.149
Mean	70.8	4.72	0.214	0.214	4.10	0.16	190	18400	0.0547	3.11	30.6	0.149
Median	70.8	4.72	0.214	0.214	4.10	0.16	190	18400	0.0547	3.11	30.6	0.149
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	70.8	4.72	0.214	0.214	4.10	0.16	190	18400	0.0547	3.11	30.6	0.149
Maximum	70.8	4.72	0.214	0.214	4.10	0.16	190	18400	0.0547	3.11	30.6	0.149
% of values undetected			100%	100%								
# of values between MDL and MRL									1			
Key:	**Bold Results** = Parameter undetected by test, value shown is 1/2 MDL or 1/2 MRL.											
	If result was not detected at the lab MDL, the value shown is 1/2 MDL.											
	If result was validation flagged U or UJ, the value shown is 1/2 MRL.											
	Green Results = Estimate result reported by laboratory below reporting limit (MRL).											
	MDL = Method Detection Limit.											
	MRL = Method Reporting Limit.											
	NA = Not Applicable.											
	Note: All results reported on dry weight basis, except total solids reported on wet weight basis.											

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION		Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury
		Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE16													
	Sample Date												
	08/19/04	**0.0478**	**2.39**	**0.0478**	1010	3.63	1.22	4.45	6370	1.44	372	63.8	0.0676
Mean		0.0478	2.39	0.0478	1010	3.63	1.22	4.45	6370	1.44	372	63.8	0.0676
Median		0.0478	2.39	0.0478	1010	3.63	1.22	4.45	6370	1.44	372	63.8	0.0676
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1
Minimum		0.0478	2.39	0.0478	1010	3.63	1.22	4.45	6370	1.44	372	63.8	0.0676
Maximum		0.0478	2.39	0.0478	1010	3.63	1.22	4.45	6370	1.44	372	63.8	0.0676
% of values undetected		100%	100%	100%									
# of values between MDL and MRL													
TE17													
	Sample Date												
	08/19/04	**0.0431**	**2.16**	**0.0431**	1860	9.05	2.89	18.2	19200	2.25	1870	97.8	**0.0391**
Mean		0.0431	2.16	0.0431	1860	9.05	2.89	18.2	19200	2.25	1870	97.8	0.0391
Median		0.0431	2.16	0.0431	1860	9.05	2.89	18.2	19200	2.25	1870	97.8	0.0391
St. Deviation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		1	1	1	1	1	1	1	1	1	1	1	1
Minimum		0.0431	2.16	0.0431	1860	9.05	2.89	18.2	19200	2.25	1870	97.8	0.0391
Maximum		0.0431	2.16	0.0431	1860	9.05	2.89	18.2	19200	2.25	1870	97.8	0.0391
% of values undetected		100%	100%	100%									
# of values between MDL and MRL													1

Appendix 10.4-B
Soil Samples Results Summary,Transportation-corridor Study Area, 2004

STATION	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TE16										
Sample Date										
08/19/04	**0.239**	1.28	**114**	**0.357**	**0.0239**	304	**0.0048**	**0.77**	27.4	7.66
Mean	0.239	1.28	114	0.357	0.02385	304	0.0048	0.77	27.4	7.66
Median	0.239	1.28	114	0.357	0.02385	304	0.0048	0.77	27.4	7.66
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	0.239	1.28	114	0.357	0.02385	304	0.0048	0.77	27.4	7.66
Maximum	0.239	1.28	114	0.357	0.02385	304	0.0048	0.77	27.4	7.66
% of values undetected	100%				100%		100%	100%		
# of values between MDL and MRL			1	1						
TE17										
Sample Date										
08/19/04	2.03	4.60	283	0.777	**0.0216**	419	**0.0043**	**0.695**	53.2	16.3
Mean	2.03	4.60	283	0.777	0.02155	419	0.0043	0.695	53.2	16.3
Median	2.03	4.60	283	0.777	0.02155	419	0.0043	0.695	53.2	16.3
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1
Minimum	2.03	4.60	283	0.777	0.02155	419	0.0043	0.695	53.2	16.3
Maximum	2.03	4.60	283	0.777	0.02155	419	0.0043	0.695	53.2	16.3
% of values undetected					100%		100%	100%		
# of values between MDL and MRL										

APPENDIX 10.4C

Vegetation Samples Results Summary, Transportation-corridor Study Area, 2004

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Alnus crispa-TE09																	
Sample Date																	
08/17/04	37.9	505	1230	225	**0.2**	34	60	**0.01**	**0.025**	7.8	**0.011**	**0.011**	**2.5**	**0.014**	11900	**0.7**	0.33
Mean	37.9	505	1230	225	0.2	34	60	0.01	0.025	7.8	0.011	0.011	2.5	0.014	11900	0.7	0.33
Median	37.9	505	1230	225	0.2	34	60	0.01	0.025	7.8	0.011	0.011	2.5	0.014	11900	0.7	0.33
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	37.9	505	1230	225	0.2	34	60	0.01	0.025	7.8	0.011	0.011	2.5	0.014	11900	0.7	0.33
Maximum	37.9	505	1230	225	0.2	34	60	0.01	0.025	7.8	0.011	0.011	2.5	0.014	11900	0.7	0.33
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%	0%	100%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0
Artemisia tilesii-TE09																	
Sample Date																	
08/17/04	28	3310	1720	2480	**0.2**	49.8	102	**0.01**	**0.025**	14.7	**0.005**	**0.008**	19.2	0.294	13100	**0.8**	0.19
Mean	28	3310	1720	2480	0.2	49.8	102	0.01	0.025	14.7	0.005	0.008	19.2	0.294	13100	0.8	0.19
Median	28	3310	1720	2480	0.2	49.8	102	0.01	0.025	14.7	0.005	0.008	19.2	0.294	13100	0.8	0.19
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	28	3310	1720	2480	0.2	49.8	102	0.01	0.025	14.7	0.005	0.008	19.2	0.294	13100	0.8	0.19
Maximum	28	3310	1720	2480	0.2	49.8	102	0.01	0.025	14.7	0.005	0.008	19.2	0.294	13100	0.8	0.19
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0
Betula glandulosa-TE03																	
Sample Date																	
08/17/04	40.9	**69**	1080	91	**0.2**	264	16.6	**0.01**	**0.025**	11.8	**0.0015**	**0.008**	7.4	**0.016**	2990	**0.3**	0.07
Mean	40.9	69	1080	91	0.2	264	16.6	0.01	0.025	11.8	0.0015	0.008	7.4	0.016	2990	0.3	0.07
Median	40.9	69	1080	91	0.2	264	16.6	0.01	0.025	11.8	0.0015	0.008	7.4	0.016	2990	0.3	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	40.9	69	1080	91	0.2	264	16.6	0.01	0.025	11.8	0.0015	0.008	7.4	0.016	2990	0.3	0.07
Maximum	40.9	69	1080	91	0.2	264	16.6	0.01	0.025	11.8	0.0015	0.008	7.4	0.016	2990	0.3	0.07
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	0%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Alnus crispa-TE09																
Sample Date																
08/17/04	5.73	163	0.07	1840	265	0.076	0.25	1.84	10500	**0.05**	**0.005**	**5**	**0.001**	**2.5**	**0.17** J	14.8
Mean	5.73	163	0.07	1840	265	0.076	0.25	1.84	10500	0.05	0.005	5	0.001	2.5	0.17	14.8
Median	5.73	163	0.07	1840	265	0.076	0.25	1.84	10500	0.05	0.005	5	0.001	2.5	0.17	14.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	5.73	163	0.07	1840	265	0.076	0.25	1.84	10500	0.05	0.005	5	0.001	2.5	0.17	14.8
Maximum	5.73	163	0.07	1840	265	0.076	0.25	1.84	10500	0.05	0.005	5	0.001	2.5	0.17	14.8
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Artemisia tilesii-TE09																
Sample Date																
08/17/04	12.6	148	0.49	2180	105	0.039	1.91	1.59	23900	**0.05**	**0.016**	13.9	**0.001**	**2.5**	0.32	23.8
Mean	12.6	148	0.49	2180	105	0.039	1.91	1.59	23900	0.05	0.016	13.9	0.001	2.5	0.32	23.8
Median	12.6	148	0.49	2180	105	0.039	1.91	1.59	23900	0.05	0.016	13.9	0.001	2.5	0.32	23.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	12.6	148	0.49	2180	105	0.039	1.91	1.59	23900	0.05	0.016	13.9	0.001	2.5	0.32	23.8
Maximum	12.6	148	0.49	2180	105	0.039	1.91	1.59	23900	0.05	0.016	13.9	0.001	2.5	0.32	23.8
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Betula glandulosa-TE03																
Sample Date																
08/17/04	4.09	56.9	**0.04**	1820	426	0.081	**0.025**	1.15	6740	**0.1**	**0.002**	**5**	**0.003**	**2.5**	**0.13** J	15.1
Mean	4.09	56.9	0.04	1820	426	0.081	0.025	1.15	6740	0.1	0.002	5	0.003	2.5	0.13	15.1
Median	4.09	56.9	0.04	1820	426	0.081	0.025	1.15	6740	0.1	0.002	5	0.003	2.5	0.13	15.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.09	56.9	0.04	1820	426	0.081	0.025	1.15	6740	0.1	0.002	5	0.003	2.5	0.13	15.1
Maximum	4.09	56.9	0.04	1820	426	0.081	0.025	1.15	6740	0.1	0.002	5	0.003	2.5	0.13	15.1
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	100%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Betula glandulosa-TE04																	
Sample Date																	
08/20/04	33.3	122	2	120	**0.1**	91	19.7	0.02	**0.025**	54	**0.0015**	**0.025**	7.7	0.023	4700	0.3	0.11
Mean	33.3	122	2	120	0.1	91	19.7	0.02	0.025	54	0.0015	0.025	7.7	0.023	4700	0.3	0.11
Median	33.3	122	2	120	0.1	91	19.7	0.02	0.025	54	0.0015	0.025	7.7	0.023	4700	0.3	0.11
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	33.3	122	2	120	0.1	91	19.7	0.02	0.025	54	0.0015	0.025	7.7	0.023	4700	0.3	0.11
Maximum	33.3	122	2	120	0.1	91	19.7	0.02	0.025	54	0.0015	0.025	7.7	0.023	4700	0.3	0.11
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	1	0	1	0	0	0	1	0	0	0	0	0	1	0	1	0
Betula glandulosa-TE08																	
Sample Date																	
08/17/04	44.2	183	1210	112	**0.12**	204	**2**	**0.01**	**0.025**	9.8	**0.0015**	**0.0035**	21.7	0.056	4390	**0.1**	0.1
Mean	44.2	183	1210	112	0.12	204	2	0.01	0.025	9.8	0.0015	0.0035	21.7	0.056	4390	0.1	0.1
Median	44.2	183	1210	112	0.12	204	2	0.01	0.025	9.8	0.0015	0.0035	21.7	0.056	4390	0.1	0.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	44.2	183	1210	112	0.12	204	2	0.01	0.025	9.8	0.0015	0.0035	21.7	0.056	4390	0.1	0.1
Maximum	44.2	183	1210	112	0.12	204	2	0.01	0.025	9.8	0.0015	0.0035	21.7	0.056	4390	0.1	0.1
% of values undetected	0%	0%	0%	0%	0%	0%	100%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Betula nana-TE01																	
Sample Date																	
08/17/04	49.4	135	**1**	151	**0.3**	156	12	**0.03**	**0.025**	20.1	**0.0015**	**0.005**	12	0.11	2730	**0.5**	0.22
Mean	49.4	135	1	151	0.3	156	12	0.03	0.025	20.1	0.0015	0.005	12	0.11	2730	0.5	0.22
Median	49.4	135	1	151	0.3	156	12	0.03	0.025	20.1	0.0015	0.005	12	0.11	2730	0.5	0.22
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	49.4	135	1	151	0.3	156	12	0.03	0.025	20.1	0.0015	0.005	12	0.11	2730	0.5	0.22
Maximum	49.4	135	1	151	0.3	156	12	0.03	0.025	20.1	0.0015	0.005	12	0.11	2730	0.5	0.22
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Betula glandulosa-TE04																
Sample Date																
08/20/04	3.69	37.4	0.07	2840	184	0.044	**0.025**	2.79	4980	**0.4**	**0.003**	20.2	**0.01**	**2.45**	**0.16** J	13.4
Mean	3.69	37.4	0.07	2840	184	0.044	0.025	2.79	4980	0.4	0.003	20.2	0.01	2.45	0.16	13.4
Median	3.69	37.4	0.07	2840	184	0.044	0.025	2.79	4980	0.4	0.003	20.2	0.01	2.45	0.16	13.4
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.69	37.4	0.07	2840	184	0.044	0.025	2.79	4980	0.4	0.003	20.2	0.01	2.45	0.16	13.4
Maximum	3.69	37.4	0.07	2840	184	0.044	0.025	2.79	4980	0.4	0.003	20.2	0.01	2.45	0.16	13.4
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0
Betula glandulosa-TE08																
Sample Date																
08/17/04	3.12	36.3	**0.04**	2190	593	0.069	0.09	0.45	7010	**0.05**	**0.002**	10.1	**0.001**	**2.5**	**0.15** J	83.6
Mean	3.12	36.3	0.04	2190	593	0.069	0.09	0.45	7010	0.05	0.002	10.1	0.001	2.5	0.15	83.6
Median	3.12	36.3	0.04	2190	593	0.069	0.09	0.45	7010	0.05	0.002	10.1	0.001	2.5	0.15	83.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.12	36.3	0.04	2190	593	0.069	0.09	0.45	7010	0.05	0.002	10.1	0.001	2.5	0.15	83.6
Maximum	3.12	36.3	0.04	2190	593	0.069	0.09	0.45	7010	0.05	0.002	10.1	0.001	2.5	0.15	83.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Betula nana-TE01																
Sample Date																
08/17/04	4.02	39.6	0.09	1690	600	0.044	**0.005**	0.89	5150	**0.1**	**0.004**	**4.9**	**0.003**	**2.45**	**0.08** J	141
Mean	4.02	39.6	0.09	1690	600	0.044	0.005	0.89	5150	0.1	0.004	4.9	0.003	2.45	0.08	141
Median	4.02	39.6	0.09	1690	600	0.044	0.005	0.89	5150	0.1	0.004	4.9	0.003	2.45	0.08	141
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.02	39.6	0.09	1690	600	0.044	0.005	0.89	5150	0.1	0.004	4.9	0.003	2.45	0.08	141
Maximum	4.02	39.6	0.09	1690	600	0.044	0.005	0.89	5150	0.1	0.004	4.9	0.003	2.45	0.08	141
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Betula nana-TE04																	
Sample Date																	
08/20/04	39.3	**124**	**1.7**	247	4.2	32	13.2	**0.03**	**0.025**	26.5	**0.0015**	**0.005**	9.1	**0.025**	2710	**0.1**	0.15
Mean	39.3	124	1.7	247	4.2	32	13.2	0.03	0.025	26.5	0.0015	0.005	9.1	0.025	2710	0.1	0.15
Median	39.3	124	1.7	247	4.2	32	13.2	0.03	0.025	26.5	0.0015	0.005	9.1	0.025	2710	0.1	0.15
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	39.3	124	1.7	247	4.2	32	13.2	0.03	0.025	26.5	0.0015	0.005	9.1	0.025	2710	0.1	0.15
Maximum	39.3	124	1.7	247	4.2	32	13.2	0.03	0.025	26.5	0.0015	0.005	9.1	0.025	2710	0.1	0.15
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	1	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0
Betula nana-TE08																	
Sample Date																	
08/17/04	48.1	94	684	**47**	**0.2**	44.7	6.9	**0.01**	**0.025**	6.4	**0.0015**	**0.0035**	20.6	**0.035**	2990	**0.1**	0.07
Mean	48.1	94	684	47	0.2	44.7	6.9	0.01	0.025	6.4	0.0015	0.0035	20.6	0.035	2990	0.1	0.07
Median	48.1	94	684	47	0.2	44.7	6.9	0.01	0.025	6.4	0.0015	0.0035	20.6	0.035	2990	0.1	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	48.1	94	684	47	0.2	44.7	6.9	0.01	0.025	6.4	0.0015	0.0035	20.6	0.035	2990	0.1	0.07
Maximum	48.1	94	684	47	0.2	44.7	6.9	0.01	0.025	6.4	0.0015	0.0035	20.6	0.035	2990	0.1	0.07
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
Betula nana-TE12																	
Sample Date																	
08/21/04	56.3	**85**	**0.6**	325	**0.045**	197	8.1	**0.025**	**0.025**	17	**0.0015**	**0.0035**	18.8	0.083	3770	**0.1**	0.11
Mean	56.3	85	0.6	325	0.045	197	8.1	0.025	0.025	17	0.0015	0.0035	18.8	0.083	3770	0.1	0.11
Median	56.3	85	0.6	325	0.045	197	8.1	0.025	0.025	17	0.0015	0.0035	18.8	0.083	3770	0.1	0.11
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	56.3	85	0.6	325	0.045	197	8.1	0.025	0.025	17	0.0015	0.0035	18.8	0.083	3770	0.1	0.11
Maximum	56.3	85	0.6	325	0.045	197	8.1	0.025	0.025	17	0.0015	0.0035	18.8	0.083	3770	0.1	0.11
% of values undetected	0%	0%	100%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Betula nana-TE04																
Sample Date																
08/20/04	4.42	31.1	0.13	2280	262	0.042	**0.025**	2.45	4890	**0.3**	**0.008**	14.4	**0.01**	**2.5**	**0.1** J	25.7
Mean	4.42	31.1	0.13	2280	262	0.042	0.025	2.45	4890	0.3	0.008	14.4	0.01	2.5	0.1	25.7
Median	4.42	31.1	0.13	2280	262	0.042	0.025	2.45	4890	0.3	0.008	14.4	0.01	2.5	0.1	25.7
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.42	31.1	0.13	2280	262	0.042	0.025	2.45	4890	0.3	0.008	14.4	0.01	2.5	0.1	25.7
Maximum	4.42	31.1	0.13	2280	262	0.042	0.025	2.45	4890	0.3	0.008	14.4	0.01	2.5	0.1	25.7
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0
Betula nana-TE08																
Sample Date																
08/17/04	2.97	36.1	0.05	1430	381	0.071	0.06	0.44	6830	**0.05**	**0.002**	15.6	**0.001**	**2.5**	**0.05** J	53.6
Mean	2.97	36.1	0.05	1430	381	0.071	0.06	0.44	6830	0.05	0.002	15.6	0.001	2.5	0.05	53.6
Median	2.97	36.1	0.05	1430	381	0.071	0.06	0.44	6830	0.05	0.002	15.6	0.001	2.5	0.05	53.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.97	36.1	0.05	1430	381	0.071	0.06	0.44	6830	0.05	0.002	15.6	0.001	2.5	0.05	53.6
Maximum	2.97	36.1	0.05	1430	381	0.071	0.06	0.44	6830	0.05	0.002	15.6	0.001	2.5	0.05	53.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Betula nana-TE12																
Sample Date																
08/21/04	4.28	33.8	0.07	1270	113	0.041	0.09	0.53	6030	**0.05**	**0.0015**	12.8	**0.001**	**2.45**	**0.08** J	296
Mean	4.28	33.8	0.07	1270	113	0.041	0.09	0.53	6030	0.05	0.0015	12.8	0.001	2.45	0.08	296
Median	4.28	33.8	0.07	1270	113	0.041	0.09	0.53	6030	0.05	0.0015	12.8	0.001	2.45	0.08	296
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.28	33.8	0.07	1270	113	0.041	0.09	0.53	6030	0.05	0.0015	12.8	0.001	2.45	0.08	296
Maximum	4.28	33.8	0.07	1270	113	0.041	0.09	0.53	6030	0.05	0.0015	12.8	0.001	2.45	0.08	296
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Betula nana-TE13																	
Sample Date																	
08/19/04	47.5	**105**	**0.4**	197	**0.55**	110	**4.5**	0.06	**0.025**	8	**0.0015**	**0.0035**	9.6	**0.025**	2970	**0.4**	0.11
Mean	47.5	105	0.4	197	0.55	110	4.5	0.06	0.025	8	0.0015	0.0035	9.6	0.025	2970	0.4	0.11
Median	47.5	105	0.4	197	0.55	110	4.5	0.06	0.025	8	0.0015	0.0035	9.6	0.025	2970	0.4	0.11
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	47.5	105	0.4	197	0.55	110	4.5	0.06	0.025	8	0.0015	0.0035	9.6	0.025	2970	0.4	0.11
Maximum	47.5	105	0.4	197	0.55	110	4.5	0.06	0.025	8	0.0015	0.0035	9.6	0.025	2970	0.4	0.11
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	0%	0%
# of values between MDL and MRL	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0
Betula nana-TE15																	
Sample Date																	
08/19/04	44.1	**120**	**0.4**	455	**0.55**	419	10.7	**0.01**	**0.025**	12.8	**0.0015**	**0.0035**	26.3	0.062	3010	**0.1**	0.29
Mean	44.1	120	0.4	455	0.55	419	10.7	0.01	0.025	12.8	0.0015	0.0035	26.3	0.062	3010	0.1	0.29
Median	44.1	120	0.4	455	0.55	419	10.7	0.01	0.025	12.8	0.0015	0.0035	26.3	0.062	3010	0.1	0.29
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	44.1	120	0.4	455	0.55	419	10.7	0.01	0.025	12.8	0.0015	0.0035	26.3	0.062	3010	0.1	0.29
Maximum	44.1	120	0.4	455	0.55	419	10.7	0.01	0.025	12.8	0.0015	0.0035	26.3	0.062	3010	0.1	0.29
% of values undetected					100%			100%	100%		100%	100%				100%	
# of values between MDL and MRL		1	1														
Betula nana-TE16																	
Sample Date																	
08/19/04	40.1	110	1000	383	**0.25**	256	102	0.1	**0.025**	9.9	**0.0015**	**0.0035**	10.4	**0.025**	3560	**0.5**	0.27
Mean	40.1	110	1000	383	0.25	256	102	0.1	0.025	9.9	0.0015	0.0035	10.4	0.025	3560	0.5	0.27
Median	40.1	110	1000	383	0.25	256	102	0.1	0.025	9.9	0.0015	0.0035	10.4	0.025	3560	0.5	0.27
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	40.1	110	1000	383	0.25	256	102	0.1	0.025	9.9	0.0015	0.0035	10.4	0.025	3560	0.5	0.27
Maximum	40.1	110	1000	383	0.25	256	102	0.1	0.025	9.9	0.0015	0.0035	10.4	0.025	3560	0.5	0.27
% of values undetected					100%				100%		100%	100%		100%			
# of values between MDL and MRL																1	

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Betula nana-TE13																
Sample Date																
08/19/04	5.91	35.3	0.05	1650	375	0.052	**0.005**	0.77	4960	**0.05**	**0.0015**	12.9	**0.001**	**2.5**	**0.1** U	26.1
Mean	5.91	35.3	0.05	1650	375	0.052	0.005	0.77	4960	0.05	0.0015	12.9	0.001	2.5	0.1	26.1
Median	5.91	35.3	0.05	1650	375	0.052	0.005	0.77	4960	0.05	0.0015	12.9	0.001	2.5	0.1	26.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	5.91	35.3	0.05	1650	375	0.052	0.005	0.77	4960	0.05	0.0015	12.9	0.001	2.5	0.1	26.1
Maximum	5.91	35.3	0.05	1650	375	0.052	0.005	0.77	4960	0.05	0.0015	12.9	0.001	2.5	0.1	26.1
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betula nana-TE15																
Sample Date																
08/19/04	3.24	40	0.05	1330	1890	0.047	**0.025**	0.71	5940	**0.05**	**0.0015**	10.5	**0.001**	**2.45**	**0.1** U	103
Mean	3.24	40	0.05	1330	1890	0.047	0.025	0.71	5940	0.05	0.0015	10.5	0.001	2.45	0.1	103
Median	3.24	40	0.05	1330	1890	0.047	0.025	0.71	5940	0.05	0.0015	10.5	0.001	2.45	0.1	103
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.24	40	0.05	1330	1890	0.047	0.025	0.71	5940	0.05	0.0015	10.5	0.001	2.45	0.1	103
Maximum	3.24	40	0.05	1330	1890	0.047	0.025	0.71	5940	0.05	0.0015	10.5	0.001	2.45	0.1	103
% of values undetected							100%			100%	100%		100%	100%	100%	
# of values between MDL and MRL																
Betula nana-TE16																
Sample Date																
08/19/04	4.81	93.9	0.09	2190	785	0.053	**0.025**	1.4	6800	**0.1**	**0.005**	19.5	0.021	**1.5**	0.32	126
Mean	4.81	93.9	0.09	2190	785	0.053	0.025	1.4	6800	0.1	0.005	19.5	0.021	1.5	0.32	126
Median	4.81	93.9	0.09	2190	785	0.053	0.025	1.4	6800	0.1	0.005	19.5	0.021	1.5	0.32	126
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.81	93.9	0.09	2190	785	0.053	0.025	1.4	6800	0.1	0.005	19.5	0.021	1.5	0.32	126
Maximum	4.81	93.9	0.09	2190	785	0.053	0.025	1.4	6800	0.1	0.005	19.5	0.021	1.5	0.32	126
% of values undetected							100%							100%		
# of values between MDL and MRL										1	1					

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Betula papyrifera-TE06																	
Sample Date																	
08/20/04	38	160	2.6	670	0.8	95	7	**0.01**	**0.52**	46.1	**0.0015**	0.11	21.1	0.113	7090	**0.15**	0.23
Mean	38	160	2.6	670	0.8	95	7	0.01	0.52	46.1	0.0015	0.11	21.1	0.113	7090	0.15	0.23
Median	38	160	2.6	670	0.8	95	7	0.01	0.52	46.1	0.0015	0.11	21.1	0.113	7090	0.15	0.23
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	38	160	2.6	670	0.8	95	7	0.01	0.52	46.1	0.0015	0.11	21.1	0.113	7090	0.15	0.23
Maximum	38	160	2.6	670	0.8	95	7	0.01	0.52	46.1	0.0015	0.11	21.1	0.113	7090	0.15	0.23
% of values undetected	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Betula papyrifera-TE11																	
Sample Date																	
08/21/04	54.7	194	**0.6**	280	**0.045**	139	9.8	**0.025**	**0.025**	6.8	**0.0015**	**0.0035**	6.2	**0.011**	2350	**0.1**	0.07
Mean	54.7	194	0.6	280	0.045	139	9.8	0.025	0.025	6.8	0.0015	0.0035	6.2	0.011	2350	0.1	0.07
Median	54.7	194	0.6	280	0.045	139	9.8	0.025	0.025	6.8	0.0015	0.0035	6.2	0.011	2350	0.1	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	54.7	194	0.6	280	0.045	139	9.8	0.025	0.025	6.8	0.0015	0.0035	6.2	0.011	2350	0.1	0.07
Maximum	54.7	194	0.6	280	0.045	139	9.8	0.025	0.025	6.8	0.0015	0.0035	6.2	0.011	2350	0.1	0.07
% of values undetected	0%	0%	100%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Betula papyrifera-TE12																	
Sample Date																	
08/21/04	49.7	229	**0.6**	110	**0.045**	230	7.1	**0.01**	**0.025**	103	**0.0015**	**0.0035**	30.9	0.393	10200	**0.1**	0.13
Mean	49.7	229	0.6	110	0.045	230	7.1	0.01	0.025	103	0.0015	0.0035	30.9	0.393	10200	0.1	0.13
Median	49.7	229	0.6	110	0.045	230	7.1	0.01	0.025	103	0.0015	0.0035	30.9	0.393	10200	0.1	0.13
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	49.7	229	0.6	110	0.045	230	7.1	0.01	0.025	103	0.0015	0.0035	30.9	0.393	10200	0.1	0.13
Maximum	49.7	229	0.6	110	0.045	230	7.1	0.01	0.025	103	0.0015	0.0035	30.9	0.393	10200	0.1	0.13
% of values undetected	0%	0%	100%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Betula papyrifera-TE06																
Sample Date																
08/20/04	3.26	55.9	0.14	2570	529	0.049	0.06	1.69	6040	**1.8**	**0.0015**	13.7	**0.01**	**2.5**	**0.57** J	83.2
Mean	3.26	55.9	0.14	2570	529	0.049	0.06	1.69	6040	1.8	0.0015	13.7	0.01	2.5	0.57	83.2
Median	3.26	55.9	0.14	2570	529	0.049	0.06	1.69	6040	1.8	0.0015	13.7	0.01	2.5	0.57	83.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.26	55.9	0.14	2570	529	0.049	0.06	1.69	6040	1.8	0.0015	13.7	0.01	2.5	0.57	83.2
Maximum	3.26	55.9	0.14	2570	529	0.049	0.06	1.69	6040	1.8	0.0015	13.7	0.01	2.5	0.57	83.2
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Betula papyrifera-TE11																
Sample Date																
08/21/04	3.54	35.5	**0.03**	1240	367	0.044	**0.005**	0.91	5490	**0.2**	**0.003**	10.8	**0.001**	**2.45**	**0.14** J	44.8
Mean	3.54	35.5	0.03	1240	367	0.044	0.005	0.91	5490	0.2	0.003	10.8	0.001	2.45	0.14	44.8
Median	3.54	35.5	0.03	1240	367	0.044	0.005	0.91	5490	0.2	0.003	10.8	0.001	2.45	0.14	44.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.54	35.5	0.03	1240	367	0.044	0.005	0.91	5490	0.2	0.003	10.8	0.001	2.45	0.14	44.8
Maximum	3.54	35.5	0.03	1240	367	0.044	0.005	0.91	5490	0.2	0.003	10.8	0.001	2.45	0.14	44.8
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1	0
Betula papyrifera-TE12																
Sample Date																
08/21/04	4.01	37.5	0.06	3490	267	0.056	0.05	1.05	6470	**0.05**	**0.0015**	16.9	**0.005**	**2.45**	**0.09** J	474
Mean	4.01	37.5	0.06	3490	267	0.056	0.05	1.05	6470	0.05	0.0015	16.9	0.005	2.45	0.09	474
Median	4.01	37.5	0.06	3490	267	0.056	0.05	1.05	6470	0.05	0.0015	16.9	0.005	2.45	0.09	474
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.01	37.5	0.06	3490	267	0.056	0.05	1.05	6470	0.05	0.0015	16.9	0.005	2.45	0.09	474
Maximum	4.01	37.5	0.06	3490	267	0.056	0.05	1.05	6470	0.05	0.0015	16.9	0.005	2.45	0.09	474
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Calamagrostis sp.-TE06																	
Sample Date																	
08/20/04	23.1	3780	**2.6**	1930	**0.1**	1980	**4.9**	**0.01**	**0.025**	26.4	**0.0015**	**0.005**	**3.1**	**0.022**	5080	**0.5**	0.08
Mean	23.1	3780	2.6	1930	0.1	1980	4.9	0.01	0.025	26.4	0.0015	0.005	3.1	0.022	5080	0.5	0.08
Median	23.1	3780	2.6	1930	0.1	1980	4.9	0.01	0.025	26.4	0.0015	0.005	3.1	0.022	5080	0.5	0.08
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	23.1	3780	2.6	1930	0.1	1980	4.9	0.01	0.025	26.4	0.0015	0.005	3.1	0.022	5080	0.5	0.08
Maximum	23.1	3780	2.6	1930	0.1	1980	4.9	0.01	0.025	26.4	0.0015	0.005	3.1	0.022	5080	0.5	0.08
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	1	0	0	0	0	0	1	1	0	1	0
Calamagrostis sp.-TE09																	
Sample Date																	
08/17/04	41.2	3050	441	940	**0.21**	38.1	77.9	**0.01**	**0.025**	21.4	**0.0015**	**0.0035**	**2.5**	**0.047**	5190	**0.9**	0.09
Mean	41.2	3050	441	940	0.21	38.1	77.9	0.01	0.025	21.4	0.0015	0.0035	2.5	0.047	5190	0.9	0.09
Median	41.2	3050	441	940	0.21	38.1	77.9	0.01	0.025	21.4	0.0015	0.0035	2.5	0.047	5190	0.9	0.09
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	41.2	3050	441	940	0.21	38.1	77.9	0.01	0.025	21.4	0.0015	0.0035	2.5	0.047	5190	0.9	0.09
Maximum	41.2	3050	441	940	0.21	38.1	77.9	0.01	0.025	21.4	0.0015	0.0035	2.5	0.047	5190	0.9	0.09
% of values undetected	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	100%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0
Calamagrostis sp.-TE13																	
Sample Date																	
08/19/04	50.8	2050	**0.3**	458	**0.55**	1060	61.9	**0.03**	**0.025**	12.6	**0.0015**	**0.0035**	18.3	**0.025**	1490	**0.8**	0.04
Mean	50.8	2050	0.3	458	0.55	1060	61.9	0.03	0.025	12.6	0.0015	0.0035	18.3	0.025	1490	0.8	0.04
Median	50.8	2050	0.3	458	0.55	1060	61.9	0.03	0.025	12.6	0.0015	0.0035	18.3	0.025	1490	0.8	0.04
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	50.8	2050	0.3	458	0.55	1060	61.9	0.03	0.025	12.6	0.0015	0.0035	18.3	0.025	1490	0.8	0.04
Maximum	50.8	2050	0.3	458	0.55	1060	61.9	0.03	0.025	12.6	0.0015	0.0035	18.3	0.025	1490	0.8	0.04
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Calamagrostis sp.-TE06																
Sample Date																
08/20/04	2.27	47	0.11	1210	466	0.028	0.61	7	9350	**0.05**	**0.0015**	18.1	0.021	**2.5**	**0.11** J	19.4
Mean	2.27	47	0.11	1210	466	0.028	0.61	7	9350	0.05	0.0015	18.1	0.021	2.5	0.11	19.4
Median	2.27	47	0.11	1210	466	0.028	0.61	7	9350	0.05	0.0015	18.1	0.021	2.5	0.11	19.4
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.27	47	0.11	1210	466	0.028	0.61	7	9350	0.05	0.0015	18.1	0.021	2.5	0.11	19.4
Maximum	2.27	47	0.11	1210	466	0.028	0.61	7	9350	0.05	0.0015	18.1	0.021	2.5	0.11	19.4
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Calamagrostis sp.-TE09																
Sample Date																
08/17/04	2.98	110	0.18	900	129	0.032	1.17	0.87	14200	**0.05**	**0.002**	10.1	**0.001**	**2.5**	0.23	11.7
Mean	2.98	110	0.18	900	129	0.032	1.17	0.87	14200	0.05	0.002	10.1	0.001	2.5	0.23	11.7
Median	2.98	110	0.18	900	129	0.032	1.17	0.87	14200	0.05	0.002	10.1	0.001	2.5	0.23	11.7
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.98	110	0.18	900	129	0.032	1.17	0.87	14200	0.05	0.002	10.1	0.001	2.5	0.23	11.7
Maximum	2.98	110	0.18	900	129	0.032	1.17	0.87	14200	0.05	0.002	10.1	0.001	2.5	0.23	11.7
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calamagrostis sp.-TE13																
Sample Date																
08/19/04	5.37	40.7	0.07	703	297	0.034	**0.025**	0.59	9120	**0.05**	**0.0015**	33.7	**0.009**	**2.5**	**0.1** U	24.7
Mean	5.37	40.7	0.07	703	297	0.034	0.025	0.59	9120	0.05	0.0015	33.7	0.009	2.5	0.1	24.7
Median	5.37	40.7	0.07	703	297	0.034	0.025	0.59	9120	0.05	0.0015	33.7	0.009	2.5	0.1	24.7
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	5.37	40.7	0.07	703	297	0.034	0.025	0.59	9120	0.05	0.0015	33.7	0.009	2.5	0.1	24.7
Maximum	5.37	40.7	0.07	703	297	0.034	0.025	0.59	9120	0.05	0.0015	33.7	0.009	2.5	0.1	24.7
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%	100%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Calamagrostis sp.-TE16																	
Sample Date																	
08/19/04	40.0	1540	**2.8**	**386**	**0.25**	1060	55.9	0.09	**0.025**	32.9	**0.0015**	**0.0035**	13.7	**0.025**	3300	**0.9**	0.09
Mean	40.0	1540	2.8	386	0.25	1060	55.9	0.09	0.025	32.9	0.0015	0.0035	13.7	0.025	3300	0.9	0.09
Median	40.0	1540	2.8	386	0.25	1060	55.9	0.09	0.025	32.9	0.0015	0.0035	13.7	0.025	3300	0.9	0.09
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	40	1540	2.8	386	0.25	1060	55.9	0.09	0.025	32.9	0.0015	0.0035	13.7	0.025	3300	0.9	0.09
Maximum	40	1540	2.8	386	0.25	1060	55.9	0.09	0.025	32.9	0.0015	0.0035	13.7	0.025	3300	0.9	0.09
% of values undetected					100%				100%		100%	100%		100%			
# of values between MDL and MRL			1	1												1	
Carex aquatilis-TE14																	
Sample Date																	
08/19/04	34.2	1310	**0.4**	2010	**0.55**	410	7.1	**0.01**	**0.025**	60.7	**0.0015**	**0.0035**	21.6	**0.0245**	3790	1.1	0.05
Mean	34.2	1310	0.4	2010	0.55	410	7.1	0.01	0.025	60.7	0.0015	0.0035	21.6	0.0245	3790	1.1	0.05
Median	34.2	1310	0.4	2010	0.55	410	7.1	0.01	0.025	60.7	0.0015	0.0035	21.6	0.0245	3790	1.1	0.05
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	34.2	1310	0.4	2010	0.55	410	7.1	0.01	0.025	60.7	0.0015	0.0035	21.6	0.0245	3790	1.1	0.05
Maximum	34.2	1310	0.4	2010	0.55	410	7.1	0.01	0.025	60.7	0.0015	0.0035	21.6	0.0245	3790	1.1	0.05
% of values undetected					100%			100%	100%		100%	100%		100%			
# of values between MDL and MRL			1														
Chamerion angustifolium-TE06																	
Sample Date																	
08/20/04	21.1	6820	**3**	374	**0.1**	2290	14.8	**0.01**	**0.09**	16.7	**0.0015**	**0.025**	42	**0.015**	16200	**0.15**	0.18
Mean	21.1	6820	3	374	0.1	2290	14.8	0.01	0.09	16.7	0.0015	0.025	42	0.015	16200	0.15	0.18
Median	21.1	6820	3	374	0.1	2290	14.8	0.01	0.09	16.7	0.0015	0.025	42	0.015	16200	0.15	0.18
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	21.1	6820	3	374	0.1	2290	14.8	0.01	0.09	16.7	0.0015	0.025	42	0.015	16200	0.15	0.18
Maximum	21.1	6820	3	374	0.1	2290	14.8	0.01	0.09	16.7	0.0015	0.025	42	0.015	16200	0.15	0.18
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Calamagrostis sp.-TE16																
Sample Date																
08/19/04	4.64	64.5	0.07	1200	329	0.036	0.19	0.99	9740	**0.05**	**0.004**	42.1	**0.005**	**1.5**	0.23	18.9
Mean	4.64	64.5	0.07	1200	329	0.036	0.19	0.99	9740	0.05	0.004	42.1	0.005	1.5	0.23	18.9
Median	4.64	64.5	0.07	1200	329	0.036	0.19	0.99	9740	0.05	0.004	42.1	0.005	1.5	0.23	18.9
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.64	64.5	0.07	1200	329	0.036	0.19	0.99	9740	0.05	0.004	42.1	0.005	1.5	0.23	18.9
Maximum	4.64	64.5	0.07	1200	329	0.036	0.19	0.99	9740	0.05	0.004	42.1	0.005	1.5	0.23	18.9
% of values undetected										100%				100%		
# of values between MDL and MRL											1		1			
Carex aquatilis-TE14																
Sample Date																
08/19/04	2.68	108	0.05	1100	195	0.032	0.77	0.6	13300	**0.05**	**0.005**	22.3	**0.001**	**2.5**	**0.1** U	31.2
Mean	2.68	108	0.05	1100	195	0.032	0.77	0.6	13300	0.05	0.005	22.3	0.001	2.5	0.1	31.2
Median	2.68	108	0.05	1100	195	0.032	0.77	0.6	13300	0.05	0.005	22.3	0.001	2.5	0.1	31.2
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.68	108	0.05	1100	195	0.032	0.77	0.6	13300	0.05	0.005	22.3	0.001	2.5	0.1	31.2
Maximum	2.68	108	0.05	1100	195	0.032	0.77	0.6	13300	0.05	0.005	22.3	0.001	2.5	0.1	31.2
% of values undetected										100%			100%	100%	100%	
# of values between MDL and MRL											1					
Chamerion angustifolium-TE06																
Sample Date																
08/20/04	7.5	67.4	0.12	4290	166	0.139	**0.025**	2.52	13500	**0.3**	**0.0015**	30.1	0.043	**2.5**	**0.17** J	44
Mean	7.5	67.4	0.12	4290	166	0.139	0.025	2.52	13500	0.3	0.0015	30.1	0.043	2.5	0.17	44
Median	7.5	67.4	0.12	4290	166	0.139	0.025	2.52	13500	0.3	0.0015	30.1	0.043	2.5	0.17	44
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	7.5	67.4	0.12	4290	166	0.139	0.025	2.52	13500	0.3	0.0015	30.1	0.043	2.5	0.17	44
Maximum	7.5	67.4	0.12	4290	166	0.139	0.025	2.52	13500	0.3	0.0015	30.1	0.043	2.5	0.17	44
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Chamerion angustifolium-TE0																	
Sample Date																	
08/17/04	27.8	4460	986	1980	**0.11**	99.9	562	**0.01**	**0.06**	28.7	0.121	**0.0035**	12.3	**0.032**	31000	**0.15**	0.34
Mean	27.8	4460	986	1980	0.11	99.9	562	0.01	0.06	28.7	0.121	0.0035	12.3	0.032	31000	0.15	0.34
Median	27.8	4460	986	1980	0.11	99.9	562	0.01	0.06	28.7	0.121	0.0035	12.3	0.032	31000	0.15	0.34
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	27.8	4460	986	1980	0.11	99.9	562	0.01	0.06	28.7	0.121	0.0035	12.3	0.032	31000	0.15	0.34
Maximum	27.8	4460	986	1980	0.11	99.9	562	0.01	0.06	28.7	0.121	0.0035	12.3	0.032	31000	0.15	0.34
% of values undetected	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0
Chamerion angustifolium-TE12																	
Sample Date																	
08/21/04	36.3	5820	**1.4**	5820	**0.045**	354	11.4	**0.025**	**0.025**	10.2	**0.0015**	**0.0035**	59	**0.019**	11400	**0.1**	0.09
Mean	36.3	5820	1.4	5820	0.045	354	11.4	0.025	0.025	10.2	0.0015	0.0035	59	0.019	11400	0.1	0.09
Median	36.3	5820	1.4	5820	0.045	354	11.4	0.025	0.025	10.2	0.0015	0.0035	59	0.019	11400	0.1	0.09
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	36.3	5820	1.4	5820	0.045	354	11.4	0.025	0.025	10.2	0.0015	0.0035	59	0.019	11400	0.1	0.09
Maximum	36.3	5820	1.4	5820	0.045	354	11.4	0.025	0.025	10.2	0.0015	0.0035	59	0.019	11400	0.1	0.09
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Chamerion angustifolium-TE13																	
Sample Date																	
08/19/04	33.4	1350	**0.6**	2290	**0.55**	349	72.2	**0.03**	**0.025**	19.9	**0.0015**	**0.0035**	12.4	**0.025**	6810	**0.4**	0.08
Mean	33.4	1350	0.6	2290	0.55	349	72.2	0.03	0.025	19.9	0.0015	0.0035	12.4	0.025	6810	0.4	0.08
Median	33.4	1350	0.6	2290	0.55	349	72.2	0.03	0.025	19.9	0.0015	0.0035	12.4	0.025	6810	0.4	0.08
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	33.4	1350	0.6	2290	0.55	349	72.2	0.03	0.025	19.9	0.0015	0.0035	12.4	0.025	6810	0.4	0.08
Maximum	33.4	1350	0.6	2290	0.55	349	72.2	0.03	0.025	19.9	0.0015	0.0035	12.4	0.025	6810	0.4	0.08
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Chamerion angustifolium-TE09																
Sample Date																
08/17/04	2.96	253	0.81	2340	171	0.117	1.49	2.37	17400	**0.05**	**0.005**	130	**0.002**	**2.5**	0.39	8
Mean	2.96	253	0.81	2340	171	0.117	1.49	2.37	17400	0.05	0.005	130	0.002	2.5	0.39	8
Median	2.96	253	0.81	2340	171	0.117	1.49	2.37	17400	0.05	0.005	130	0.002	2.5	0.39	8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.96	253	0.81	2340	171	0.117	1.49	2.37	17400	0.05	0.005	130	0.002	2.5	0.39	8
Maximum	2.96	253	0.81	2340	171	0.117	1.49	2.37	17400	0.05	0.005	130	0.002	2.5	0.39	8
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Chamerion angustifolium-TE12																
Sample Date																
08/21/04	3.85	38.9	**0.04**	2750	46.6	0.101	0.39	1.06	9820	**0.05**	**0.0015**	20.8	**0.012**	**2.45**	**0.19** J	67.2
Mean	3.85	38.9	0.04	2750	46.6	0.101	0.39	1.06	9820	0.05	0.0015	20.8	0.012	2.45	0.19	67.2
Median	3.85	38.9	0.04	2750	46.6	0.101	0.39	1.06	9820	0.05	0.0015	20.8	0.012	2.45	0.19	67.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.85	38.9	0.04	2750	46.6	0.101	0.39	1.06	9820	0.05	0.0015	20.8	0.012	2.45	0.19	67.2
Maximum	3.85	38.9	0.04	2750	46.6	0.101	0.39	1.06	9820	0.05	0.0015	20.8	0.012	2.45	0.19	67.2
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0
Chamerion angustifolium-TE13																
Sample Date																
08/19/04	6.78	51.9	0.07	4390	80.5	0.124	**0.025**	0.89	7340	**0.05**	**0.0015**	31.7	**0.017**	**2.5**	**0.1** U	10.8
Mean	6.78	51.9	0.07	4390	80.5	0.124	0.025	0.89	7340	0.05	0.0015	31.7	0.017	2.5	0.1	10.8
Median	6.78	51.9	0.07	4390	80.5	0.124	0.025	0.89	7340	0.05	0.0015	31.7	0.017	2.5	0.1	10.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	6.78	51.9	0.07	4390	80.5	0.124	0.025	0.89	7340	0.05	0.0015	31.7	0.017	2.5	0.1	10.8
Maximum	6.78	51.9	0.07	4390	80.5	0.124	0.025	0.89	7340	0.05	0.0015	31.7	0.017	2.5	0.1	10.8
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%	100%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Chamerion angustifolium-TE16																	
Sample Date																	
08/19/04	26.7	2910	**1.0**	2070	**0.25**	1010	212	0.05	**0.025**	40.5	**0.004**	**0.0035**	10.9	**0.025**	9170	1.2	0.13
Mean	26.7	2910	1	2070	0.25	1010	212	0.05	0.025	40.5	0.004	0.0035	10.9	0.025	9170	1.2	0.13
Median	26.7	2910	1	2070	0.25	1010	212	0.05	0.025	40.5	0.004	0.0035	10.9	0.025	9170	1.2	0.13
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	26.7	2910	1	2070	0.25	1010	212	0.05	0.025	40.5	0.004	0.0035	10.9	0.025	9170	1.2	0.13
Maximum	26.7	2910	1	2070	0.25	1010	212	0.05	0.025	40.5	0.004	0.0035	10.9	0.025	9170	1.2	0.13
% of values undetected					100%				100%			100%		100%			
# of values between MDL and MRL			1								1						
Chamerion angustifolium-TE17																	
Sample Date																	
08/19/04	24.8	2010	**1.1**	4130	**0.25**	512	122	0.06	**0.025**	12.8	**0.0015**	**0.0035**	15	**0.025**	9100	**0.4**	0.13
Mean	24.8	2010	1.1	4130	0.25	512	122	0.06	0.025	12.8	0.0015	0.0035	15	0.025	9100	0.4	0.13
Median	24.8	2010	1.1	4130	0.25	512	122	0.06	0.025	12.8	0.0015	0.0035	15	0.025	9100	0.4	0.13
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	24.8	2010	1.1	4130	0.25	512	122	0.06	0.025	12.8	0.0015	0.0035	15	0.025	9100	0.4	0.13
Maximum	24.8	2010	1.1	4130	0.25	512	122	0.06	0.025	12.8	0.0015	0.0035	15	0.025	9100	0.4	0.13
% of values undetected					100%				100%		100%	100%		100%			
# of values between MDL and MRL			1													1	
Cladina rangiferina-TE01																	
Sample Date																	
08/17/04	78.9	42	**0.6**	82	**0.19**	13.1	155	**0.04**	**0.1**	13.6	**0.005**	**0.005**	**2.45**	**0.033**	761	**0.6**	0.11
Mean	78.9	42	0.6	82	0.19	13.1	155	0.04	0.1	13.6	0.005	0.005	2.45	0.033	761	0.6	0.11
Median	78.9	42	0.6	82	0.19	13.1	155	0.04	0.1	13.6	0.005	0.005	2.45	0.033	761	0.6	0.11
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	78.9	42	0.6	82	0.19	13.1	155	0.04	0.1	13.6	0.005	0.005	2.45	0.033	761	0.6	0.11
Maximum	78.9	42	0.6	82	0.19	13.1	155	0.04	0.1	13.6	0.005	0.005	2.45	0.033	761	0.6	0.11
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	1	0	0	1	1	0	1	0	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Chamerion angustifolium-TE16																
Sample Date																
08/19/04	4.65	137	0.18	2900	81.8	0.166	0.07	1.7	7890	**0.05**	**0.004**	42.8	**0.009**	**1.5**	0.34	21
Mean	4.65	137	0.18	2900	81.8	0.166	0.07	1.7	7890	0.05	0.004	42.8	0.009	1.5	0.34	21
Median	4.65	137	0.18	2900	81.8	0.166	0.07	1.7	7890	0.05	0.004	42.8	0.009	1.5	0.34	21
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.65	137	0.18	2900	81.8	0.166	0.07	1.7	7890	0.05	0.004	42.8	0.009	1.5	0.34	21
Maximum	4.65	137	0.18	2900	81.8	0.166	0.07	1.7	7890	0.05	0.004	42.8	0.009	1.5	0.34	21
% of values undetected										100%				100%		
# of values between MDL and MRL											1		1			
Chamerion angustifolium-TE17																
Sample Date																
08/19/04	4.56	92.1	0.13	5000	102	0.153	1.5	0.99	9230	**0.05**	**0.0015**	42.6	**0.001**	**1.5**	0.28	23.9
Mean	4.56	92.1	0.13	5000	102	0.153	1.5	0.99	9230	0.05	0.0015	42.6	0.001	1.5	0.28	23.9
Median	4.56	92.1	0.13	5000	102	0.153	1.5	0.99	9230	0.05	0.0015	42.6	0.001	1.5	0.28	23.9
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.56	92.1	0.13	5000	102	0.153	1.5	0.99	9230	0.05	0.0015	42.6	0.001	1.5	0.28	23.9
Maximum	4.56	92.1	0.13	5000	102	0.153	1.5	0.99	9230	0.05	0.0015	42.6	0.001	1.5	0.28	23.9
% of values undetected										100%	100%		100%	100%		
# of values between MDL and MRL																
Cladina rangiferina-TE01																
Sample Date																
08/17/04	1.22	165	0.72	253	80.4	0.04	**0.025**	0.47	739	**0.05**	**0.01**	33.7	**0.006**	**2.45**	0.45	14.3
Mean	1.22	165	0.72	253	80.4	0.04	0.025	0.47	739	0.05	0.01	33.7	0.006	2.45	0.45	14.3
Median	1.22	165	0.72	253	80.4	0.04	0.025	0.47	739	0.05	0.01	33.7	0.006	2.45	0.45	14.3
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.22	165	0.72	253	80.4	0.04	0.025	0.47	739	0.05	0.01	33.7	0.006	2.45	0.45	14.3
Maximum	1.22	165	0.72	253	80.4	0.04	0.025	0.47	739	0.05	0.01	33.7	0.006	2.45	0.45	14.3
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Cladina rangiferina-TE02																	
Sample Date																	
08/17/04	81.3	29	**0.3**	53	**0.3**	10.8	183	0.05	**0.13**	12	**0.006**	**0.005**	**2.45**	**0.021**	735	**0.5**	0.1
Mean	81.3	29	0.3	53	0.3	10.8	183	0.05	0.13	12	0.006	0.005	2.45	0.021	735	0.5	0.1
Median	81.3	29	0.3	53	0.3	10.8	183	0.05	0.13	12	0.006	0.005	2.45	0.021	735	0.5	0.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	81.3	29	0.3	53	0.3	10.8	183	0.05	0.13	12	0.006	0.005	2.45	0.021	735	0.5	0.1
Maximum	81.3	29	0.3	53	0.3	10.8	183	0.05	0.13	12	0.006	0.005	2.45	0.021	735	0.5	0.1
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	1	0	1	0	0	1	0	1	0
Cladina rangiferina-TE04																	
Sample Date																	
08/20/04	31.3	**36**	2	**49**	**0.1**	50.1	165	**0.03**	**0.1**	16.2	**0.004**	**0.025**	**0.5**	**0.023**	1080	**0.4**	0.07
Mean	31.3	36	2	49	0.1	50.1	165	0.03	0.1	16.2	0.004	0.025	0.5	0.023	1080	0.4	0.07
Median	31.3	36	2	49	0.1	50.1	165	0.03	0.1	16.2	0.004	0.025	0.5	0.023	1080	0.4	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	31.3	36	2	49	0.1	50.1	165	0.03	0.1	16.2	0.004	0.025	0.5	0.023	1080	0.4	0.07
Maximum	31.3	36	2	49	0.1	50.1	165	0.03	0.1	16.2	0.004	0.025	0.5	0.023	1080	0.4	0.07
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	1	0	1	0	0	0	1	1	0	1	0	1	1	0	1	0
Cladina rangiferina-TE05																	
Sample Date																	
08/20/04	31.2	**26**	2.2	**60**	**0.1**	31.4	116	**0.04**	**0.12**	10.6	**0.0015**	**0.025**	**0.4**	**0.021**	982	**0.4**	0.13
Mean	31.2	26	2.2	60	0.1	31.4	116	0.04	0.12	10.6	0.0015	0.025	0.4	0.021	982	0.4	0.13
Median	31.2	26	2.2	60	0.1	31.4	116	0.04	0.12	10.6	0.0015	0.025	0.4	0.021	982	0.4	0.13
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	31.2	26	2.2	60	0.1	31.4	116	0.04	0.12	10.6	0.0015	0.025	0.4	0.021	982	0.4	0.13
Maximum	31.2	26	2.2	60	0.1	31.4	116	0.04	0.12	10.6	0.0015	0.025	0.4	0.021	982	0.4	0.13
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	1	0	1	0	0	0	1	1	0	0	0	1	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Cladina rangiferina-TE02																
Sample Date																
08/17/04	0.93	178	0.56	200	36.8	0.021	**0.025**	0.48	657	**0.1**	**0.008**	30.4	**0.011**	**2.45**	0.47	9.9
Mean	0.93	178	0.56	200	36.8	0.021	0.025	0.48	657	0.1	0.008	30.4	0.011	2.45	0.47	9.9
Median	0.93	178	0.56	200	36.8	0.021	0.025	0.48	657	0.1	0.008	30.4	0.011	2.45	0.47	9.9
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	0.93	178	0.56	200	36.8	0.021	0.025	0.48	657	0.1	0.008	30.4	0.011	2.45	0.47	9.9
Maximum	0.93	178	0.56	200	36.8	0.021	0.025	0.48	657	0.1	0.008	30.4	0.011	2.45	0.47	9.9
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
Cladina rangiferina-TE04																
Sample Date																
08/20/04	1.15	149	0.45	216	55	0.032	**0.025**	1.19	768	**0.05**	**0.007**	33.8	**0.01**	**2.5**	0.34	10.6
Mean	1.15	149	0.45	216	55	0.032	0.025	1.19	768	0.05	0.007	33.8	0.01	2.5	0.34	10.6
Median	1.15	149	0.45	216	55	0.032	0.025	1.19	768	0.05	0.007	33.8	0.01	2.5	0.34	10.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.15	149	0.45	216	55	0.032	0.025	1.19	768	0.05	0.007	33.8	0.01	2.5	0.34	10.6
Maximum	1.15	149	0.45	216	55	0.032	0.025	1.19	768	0.05	0.007	33.8	0.01	2.5	0.34	10.6
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Cladina rangiferina-TE05																
Sample Date																
08/20/04	1.06	128	0.42	220	194	0.027	**0.025**	1.28	756	**0.1**	**0.006**	32.9	**0.01**	**2.5**	0.36	12.4
Mean	1.06	128	0.42	220	194	0.027	0.025	1.28	756	0.1	0.006	32.9	0.01	2.5	0.36	12.4
Median	1.06	128	0.42	220	194	0.027	0.025	1.28	756	0.1	0.006	32.9	0.01	2.5	0.36	12.4
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.06	128	0.42	220	194	0.027	0.025	1.28	756	0.1	0.006	32.9	0.01	2.5	0.36	12.4
Maximum	1.06	128	0.42	220	194	0.027	0.025	1.28	756	0.1	0.006	32.9	0.01	2.5	0.36	12.4
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Cladina rangiferina-TE10																	
Sample Date																	
08/21/04	67	**39**	**4.3**	132	**0.1**	8.3	119	**0.025**	**0.09**	9.2	**0.0015**	**0.012**	**2.5**	**0.021**	994	**0.4**	0.05
Mean	67	39	4.3	132	0.1	8.3	119	0.025	0.09	9.2	0.0015	0.012	2.5	0.021	994	0.4	0.05
Median	67	39	4.3	132	0.1	8.3	119	0.025	0.09	9.2	0.0015	0.012	2.5	0.021	994	0.4	0.05
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	67	39	4.3	132	0.1	8.3	119	0.025	0.09	9.2	0.0015	0.012	2.5	0.021	994	0.4	0.05
Maximum	67	39	4.3	132	0.1	8.3	119	0.025	0.09	9.2	0.0015	0.012	2.5	0.021	994	0.4	0.05
% of values undetected	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	100%	0%	0%	0%	0%
# of values between MDL and MRL	0	1	1	0	1	0	0	0	1	0	0	1	0	1	0	1	0
Cladina rangiferina-TE11																	
Sample Date																	
08/21/04	30.4	298	**1.9**	235	**0.11**	12.8	124	0.16	**0.08**	31.4	**0.0015**	**0.0035**	**2.5**	**0.033**	4080	**0.3**	0.08
Mean	30.4	298	1.9	235	0.11	12.8	124	0.16	0.08	31.4	0.0015	0.0035	2.5	0.033	4080	0.3	0.08
Median	30.4	298	1.9	235	0.11	12.8	124	0.16	0.08	31.4	0.0015	0.0035	2.5	0.033	4080	0.3	0.08
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	30.4	298	1.9	235	0.11	12.8	124	0.16	0.08	31.4	0.0015	0.0035	2.5	0.033	4080	0.3	0.08
Maximum	30.4	298	1.9	235	0.11	12.8	124	0.16	0.08	31.4	0.0015	0.0035	2.5	0.033	4080	0.3	0.08
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	1	0	0	0	1	0	0	0	0	1	0	1	0
Cladina rangiferina-TE17																	
Sample Date																	
08/19/04	43.6	79	**0.7**	200	**0.25**	27.1	356	0.06	**0.12**	3.5	**0.0015**	**0.0035**	**6.8**	0.051	414	1	0.11
Mean	43.6	79	0.7	200	0.25	27.1	356	0.06	0.12	3.5	0.0015	0.0035	6.8	0.051	414	1	0.11
Median	43.6	79	0.7	200	0.25	27.1	356	0.06	0.12	3.5	0.0015	0.0035	6.8	0.051	414	1	0.11
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	43.6	79	0.7	200	0.25	27.1	356	0.06	0.12	3.5	0.0015	0.0035	6.8	0.051	414	1	0.11
Maximum	43.6	79	0.7	200	0.25	27.1	356	0.06	0.12	3.5	0.0015	0.0035	6.8	0.051	414	1	0.11
% of values undetected					100%						100%	100%					
# of values between MDL and MRL			1						1				1				

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Cladina rangiferina-TE10																
Sample Date																
08/21/04	1.21	120	0.75	179	44.8	0.027	0.16	0.9	791	**0.05**	**0.005**	32.5	**0.006**	**2.5**	0.29	15
Mean	1.21	120	0.75	179	44.8	0.027	0.16	0.9	791	0.05	0.005	32.5	0.006	2.5	0.29	15
Median	1.21	120	0.75	179	44.8	0.027	0.16	0.9	791	0.05	0.005	32.5	0.006	2.5	0.29	15
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.21	120	0.75	179	44.8	0.027	0.16	0.9	791	0.05	0.005	32.5	0.006	2.5	0.29	15
Maximum	1.21	120	0.75	179	44.8	0.027	0.16	0.9	791	0.05	0.005	32.5	0.006	2.5	0.29	15
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Cladina rangiferina-TE11																
Sample Date																
08/21/04	3.55	109	0.69	1300	1160	0.074	**0.02**	1.2	2690	**0.2**	**0.006**	96.7	**0.012**	**2.5**	0.25	44.6
Mean	3.55	109	0.69	1300	1160	0.074	0.02	1.2	2690	0.2	0.006	96.7	0.012	2.5	0.25	44.6
Median	3.55	109	0.69	1300	1160	0.074	0.02	1.2	2690	0.2	0.006	96.7	0.012	2.5	0.25	44.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.55	109	0.69	1300	1160	0.074	0.02	1.2	2690	0.2	0.006	96.7	0.012	2.5	0.25	44.6
Maximum	3.55	109	0.69	1300	1160	0.074	0.02	1.2	2690	0.2	0.006	96.7	0.012	2.5	0.25	44.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0
Cladina rangiferina-TE17																
Sample Date																
08/19/04	1.12	278	0.98	250	17	0.028	**0.025**	0.37	692	**0.2**	**0.009**	57.7	**0.004**	**1.5**	0.67	10.9
Mean	1.12	278	0.98	250	17	0.028	0.025	0.37	692	0.2	0.009	57.7	0.004	1.5	0.67	10.9
Median	1.12	278	0.98	250	17	0.028	0.025	0.37	692	0.2	0.009	57.7	0.004	1.5	0.67	10.9
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.12	278	0.98	250	17	0.028	0.025	0.37	692	0.2	0.009	57.7	0.004	1.5	0.67	10.9
Maximum	1.12	278	0.98	250	17	0.028	0.025	0.37	692	0.2	0.009	57.7	0.004	1.5	0.67	10.9
% of values undetected							100%							100%		
# of values between MDL and MRL										1	1		1			

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Dryopteris expansa-TE13																	
Sample Date																	
08/19/04	32.7	3440	**1.2**	626	**0.55**	356	291	**0.03**	**0.025**	67.1	**0.009**	**0.0035**	29.4	**0.025**	4350	**0.15**	0.19
Mean	32.7	3440	1.2	626	0.55	356	291	0.03	0.025	67.1	0.009	0.0035	29.4	0.025	4350	0.15	0.19
Median	32.7	3440	1.2	626	0.55	356	291	0.03	0.025	67.1	0.009	0.0035	29.4	0.025	4350	0.15	0.19
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	32.7	3440	1.2	626	0.55	356	291	0.03	0.025	67.1	0.009	0.0035	29.4	0.025	4350	0.15	0.19
Maximum	32.7	3440	1.2	626	0.55	356	291	0.03	0.025	67.1	0.009	0.0035	29.4	0.025	4350	0.15	0.19
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%	100%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0
Dryopteris expansa-TE16																	
Sample Date																	
08/19/04	28	5510	**1.8**	5120	**0.25**	569	257	0.05	**0.025**	94.8	**0.004**	**0.0035**	19.4	**0.025**	5660	**0.8**	0.16
Mean	28	5510	1.8	5120	0.25	569	257	0.05	0.025	94.8	0.004	0.0035	19.4	0.025	5660	0.8	0.16
Median	28	5510	1.8	5120	0.25	569	257	0.05	0.025	94.8	0.004	0.0035	19.4	0.025	5660	0.8	0.16
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	28	5510	1.8	5120	0.25	569	257	0.05	0.025	94.8	0.004	0.0035	19.4	0.025	5660	0.8	0.16
Maximum	28	5510	1.8	5120	0.25	569	257	0.05	0.025	94.8	0.004	0.0035	19.4	0.025	5660	0.8	0.16
% of values undetected					100%				100%			100%		100%			
# of values between MDL and MRL			1								1					1	
Empetrum nigrum-Berry-TE01																	
Sample Date																	
09/20/04	14.6	1160	**0.9**	2220	**0.5**	25	22.7	0.23	**0.025**	5.7	**0.0015**	**0.0035**	**2.5**	**0.0035**	698	**0.1**	0.03
Mean	14.6	1160	0.9	2220	0.5	25	22.7	0.23	0.025	5.7	0.0015	0.0035	2.5	0.0035	698	0.1	0.03
Median	14.6	1160	0.9	2220	0.5	25	22.7	0.23	0.025	5.7	0.0015	0.0035	2.5	0.0035	698	0.1	0.03
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	14.6	1160	0.9	2220	0.5	25	22.7	0.23	0.025	5.7	0.0015	0.0035	2.5	0.0035	698	0.1	0.03
Maximum	14.6	1160	0.9	2220	0.5	25	22.7	0.23	0.025	5.7	0.0015	0.0035	2.5	0.0035	698	0.1	0.03
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	100%	100%	100%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Dryopteris expansa-TE13																
Sample Date																
08/19/04	4.18	44.6	0.09	3890	680	0.063	**0.005**	0.98	11500	**0.05**	**0.0015**	158	**0.003**	**2.5**	0.22	40.3
Mean	4.18	44.6	0.09	3890	680	0.063	0.005	0.98	11500	0.05	0.0015	158	0.003	2.5	0.22	40.3
Median	4.18	44.6	0.09	3890	680	0.063	0.005	0.98	11500	0.05	0.0015	158	0.003	2.5	0.22	40.3
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.18	44.6	0.09	3890	680	0.063	0.005	0.98	11500	0.05	0.0015	158	0.003	2.5	0.22	40.3
Maximum	4.18	44.6	0.09	3890	680	0.063	0.005	0.98	11500	0.05	0.0015	158	0.003	2.5	0.22	40.3
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Dryopteris expansa-TE16																
Sample Date																
08/19/04	3.64	111	0.11	8200	235	0.076	0.12	1.81	7990	**0.05**	**0.004**	189	0.03	**1.5**	0.81	17.8
Mean	3.64	111	0.11	8200	235	0.076	0.12	1.81	7990	0.05	0.004	189	0.03	1.5	0.81	17.8
Median	3.64	111	0.11	8200	235	0.076	0.12	1.81	7990	0.05	0.004	189	0.03	1.5	0.81	17.8
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.64	111	0.11	8200	235	0.076	0.12	1.81	7990	0.05	0.004	189	0.03	1.5	0.81	17.8
Maximum	3.64	111	0.11	8200	235	0.076	0.12	1.81	7990	0.05	0.004	189	0.03	1.5	0.81	17.8
% of values undetected										100%				100%		
# of values between MDL and MRL											1					
Empetrum nigrum-Berry-TE01																
Sample Date																
09/20/04	4.27	79.9	0.19	354	70.2	**0.011**	0.059	8.8	5900	**0.05**	**0.005**	51.2	**0.002**	**2.5**	**0.04** J	8
Mean	4.27	79.9	0.19	354	70.2	0.011	0.059	8.8	5900	0.05	0.005	51.2	0.002	2.5	0.04	8
Median	4.27	79.9	0.19	354	70.2	0.011	0.059	8.8	5900	0.05	0.005	51.2	0.002	2.5	0.04	8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.27	79.9	0.19	354	70.2	0.011	0.059	8.8	5900	0.05	0.005	51.2	0.002	2.5	0.04	8
Maximum	4.27	79.9	0.19	354	70.2	0.011	0.059	8.8	5900	0.05	0.005	51.2	0.002	2.5	0.04	8
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	1	0	0	0	0	1	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Empetrum nigrum-Berry-TE08																	
Sample Date																	
09/20/04	11	1000	**0.35**	2070	**0.15**	135	624	0.15	**0.025**	2.7	**0.0015**	**0.0035**	**2.5**	**0.0035**	705	**0.1**	0.03
Mean	11	1000	0.35	2070	0.15	135	624	0.15	0.025	2.7	0.0015	0.0035	2.5	0.0035	705	0.1	0.03
Median	11	1000	0.35	2070	0.15	135	624	0.15	0.025	2.7	0.0015	0.0035	2.5	0.0035	705	0.1	0.03
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	11	1000	0.35	2070	0.15	135	624	0.15	0.025	2.7	0.0015	0.0035	2.5	0.0035	705	0.1	0.03
Maximum	11	1000	0.35	2070	0.15	135	624	0.15	0.025	2.7	0.0015	0.0035	2.5	0.0035	705	0.1	0.03
% of values undetected	0%	0%	100%	0%	100%	0%	0%	0%	100%	0%	100%	100%	100%	100%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Empetrum nigrum-Berry-TE12																	
Sample Date																	
09/20/04	11.3	1030	**1.5**	2680	**0.15**	59	24.8	0.25	**0.025**	5.3	**0.0015**	**0.025**	**2.5**	**0.0035**	760	**0.1**	0.03
Mean	11.3	1030	1.5	2680	0.15	59	24.8	0.25	0.025	5.3	0.0015	0.025	2.5	0.0035	760	0.1	0.03
Median	11.3	1030	1.5	2680	0.15	59	24.8	0.25	0.025	5.3	0.0015	0.025	2.5	0.0035	760	0.1	0.03
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	11.3	1030	1.5	2680	0.15	59	24.8	0.25	0.025	5.3	0.0015	0.025	2.5	0.0035	760	0.1	0.03
Maximum	11.3	1030	1.5	2680	0.15	59	24.8	0.25	0.025	5.3	0.0015	0.025	2.5	0.0035	760	0.1	0.03
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	100%	100%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Empetrum nigrum-Berry-TE17																	
Sample Date																	
09/20/04	11.8	794	**0.4**	4630	**0.15**	76	902	0.18	**0.025**	6	**0.0015**	**0.0035**	**2.5**	**0.008**	838	**0.4**	0.05
Mean	11.8	794	0.4	4630	0.15	76	902	0.18	0.025	6	0.0015	0.0035	2.5	0.008	838	0.4	0.05
Median	11.8	794	0.4	4630	0.15	76	902	0.18	0.025	6	0.0015	0.0035	2.5	0.008	838	0.4	0.05
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	11.8	794	0.4	4630	0.15	76	902	0.18	0.025	6	0.0015	0.0035	2.5	0.008	838	0.4	0.05
Maximum	11.8	794	0.4	4630	0.15	76	902	0.18	0.025	6	0.0015	0.0035	2.5	0.008	838	0.4	0.05
% of values undetected					100%				100%		100%	100%	100%				
# of values between MDL and MRL			1											1		1	

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Empetrum nigrum-Berry-TE08																
Sample Date																
09/20/04	2.64	83.7	0.14	389	85.3	**0.005**	0.189	9.21	6330	**0.05**	**0.0015**	41.7	**0.013**	**2.5**	**0.13** J	7.5
Mean	2.64	83.7	0.14	389	85.3	0.005	0.189	9.21	6330	0.05	0.0015	41.7	0.013	2.5	0.13	7.5
Median	2.64	83.7	0.14	389	85.3	0.005	0.189	9.21	6330	0.05	0.0015	41.7	0.013	2.5	0.13	7.5
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.64	83.7	0.14	389	85.3	0.005	0.189	9.21	6330	0.05	0.0015	41.7	0.013	2.5	0.13	7.5
Maximum	2.64	83.7	0.14	389	85.3	0.005	0.189	9.21	6330	0.05	0.0015	41.7	0.013	2.5	0.13	7.5
% of values undetected	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Empetrum nigrum-Berry-TE12																
Sample Date																
09/20/04	3.99	69.5	0.09	391	50	**0.012**	**0.04**	7.3	6270	**0.05**	**0.007**	84.4	**0.008**	**2.5**	**0.05** J	6.4
Mean	3.99	69.5	0.09	391	50	0.012	0.04	7.3	6270	0.05	0.007	84.4	0.008	2.5	0.05	6.4
Median	3.99	69.5	0.09	391	50	0.012	0.04	7.3	6270	0.05	0.007	84.4	0.008	2.5	0.05	6.4
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.99	69.5	0.09	391	50	0.012	0.04	7.3	6270	0.05	0.007	84.4	0.008	2.5	0.05	6.4
Maximum	3.99	69.5	0.09	391	50	0.012	0.04	7.3	6270	0.05	0.007	84.4	0.008	2.5	0.05	6.4
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0
Empetrum nigrum-Berry-TE17																
Sample Date																
09/20/04	5.26	149	0.23	425	29	**0.005**	0.118	11.3	6620	**0.05**	**0.0015**	108	**0.009**	**2.5**	0.21	8.2
Mean	5.26	149	0.23	425	29	0.005	0.118	11.3	6620	0.05	0.0015	108	0.009	2.5	0.21	8.2
Median	5.26	149	0.23	425	29	0.005	0.118	11.3	6620	0.05	0.0015	108	0.009	2.5	0.21	8.2
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	5.26	149	0.23	425	29	0.005	0.118	11.3	6620	0.05	0.0015	108	0.009	2.5	0.21	8.2
Maximum	5.26	149	0.23	425	29	0.005	0.118	11.3	6620	0.05	0.0015	108	0.009	2.5	0.21	8.2
% of values undetected						100%				100%	100%			100%		
# of values between MDL and MRL													1			

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Empetrum nigrum-TE01																	
Sample Date																	
08/17/04	46.4	470	**1.2**	161	0.9	**2.9**	30.2	**0.02**	**0.025**	33.3	**0.0015**	**0.005**	19.1	**0.011**	5560	**0.4**	0.07
09/20/04	48.1	427	**0.5**	1560	**0.15**	**3.4**	52.7	0.12	**0.025**	44.6	**0.0015**	**0.0035**	21.7	**0.0035**	6610	**0.1**	0.07
Mean	47.3	449	0.9	861	0.53	3.2	41.5	0.07	0.025	39.0	0.0015	0.0043	20.4	0.007	6085	0.3	0.07
Median	47.3	449	0.9	861	0.53	3.2	41.5	0.07	0.025	39.0	0.0015	0.0043	20.4	0.007	6085	0.3	0.07
St. Deviation	1.2	30	0.5	989.2	0.53	0.4	15.9	0.1	0.0	8.0	0.0	0.001	1.8	0.01	742	0.2	0.00
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	46.4	427	0.5	161	0.15	2.9	30.2	0.02	0.025	33.3	0.0015	0.0035	19.1	0.0035	5560	0.1	0.07
Maximum	48.1	470	1.2	1560	0.9	3.4	52.7	0.12	0.025	44.6	0.0015	0.005	21.7	0.011	6610	0.4	0.07
% of values undetected	0%	0%	0%	0%	50%	50%	0%	0%	100%	0%	100%	100%	0%	50%	0%	50%	0%
# of values between MDL and MRL	0	0	2	0	0	1	0	1	0	0	0	0	0	1	0	1	0
Empetrum nigrum-TE02																	
Sample Date																	
08/17/04	55.6	465	**0.3**	158	**0.3**	**3.8**	51.3	**0.01**	**0.025**	72.7	**0.0015**	**0.005**	21.5	**0.009**	7270	**0.6**	0.12
Mean	55.6	465	0.3	158	0.3	3.8	51.3	0.01	0.025	72.7	0.0015	0.005	21.5	0.009	7270	0.6	0.12
Median	55.6	465	0.3	158	0.3	3.8	51.3	0.01	0.025	72.7	0.0015	0.005	21.5	0.009	7270	0.6	0.12
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	55.6	465	0.3	158	0.3	3.8	51.3	0.01	0.025	72.7	0.0015	0.005	21.5	0.009	7270	0.6	0.12
Maximum	55.6	465	0.3	158	0.3	3.8	51.3	0.01	0.025	72.7	0.0015	0.005	21.5	0.009	7270	0.6	0.12
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0
Empetrum nigrum-TE03																	
Sample Date																	
08/17/04	50.5	345	1320	136	**0.2**	2.7	22.1	**0.01**	**0.025**	32.7	**0.0015**	**0.0035**	23.4	**0.01**	5560	**0.1**	0.07
Mean	50.5	345	1320	136	0.2	2.7	22.1	0.01	0.025	32.7	0.0015	0.0035	23.4	0.01	5560	0.1	0.07
Median	50.5	345	1320	136	0.2	2.7	22.1	0.01	0.025	32.7	0.0015	0.0035	23.4	0.01	5560	0.1	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	50.5	345	1320	136	0.2	2.7	22.1	0.01	0.025	32.7	0.0015	0.0035	23.4	0.01	5560	0.1	0.07
Maximum	50.5	345	1320	136	0.2	2.7	22.1	0.01	0.025	32.7	0.0015	0.0035	23.4	0.01	5560	0.1	0.07
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Empetrum nigrum-TE01																
Sample Date																
08/17/04	3.25	32.5	0.15	1530	652	0.043	0.07	0.98	3830	**0.1**	**0.0015**	14.3	**0.001**	**2.5**	0.21	14.3
09/20/04	3.69	28.5	0.13	1230	709	0.023	**0.048**	1.57	2420	**0.05**	**0.003**	15.4	**0.004**	**2.5**	**0.14** J	11.8
Mean	3.47	30.5	0.14	1380	681	0.033	0.06	1.28	3125	0.075	0.0023	14.9	0.0025	2.5	0.18	13.1
Median	3.47	30.5	0.14	1380	681	0.033	0.06	1.28	3125	0.075	0.0023	14.9	0.0025	2.5	0.18	13.1
St. Deviation	0.31	2.8	0.01	212	40	0.014	0.02	0.42	997	0.04	0.001	0.8	0.0021	0.0	0.05	1.8
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	3.25	28.5	0.13	1230	652	0.023	0.048	0.98	2420	0.05	0.0015	14.3	0.001	2.5	0.14	11.8
Maximum	3.69	32.5	0.15	1530	709	0.043	0.07	1.57	3830	0.1	0.003	15.4	0.004	2.5	0.21	14.3
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	50%	0%	50%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	1	0	0	1	1	0	1	0	1	0
Empetrum nigrum-TE02																
Sample Date																
08/17/04	3.94	51.7	0.16	1510	564	0.039	**0.025**	1.44	3320	**0.05**	**0.0015**	15.5	**0.006**	**2.5**	0.24	13
Mean	3.94	51.7	0.16	1510	564	0.039	0.025	1.44	3320	0.05	0.0015	15.5	0.006	2.5	0.24	13
Median	3.94	51.7	0.16	1510	564	0.039	0.025	1.44	3320	0.05	0.0015	15.5	0.006	2.5	0.24	13
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.94	51.7	0.16	1510	564	0.039	0.025	1.44	3320	0.05	0.0015	15.5	0.006	2.5	0.24	13
Maximum	3.94	51.7	0.16	1510	564	0.039	0.025	1.44	3320	0.05	0.0015	15.5	0.006	2.5	0.24	13
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Empetrum nigrum-TE03																
Sample Date																
08/17/04	3.81	30.5	0.1	1300	464	0.045	0.09	0.86	3900	**0.05**	**0.002**	15.7	**0.001**	**2.45**	0.24	12.2
Mean	3.81	30.5	0.1	1300	464	0.045	0.09	0.86	3900	0.05	0.002	15.7	0.001	2.45	0.24	12.2
Median	3.81	30.5	0.1	1300	464	0.045	0.09	0.86	3900	0.05	0.002	15.7	0.001	2.45	0.24	12.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.81	30.5	0.1	1300	464	0.045	0.09	0.86	3900	0.05	0.002	15.7	0.001	2.45	0.24	12.2
Maximum	3.81	30.5	0.1	1300	464	0.045	0.09	0.86	3900	0.05	0.002	15.7	0.001	2.45	0.24	12.2
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Empetrum nigrum-TE04																	
Sample Date																	
08/20/04	37.6	537	**1.7**	251	**0.1**	8.2	47.3	**0.02**	**0.025**	68.4	**0.0015**	**0.025**	18.9	**0.0035**	5690	**0.15**	0.1
Mean	37.6	537	1.7	251	0.1	8.2	47.3	0.02	0.025	68.4	0.0015	0.025	18.9	0.0035	5690	0.15	0.1
Median	37.6	537	1.7	251	0.1	8.2	47.3	0.02	0.025	68.4	0.0015	0.025	18.9	0.0035	5690	0.15	0.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	37.6	537	1.7	251	0.1	8.2	47.3	0.02	0.025	68.4	0.0015	0.025	18.9	0.0035	5690	0.15	0.1
Maximum	37.6	537	1.7	251	0.1	8.2	47.3	0.02	0.025	68.4	0.0015	0.025	18.9	0.0035	5690	0.15	0.1
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Empetrum nigrum-TE05																	
Sample Date																	
08/20/04	40.3	752	**1.9**	247	**0.6**	6.6	23.5	**0.01**	**0.025**	29.6	**0.0015**	**0.005**	18.8	**0.0035**	6050	**0.15**	0.14
Mean	40.3	752	1.9	247	0.6	6.6	23.5	0.01	0.025	29.6	0.0015	0.005	18.8	0.0035	6050	0.15	0.14
Median	40.3	752	1.9	247	0.6	6.6	23.5	0.01	0.025	29.6	0.0015	0.005	18.8	0.0035	6050	0.15	0.14
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	40.3	752	1.9	247	0.6	6.6	23.5	0.01	0.025	29.6	0.0015	0.005	18.8	0.0035	6050	0.15	0.14
Maximum	40.3	752	1.9	247	0.6	6.6	23.5	0.01	0.025	29.6	0.0015	0.005	18.8	0.0035	6050	0.15	0.14
% of values undetected	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	100%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Empetrum nigrum-TE08																	
Sample Date																	
08/17/04	55.4	587	1080	164	**0.2**	2.7	21.3	**0.01**	**0.025**	34.3	**0.0015**	**0.0035**	35.9	**0.011**	5190	**0.3**	0.09
09/20/04	43.2	559	**0.5**	1090	**0.15**	**7.8**	16.3	0.11	**0.025**	30.8	**0.0015**	**0.025**	23.5	**0.008**	6890	**0.15**	0.06
Mean	49.3	573	540	627	0.18	5.25	18.8	0.06	0.025	32.6	0.0015	0.014	29.7	0.0095	6040	0.225	0.075
Median	49.3	573	540	627	0.18	5.25	18.8	0.06	0.025	32.6	0.0015	0.014	29.7	0.0095	6040	0.225	0.075
St. Deviation	8.6	20	763	655	0.04	3.6	3.5	0.1	0.0	2.5	0.0	0.0	8.8	0.0021	1202	0.1	0.021
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	43.2	559	0.5	164	0.15	2.7	16.3	0.01	0.025	30.8	0.0015	0.0035	23.5	0.008	5190	0.15	0.06
Maximum	55.4	587	1080	1090	0.2	7.8	21.3	0.11	0.025	34.3	0.0015	0.025	35.9	0.011	6890	0.3	0.09
% of values undetected	0%	0%	0%	0%	100%	0%	0%	50%	100%	0%	100%	100%	0%	0%	0%	50%	0%
# of values between MDL and MRL	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Empetrum nigrum-TE04																
Sample Date																
08/20/04	3.06	27.1	0.08	1750	312	0.03	0.1	3.42	3720	**0.05**	**0.0015**	17.3	**0.01**	**2.5**	0.25	11.7
Mean	3.06	27.1	0.08	1750	312	0.03	0.1	3.42	3720	0.05	0.0015	17.3	0.01	2.5	0.25	11.7
Median	3.06	27.1	0.08	1750	312	0.03	0.1	3.42	3720	0.05	0.0015	17.3	0.01	2.5	0.25	11.7
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.06	27.1	0.08	1750	312	0.03	0.1	3.42	3720	0.05	0.0015	17.3	0.01	2.5	0.25	11.7
Maximum	3.06	27.1	0.08	1750	312	0.03	0.1	3.42	3720	0.05	0.0015	17.3	0.01	2.5	0.25	11.7
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Empetrum nigrum-TE05																
Sample Date																
08/20/04	3.53	24.1	0.09	1420	1090	0.036	0.17	1.16	4220	**0.05**	**0.0015**	15.7	**0.01**	**2.5**	**0.1** J	10.6
Mean	3.53	24.1	0.09	1420	1090	0.036	0.17	1.16	4220	0.05	0.0015	15.7	0.01	2.5	0.1	10.6
Median	3.53	24.1	0.09	1420	1090	0.036	0.17	1.16	4220	0.05	0.0015	15.7	0.01	2.5	0.1	10.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.53	24.1	0.09	1420	1090	0.036	0.17	1.16	4220	0.05	0.0015	15.7	0.01	2.5	0.1	10.6
Maximum	3.53	24.1	0.09	1420	1090	0.036	0.17	1.16	4220	0.05	0.0015	15.7	0.01	2.5	0.1	10.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Empetrum nigrum-TE08																
Sample Date																
08/17/04	3.49	31.3	0.12	1220	235	0.047	0.32	0.56	4290	**0.05**	**0.002**	33.1	**0.004**	**2.5**	**0.18** J	10.8
09/20/04	2.89	32.4	0.54	1840	1300	0.024	0.371	1.14	3030	**0.05**	**0.0015**	14	**0.001**	**2.5**	**0.11** J	14.9
Mean	3.19	31.9	0.33	1530	768	0.036	0.35	0.85	3660	0.05	0.0018	23.6	0.0025	2.5	0.15	12.9
Median	3.19	31.9	0.33	1530	768	0.036	0.35	0.85	3660	0.05	0.0018	23.6	0.0025	2.5	0.15	12.9
St. Deviation	0.42	0.8	0.30	438	753	0.016	0.04	0.41	891	0.00	0.0004	13.5	0.0021	0.0	0.05	2.9
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	2.89	31.3	0.12	1220	235	0.024	0.32	0.56	3030	0.05	0.0015	14	0.001	2.5	0.11	10.8
Maximum	3.49	32.4	0.54	1840	1300	0.047	0.371	1.14	4290	0.05	0.002	33.1	0.004	2.5	0.18	14.9
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	50%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Empetrum nigrum-TE10																	
Sample Date																	
08/21/04	80.7	501	**0.6**	513	**0.045**	**1.7**	41.7	**0.01**	**0.025**	43.5	**0.0015**	**0.0035**	20.3	**0.019**	7510	**0.15**	0.09
Mean	80.7	501	0.6	513	0.045	1.7	41.7	0.01	0.025	43.5	0.0015	0.0035	20.3	0.019	7510	0.15	0.09
Median	80.7	501	0.6	513	0.045	1.7	41.7	0.01	0.025	43.5	0.0015	0.0035	20.3	0.019	7510	0.15	0.09
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	80.7	501	0.6	513	0.045	1.7	41.7	0.01	0.025	43.5	0.0015	0.0035	20.3	0.019	7510	0.15	0.09
Maximum	80.7	501	0.6	513	0.045	1.7	41.7	0.01	0.025	43.5	0.0015	0.0035	20.3	0.019	7510	0.15	0.09
% of values undetected	0%	0%	100%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
Empetrum nigrum-TE11																	
Sample Date																	
08/21/04	82	325	**0.6**	522	**0.045**	4	38.5	**0.025**	**0.025**	18.4	**0.0015**	**0.0035**	12.4	**0.007**	4940	**0.15**	0.05
Mean	82	325	0.6	522	0.045	4	38.5	0.025	0.025	18.4	0.0015	0.0035	12.4	0.007	4940	0.15	0.05
Median	82	325	0.6	522	0.045	4	38.5	0.025	0.025	18.4	0.0015	0.0035	12.4	0.007	4940	0.15	0.05
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	82	325	0.6	522	0.045	4	38.5	0.025	0.025	18.4	0.0015	0.0035	12.4	0.007	4940	0.15	0.05
Maximum	82	325	0.6	522	0.045	4	38.5	0.025	0.025	18.4	0.0015	0.0035	12.4	0.007	4940	0.15	0.05
% of values undetected	0%	0%	100%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Empetrum nigrum-TE12																	
Sample Date																	
08/21/04	57.6	786	**0.6**	608	**0.045**	2.4	17.6	**0.01**	**0.025**	41.8	**0.0015**	**0.0035**	31.7	**0.012**	6490	**0.15**	0.06
09/20/04	43.8	543	**0.6**	1030	**0.15**	**3.4**	33.4	0.18	**0.025**	43.7	**0.0015**	**0.0035**	16.9	**0.008**	6550	**0.1**	0.07
Mean	50.7	665	0.6	819	0.098	2.9	25.5	0.095	0.025	42.8	0.0015	0.0035	24.3	0.01	6520	0.125	0.065
Median	50.7	665	0.6	819	0.098	2.9	25.5	0.095	0.025	42.8	0.0015	0.0035	24.3	0.01	6520	0.125	0.065
St. Deviation	9.8	172	0.0	298	0.1	0.7	11.2	0.12	0.0	1.3	0.0	0.0	10.5	0.003	42	0.0	0.01
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	43.8	543	0.6	608	0.045	2.4	17.6	0.01	0.025	41.8	0.0015	0.0035	16.9	0.008	6490	0.1	0.06
Maximum	57.6	786	0.6	1030	0.15	3.4	33.4	0.18	0.025	43.7	0.0015	0.0035	31.7	0.012	6550	0.15	0.07
% of values undetected	0%	0%	50%	0%	100%	50%	0%	50%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Empetrum nigrum-TE10																
Sample Date																
08/21/04	3.11	39.8	0.15	1350	192	0.041	0.73	1.42	2910	**0.05**	**0.0015**	14.9	**0.003**	**2.5**	**0.16** J	13.9
Mean	3.11	39.8	0.15	1350	192	0.041	0.73	1.42	2910	0.05	0.0015	14.9	0.003	2.5	0.16	13.9
Median	3.11	39.8	0.15	1350	192	0.041	0.73	1.42	2910	0.05	0.0015	14.9	0.003	2.5	0.16	13.9
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.11	39.8	0.15	1350	192	0.041	0.73	1.42	2910	0.05	0.0015	14.9	0.003	2.5	0.16	13.9
Maximum	3.11	39.8	0.15	1350	192	0.041	0.73	1.42	2910	0.05	0.0015	14.9	0.003	2.5	0.16	13.9
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Empetrum nigrum-TE11																
Sample Date																
08/21/04	3.72	32	0.19	1250	489	0.033	**0.03**	0.93	3410	**0.05**	**0.0015**	20.7	**0.002**	**2.5**	**0.14** J	13.6
Mean	3.72	32	0.19	1250	489	0.033	0.03	0.93	3410	0.05	0.0015	20.7	0.002	2.5	0.14	13.6
Median	3.72	32	0.19	1250	489	0.033	0.03	0.93	3410	0.05	0.0015	20.7	0.002	2.5	0.14	13.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.72	32	0.19	1250	489	0.033	0.03	0.93	3410	0.05	0.0015	20.7	0.002	2.5	0.14	13.6
Maximum	3.72	32	0.19	1250	489	0.033	0.03	0.93	3410	0.05	0.0015	20.7	0.002	2.5	0.14	13.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0
Empetrum nigrum-TE12																
Sample Date																
08/21/04	4.3	29.4	0.12	1130	212	0.031	0.3	0.92	4470	**0.05**	**0.0015**	32	**0.001**	**2.5**	**0.12** J	32.6
09/20/04	3.3	26.3	0.16	1580	427	0.028	0.052	1.72	2530	**0.05**	**0.0015**	22.8	**0.003**	**2.5**	**0.11** J	17.1
Mean	3.8	27.9	0.14	1355	320	0.030	0.176	1.32	3500	0.05	0.0015	27.4	0.002	2.5	0.115	24.9
Median	3.8	27.9	0.14	1355	320	0.030	0.176	1.32	3500	0.05	0.0015	27.4	0.002	2.5	0.115	24.9
St. Deviation	0.7	2.2	0.03	318	152	0.002	0.2	0.57	1372	0.0	0.0	6.5	0.001	0.00	0.01	11.0
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	3.3	26.3	0.12	1130	212	0.028	0.052	0.92	2530	0.05	0.0015	22.8	0.001	2.5	0.11	17.1
Maximum	4.3	29.4	0.16	1580	427	0.031	0.3	1.72	4470	0.05	0.0015	32	0.003	2.5	0.12	32.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	50%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Empetrum nigrum-TE13																	
Sample Date																	
08/19/04	46.7	688	**0.3**	483	**0.55**	**3.5**	21.5	**0.03**	**0.025**	36.3	**0.0015**	**0.0035**	21.2	**0.0245**	5950	**0.15**	0.07
Mean	46.7	688	0.3	483	0.55	3.5	21.5	0.03	0.025	36.3	0.0015	0.0035	21.2	0.0245	5950	0.15	0.07
Median	46.7	688	0.3	483	0.55	3.5	21.5	0.03	0.025	36.3	0.0015	0.0035	21.2	0.0245	5950	0.15	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	46.7	688	0.3	483	0.55	3.5	21.5	0.03	0.025	36.3	0.0015	0.0035	21.2	0.0245	5950	0.15	0.07
Maximum	46.7	688	0.3	483	0.55	3.5	21.5	0.03	0.025	36.3	0.0015	0.0035	21.2	0.0245	5950	0.15	0.07
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0
Empetrum nigrum-TE14																	
Sample Date																	
08/19/04	46.9	878	**0.3**	183	**0.55**	19.4	16.7	**0.01**	**0.025**	23.9	**0.0015**	**0.0035**	38.4	**0.025**	5130	**0.3**	0.08
Mean	46.9	878	0.3	183	0.55	19.4	16.7	0.01	0.025	23.9	0.0015	0.0035	38.4	0.025	5130	0.3	0.08
Median	46.9	878	0.3	183	0.55	19.4	16.7	0.01	0.025	23.9	0.0015	0.0035	38.4	0.025	5130	0.3	0.08
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	46.9	878	0.3	183	0.55	19.4	16.7	0.01	0.025	23.9	0.0015	0.0035	38.4	0.025	5130	0.3	0.08
Maximum	46.9	878	0.3	183	0.55	19.4	16.7	0.01	0.025	23.9	0.0015	0.0035	38.4	0.025	5130	0.3	0.08
% of values undetected					100%			100%	100%		100%	100%		100%			
# of values between MDL and MRL			1													1	
Empetrum nigrum-TE15																	
Sample Date																	
08/19/04	49.6	599	**0.3**	465	**0.55**	**5.0**	38.2	0.06	**0.025**	43.1	**0.0015**	**0.0035**	18.1	**0.025**	4550	**0.1**	0.06
Mean	49.6	599	0.3	465	0.55	5	38.2	0.06	0.025	43.1	0.0015	0.0035	18.1	0.025	4550	0.1	0.06
Median	49.6	599	0.3	465	0.55	5	38.2	0.06	0.025	43.1	0.0015	0.0035	18.1	0.025	4550	0.1	0.06
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	49.6	599	0.3	465	0.55	5	38.2	0.06	0.025	43.1	0.0015	0.0035	18.1	0.025	4550	0.1	0.06
Maximum	49.6	599	0.3	465	0.55	5	38.2	0.06	0.025	43.1	0.0015	0.0035	18.1	0.025	4550	0.1	0.06
% of values undetected					100%				100%		100%	100%		100%		100%	
# of values between MDL and MRL			1			1											

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Empetrum nigrum-TE13																
Sample Date																
08/19/04	3.85	26.1	0.09	1630	565	0.036	**0.005**	1.07	3130	**0.05**	**0.0015**	40.4	**0.007**	**2.5**	0.27	13.4
Mean	3.85	26.1	0.09	1630	565	0.036	0.005	1.07	3130	0.05	0.0015	40.4	0.007	2.5	0.27	13.4
Median	3.85	26.1	0.09	1630	565	0.036	0.005	1.07	3130	0.05	0.0015	40.4	0.007	2.5	0.27	13.4
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.85	26.1	0.09	1630	565	0.036	0.005	1.07	3130	0.05	0.0015	40.4	0.007	2.5	0.27	13.4
Maximum	3.85	26.1	0.09	1630	565	0.036	0.005	1.07	3130	0.05	0.0015	40.4	0.007	2.5	0.27	13.4
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Empetrum nigrum-TE14																
Sample Date																
08/19/04	3.93	26	0.09	1120	921	0.032	0.06	0.71	4330	**0.05**	**0.0015**	44	**0.001**	**2.5**	**0.1** U	12.8
Mean	3.93	26	0.09	1120	921	0.032	0.06	0.71	4330	0.05	0.0015	44	0.001	2.5	0.1	12.8
Median	3.93	26	0.09	1120	921	0.032	0.06	0.71	4330	0.05	0.0015	44	0.001	2.5	0.1	12.8
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.93	26	0.09	1120	921	0.032	0.06	0.71	4330	0.05	0.0015	44	0.001	2.5	0.1	12.8
Maximum	3.93	26	0.09	1120	921	0.032	0.06	0.71	4330	0.05	0.0015	44	0.001	2.5	0.1	12.8
% of values undetected										100%	100%		100%	100%	100%	
# of values between MDL and MRL																
Empetrum nigrum-TE15																
Sample Date																
08/19/04	3.44	41.4	0.2	1340	965	0.044	**0.025**	0.57	3090	**0.05**	**0.006**	11.8	**0.001**	**2.45**	**0.1** U	21.8
Mean	3.44	41.4	0.2	1340	965	0.044	0.025	0.57	3090	0.05	0.006	11.8	0.001	2.45	0.1	21.8
Median	3.44	41.4	0.2	1340	965	0.044	0.025	0.57	3090	0.05	0.006	11.8	0.001	2.45	0.1	21.8
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.44	41.4	0.2	1340	965	0.044	0.025	0.57	3090	0.05	0.006	11.8	0.001	2.45	0.1	21.8
Maximum	3.44	41.4	0.2	1340	965	0.044	0.025	0.57	3090	0.05	0.006	11.8	0.001	2.45	0.1	21.8
% of values undetected							100%			100%			100%	100%	100%	
# of values between MDL and MRL											1					

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Empetrum nigrum-TE17																	
Sample Date																	
08/19/04	39.8	594	**0.8**	386	**0.25**	9.0	87.1	0.07	**0.025**	28.9	**0.0015**	**0.0035**	16.1	**0.025**	4010	**0.6**	0.08
09/20/04	40.8	265	**0.3**	1210	**0.15**	**8.0**	238	0.17	**0.025**	47	**0.0015**	**0.0035**	17.7	**0.013**	5870	**0.5**	0.17
Mean	40.3	430.0	0.55	800	0.2	8.5	163	0.1	0.025	38	0.0015	0.0035	16.9	0.019	4940	0.55	0.1
Median	40.3	430.0	0.6	800.0	0.2	8.5	163	0.1	0.025	38	0.0015	0.0035	16.9	0.019	4940	0.55	0.1
St. Deviation	0.7	233	0.35	580	0.07	0.7	107	0.1	0	13	0	0	1.1	0.008	1320	0.07	0.1
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	39.8	265	0.3	386	0.15	8	87.1	0.07	0.025	28.9	0.0015	0.0035	16.1	0.013	4010	0.5	0.08
Maximum	40.8	594	0.8	1210	0.25	9	238	0.17	0.025	47	0.0015	0.0035	17.7	0.025	5870	0.6	0.17
% of values undetected					100%				100%		100%	100%		50%			
# of values between MDL and MRL			2			1								1		2	
Equisetum pratense-TE06																	
Sample Date																	
08/20/04	19.2	15300	**2.7**	29500	**0.1**	1370	13.2	0.05	**0.11**	25.6	**0.0015**	**0.025**	25.8	**0.023**	20000	**0.3**	0.53
Mean	19.2	15300	2.7	29500	0.1	1370	13.2	0.05	0.11	25.6	0.0015	0.025	25.8	0.023	20000	0.3	0.53
Median	19.2	15300	2.7	29500	0.1	1370	13.2	0.05	0.11	25.6	0.0015	0.025	25.8	0.023	20000	0.3	0.53
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	19.2	15300	2.7	29500	0.1	1370	13.2	0.05	0.11	25.6	0.0015	0.025	25.8	0.023	20000	0.3	0.53
Maximum	19.2	15300	2.7	29500	0.1	1370	13.2	0.05	0.11	25.6	0.0015	0.025	25.8	0.023	20000	0.3	0.53
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	1	0
Equisetum pratense-TE07																	
Sample Date																	
08/20/04	23.2	10400	**1.3**	8730	**0.1**	1160	18.4	**0.01**	2.24	48.9	**0.0015**	**0.005**	21.8	**0.014**	32300	**0.3**	1.75
Mean	23.2	10400	1.3	8730	0.1	1160	18.4	0.01	2.24	48.9	0.0015	0.005	21.8	0.014	32300	0.3	1.75
Median	23.2	10400	1.3	8730	0.1	1160	18.4	0.01	2.24	48.9	0.0015	0.005	21.8	0.014	32300	0.3	1.75
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	23.2	10400	1.3	8730	0.1	1160	18.4	0.01	2.24	48.9	0.0015	0.005	21.8	0.014	32300	0.3	1.75
Maximum	23.2	10400	1.3	8730	0.1	1160	18.4	0.01	2.24	48.9	0.0015	0.005	21.8	0.014	32300	0.3	1.75
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Empetrum nigrum-TE17																
Sample Date																
08/19/04	4.88	71.2	0.14	1290	376	0.042	0.53	1.48	4380	**0.05**	**0.0015**	31.3	**0.001**	**3.9**	0.27	15.0
09/20/04	5.1	196	0.72	1360	275	0.03	0.142	3.05	2970	**0.05**	**0.004**	35.6	**0.001**	**2.5**	0.38	28.4
Mean	5	134	0.43	1330	326	0.04	0.34	2.27	3680	0.05	0.003	33.5	0.001	3.2	0.33	22.0
Median	5	134	0.43	1330	326	0.04	0.34	2.27	3680	0.05	0.003	33.5	0.001	3.2	0.33	22.0
St. Deviation	0.2	88	0.41	50	71	0.01	0.27	1.11	1000	0	0.002	3	0	1	0.08	9.0
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	4.88	71.2	0.14	1290	275	0.03	0.142	1.48	2970	0.05	0.0015	31.3	0.001	2.5	0.27	15
Maximum	5.1	196	0.72	1360	376	0.042	0.53	3.05	4380	0.05	0.004	35.6	0.001	3.9	0.38	28.4
% of values undetected										100%	50%		100%	50%		
# of values between MDL and MRL											1			1		
Equisetum pratense-TE06																
Sample Date																
08/20/04	3.26	54.7	**0.03**	3630	91.4	0.023	0.25	7.42	29600	**0.4**	**0.005**	184	0.091	**2.5**	0.21	11.4
Mean	3.26	54.7	0.03	3630	91.4	0.023	0.25	7.42	29600	0.4	0.005	184	0.091	2.5	0.21	11.4
Median	3.26	54.7	0.03	3630	91.4	0.023	0.25	7.42	29600	0.4	0.005	184	0.091	2.5	0.21	11.4
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.26	54.7	0.03	3630	91.4	0.023	0.25	7.42	29600	0.4	0.005	184	0.091	2.5	0.21	11.4
Maximum	3.26	54.7	0.03	3630	91.4	0.023	0.25	7.42	29600	0.4	0.005	184	0.091	2.5	0.21	11.4
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0
Equisetum pratense-TE07																
Sample Date																
08/20/04	3.15	79.4	**0.04**	5990	80.8	0.024	1.24	5.06	7780	**0.4**	**0.0015**	359	0.109	**2.5**	**0.16** J	14.1
Mean	3.15	79.4	0.04	5990	80.8	0.024	1.24	5.06	7780	0.4	0.0015	359	0.109	2.5	0.16	14.1
Median	3.15	79.4	0.04	5990	80.8	0.024	1.24	5.06	7780	0.4	0.0015	359	0.109	2.5	0.16	14.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.15	79.4	0.04	5990	80.8	0.024	1.24	5.06	7780	0.4	0.0015	359	0.109	2.5	0.16	14.1
Maximum	3.15	79.4	0.04	5990	80.8	0.024	1.24	5.06	7780	0.4	0.0015	359	0.109	2.5	0.16	14.1
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Equisetum pratense-TE08																	
Sample Date																	
08/17/04	26.5	17800	463	16100	**0.2**	454	11.2	**0.01**	**0.025**	22.2	**0.0015**	**0.0035**	44.3	0.052	26100	**0.8**	0.59
Mean	26.5	17800	463	16100	0.2	454	11.2	0.01	0.025	22.2	0.0015	0.0035	44.3	0.052	26100	0.8	0.59
Median	26.5	17800	463	16100	0.2	454	11.2	0.01	0.025	22.2	0.0015	0.0035	44.3	0.052	26100	0.8	0.59
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	26.5	17800	463	16100	0.2	454	11.2	0.01	0.025	22.2	0.0015	0.0035	44.3	0.052	26100	0.8	0.59
Maximum	26.5	17800	463	16100	0.2	454	11.2	0.01	0.025	22.2	0.0015	0.0035	44.3	0.052	26100	0.8	0.59
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Equisetum pratense-TE10																	
Sample Date																	
08/21/04	33.2	6030	**10**	6030	**0.045**	492	56.2	**0.025**	**0.06**	31.7	**0.008**	**0.0035**	34.5	**0.008**	19600	**0.1**	0.78
Mean	33.2	6030	10	6030	0.045	492	56.2	0.025	0.06	31.7	0.008	0.0035	34.5	0.008	19600	0.1	0.78
Median	33.2	6030	10	6030	0.045	492	56.2	0.025	0.06	31.7	0.008	0.0035	34.5	0.008	19600	0.1	0.78
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	33.2	6030	10	6030	0.045	492	56.2	0.025	0.06	31.7	0.008	0.0035	34.5	0.008	19600	0.1	0.78
Maximum	33.2	6030	10	6030	0.045	492	56.2	0.025	0.06	31.7	0.008	0.0035	34.5	0.008	19600	0.1	0.78
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	1	0	1	0	0	1	0	0	0
Equisetum pratense-TE15																	
Sample Date																	
08/19/04	21.9	13300	**2.6**	20300	**0.55**	776	21.6	**0.04**	**0.025**	30.2	**0.0015**	**0.0035**	27.8	**0.025**	19200	**0.5**	1.12
Mean	21.9	13300	2.6	20300	0.55	776	21.6	0.04	0.025	30.2	0.0015	0.0035	27.8	0.025	19200	0.5	1.12
Median	21.9	13300	2.6	20300	0.55	776	21.6	0.04	0.025	30.2	0.0015	0.0035	27.8	0.025	19200	0.5	1.12
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	21.9	13300	2.6	20300	0.55	776	21.6	0.04	0.025	30.2	0.0015	0.0035	27.8	0.025	19200	0.5	1.12
Maximum	21.9	13300	2.6	20300	0.55	776	21.6	0.04	0.025	30.2	0.0015	0.0035	27.8	0.025	19200	0.5	1.12
% of values undetected					100%				100%		100%	100%		100%			
# of values between MDL and MRL			1					1								1	

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Equisetum pratense-TE08																
Sample Date																
08/17/04	2.51	29.9	0.14	6580	32	0.02	0.22	2.66	16600	**0.4**	**0.005**	69	**0.016**	**2.45**	**0.14** J	11
Mean	2.51	29.9	0.14	6580	32	0.02	0.22	2.66	16600	0.4	0.005	69	0.016	2.45	0.14	11
Median	2.51	29.9	0.14	6580	32	0.02	0.22	2.66	16600	0.4	0.005	69	0.016	2.45	0.14	11
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.51	29.9	0.14	6580	32	0.02	0.22	2.66	16600	0.4	0.005	69	0.016	2.45	0.14	11
Maximum	2.51	29.9	0.14	6580	32	0.02	0.22	2.66	16600	0.4	0.005	69	0.016	2.45	0.14	11
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0
Equisetum pratense-TE10																
Sample Date																
08/21/04	3.79	217	**0.04**	1930	258	0.033	0.48	2.95	29000	**0.4**	**0.0015**	30.1	0.042	**2.45**	**0.13** J	16.5
Mean	3.79	217	0.04	1930	258	0.033	0.48	2.95	29000	0.4	0.0015	30.1	0.042	2.45	0.13	16.5
Median	3.79	217	0.04	1930	258	0.033	0.48	2.95	29000	0.4	0.0015	30.1	0.042	2.45	0.13	16.5
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.79	217	0.04	1930	258	0.033	0.48	2.95	29000	0.4	0.0015	30.1	0.042	2.45	0.13	16.5
Maximum	3.79	217	0.04	1930	258	0.033	0.48	2.95	29000	0.4	0.0015	30.1	0.042	2.45	0.13	16.5
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0
Equisetum pratense-TE15																
Sample Date																
08/19/04	4.06	64.3	**0.04**	3920	111	0.025	0.88	2.33	34200	**0.6**	**0.008**	67.1	0.035	**2.5**	**0.1** U	15.4
Mean	4.06	64.3	0.04	3920	111	0.025	0.88	2.33	34200	0.6	0.008	67.1	0.035	2.5	0.1	15.4
Median	4.06	64.3	0.04	3920	111	0.025	0.88	2.33	34200	0.6	0.008	67.1	0.035	2.5	0.1	15.4
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.06	64.3	0.04	3920	111	0.025	0.88	2.33	34200	0.6	0.008	67.1	0.035	2.5	0.1	15.4
Maximum	4.06	64.3	0.04	3920	111	0.025	0.88	2.33	34200	0.6	0.008	67.1	0.035	2.5	0.1	15.4
% of values undetected														100%	100%	
# of values between MDL and MRL			1							1	1					

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Ledum palustre-TE02																	
Sample Date																	
08/17/04	55.3	160	**0.6**	97	**0.3**	5.1	49.4	**0.02**	**0.025**	95.1	**0.0015**	**0.005**	14.4	**0.008**	4190	**0.5**	0.08
Mean	55.3	160	0.6	97	0.3	5.1	49.4	0.02	0.025	95.1	0.0015	0.005	14.4	0.008	4190	0.5	0.08
Median	55.3	160	0.6	97	0.3	5.1	49.4	0.02	0.025	95.1	0.0015	0.005	14.4	0.008	4190	0.5	0.08
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	55.3	160	0.6	97	0.3	5.1	49.4	0.02	0.025	95.1	0.0015	0.005	14.4	0.008	4190	0.5	0.08
Maximum	55.3	160	0.6	97	0.3	5.1	49.4	0.02	0.025	95.1	0.0015	0.005	14.4	0.008	4190	0.5	0.08
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	1	0
Ledum palustre-TE03																	
Sample Date																	
08/17/04	50.9	173	**0.3**	141	**0.3**	5.3	22.3	**0.03**	**0.025**	72.2	**0.0015**	**0.005**	13.3	**0.0035**	4600	**0.3**	0.05
Mean	50.9	173	0.3	141	0.3	5.3	22.3	0.03	0.025	72.2	0.0015	0.005	13.3	0.0035	4600	0.3	0.05
Median	50.9	173	0.3	141	0.3	5.3	22.3	0.03	0.025	72.2	0.0015	0.005	13.3	0.0035	4600	0.3	0.05
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	50.9	173	0.3	141	0.3	5.3	22.3	0.03	0.025	72.2	0.0015	0.005	13.3	0.0035	4600	0.3	0.05
Maximum	50.9	173	0.3	141	0.3	5.3	22.3	0.03	0.025	72.2	0.0015	0.005	13.3	0.0035	4600	0.3	0.05
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Ledum palustre-TE04																	
Sample Date																	
08/20/04	38	239	2.6	**133**	**0.1**	14.6	30.7	**0.01**	**0.025**	119	**0.0015**	**0.025**	11.2	**0.0035**	5300	**0.3**	0.08
Mean	38	239	2.6	133	0.1	14.6	30.7	0.01	0.025	119	0.0015	0.025	11.2	0.0035	5300	0.3	0.08
Median	38	239	2.6	133	0.1	14.6	30.7	0.01	0.025	119	0.0015	0.025	11.2	0.0035	5300	0.3	0.08
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	38	239	2.6	133	0.1	14.6	30.7	0.01	0.025	119	0.0015	0.025	11.2	0.0035	5300	0.3	0.08
Maximum	38	239	2.6	133	0.1	14.6	30.7	0.01	0.025	119	0.0015	0.025	11.2	0.0035	5300	0.3	0.08
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	100%	0%	0%	0%
# of values between MDL and MRL	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Ledum palustre-TE02																
Sample Date																
08/17/04	3.71	41.1	0.18	932	499	0.044	0.11	0.88	2910	**0.05**	**0.0015**	32.6	0.106	**2.5**	0.26	23.8
Mean	3.71	41.1	0.18	932	499	0.044	0.11	0.88	2910	0.05	0.0015	32.6	0.106	2.5	0.26	23.8
Median	3.71	41.1	0.18	932	499	0.044	0.11	0.88	2910	0.05	0.0015	32.6	0.106	2.5	0.26	23.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.71	41.1	0.18	932	499	0.044	0.11	0.88	2910	0.05	0.0015	32.6	0.106	2.5	0.26	23.8
Maximum	3.71	41.1	0.18	932	499	0.044	0.11	0.88	2910	0.05	0.0015	32.6	0.106	2.5	0.26	23.8
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ledum palustre-TE03																
Sample Date																
08/17/04	3.56	26.9	0.07	1240	883	0.041	**0.005**	0.59	4130	**0.05**	**0.005**	**5**	0.06	**2.5**	**0.12** J	18.6
Mean	3.56	26.9	0.07	1240	883	0.041	0.005	0.59	4130	0.05	0.005	5	0.06	2.5	0.12	18.6
Median	3.56	26.9	0.07	1240	883	0.041	0.005	0.59	4130	0.05	0.005	5	0.06	2.5	0.12	18.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.56	26.9	0.07	1240	883	0.041	0.005	0.59	4130	0.05	0.005	5	0.06	2.5	0.12	18.6
Maximum	3.56	26.9	0.07	1240	883	0.041	0.005	0.59	4130	0.05	0.005	5	0.06	2.5	0.12	18.6
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Ledum palustre-TE04																
Sample Date																
08/20/04	3.12	27.8	0.09	1090	292	0.029	**0.025**	1.48	4100	**0.05**	**0.0015**	**9.3**	0.258	**2.5**	**0.17** J	15.1
Mean	3.12	27.8	0.09	1090	292	0.029	0.025	1.48	4100	0.05	0.0015	9.3	0.258	2.5	0.17	15.1
Median	3.12	27.8	0.09	1090	292	0.029	0.025	1.48	4100	0.05	0.0015	9.3	0.258	2.5	0.17	15.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.12	27.8	0.09	1090	292	0.029	0.025	1.48	4100	0.05	0.0015	9.3	0.258	2.5	0.17	15.1
Maximum	3.12	27.8	0.09	1090	292	0.029	0.025	1.48	4100	0.05	0.0015	9.3	0.258	2.5	0.17	15.1
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Ledum palustre-TE05																	
Sample Date																	
08/20/04	37.4	306	2	**146**	**0.1**	16.5	28.2	**0.01**	**0.025**	111	**0.0015**	**0.005**	12.8	**0.0035**	5160	**0.25**	0.07
Mean	37.4	306	2	146	0.1	16.5	28.2	0.01	0.025	111	0.0015	0.005	12.8	0.0035	5160	0.25	0.07
Median	37.4	306	2	146	0.1	16.5	28.2	0.01	0.025	111	0.0015	0.005	12.8	0.0035	5160	0.25	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	37.4	306	2	146	0.1	16.5	28.2	0.01	0.025	111	0.0015	0.005	12.8	0.0035	5160	0.25	0.07
Maximum	37.4	306	2	146	0.1	16.5	28.2	0.01	0.025	111	0.0015	0.005	12.8	0.0035	5160	0.25	0.07
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	100%	0%	100%	0%
# of values between MDL and MRL	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Ledum palustre-TE07																	
Sample Date																	
08/20/04	50	136	**1.6**	194	**0.3**	13.2	15.7	**0.03**	**0.025**	60	**0.0015**	**0.025**	12.7	**0.0035**	4870	**0.1**	0.07
Mean	50	136	1.6	194	0.3	13.2	15.7	0.03	0.025	60	0.0015	0.025	12.7	0.0035	4870	0.1	0.07
Median	50	136	1.6	194	0.3	13.2	15.7	0.03	0.025	60	0.0015	0.025	12.7	0.0035	4870	0.1	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	50	136	1.6	194	0.3	13.2	15.7	0.03	0.025	60	0.0015	0.025	12.7	0.0035	4870	0.1	0.07
Maximum	50	136	1.6	194	0.3	13.2	15.7	0.03	0.025	60	0.0015	0.025	12.7	0.0035	4870	0.1	0.07
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0
Ledum palustre-TE08																	
Sample Date																	
08/17/04	52.9	124	783	258	**0.2**	5.4	14.8	**0.01**	**0.025**	59.8	**0.0015**	**0.0035**	17.1	**0.008**	3660	**0.1**	0.04
Mean	52.9	124	783	258	0.2	5.4	14.8	0.01	0.025	59.8	0.0015	0.0035	17.1	0.008	3660	0.1	0.04
Median	52.9	124	783	258	0.2	5.4	14.8	0.01	0.025	59.8	0.0015	0.0035	17.1	0.008	3660	0.1	0.04
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	52.9	124	783	258	0.2	5.4	14.8	0.01	0.025	59.8	0.0015	0.0035	17.1	0.008	3660	0.1	0.04
Maximum	52.9	124	783	258	0.2	5.4	14.8	0.01	0.025	59.8	0.0015	0.0035	17.1	0.008	3660	0.1	0.04
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Ledum palustre-TE05																
Sample Date																
08/20/04	3.87	29.3	0.07	1120	1890	0.033	0.07	1.17	4870	**0.05**	**0.0015**	11.4	0.179	**2.45**	**0.09** J	22.5
Mean	3.87	29.3	0.07	1120	1890	0.033	0.07	1.17	4870	0.05	0.0015	11.4	0.179	2.45	0.09	22.5
Median	3.87	29.3	0.07	1120	1890	0.033	0.07	1.17	4870	0.05	0.0015	11.4	0.179	2.45	0.09	22.5
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.87	29.3	0.07	1120	1890	0.033	0.07	1.17	4870	0.05	0.0015	11.4	0.179	2.45	0.09	22.5
Maximum	3.87	29.3	0.07	1120	1890	0.033	0.07	1.17	4870	0.05	0.0015	11.4	0.179	2.45	0.09	22.5
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Ledum palustre-TE07																
Sample Date																
08/20/04	4.09	25.3	0.07	976	409	0.037	0.22	0.89	3740	**0.05**	**0.0015**	**4.95**	0.09	**2.5**	**0.13** J	24.2
Mean	4.09	25.3	0.07	976	409	0.037	0.22	0.89	3740	0.05	0.0015	4.95	0.09	2.5	0.13	24.2
Median	4.09	25.3	0.07	976	409	0.037	0.22	0.89	3740	0.05	0.0015	4.95	0.09	2.5	0.13	24.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.09	25.3	0.07	976	409	0.037	0.22	0.89	3740	0.05	0.0015	4.95	0.09	2.5	0.13	24.2
Maximum	4.09	25.3	0.07	976	409	0.037	0.22	0.89	3740	0.05	0.0015	4.95	0.09	2.5	0.13	24.2
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Ledum palustre-TE08																
Sample Date																
08/17/04	3.53	24.1	0.07	869	466	0.048	0.2	0.32	4920	**0.05**	**0.002**	14.2	0.024	**2.5**	**0.09** J	20.2
Mean	3.53	24.1	0.07	869	466	0.048	0.2	0.32	4920	0.05	0.002	14.2	0.024	2.5	0.09	20.2
Median	3.53	24.1	0.07	869	466	0.048	0.2	0.32	4920	0.05	0.002	14.2	0.024	2.5	0.09	20.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.53	24.1	0.07	869	466	0.048	0.2	0.32	4920	0.05	0.002	14.2	0.024	2.5	0.09	20.2
Maximum	3.53	24.1	0.07	869	466	0.048	0.2	0.32	4920	0.05	0.002	14.2	0.024	2.5	0.09	20.2
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Ledum palustre-TE10																	
Sample Date																	
08/21/04	75.1	223	**0.6**	91	**0.045**	3.4	25.5	**0.025**	**0.025**	96.6	**0.0015**	**0.0035**	14.8	**0.007**	4990	**0.3**	0.05
Mean	75.1	223	0.6	91	0.045	3.4	25.5	0.025	0.025	96.6	0.0015	0.0035	14.8	0.007	4990	0.3	0.05
Median	75.1	223	0.6	91	0.045	3.4	25.5	0.025	0.025	96.6	0.0015	0.0035	14.8	0.007	4990	0.3	0.05
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	75.1	223	0.6	91	0.045	3.4	25.5	0.025	0.025	96.6	0.0015	0.0035	14.8	0.007	4990	0.3	0.05
Maximum	75.1	223	0.6	91	0.045	3.4	25.5	0.025	0.025	96.6	0.0015	0.0035	14.8	0.007	4990	0.3	0.05
% of values undetected	0%	0%	100%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Ledum palustre-TE11																	
Sample Date																	
08/21/04	64.4	177	**0.6**	201	**0.045**	2	15.3	**0.025**	**0.025**	46.8	**0.0015**	**0.0035**	9.5	**0.0035**	2880	**0.15**	0.03
Mean	64.4	177	0.6	201	0.045	2	15.3	0.025	0.025	46.8	0.0015	0.0035	9.5	0.0035	2880	0.15	0.03
Median	64.4	177	0.6	201	0.045	2	15.3	0.025	0.025	46.8	0.0015	0.0035	9.5	0.0035	2880	0.15	0.03
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	64.4	177	0.6	201	0.045	2	15.3	0.025	0.025	46.8	0.0015	0.0035	9.5	0.0035	2880	0.15	0.03
Maximum	64.4	177	0.6	201	0.045	2	15.3	0.025	0.025	46.8	0.0015	0.0035	9.5	0.0035	2880	0.15	0.03
% of values undetected	0%	0%	100%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	100%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ledum palustre-TE14																	
Sample Date																	
08/19/04	53.2	**137**	**0.4**	**168**	**0.55**	7.7	11.5	**0.01**	**0.025**	57.9	**0.0015**	**0.0035**	9.1	**0.0245**	4530	**0.15**	0.05
Mean	53.2	137	0.4	168	0.55	7.7	11.5	0.01	0.025	57.9	0.0015	0.0035	9.1	0.0245	4530	0.15	0.05
Median	53.2	137	0.4	168	0.55	7.7	11.5	0.01	0.025	57.9	0.0015	0.0035	9.1	0.0245	4530	0.15	0.05
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	53.2	137	0.4	168	0.55	7.7	11.5	0.01	0.025	57.9	0.0015	0.0035	9.1	0.0245	4530	0.15	0.05
Maximum	53.2	137	0.4	168	0.55	7.7	11.5	0.01	0.025	57.9	0.0015	0.0035	9.1	0.0245	4530	0.15	0.05
% of values undetected					100%			100%	100%		100%	100%		100%		100%	
# of values between MDL and MRL		1	1	1													

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Ledum palustre-TE10																
Sample Date																
08/21/04	3.73	28.5	0.09	1120	600	0.032	0.3	0.72	4560	**0.05**	**0.0015**	**5**	0.114	**2.5**	**0.14** J	26
Mean	3.73	28.5	0.09	1120	600	0.032	0.3	0.72	4560	0.05	0.0015	5	0.114	2.5	0.14	26
Median	3.73	28.5	0.09	1120	600	0.032	0.3	0.72	4560	0.05	0.0015	5	0.114	2.5	0.14	26
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.73	28.5	0.09	1120	600	0.032	0.3	0.72	4560	0.05	0.0015	5	0.114	2.5	0.14	26
Maximum	3.73	28.5	0.09	1120	600	0.032	0.3	0.72	4560	0.05	0.0015	5	0.114	2.5	0.14	26
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Ledum palustre-TE11																
Sample Date																
08/21/04	3.28	22.1	0.07	1060	718	0.031	**0.005**	0.4	4410	**0.05**	**0.0015**	**5**	0.052	**2.5**	**0.12** J	21.9
Mean	3.28	22.1	0.07	1060	718	0.031	0.005	0.4	4410	0.05	0.0015	5	0.052	2.5	0.12	21.9
Median	3.28	22.1	0.07	1060	718	0.031	0.005	0.4	4410	0.05	0.0015	5	0.052	2.5	0.12	21.9
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.28	22.1	0.07	1060	718	0.031	0.005	0.4	4410	0.05	0.0015	5	0.052	2.5	0.12	21.9
Maximum	3.28	22.1	0.07	1060	718	0.031	0.005	0.4	4410	0.05	0.0015	5	0.052	2.5	0.12	21.9
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	100%	100%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Ledum palustre-TE14																
Sample Date																
08/19/04	2.95	26.6	0.1	1020	1430	0.04	0.06	0.47	3400	**0.05**	**0.0015**	**5**	0.097	**2.5**	**0.1** U	21.7
Mean	2.95	26.6	0.1	1020	1430	0.04	0.06	0.47	3400	0.05	0.0015	5	0.097	2.5	0.1	21.7
Median	2.95	26.6	0.1	1020	1430	0.04	0.06	0.47	3400	0.05	0.0015	5	0.097	2.5	0.1	21.7
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.95	26.6	0.1	1020	1430	0.04	0.06	0.47	3400	0.05	0.0015	5	0.097	2.5	0.1	21.7
Maximum	2.95	26.6	0.1	1020	1430	0.04	0.06	0.47	3400	0.05	0.0015	5	0.097	2.5	0.1	21.7
% of values undetected										100%	100%	100%		100%	100%	
# of values between MDL and MRL																

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Lupinus nootkatensis-TE0																	
Sample Date																	
08/17/04	21.9	1960	17.4	3690	**0.3**	404	330	**0.03**	**0.05**	84.5	0.056	**0.005**	11.5	**0.009**	11700	**0.5**	0.35
Mean	21.9	1960	17.4	3690	0.3	404	330	0.03	0.05	84.5	0.056	0.005	11.5	0.009	11700	0.5	0.35
Median	21.9	1960	17.4	3690	0.3	404	330	0.03	0.05	84.5	0.056	0.005	11.5	0.009	11700	0.5	0.35
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	21.9	1960	17.4	3690	0.3	404	330	0.03	0.05	84.5	0.056	0.005	11.5	0.009	11700	0.5	0.35
Maximum	21.9	1960	17.4	3690	0.3	404	330	0.03	0.05	84.5	0.056	0.005	11.5	0.009	11700	0.5	0.35
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0
Myrica gale-TE07																	
Sample Date																	
08/20/04	39.5	1180	**1.3**	986	1.1	215	**1.95**	0.05	**0.08**	5.5	**0.0015**	**0.005**	8.4	**0.017**	7380	**0.1**	0.16
Mean	39.5	1180	1.3	986	1.1	215	1.95	0.05	0.08	5.5	0.0015	0.005	8.4	0.017	7380	0.1	0.16
Median	39.5	1180	1.3	986	1.1	215	1.95	0.05	0.08	5.5	0.0015	0.005	8.4	0.017	7380	0.1	0.16
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	39.5	1180	1.3	986	1.1	215	1.95	0.05	0.08	5.5	0.0015	0.005	8.4	0.017	7380	0.1	0.16
Maximum	39.5	1180	1.3	986	1.1	215	1.95	0.05	0.08	5.5	0.0015	0.005	8.4	0.017	7380	0.1	0.16
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0
Picea glauca-TE05																	
Sample Date																	
08/20/04	36.2	467	**1.6**	**109**	**0.5**	24.2	60.4	**0.02**	**0.025**	39.3	**0.0015**	**0.025**	8.4	**0.022**	5670	**0.1**	0.15
Mean	36.2	467	1.6	109	0.5	24.2	60.4	0.02	0.025	39.3	0.0015	0.025	8.4	0.022	5670	0.1	0.15
Median	36.2	467	1.6	109	0.5	24.2	60.4	0.02	0.025	39.3	0.0015	0.025	8.4	0.022	5670	0.1	0.15
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	36.2	467	1.6	109	0.5	24.2	60.4	0.02	0.025	39.3	0.0015	0.025	8.4	0.022	5670	0.1	0.15
Maximum	36.2	467	1.6	109	0.5	24.2	60.4	0.02	0.025	39.3	0.0015	0.025	8.4	0.022	5670	0.1	0.15
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	1	1	0	0	1	0	0	0	0	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Lupinus nootkatensis-TE02																
Sample Date																
08/17/04	6.36	66.5	0.05	4260	109	0.032	0.08	1.77	5650	**0.05**	**0.0015**	1940	**0.002**	**2.5**	**0.14** J	24.2
Mean	6.36	66.5	0.05	4260	109	0.032	0.08	1.77	5650	0.05	0.0015	1940	0.002	2.5	0.14	24.2
Median	6.36	66.5	0.05	4260	109	0.032	0.08	1.77	5650	0.05	0.0015	1940	0.002	2.5	0.14	24.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	6.36	66.5	0.05	4260	109	0.032	0.08	1.77	5650	0.05	0.0015	1940	0.002	2.5	0.14	24.2
Maximum	6.36	66.5	0.05	4260	109	0.032	0.08	1.77	5650	0.05	0.0015	1940	0.002	2.5	0.14	24.2
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Myrica gale-TE07																
Sample Date																
08/20/04	2.49	88.4	**0.02**	2630	238	0.102	2.74	1.56	4810	**0.05**	**0.0015**	30.4	**0.01**	**2.45**	**0.15** J	23.3
Mean	2.49	88.4	0.02	2630	238	0.102	2.74	1.56	4810	0.05	0.0015	30.4	0.01	2.45	0.15	23.3
Median	2.49	88.4	0.02	2630	238	0.102	2.74	1.56	4810	0.05	0.0015	30.4	0.01	2.45	0.15	23.3
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.49	88.4	0.02	2630	238	0.102	2.74	1.56	4810	0.05	0.0015	30.4	0.01	2.45	0.15	23.3
Maximum	2.49	88.4	0.02	2630	238	0.102	2.74	1.56	4810	0.05	0.0015	30.4	0.01	2.45	0.15	23.3
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Picea glauca-TE05																
Sample Date																
08/20/04	3.1	34.8	0.12	699	754	0.041	**0.025**	2.97	8160	**0.05**	**0.012**	45.6	**0.01**	**2.45**	**0.17** J	51.3
Mean	3.1	34.8	0.12	699	754	0.041	0.025	2.97	8160	0.05	0.012	45.6	0.01	2.45	0.17	51.3
Median	3.1	34.8	0.12	699	754	0.041	0.025	2.97	8160	0.05	0.012	45.6	0.01	2.45	0.17	51.3
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.1	34.8	0.12	699	754	0.041	0.025	2.97	8160	0.05	0.012	45.6	0.01	2.45	0.17	51.3
Maximum	3.1	34.8	0.12	699	754	0.041	0.025	2.97	8160	0.05	0.012	45.6	0.01	2.45	0.17	51.3
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Picea glauca-TE10																	
Sample Date																	
08/21/04	59.9	408	**0.6**	856	**0.17**	2.5	74.5	**0.025**	**0.025**	32.9	**0.0015**	**0.0035**	5.4	**0.01**	4840	**0.15**	0.06
Mean	59.9	408	0.6	856	0.17	2.5	74.5	0.025	0.025	32.9	0.0015	0.0035	5.4	0.01	4840	0.15	0.06
Median	59.9	408	0.6	856	0.17	2.5	74.5	0.025	0.025	32.9	0.0015	0.0035	5.4	0.01	4840	0.15	0.06
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	59.9	408	0.6	856	0.17	2.5	74.5	0.025	0.025	32.9	0.0015	0.0035	5.4	0.01	4840	0.15	0.06
Maximum	59.9	408	0.6	856	0.17	2.5	74.5	0.025	0.025	32.9	0.0015	0.0035	5.4	0.01	4840	0.15	0.06
% of values undetected	0%	0%	100%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
Picea glauca-TE13																	
Sample Date																	
08/19/04	48.3	249	**0.3**	**103**	**0.55**	**4.8**	101	**0.02**	**0.025**	4.2	**0.0015**	**0.0035**	6.3	**0.025**	818	**0.3**	0.03
Mean	48.3	249	0.3	103	0.55	4.8	101	0.02	0.025	4.2	0.0015	0.0035	6.3	0.025	818	0.3	0.03
Median	48.3	249	0.3	103	0.55	4.8	101	0.02	0.025	4.2	0.0015	0.0035	6.3	0.025	818	0.3	0.03
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	48.3	249	0.3	103	0.55	4.8	101	0.02	0.025	4.2	0.0015	0.0035	6.3	0.025	818	0.3	0.03
Maximum	48.3	249	0.3	103	0.55	4.8	101	0.02	0.025	4.2	0.0015	0.0035	6.3	0.025	818	0.3	0.03
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	0%	0%
# of values between MDL and MRL	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	1	0
Picea glauca-TE17																	
Sample Date																	
08/19/04	41	327	**0.6**	143	**0.2**	12.9	74.5	0.05	**0.025**	65.6	**0.0015**	**0.0035**	21.5	**0.025**	3620	**0.7**	0.15
Mean	41	327	0.6	143	0.2	12.9	74.5	0.05	0.025	65.6	0.0015	0.0035	21.5	0.025	3620	0.7	0.15
Median	41	327	0.6	143	0.2	12.9	74.5	0.05	0.025	65.6	0.0015	0.0035	21.5	0.025	3620	0.7	0.15
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	41	327	0.6	143	0.2	12.9	74.5	0.05	0.025	65.6	0.0015	0.0035	21.5	0.025	3620	0.7	0.15
Maximum	41	327	0.6	143	0.2	12.9	74.5	0.05	0.025	65.6	0.0015	0.0035	21.5	0.025	3620	0.7	0.15
% of values undetected									100%		100%	100%		100%			
# of values between MDL and MRL			1		1											1	

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Picea glauca-TE10																
Sample Date																
08/21/04	2.25	29.8	0.15	652	94.9	0.057	**0.005**	3.25	4880	**0.05**	**0.008**	39.5	**0.004**	**2.5**	**0.19** J	60.5
Mean	2.25	29.8	0.15	652	94.9	0.057	0.005	3.25	4880	0.05	0.008	39.5	0.004	2.5	0.19	60.5
Median	2.25	29.8	0.15	652	94.9	0.057	0.005	3.25	4880	0.05	0.008	39.5	0.004	2.5	0.19	60.5
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.25	29.8	0.15	652	94.9	0.057	0.005	3.25	4880	0.05	0.008	39.5	0.004	2.5	0.19	60.5
Maximum	2.25	29.8	0.15	652	94.9	0.057	0.005	3.25	4880	0.05	0.008	39.5	0.004	2.5	0.19	60.5
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0
Picea glauca-TE13																
Sample Date																
08/19/04	3.33	23	**0.04**	343	103	0.043	**0.005**	0.77	4230	**0.05**	**0.007**	**4.85**	**0.005**	**2.45**	**0.1** U	22.5
Mean	3.33	23	0.04	343	103	0.043	0.005	0.77	4230	0.05	0.007	4.85	0.005	2.45	0.1	22.5
Median	3.33	23	0.04	343	103	0.043	0.005	0.77	4230	0.05	0.007	4.85	0.005	2.45	0.1	22.5
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.33	23	0.04	343	103	0.043	0.005	0.77	4230	0.05	0.007	4.85	0.005	2.45	0.1	22.5
Maximum	3.33	23	0.04	343	103	0.043	0.005	0.77	4230	0.05	0.007	4.85	0.005	2.45	0.1	22.5
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	100%	0%	100%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0
Picea glauca-TE17																
Sample Date																
08/19/04	3.31	52.7	0.07	639	523	0.046	0.07	1.15	7280	**0.05**	**0.004**	37.5	**0.001**	**1.5**	0.24	54.3
Mean	3.31	52.7	0.07	639	523	0.046	0.07	1.15	7280	0.05	0.004	37.5	0.001	1.5	0.24	54.3
Median	3.31	52.7	0.07	639	523	0.046	0.07	1.15	7280	0.05	0.004	37.5	0.001	1.5	0.24	54.3
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.31	52.7	0.07	639	523	0.046	0.07	1.15	7280	0.05	0.004	37.5	0.001	1.5	0.24	54.3
Maximum	3.31	52.7	0.07	639	523	0.046	0.07	1.15	7280	0.05	0.004	37.5	0.001	1.5	0.24	54.3
% of values undetected										100%			100%	100%		
# of values between MDL and MRL											1					

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Picea mariana-TE01																	
Sample Date																	
08/17/04	47	540	**0.9**	149	**0.3**	6.8	94.5	**0.03**	**0.025**	36.5	**0.0015**	**0.005**	8.5	**0.009**	5460	**0.3**	0.11
Mean	47	540	0.9	149	0.3	6.8	94.5	0.03	0.025	36.5	0.0015	0.005	8.5	0.009	5460	0.3	0.11
Median	47	540	0.9	149	0.3	6.8	94.5	0.03	0.025	36.5	0.0015	0.005	8.5	0.009	5460	0.3	0.11
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	47	540	0.9	149	0.3	6.8	94.5	0.03	0.025	36.5	0.0015	0.005	8.5	0.009	5460	0.3	0.11
Maximum	47	540	0.9	149	0.3	6.8	94.5	0.03	0.025	36.5	0.0015	0.005	8.5	0.009	5460	0.3	0.11
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	1	0
Picea mariana-TE02																	
Sample Date																	
08/17/04	49.9	310	**0.4**	269	**0.3**	**4**	136	**0.03**	**0.025**	35.4	**0.003**	**0.005**	8	**0.0035**	5660	**0.6**	0.08
Mean	49.9	310	0.4	269	0.3	4	136	0.03	0.025	35.4	0.003	0.005	8	0.0035	5660	0.6	0.08
Median	49.9	310	0.4	269	0.3	4	136	0.03	0.025	35.4	0.003	0.005	8	0.0035	5660	0.6	0.08
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	49.9	310	0.4	269	0.3	4	136	0.03	0.025	35.4	0.003	0.005	8	0.0035	5660	0.6	0.08
Maximum	49.9	310	0.4	269	0.3	4	136	0.03	0.025	35.4	0.003	0.005	8	0.0035	5660	0.6	0.08
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%	100%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	1	0
Picea mariana-TE03																	
Sample Date																	
08/17/04	46.3	478	**0.7**	340	**0.3**	7.4	42.5	**0.01**	**0.025**	8.6	**0.0015**	**0.005**	11.1	**0.0035**	5000	**0.5**	0.08
Mean	46.3	478	0.7	340	0.3	7.4	42.5	0.01	0.025	8.6	0.0015	0.005	11.1	0.0035	5000	0.5	0.08
Median	46.3	478	0.7	340	0.3	7.4	42.5	0.01	0.025	8.6	0.0015	0.005	11.1	0.0035	5000	0.5	0.08
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	46.3	478	0.7	340	0.3	7.4	42.5	0.01	0.025	8.6	0.0015	0.005	11.1	0.0035	5000	0.5	0.08
Maximum	46.3	478	0.7	340	0.3	7.4	42.5	0.01	0.025	8.6	0.0015	0.005	11.1	0.0035	5000	0.5	0.08
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	100%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Picea mariana-TE01																
Sample Date																
08/17/04	3.47	34.6	0.1	695	237	0.048	**0.005**	1.37	8290	**0.05**	**0.018**	25.4	**0.004**	**2.45**	**0.19** J	55.2
Mean	3.47	34.6	0.1	695	237	0.048	0.005	1.37	8290	0.05	0.018	25.4	0.004	2.45	0.19	55.2
Median	3.47	34.6	0.1	695	237	0.048	0.005	1.37	8290	0.05	0.018	25.4	0.004	2.45	0.19	55.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.47	34.6	0.1	695	237	0.048	0.005	1.37	8290	0.05	0.018	25.4	0.004	2.45	0.19	55.2
Maximum	3.47	34.6	0.1	695	237	0.048	0.005	1.37	8290	0.05	0.018	25.4	0.004	2.45	0.19	55.2
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0
Picea mariana-TE02																
Sample Date																
08/17/04	2.29	28.3	0.11	937	27.1	0.049	**0.005**	1.45	5530	**0.05**	**0.014**	12	0.031	**2.45**	**0.13** J	75.5
Mean	2.29	28.3	0.11	937	27.1	0.049	0.005	1.45	5530	0.05	0.014	12	0.031	2.45	0.13	75.5
Median	2.29	28.3	0.11	937	27.1	0.049	0.005	1.45	5530	0.05	0.014	12	0.031	2.45	0.13	75.5
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.29	28.3	0.11	937	27.1	0.049	0.005	1.45	5530	0.05	0.014	12	0.031	2.45	0.13	75.5
Maximum	2.29	28.3	0.11	937	27.1	0.049	0.005	1.45	5530	0.05	0.014	12	0.031	2.45	0.13	75.5
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Picea mariana-TE03																
Sample Date																
08/17/04	2.39	37.1	0.12	895	212	0.049	**0.005**	0.92	8240	**0.05**	**0.008**	21.6	**0.007**	**2.5**	**0.16** J	31.5
Mean	2.39	37.1	0.12	895	212	0.049	0.005	0.92	8240	0.05	0.008	21.6	0.007	2.5	0.16	31.5
Median	2.39	37.1	0.12	895	212	0.049	0.005	0.92	8240	0.05	0.008	21.6	0.007	2.5	0.16	31.5
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.39	37.1	0.12	895	212	0.049	0.005	0.92	8240	0.05	0.008	21.6	0.007	2.5	0.16	31.5
Maximum	2.39	37.1	0.12	895	212	0.049	0.005	0.92	8240	0.05	0.008	21.6	0.007	2.5	0.16	31.5
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Picea mariana-TE04																	
Sample Date																	
08/20/04	38.8	285	**1.6**	**95**	**0.6**	11.4	142	**0.01**	**0.025**	22.3	**0.012**	**0.025**	6.2	**0.009**	2310	**0.1**	0.1
Mean	38.8	285	1.6	95	0.6	11.4	142	0.01	0.025	22.3	0.012	0.025	6.2	0.009	2310	0.1	0.1
Median	38.8	285	1.6	95	0.6	11.4	142	0.01	0.025	22.3	0.012	0.025	6.2	0.009	2310	0.1	0.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	38.8	285	1.6	95	0.6	11.4	142	0.01	0.025	22.3	0.012	0.025	6.2	0.009	2310	0.1	0.1
Maximum	38.8	285	1.6	95	0.6	11.4	142	0.01	0.025	22.3	0.012	0.025	6.2	0.009	2310	0.1	0.1
% of values undetected	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	1	1	0	0	0	0	0	1	0	0	1	0	0	0
Picea mariana-TE07																	
Sample Date																	
08/20/04	42.3	391	**1.5**	385	**0.1**	13.7	13.8	**0.02**	**0.025**	15.5	**0.0015**	**0.005**	10.5	**0.0035**	7800	**0.3**	0.11
Mean	42.3	391	1.5	385	0.1	13.7	13.8	0.02	0.025	15.5	0.0015	0.005	10.5	0.0035	7800	0.3	0.11
Median	42.3	391	1.5	385	0.1	13.7	13.8	0.02	0.025	15.5	0.0015	0.005	10.5	0.0035	7800	0.3	0.11
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	42.3	391	1.5	385	0.1	13.7	13.8	0.02	0.025	15.5	0.0015	0.005	10.5	0.0035	7800	0.3	0.11
Maximum	42.3	391	1.5	385	0.1	13.7	13.8	0.02	0.025	15.5	0.0015	0.005	10.5	0.0035	7800	0.3	0.11
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Picea mariana-TE08																	
Sample Date																	
08/17/04	48.9	319	1170	306	**0.21**	5.4	12.8	**0.01**	**0.025**	24.8	**0.0015**	**0.0035**	5.5	**0.011**	6600	**0.1**	0.08
Mean	48.9	319	1170	306	0.21	5.4	12.8	0.01	0.025	24.8	0.0015	0.0035	5.5	0.011	6600	0.1	0.08
Median	48.9	319	1170	306	0.21	5.4	12.8	0.01	0.025	24.8	0.0015	0.0035	5.5	0.011	6600	0.1	0.08
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	48.9	319	1170	306	0.21	5.4	12.8	0.01	0.025	24.8	0.0015	0.0035	5.5	0.011	6600	0.1	0.08
Maximum	48.9	319	1170	306	0.21	5.4	12.8	0.01	0.025	24.8	0.0015	0.0035	5.5	0.011	6600	0.1	0.08
% of values undetected	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Picea mariana-TE04																
Sample Date																
08/20/04	3.53	24.5	0.05	733	213	0.033	**0.005**	3.42	5450	**0.2**	**0.016**	13.6	**0.01**	**2.45**	**0.08** J	17.2
Mean	3.53	24.5	0.05	733	213	0.033	0.005	3.42	5450	0.2	0.016	13.6	0.01	2.45	0.08	17.2
Median	3.53	24.5	0.05	733	213	0.033	0.005	3.42	5450	0.2	0.016	13.6	0.01	2.45	0.08	17.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.53	24.5	0.05	733	213	0.033	0.005	3.42	5450	0.2	0.016	13.6	0.01	2.45	0.08	17.2
Maximum	3.53	24.5	0.05	733	213	0.033	0.005	3.42	5450	0.2	0.016	13.6	0.01	2.45	0.08	17.2
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0
Picea mariana-TE07																
Sample Date																
08/20/04	2.71	26.9	0.08	608	129	0.05	**0.02**	1.81	7980	**0.05**	**0.007**	20.9	0.026	**2.5**	**0.12** J	72.9
Mean	2.71	26.9	0.08	608	129	0.05	0.02	1.81	7980	0.05	0.007	20.9	0.026	2.5	0.12	72.9
Median	2.71	26.9	0.08	608	129	0.05	0.02	1.81	7980	0.05	0.007	20.9	0.026	2.5	0.12	72.9
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.71	26.9	0.08	608	129	0.05	0.02	1.81	7980	0.05	0.007	20.9	0.026	2.5	0.12	72.9
Maximum	2.71	26.9	0.08	608	129	0.05	0.02	1.81	7980	0.05	0.007	20.9	0.026	2.5	0.12	72.9
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0
Picea mariana-TE08																
Sample Date																
08/17/04	2.26	25.8	0.12	552	239	0.054	**0.025**	0.66	6130	**0.05**	**0.009**	26.7	**0.004**	**2.45**	**0.12** J	36.8
Mean	2.26	25.8	0.12	552	239	0.054	0.025	0.66	6130	0.05	0.009	26.7	0.004	2.45	0.12	36.8
Median	2.26	25.8	0.12	552	239	0.054	0.025	0.66	6130	0.05	0.009	26.7	0.004	2.45	0.12	36.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.26	25.8	0.12	552	239	0.054	0.025	0.66	6130	0.05	0.009	26.7	0.004	2.45	0.12	36.8
Maximum	2.26	25.8	0.12	552	239	0.054	0.025	0.66	6130	0.05	0.009	26.7	0.004	2.45	0.12	36.8
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Picea mariana-TE14																	
Sample Date																	
08/19/04	46.6	441	**0.3**	**145**	**0.55**	10.2	30.8	**0.01**	**0.025**	35	**0.0015**	**0.0035**	9.7	**0.025**	5520	**0.3**	0.08
Mean	46.6	441	0.3	145	0.55	10.2	30.8	0.01	0.025	35	0.0015	0.0035	9.7	0.025	5520	0.3	0.08
Median	46.6	441	0.3	145	0.55	10.2	30.8	0.01	0.025	35	0.0015	0.0035	9.7	0.025	5520	0.3	0.08
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	46.6	441	0.3	145	0.55	10.2	30.8	0.01	0.025	35	0.0015	0.0035	9.7	0.025	5520	0.3	0.08
Maximum	46.6	441	0.3	145	0.55	10.2	30.8	0.01	0.025	35	0.0015	0.0035	9.7	0.025	5520	0.3	0.08
% of values undetected					100%			100%	100%		100%	100%		100%			
# of values between MDL and MRL			1	1												1	
Picea mariana-TE15																	
Sample Date																	
08/19/04	47.1	459	**0.3**	212	**0.55**	**5.2**	30.4	**0.01**	**0.025**	23.6	**0.0015**	**0.0035**	9.2	**0.025**	5010	**0.3**	0.07
Mean	47.1	459	0.3	212	0.55	5.2	30.4	0.01	0.025	23.6	0.0015	0.0035	9.2	0.025	5010	0.3	0.07
Median	47.1	459	0.3	212	0.55	5.2	30.4	0.01	0.025	23.6	0.0015	0.0035	9.2	0.025	5010	0.3	0.07
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	47.1	459	0.3	212	0.55	5.2	30.4	0.01	0.025	23.6	0.0015	0.0035	9.2	0.025	5010	0.3	0.07
Maximum	47.1	459	0.3	212	0.55	5.2	30.4	0.01	0.025	23.6	0.0015	0.0035	9.2	0.025	5010	0.3	0.07
% of values undetected					100%			100%	100%		100%	100%		100%			
# of values between MDL and MRL			1			1										1	
Picea mariana-TE16																	
Sample Date																	
08/19/04	45.1	613	884	376	**0.25**	11.5	161	0.47	**0.05**	49.5	**0.0015**	**0.0035**	10	**0.025**	6540	1.2	0.14
Mean	45.1	613	884	376	0.25	11.5	161	0.47	0.05	49.5	0.0015	0.0035	10	0.025	6540	1.2	0.14
Median	45.1	613	884	376	0.25	11.5	161	0.47	0.05	49.5	0.0015	0.0035	10	0.025	6540	1.2	0.14
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	45.1	613	884	376	0.25	11.5	161	0.47	0.05	49.5	0.0015	0.0035	10	0.025	6540	1.2	0.14
Maximum	45.1	613	884	376	0.25	11.5	161	0.47	0.05	49.5	0.0015	0.0035	10	0.025	6540	1.2	0.14
% of values undetected					100%						100%	100%		100%			
# of values between MDL and MRL									1								

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Picea mariana-TE14																
Sample Date																
08/19/04	2.78	27	0.06	692	527	0.049	**0.005**	0.8	6420	**0.05**	**0.009**	29.5	**0.016**	**2.5**	**0.1** U	46.3
Mean	2.78	27	0.06	692	527	0.049	0.005	0.8	6420	0.05	0.009	29.5	0.016	2.5	0.1	46.3
Median	2.78	27	0.06	692	527	0.049	0.005	0.8	6420	0.05	0.009	29.5	0.016	2.5	0.1	46.3
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.78	27	0.06	692	527	0.049	0.005	0.8	6420	0.05	0.009	29.5	0.016	2.5	0.1	46.3
Maximum	2.78	27	0.06	692	527	0.049	0.005	0.8	6420	0.05	0.009	29.5	0.016	2.5	0.1	46.3
% of values undetected							100%			100%				100%	100%	
# of values between MDL and MRL											1		1			
Picea mariana-TE15																
Sample Date																
08/19/04	2.4	34.9	0.17	629	520	0.066	**0.025**	0.56	6480	**0.05**	**0.012**	35.6	**0.002**	**2.5**	**0.1** U	52.3
Mean	2.4	34.9	0.17	629	520	0.066	0.025	0.56	6480	0.05	0.012	35.6	0.002	2.5	0.1	52.3
Median	2.4	34.9	0.17	629	520	0.066	0.025	0.56	6480	0.05	0.012	35.6	0.002	2.5	0.1	52.3
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.4	34.9	0.17	629	520	0.066	0.025	0.56	6480	0.05	0.012	35.6	0.002	2.5	0.1	52.3
Maximum	2.4	34.9	0.17	629	520	0.066	0.025	0.56	6480	0.05	0.012	35.6	0.002	2.5	0.1	52.3
% of values undetected							100%			100%				100%	100%	
# of values between MDL and MRL											1		1			
Picea mariana-TE16																
Sample Date																
08/19/04	3.25	107	0.18	1020	591	0.067	**0.025**	1.43	5720	**0.1**	0.041	62.2	**0.014**	**1.5**	0.33	51.5
Mean	3.25	107	0.18	1020	591	0.067	0.025	1.43	5720	0.1	0.041	62.2	0.014	1.5	0.33	51.5
Median	3.25	107	0.18	1020	591	0.067	0.025	1.43	5720	0.1	0.041	62.2	0.014	1.5	0.33	51.5
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.25	107	0.18	1020	591	0.067	0.025	1.43	5720	0.1	0.041	62.2	0.014	1.5	0.33	51.5
Maximum	3.25	107	0.18	1020	591	0.067	0.025	1.43	5720	0.1	0.041	62.2	0.014	1.5	0.33	51.5
% of values undetected							100%							100%		
# of values between MDL and MRL										1			1			

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Ptilium crista-castrensis-TE02																	
Sample Date																	
08/17/04	14.4	158	**3.6**	73	**0.3**	6.6	2520	0.09	**0.29**	30	0.034	**0.01**	**2.5**	0.061	2260	1	1.29
Mean	14.4	158	3.6	73	0.3	6.6	2520	0.09	0.29	30	0.034	0.01	2.5	0.061	2260	1	1.29
Median	14.4	158	3.6	73	0.3	6.6	2520	0.09	0.29	30	0.034	0.01	2.5	0.061	2260	1	1.29
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	14.4	158	3.6	73	0.3	6.6	2520	0.09	0.29	30	0.034	0.01	2.5	0.061	2260	1	1.29
Maximum	14.4	158	3.6	73	0.3	6.6	2520	0.09	0.29	30	0.034	0.01	2.5	0.061	2260	1	1.29
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0
Ptilium crista-castrensis-TE03																	
Sample Date																	
08/17/04	61.4	145	118	101	**0.11**	10.4	90	**0.01**	**0.025**	29	**0.0015**	**0.009**	**2.5**	0.068	3550	**0.15**	0.09
Mean	61.4	145	118	101	0.11	10.4	90	0.01	0.025	29	0.0015	0.009	2.5	0.068	3550	0.15	0.09
Median	61.4	145	118	101	0.11	10.4	90	0.01	0.025	29	0.0015	0.009	2.5	0.068	3550	0.15	0.09
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	61.4	145	118	101	0.11	10.4	90	0.01	0.025	29	0.0015	0.009	2.5	0.068	3550	0.15	0.09
Maximum	61.4	145	118	101	0.11	10.4	90	0.01	0.025	29	0.0015	0.009	2.5	0.068	3550	0.15	0.09
% of values undetected	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	0%	100%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
Ptilium crista-castrensis-TE07																	
Sample Date																	
08/20/04	13.7	401	**2.8**	295	**0.1**	39.7	339	0.12	2.4	22.9	**0.004**	**0.025**	**3.3**	0.051	8570	**0.8**	0.55
Mean	13.7	401	2.8	295	0.1	39.7	339	0.12	2.4	22.9	0.004	0.025	3.3	0.051	8570	0.8	0.55
Median	13.7	401	2.8	295	0.1	39.7	339	0.12	2.4	22.9	0.004	0.025	3.3	0.051	8570	0.8	0.55
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	13.7	401	2.8	295	0.1	39.7	339	0.12	2.4	22.9	0.004	0.025	3.3	0.051	8570	0.8	0.55
Maximum	13.7	401	2.8	295	0.1	39.7	339	0.12	2.4	22.9	0.004	0.025	3.3	0.051	8570	0.8	0.55
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Ptilium crista-castrensis-TE02																
Sample Date																
08/17/04	2.44	1660	0.96	657	20.4	0.072	0.1	1.73	1470	**0.2**	0.024	170	0.02	**2.5**	1.12	23.7
Mean	2.44	1660	0.96	657	20.4	0.072	0.1	1.73	1470	0.2	0.024	170	0.02	2.5	1.12	23.7
Median	2.44	1660	0.96	657	20.4	0.072	0.1	1.73	1470	0.2	0.024	170	0.02	2.5	1.12	23.7
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.44	1660	0.96	657	20.4	0.072	0.1	1.73	1470	0.2	0.024	170	0.02	2.5	1.12	23.7
Maximum	2.44	1660	0.96	657	20.4	0.072	0.1	1.73	1470	0.2	0.024	170	0.02	2.5	1.12	23.7
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Ptilium crista-castrensis-TE03																
Sample Date																
08/17/04	4.16	93	0.39	1140	744	0.088	**0.025**	0.71	2620	**0.05**	**0.014**	48.3	**0.018**	**2.5**	0.26	31.8
Mean	4.16	93	0.39	1140	744	0.088	0.025	0.71	2620	0.05	0.014	48.3	0.018	2.5	0.26	31.8
Median	4.16	93	0.39	1140	744	0.088	0.025	0.71	2620	0.05	0.014	48.3	0.018	2.5	0.26	31.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.16	93	0.39	1140	744	0.088	0.025	0.71	2620	0.05	0.014	48.3	0.018	2.5	0.26	31.8
Maximum	4.16	93	0.39	1140	744	0.088	0.025	0.71	2620	0.05	0.014	48.3	0.018	2.5	0.26	31.8
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Ptilium crista-castrensis-TE07																
Sample Date																
08/20/04	3.32	655	0.52	943	205	0.071	0.34	6.53	3070	**0.2**	**0.005**	163	0.041	**2.5**	1.26	28.1
Mean	3.32	655	0.52	943	205	0.071	0.34	6.53	3070	0.2	0.005	163	0.041	2.5	1.26	28.1
Median	3.32	655	0.52	943	205	0.071	0.34	6.53	3070	0.2	0.005	163	0.041	2.5	1.26	28.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.32	655	0.52	943	205	0.071	0.34	6.53	3070	0.2	0.005	163	0.041	2.5	1.26	28.1
Maximum	3.32	655	0.52	943	205	0.071	0.34	6.53	3070	0.2	0.005	163	0.041	2.5	1.26	28.1
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Ptilium crista-castrensis-TE08																	
Sample Date																	
08/17/04	46.7	180	117	149	**0.2**	16.9	89.1	**0.01**	**0.06**	34.2	**0.0015**	**0.0035**	5.1	0.058	5050	**0.5**	0.14
Mean	46.7	180	117	149	0.2	16.9	89.1	0.01	0.06	34.2	0.0015	0.0035	5.1	0.058	5050	0.5	0.14
Median	46.7	180	117	149	0.2	16.9	89.1	0.01	0.06	34.2	0.0015	0.0035	5.1	0.058	5050	0.5	0.14
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	46.7	180	117	149	0.2	16.9	89.1	0.01	0.06	34.2	0.0015	0.0035	5.1	0.058	5050	0.5	0.14
Maximum	46.7	180	117	149	0.2	16.9	89.1	0.01	0.06	34.2	0.0015	0.0035	5.1	0.058	5050	0.5	0.14
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Ptilium crista-castrensis-TE09																	
Sample Date																	
08/17/04	85.9	94	399	253	0.4	54.2	2060	0.05	**0.48**	27.5	0.073	**0.013**	**2.5**	0.385	12900	27.9	1.18
Mean	85.9	94	399	253	0.4	54.2	2060	0.05	0.48	27.5	0.073	0.013	2.5	0.385	12900	27.9	1.18
Median	85.9	94	399	253	0.4	54.2	2060	0.05	0.48	27.5	0.073	0.013	2.5	0.385	12900	27.9	1.18
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	85.9	94	399	253	0.4	54.2	2060	0.05	0.48	27.5	0.073	0.013	2.5	0.385	12900	27.9	1.18
Maximum	85.9	94	399	253	0.4	54.2	2060	0.05	0.48	27.5	0.073	0.013	2.5	0.385	12900	27.9	1.18
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
Ptilium crista-castrensis-TE12																	
Sample Date																	
08/21/04	55.2	**46**	**0.6**	**42**	**0.045**	5.8	526	0.13	**0.14**	10.5	**0.0015**	**0.0035**	**2.5**	0.08	1570	2.9	0.17
Mean	55.2	46	0.6	42	0.045	5.8	526	0.13	0.14	10.5	0.0015	0.0035	2.5	0.08	1570	2.9	0.17
Median	55.2	46	0.6	42	0.045	5.8	526	0.13	0.14	10.5	0.0015	0.0035	2.5	0.08	1570	2.9	0.17
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	55.2	46	0.6	42	0.045	5.8	526	0.13	0.14	10.5	0.0015	0.0035	2.5	0.08	1570	2.9	0.17
Maximum	55.2	46	0.6	42	0.045	5.8	526	0.13	0.14	10.5	0.0015	0.0035	2.5	0.08	1570	2.9	0.17
% of values undetected	0%	0%	100%	0%	100%	0%	0%	0%	0%	0%	100%	100%	100%	0%	0%	0%	0%
# of values between MDL and MRL	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Ptilium crista-castrensis-TE08																
Sample Date																
08/17/04	3.44	89.2	0.38	1110	771	0.103	0.2	0.71	2790	**0.05**	**0.016**	75.8	**0.014**	**2.5**	0.21	23.6
Mean	3.44	89.2	0.38	1110	771	0.103	0.2	0.71	2790	0.05	0.016	75.8	0.014	2.5	0.21	23.6
Median	3.44	89.2	0.38	1110	771	0.103	0.2	0.71	2790	0.05	0.016	75.8	0.014	2.5	0.21	23.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.44	89.2	0.38	1110	771	0.103	0.2	0.71	2790	0.05	0.016	75.8	0.014	2.5	0.21	23.6
Maximum	3.44	89.2	0.38	1110	771	0.103	0.2	0.71	2790	0.05	0.016	75.8	0.014	2.5	0.21	23.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Ptilium crista-castrensis-TE09																
Sample Date																
08/17/04	7.16	3800	1.51	1650	290	0.066	1.39	5.32	2810	**0.1**	0.031	50.3	**0.011**	**2.5**	4.72	31.3
Mean	7.16	3800	1.51	1650	290	0.066	1.39	5.32	2810	0.1	0.031	50.3	0.011	2.5	4.72	31.3
Median	7.16	3800	1.51	1650	290	0.066	1.39	5.32	2810	0.1	0.031	50.3	0.011	2.5	4.72	31.3
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	7.16	3800	1.51	1650	290	0.066	1.39	5.32	2810	0.1	0.031	50.3	0.011	2.5	4.72	31.3
Maximum	7.16	3800	1.51	1650	290	0.066	1.39	5.32	2810	0.1	0.031	50.3	0.011	2.5	4.72	31.3
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Ptilium crista-castrensis-TE12																
Sample Date																
08/21/04	1.63	487	1.08	563	33.4	0.066	**0.03**	14.1	933	**0.2**	**0.015**	110	**0.008**	**2.5**	1	16
Mean	1.63	487	1.08	563	33.4	0.066	0.03	14.1	933	0.2	0.015	110	0.008	2.5	1	16
Median	1.63	487	1.08	563	33.4	0.066	0.03	14.1	933	0.2	0.015	110	0.008	2.5	1	16
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.63	487	1.08	563	33.4	0.066	0.03	14.1	933	0.2	0.015	110	0.008	2.5	1	16
Maximum	1.63	487	1.08	563	33.4	0.066	0.03	14.1	933	0.2	0.015	110	0.008	2.5	1	16
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Ptilium crista-castrensis-TE13																	
Sample Date																	
08/19/04	66.5	41	0.3	321	**0.55**	62.2	133	0.04	0.1	15	**0.0015**	**0.0035**	17.4	0.141	2280	0.7	0.29
Mean	66.5	41	0.3	321	0.55	62.2	133	0.04	0.1	15	0.0015	0.0035	17.4	0.141	2280	0.7	0.29
Median	66.5	41	0.3	321	0.55	62.2	133	0.04	0.1	15	0.0015	0.0035	17.4	0.141	2280	0.7	0.29
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	66.5	41	0.3	321	0.55	62.2	133	0.04	0.1	15	0.0015	0.0035	17.4	0.141	2280	0.7	0.29
Maximum	66.5	41	0.3	321	0.55	62.2	133	0.04	0.1	15	0.0015	0.0035	17.4	0.141	2280	0.7	0.29
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	1	0
Ptilium crista-castrensis-TE14																	
Sample Date																	
08/19/04	15.3	588	1.5	116	**0.55**	13.6	53	0.02	0.06	14.1	**0.0015**	**0.0035**	19.2	**0.025**	2080	0.6	0.07
Mean	15.3	588	1.5	116	0.55	13.6	53	0.02	0.06	14.1	0.0015	0.0035	19.2	0.025	2080	0.6	0.07
Median	15.3	588	1.5	116	0.55	13.6	53	0.02	0.06	14.1	0.0015	0.0035	19.2	0.025	2080	0.6	0.07
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	15.3	588	1.5	116	0.55	13.6	53	0.02	0.06	14.1	0.0015	0.0035	19.2	0.025	2080	0.6	0.07
Maximum	15.3	588	1.5	116	0.55	13.6	53	0.02	0.06	14.1	0.0015	0.0035	19.2	0.025	2080	0.6	0.07
% of values undetected					100%						100%	100%		100%			
# of values between MDL and MRL			1					1	1							1	
Ptilium crista-castrensis-TE15																	
Sample Date																	
08/19/04	11.7	585	3.4	143	**0.55**	14.6	97.5	**0.01**	0.06	13.9	**0.0015**	**0.0035**	**2.5**	**0.0245**	2810	0.5	0.16
Mean	11.7	585	3.4	143	0.55	14.6	97.5	0.01	0.06	13.9	0.0015	0.0035	2.5	0.0245	2810	0.5	0.16
Median	11.7	585	3.4	143	0.55	14.6	97.5	0.01	0.06	13.9	0.0015	0.0035	2.5	0.0245	2810	0.5	0.16
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	11.7	585	3.4	143	0.55	14.6	97.5	0.01	0.06	13.9	0.0015	0.0035	2.5	0.0245	2810	0.5	0.16
Maximum	11.7	585	3.4	143	0.55	14.6	97.5	0.01	0.06	13.9	0.0015	0.0035	2.5	0.0245	2810	0.5	0.16
% of values undetected					100%			100%			100%	100%	100%	100%			
# of values between MDL and MRL			1						1							1	

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Ptilium crista-castrensis-TE13																
Sample Date																
08/19/04	5.02	155	1.06	923	323	0.08	**0.025**	1.52	2060	**0.2**	**0.006**	49.2	**0.004**	**2.5**	0.43	73.9
Mean	5.02	155	1.06	923	323	0.08	0.025	1.52	2060	0.2	0.006	49.2	0.004	2.5	0.43	73.9
Median	5.02	155	1.06	923	323	0.08	0.025	1.52	2060	0.2	0.006	49.2	0.004	2.5	0.43	73.9
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	5.02	155	1.06	923	323	0.08	0.025	1.52	2060	0.2	0.006	49.2	0.004	2.5	0.43	73.9
Maximum	5.02	155	1.06	923	323	0.08	0.025	1.52	2060	0.2	0.006	49.2	0.004	2.5	0.43	73.9
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
Ptilium crista-castrensis-TE14																
Sample Date																
08/19/04	1.63	81.8	0.38	680	582	0.038	**0.025**	0.68	4780	**0.05**	**0.006**	419	**0.007**	**2.5**	**0.1** U	20.7
Mean	1.63	81.8	0.38	680	582	0.038	0.025	0.68	4780	0.05	0.006	419	0.007	2.5	0.1	20.7
Median	1.63	81.8	0.38	680	582	0.038	0.025	0.68	4780	0.05	0.006	419	0.007	2.5	0.1	20.7
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.63	81.8	0.38	680	582	0.038	0.025	0.68	4780	0.05	0.006	419	0.007	2.5	0.1	20.7
Maximum	1.63	81.8	0.38	680	582	0.038	0.025	0.68	4780	0.05	0.006	419	0.007	2.5	0.1	20.7
% of values undetected							100%			100%				100%	100%	
# of values between MDL and MRL											1		1			
Ptilium crista-castrensis-TE15																
Sample Date																
08/19/04	2.3	102	0.48	814	415	0.049	0.15	0.6	4150	**0.05**	**0.01**	348	**0.003**	**2.5**	0.26	21.5
Mean	2.3	102	0.48	814	415	0.049	0.15	0.6	4150	0.05	0.01	348	0.003	2.5	0.26	21.5
Median	2.3	102	0.48	814	415	0.049	0.15	0.6	4150	0.05	0.01	348	0.003	2.5	0.26	21.5
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.3	102	0.48	814	415	0.049	0.15	0.6	4150	0.05	0.01	348	0.003	2.5	0.26	21.5
Maximum	2.3	102	0.48	814	415	0.049	0.15	0.6	4150	0.05	0.01	348	0.003	2.5	0.26	21.5
% of values undetected										100%				100%		
# of values between MDL and MRL											1		1			

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Ptilium crista-castrensis-TE16																	
Sample Date																	
08/19/04	56.2	168	944	327	0.8	27.0	3040	0.15	**0.35**	49.2	0.025	**0.0035**	**5.6**	0.077	4990	15.4	1.05
Mean	56.2	168	944	327	0.8	27	3040	0.15	0.35	49.2	0.025	0.0035	5.6	0.077	4990	15.4	1.05
Median	56.2	168	944	327	0.8	27	3040	0.15	0.35	49.2	0.025	0.0035	5.6	0.077	4990	15.4	1.05
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	56.2	168	944	327	0.8	27	3040	0.15	0.35	49.2	0.025	0.0035	5.6	0.077	4990	15.4	1.05
Maximum	56.2	168	944	327	0.8	27	3040	0.15	0.35	49.2	0.025	0.0035	5.6	0.077	4990	15.4	1.05
% of values undetected												100%					
# of values between MDL and MRL									1				1				
Ptilium crista-castrensis-TE17																	
Sample Date																	
08/19/04	60.9	470	**0.6**	46	**0.25**	7.0	668	0.05	**0.19**	12.9	**0.007**	**0.012**	**1.9**	**0.025**	1310	5.4	0.26
Mean	60.9	470	0.6	46	0.25	7	668	0.05	0.19	12.9	0.007	0.012	1.9	0.025	1310	5.4	0.26
Median	60.9	470	0.6	46	0.25	7	668	0.05	0.19	12.9	0.007	0.012	1.9	0.025	1310	5.4	0.26
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	60.9	470	0.6	46	0.25	7	668	0.05	0.19	12.9	0.007	0.012	1.9	0.025	1310	5.4	0.26
Maximum	60.9	470	0.6	46	0.25	7	668	0.05	0.19	12.9	0.007	0.012	1.9	0.025	1310	5.4	0.26
% of values undetected					100%									100%			
# of values between MDL and MRL			1						1		1	1	1				
Rubus chamaemorus-TE06																	
Sample Date																	
08/20/04	34.7	4240	**1.4**	7370	**0.1**	222	24.3	**0.03**	**0.025**	1.1	**0.0015**	**0.025**	39.7	0.144	6410	**0.25**	0.07
Mean	34.7	4240	1.4	7370	0.1	222	24.3	0.03	0.025	1.1	0.0015	0.025	39.7	0.144	6410	0.25	0.07
Median	34.7	4240	1.4	7370	0.1	222	24.3	0.03	0.025	1.1	0.0015	0.025	39.7	0.144	6410	0.25	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	34.7	4240	1.4	7370	0.1	222	24.3	0.03	0.025	1.1	0.0015	0.025	39.7	0.144	6410	0.25	0.07
Maximum	34.7	4240	1.4	7370	0.1	222	24.3	0.03	0.025	1.1	0.0015	0.025	39.7	0.144	6410	0.25	0.07
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Ptilium crista-castrensis-TE16																
Sample Date																
08/19/04	7.12	2270	1.65	1640	381	0.084	0.15	4.21	3760	**0.2**	0.027	141	**0.013**	**1.5**	4.95	39
Mean	7.12	2270	1.65	1640	381	0.084	0.15	4.21	3760	0.2	0.027	141	0.013	1.5	4.95	39
Median	7.12	2270	1.65	1640	381	0.084	0.15	4.21	3760	0.2	0.027	141	0.013	1.5	4.95	39
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	7.12	2270	1.65	1640	381	0.084	0.15	4.21	3760	0.2	0.027	141	0.013	1.5	4.95	39
Maximum	7.12	2270	1.65	1640	381	0.084	0.15	4.21	3760	0.2	0.027	141	0.013	1.5	4.95	39
% of values undetected														100%		
# of values between MDL and MRL										1			1			
Ptilium crista-castrensis-TE17																
Sample Date																
08/19/04	2.47	609	1.34	664	45.4	0.068	0.26	1.59	684	**0.3**	**0.005**	80.3	**0.01**	**1.5**	1.44	6.8
Mean	2.47	609	1.34	664	45.4	0.068	0.26	1.59	684	0.3	0.005	80.3	0.01	1.5	1.44	6.8
Median	2.47	609	1.34	664	45.4	0.068	0.26	1.59	684	0.3	0.005	80.3	0.01	1.5	1.44	6.8
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.47	609	1.34	664	45.4	0.068	0.26	1.59	684	0.3	0.005	80.3	0.01	1.5	1.44	6.8
Maximum	2.47	609	1.34	664	45.4	0.068	0.26	1.59	684	0.3	0.005	80.3	0.01	1.5	1.44	6.8
% of values undetected														100%		
# of values between MDL and MRL										1	1		1			
Rubus chamaemorus-TE06																
Sample Date																
08/20/04	2.63	82.9	**0.04**	4910	1360	0.079	0.05	1.01	9440	**0.05**	**0.0015**	42.9	**0.01**	**1**	**0.19** J	57.2
Mean	2.63	82.9	0.04	4910	1360	0.079	0.05	1.01	9440	0.05	0.0015	42.9	0.01	1	0.19	57.2
Median	2.63	82.9	0.04	4910	1360	0.079	0.05	1.01	9440	0.05	0.0015	42.9	0.01	1	0.19	57.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.63	82.9	0.04	4910	1360	0.079	0.05	1.01	9440	0.05	0.0015	42.9	0.01	1	0.19	57.2
Maximum	2.63	82.9	0.04	4910	1360	0.079	0.05	1.01	9440	0.05	0.0015	42.9	0.01	1	0.19	57.2
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Rubus chamaemorus-TE14																	
Sample Date																	
08/19/04	31.2	4230	**0.8**	1340	**0.55**	249	26.9	**0.02**	**0.025**	2.5	**0.0015**	**0.0035**	15.4	0.23	4610	**0.1**	0.06
Mean	31.2	4230	0.8	1340	0.55	249	26.9	0.02	0.025	2.5	0.0015	0.0035	15.4	0.23	4610	0.1	0.06
Median	31.2	4230	0.8	1340	0.55	249	26.9	0.02	0.025	2.5	0.0015	0.0035	15.4	0.23	4610	0.1	0.06
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	31.2	4230	0.8	1340	0.55	249	26.9	0.02	0.025	2.5	0.0015	0.0035	15.4	0.23	4610	0.1	0.06
Maximum	31.2	4230	0.8	1340	0.55	249	26.9	0.02	0.025	2.5	0.0015	0.0035	15.4	0.23	4610	0.1	0.06
% of values undetected					100%				100%		100%	100%				100%	
# of values between MDL and MRL			1					1									
Salix alaxensis-TE09																	
Sample Date																	
08/17/04	35.5	1820	1170	9300	**0.2**	73.7	17.4	**0.01**	**0.025**	5.5	**0.0015**	**0.007**	21.3	0.607	15500	**0.15**	0.22
Mean	35.5	1820	1170	9300	0.2	73.7	17.4	0.01	0.025	5.5	0.0015	0.007	21.3	0.607	15500	0.15	0.22
Median	35.5	1820	1170	9300	0.2	73.7	17.4	0.01	0.025	5.5	0.0015	0.007	21.3	0.607	15500	0.15	0.22
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	35.5	1820	1170	9300	0.2	73.7	17.4	0.01	0.025	5.5	0.0015	0.007	21.3	0.607	15500	0.15	0.22
Maximum	35.5	1820	1170	9300	0.2	73.7	17.4	0.01	0.025	5.5	0.0015	0.007	21.3	0.607	15500	0.15	0.22
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	0%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Salix brachycarpa-TE01																	
Sample Date																	
08/17/04	41.2	358	**1.3**	1960	**0.3**	135	98.1	0.07	**0.025**	59.1	**0.015**	**0.005**	12.7	0.35	9190	**0.3**	1.91
Mean	41.2	358	1.3	1960	0.3	135	98.1	0.07	0.025	59.1	0.015	0.005	12.7	0.35	9190	0.3	1.91
Median	41.2	358	1.3	1960	0.3	135	98.1	0.07	0.025	59.1	0.015	0.005	12.7	0.35	9190	0.3	1.91
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	41.2	358	1.3	1960	0.3	135	98.1	0.07	0.025	59.1	0.015	0.005	12.7	0.35	9190	0.3	1.91
Maximum	41.2	358	1.3	1960	0.3	135	98.1	0.07	0.025	59.1	0.015	0.005	12.7	0.35	9190	0.3	1.91
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Rubus chamaemorus-TE14																
Sample Date																
08/19/04	3.22	122	0.05	2570	1180	0.076	0.31	0.49	14400	**0.05**	0.02	35.3	**0.001**	**2.5**	0.97	28.8
Mean	3.22	122	0.05	2570	1180	0.076	0.31	0.49	14400	0.05	0.02	35.3	0.001	2.5	0.97	28.8
Median	3.22	122	0.05	2570	1180	0.076	0.31	0.49	14400	0.05	0.02	35.3	0.001	2.5	0.97	28.8
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.22	122	0.05	2570	1180	0.076	0.31	0.49	14400	0.05	0.02	35.3	0.001	2.5	0.97	28.8
Maximum	3.22	122	0.05	2570	1180	0.076	0.31	0.49	14400	0.05	0.02	35.3	0.001	2.5	0.97	28.8
% of values undetected										100%			100%	100%		
# of values between MDL and MRL																
Salix alaxensis-TE09																
Sample Date																
08/17/04	5.86	63.7	0.06	2260	66.8	0.05	2.96	1.61	20400	**0.05**	**0.002**	23	**0.001**	**2.5**	**0.14** J	14.8
Mean	5.86	63.7	0.06	2260	66.8	0.05	2.96	1.61	20400	0.05	0.002	23	0.001	2.5	0.14	14.8
Median	5.86	63.7	0.06	2260	66.8	0.05	2.96	1.61	20400	0.05	0.002	23	0.001	2.5	0.14	14.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	5.86	63.7	0.06	2260	66.8	0.05	2.96	1.61	20400	0.05	0.002	23	0.001	2.5	0.14	14.8
Maximum	5.86	63.7	0.06	2260	66.8	0.05	2.96	1.61	20400	0.05	0.002	23	0.001	2.5	0.14	14.8
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Salix brachycarpa-TE01																
Sample Date																
08/17/04	3.24	46.7	0.08	5080	110	0.058	**0.025**	3.22	12100	**0.05**	**0.005**	24.9	**0.007**	**2.5**	**0.13** J	32.1
Mean	3.24	46.7	0.08	5080	110	0.058	0.025	3.22	12100	0.05	0.005	24.9	0.007	2.5	0.13	32.1
Median	3.24	46.7	0.08	5080	110	0.058	0.025	3.22	12100	0.05	0.005	24.9	0.007	2.5	0.13	32.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.24	46.7	0.08	5080	110	0.058	0.025	3.22	12100	0.05	0.005	24.9	0.007	2.5	0.13	32.1
Maximum	3.24	46.7	0.08	5080	110	0.058	0.025	3.22	12100	0.05	0.005	24.9	0.007	2.5	0.13	32.1
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Salix brachycarpa-TE03																	
Sample Date																	
08/17/04	42.3	1040	**0.3**	1280	**0.3**	224	75.3	**0.03**	**0.025**	49.8	**0.009**	**0.005**	20.1	0.391	6450	**0.5**	1.99
Mean	42.3	1040	0.3	1280	0.3	224	75.3	0.03	0.025	49.8	0.009	0.005	20.1	0.391	6450	0.5	1.99
Median	42.3	1040	0.3	1280	0.3	224	75.3	0.03	0.025	49.8	0.009	0.005	20.1	0.391	6450	0.5	1.99
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	42.3	1040	0.3	1280	0.3	224	75.3	0.03	0.025	49.8	0.009	0.005	20.1	0.391	6450	0.5	1.99
Maximum	42.3	1040	0.3	1280	0.3	224	75.3	0.03	0.025	49.8	0.009	0.005	20.1	0.391	6450	0.5	1.99
% of values undetected	0%	0%	100%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0
Salix planifolia-TE17																	
Sample Date																	
08/19/04	33.5	1170	**1.7**	3230	**0.25**	639	373	**0.01**	**0.025**	25	**0.016**	**0.0035**	18.3	**0.025**	7730	**0.9**	2.18
Mean	33.5	1170	1.7	3230	0.25	639	373	0.01	0.025	25	0.016	0.0035	18.3	0.025	7730	0.9	2.18
Median	33.5	1170	1.7	3230	0.25	639	373	0.01	0.025	25	0.016	0.0035	18.3	0.025	7730	0.9	2.18
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	33.5	1170	1.7	3230	0.25	639	373	0.01	0.025	25	0.016	0.0035	18.3	0.025	7730	0.9	2.18
Maximum	33.5	1170	1.7	3230	0.25	639	373	0.01	0.025	25	0.016	0.0035	18.3	0.025	7730	0.9	2.18
% of values undetected					100%			100%	100%			100%		100%			
# of values between MDL and MRL			1								1					1	
Sedge sp.-TE05																	
Sample Date																	
08/20/04	36.5	4700	**1.7**	954	**0.4**	857	14.8	**0.01**	**0.025**	47.9	**0.0015**	**0.005**	9.3	**0.028**	4890	**0.3**	0.09
Mean	36.5	4700	1.7	954	0.4	857	14.8	0.01	0.025	47.9	0.0015	0.005	9.3	0.028	4890	0.3	0.09
Median	36.5	4700	1.7	954	0.4	857	14.8	0.01	0.025	47.9	0.0015	0.005	9.3	0.028	4890	0.3	0.09
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	36.5	4700	1.7	954	0.4	857	14.8	0.01	0.025	47.9	0.0015	0.005	9.3	0.028	4890	0.3	0.09
Maximum	36.5	4700	1.7	954	0.4	857	14.8	0.01	0.025	47.9	0.0015	0.005	9.3	0.028	4890	0.3	0.09
% of values undetected	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Salix brachycarpa-TE03																
Sample Date																
08/17/04	4.13	54.2	**0.04**	1680	204	0.052	**0.025**	2.35	9670	**0.1**	**0.0015**	14	**0.001**	**2.5**	**0.11** J	23.2
Mean	4.13	54.2	0.04	1680	204	0.052	0.025	2.35	9670	0.1	0.0015	14	0.001	2.5	0.11	23.2
Median	4.13	54.2	0.04	1680	204	0.052	0.025	2.35	9670	0.1	0.0015	14	0.001	2.5	0.11	23.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.13	54.2	0.04	1680	204	0.052	0.025	2.35	9670	0.1	0.0015	14	0.001	2.5	0.11	23.2
Maximum	4.13	54.2	0.04	1680	204	0.052	0.025	2.35	9670	0.1	0.0015	14	0.001	2.5	0.11	23.2
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0
Salix planifolia-TE17																
Sample Date																
08/19/04	4.01	131	0.12	2810	81.5	0.06	0.38	2.62	14900	**0.2**	**0.0015**	57.8	**0.001**	**3**	0.35	40.7
Mean	4.01	131	0.12	2810	81.5	0.06	0.38	2.62	14900	0.2	0.0015	57.8	0.001	3	0.35	40.7
Median	4.01	131	0.12	2810	81.5	0.06	0.38	2.62	14900	0.2	0.0015	57.8	0.001	3	0.35	40.7
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.01	131	0.12	2810	81.5	0.06	0.38	2.62	14900	0.2	0.0015	57.8	0.001	3	0.35	40.7
Maximum	4.01	131	0.12	2810	81.5	0.06	0.38	2.62	14900	0.2	0.0015	57.8	0.001	3	0.35	40.7
% of values undetected											100%		100%			
# of values between MDL and MRL										1				1		
Sedge sp.-TE05																
Sample Date																
08/20/04	2.81	61.9	0.21	797	907	0.03	1.7	2.99	11100	**0.2**	**0.0015**	10.6	**0.01**	**2.45**	**0.06** J	30.8
Mean	2.81	61.9	0.21	797	907	0.03	1.7	2.99	11100	0.2	0.0015	10.6	0.01	2.45	0.06	30.8
Median	2.81	61.9	0.21	797	907	0.03	1.7	2.99	11100	0.2	0.0015	10.6	0.01	2.45	0.06	30.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.81	61.9	0.21	797	907	0.03	1.7	2.99	11100	0.2	0.0015	10.6	0.01	2.45	0.06	30.8
Maximum	2.81	61.9	0.21	797	907	0.03	1.7	2.99	11100	0.2	0.0015	10.6	0.01	2.45	0.06	30.8
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Vaccinium uliginosum-Berry-TE01																	
Sample Date																	
09/20/04	13.7	**33.8**	**0.35**	3910	**0.15**	27	30	0.24	**0.025**	13.2	**0.0015**	**0.0035**	9.8	0.101	1070	**0.1**	0.04
Mean	13.7	33.8	0.35	3910	0.15	27	30	0.24	0.025	13.2	0.0015	0.0035	9.8	0.101	1070	0.1	0.04
Median	13.7	33.8	0.35	3910	0.15	27	30	0.24	0.025	13.2	0.0015	0.0035	9.8	0.101	1070	0.1	0.04
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	13.7	33.8	0.35	3910	0.15	27	30	0.24	0.025	13.2	0.0015	0.0035	9.8	0.101	1070	0.1	0.04
Maximum	13.7	33.8	0.35	3910	0.15	27	30	0.24	0.025	13.2	0.0015	0.0035	9.8	0.101	1070	0.1	0.04
% of values undetected	0%	0%	100%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccinium uliginosum-Berry-TE05																	
Sample Date																	
09/20/04	12.7	**45.9**	**0.8**	2760	**0.15**	22	163	0.21	**0.025**	16.6	**0.0015**	**0.0035**	10.7	0.051	1800	**0.1**	0.07
Mean	12.7	45.9	0.8	2760	0.15	22	163	0.21	0.025	16.6	0.0015	0.0035	10.7	0.051	1800	0.1	0.07
Median	12.7	45.9	0.8	2760	0.15	22	163	0.21	0.025	16.6	0.0015	0.0035	10.7	0.051	1800	0.1	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	12.7	45.9	0.8	2760	0.15	22	163	0.21	0.025	16.6	0.0015	0.0035	10.7	0.051	1800	0.1	0.07
Maximum	12.7	45.9	0.8	2760	0.15	22	163	0.21	0.025	16.6	0.0015	0.0035	10.7	0.051	1800	0.1	0.07
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccinium uliginosum-Berry-TE17																	
Sample Date																	
09/20/04	12.3	**32.1**	**1.2**	3050	**0.15**	26	17.7	0.32	**0.02**	9	**0.0015**	**0.0225**	12.1	0.061	1750	**0.25**	0.06
Mean	12.3	32.1	1.2	3050	0.15	26	17.7	0.32	0.02	9	0.0015	0.0225	12.1	0.061	1750	0.25	0.06
Median	12.3	32.1	1.2	3050	0.15	26	17.7	0.32	0.02	9	0.0015	0.0225	12.1	0.061	1750	0.25	0.06
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	12.3	32.1	1.2	3050	0.15	26	17.7	0.32	0.02	9	0.0015	0.0225	12.1	0.061	1750	0.25	0.06
Maximum	12.3	32.1	1.2	3050	0.15	26	17.7	0.32	0.02	9	0.0015	0.0225	12.1	0.061	1750	0.25	0.06
% of values undetected					100%				100%		100%	100%				100%	
# of values between MDL and MRL		1	1														

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Vaccinium uliginosum-Berry-TE01																
Sample Date																
09/20/04	2.48	54.6	0.2	518	80.7	**0.005**	0.118	8.08	5260	**0.05**	**0.015**	15.9	**0.003**	**2.5**	**0.06** J	16.8
Mean	2.48	54.6	0.2	518	80.7	0.005	0.118	8.08	5260	0.05	0.015	15.9	0.003	2.5	0.06	16.8
Median	2.48	54.6	0.2	518	80.7	0.005	0.118	8.08	5260	0.05	0.015	15.9	0.003	2.5	0.06	16.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.48	54.6	0.2	518	80.7	0.005	0.118	8.08	5260	0.05	0.015	15.9	0.003	2.5	0.06	16.8
Maximum	2.48	54.6	0.2	518	80.7	0.005	0.118	8.08	5260	0.05	0.015	15.9	0.003	2.5	0.06	16.8
% of values undetected	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0
Vaccinium uliginosum-Berry-TE05																
Sample Date																
09/20/04	1.72	72.1	0.2	733	572	**0.005**	0.157	7.85	4760	**0.05**	**0.006**	22.2	**0.009**	**2.5**	**0.05** J	24.5
Mean	1.72	72.1	0.2	733	572	0.005	0.157	7.85	4760	0.05	0.006	22.2	0.009	2.5	0.05	24.5
Median	1.72	72.1	0.2	733	572	0.005	0.157	7.85	4760	0.05	0.006	22.2	0.009	2.5	0.05	24.5
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.72	72.1	0.2	733	572	0.005	0.157	7.85	4760	0.05	0.006	22.2	0.009	2.5	0.05	24.5
Maximum	1.72	72.1	0.2	733	572	0.005	0.157	7.85	4760	0.05	0.006	22.2	0.009	2.5	0.05	24.5
% of values undetected	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0
Vaccinium uliginosum-Berry-TE17																
Sample Date																
09/20/04	3.19	91.3	0.14	558	103	**0.005**	0.558	12	4840	**0.05**	**0.013**	34.3	**0.001**	**4.5**	**0.07** J	14.7
Mean	3.19	91.3	0.14	558	103	0.005	0.558	12	4840	0.05	0.013	34.3	0.001	4.5	0.07	14.7
Median	3.19	91.3	0.14	558	103	0.005	0.558	12	4840	0.05	0.013	34.3	0.001	4.5	0.07	14.7
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.19	91.3	0.14	558	103	0.005	0.558	12	4840	0.05	0.013	34.3	0.001	4.5	0.07	14.7
Maximum	3.19	91.3	0.14	558	103	0.005	0.558	12	4840	0.05	0.013	34.3	0.001	4.5	0.07	14.7
% of values undetected						100%				100%			100%	100%		
# of values between MDL and MRL											1				1	

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Vaccinium uliginosum-TE01																	
Sample Date																	
08/17/04	45.9	306	**1.1**	373	**0.3**	60.3	75	**0.03**	**0.025**	56	**0.0015**	**0.01**	21.1	0.286	6270	**0.5**	0.1
09/20/04	37.7	248	**0.4**	1190	**0.15**	41	113	0.13	**0.11**	85.6	**0.0015**	0.116	28.4	0.426	8330	**0.1**	0.11
Mean	41.8	277	0.8	782	0.23	51	94	0.08	0.068	70.8	0.0015	0.06	24.8	0.356	7300	0.3	0.11
Median	41.8	277	0.8	782	0.23	51	94	0.08	0.068	70.8	0.0015	0.06	24.8	0.356	7300	0.3	0.11
St. Deviation	5.8	41.0	0.5	577.7	0.11	14	27	0.07	0.06	20.9	0.0	0.07	5.2	0.099	1457	0.3	0.01
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	37.7	248	0.4	373	0.15	41	75	0.03	0.025	56	0.0015	0.01	21.1	0.286	6270	0.1	0.1
Maximum	45.9	306	1.1	1190	0.3	60.3	113	0.13	0.11	85.6	0.0015	0.116	28.4	0.426	8330	0.5	0.11
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	50%	0%	100%	0%	0%	0%	0%	50%	0%
# of values between MDL and MRL	0	0	2	0	0	0	0	1	1	0	0	1	0	0	0	1	0
Vaccinium uliginosum-TE02																	
Sample Date																	
08/17/04	53.3	291	**0.4**	620	0.6	111	83.2	0.06	**0.025**	79.3	**0.0015**	**0.005**	21.1	0.133	5530	**0.5**	0.27
Mean	53.3	291	0.4	620	0.6	111	83.2	0.06	0.025	79.3	0.0015	0.005	21.1	0.133	5530	0.5	0.27
Median	53.3	291	0.4	620	0.6	111	83.2	0.06	0.025	79.3	0.0015	0.005	21.1	0.133	5530	0.5	0.27
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	53.3	291	0.4	620	0.6	111	83.2	0.06	0.025	79.3	0.0015	0.005	21.1	0.133	5530	0.5	0.27
Maximum	53.3	291	0.4	620	0.6	111	83.2	0.06	0.025	79.3	0.0015	0.005	21.1	0.133	5530	0.5	0.27
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Vaccinium uliginosum-TE03																	
Sample Date																	
08/17/04	51.1	249	2660	**78**	**0.2**	47.3	49.9	**0.01**	**0.025**	21.7	**0.0015**	**0.01**	20.9	0.208	5360	**0.1**	0.06
Mean	51.1	249	2660	78	0.2	47.3	49.9	0.01	0.025	21.7	0.0015	0.01	20.9	0.208	5360	0.1	0.06
Median	51.1	249	2660	78	0.2	47.3	49.9	0.01	0.025	21.7	0.0015	0.01	20.9	0.208	5360	0.1	0.06
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	51.1	249	2660	78	0.2	47.3	49.9	0.01	0.025	21.7	0.0015	0.01	20.9	0.208	5360	0.1	0.06
Maximum	51.1	249	2660	78	0.2	47.3	49.9	0.01	0.025	21.7	0.0015	0.01	20.9	0.208	5360	0.1	0.06
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	0%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Vaccinium uliginosum-TE01																
Sample Date																
08/17/04	3.56	33.1	0.17	2370	600	0.055	**0.025**	0.8	7210	**0.05**	**0.0015**	**4.95**	**0.001**	**2.5**	**0.1** J	34.5
09/20/04	3.68	31.1	0.47	2150	1050	0.036	**0.049**	1.77	2290	**0.05**	**0.0015**	15.8	**0.004**	**2.5**	**0.07** J	34.1
Mean	3.62	32.1	0.32	2260	825	0.0455	0.037	1.285	4750	0.05	0.0015	10.4	0.0025	2.5	0.09	34.3
Median	3.62	32.1	0.32	2260	825	0.0455	0.037	1.285	4750	0.05	0.0015	10.4	0.0025	2.5	0.09	34.3
St. Deviation	0.08	1.4	0.21	156	318	0.013	0.017	0.69	3479	0.0	0.0	7.7	0.002	0.0	0.02	0.3
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	3.56	31.1	0.17	2150	600	0.036	0.025	0.8	2290	0.05	0.0015	4.95	0.001	2.5	0.07	34.1
Maximum	3.68	33.1	0.47	2370	1050	0.055	0.049	1.77	7210	0.05	0.0015	15.8	0.004	2.5	0.1	34.5
% of values undetected	0%	0%	0%	0%	0%	0%	50%	0%	0%	100%	100%	50%	50%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2	0
Vaccinium uliginosum-TE02																
Sample Date																
08/17/04	4.72	30.3	0.08	1800	372	0.054	0.11	1.74	3910	**0.05**	**0.004**	10.8	**0.001**	**2.5**	**0.09** J	43.8
Mean	4.72	30.3	0.08	1800	372	0.054	0.11	1.74	3910	0.05	0.004	10.8	0.001	2.5	0.09	43.8
Median	4.72	30.3	0.08	1800	372	0.054	0.11	1.74	3910	0.05	0.004	10.8	0.001	2.5	0.09	43.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.72	30.3	0.08	1800	372	0.054	0.11	1.74	3910	0.05	0.004	10.8	0.001	2.5	0.09	43.8
Maximum	4.72	30.3	0.08	1800	372	0.054	0.11	1.74	3910	0.05	0.004	10.8	0.001	2.5	0.09	43.8
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Vaccinium uliginosum-TE03																
Sample Date																
08/17/04	4.03	23.6	**0.04**	1880	445	0.052	0.07	0.79	6160	**0.05**	**0.002**	**4.95**	**0.001**	**2.5**	**0.17** J	35.3
Mean	4.03	23.6	0.04	1880	445	0.052	0.07	0.79	6160	0.05	0.002	4.95	0.001	2.5	0.17	35.3
Median	4.03	23.6	0.04	1880	445	0.052	0.07	0.79	6160	0.05	0.002	4.95	0.001	2.5	0.17	35.3
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.03	23.6	0.04	1880	445	0.052	0.07	0.79	6160	0.05	0.002	4.95	0.001	2.5	0.17	35.3
Maximum	4.03	23.6	0.04	1880	445	0.052	0.07	0.79	6160	0.05	0.002	4.95	0.001	2.5	0.17	35.3
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Vaccinium uliginosum-TE05																	
Sample Date																	
08/20/04	33.5	286	**1.8**	836	0.8	24.4	111	**0.01**	**0.025**	70.3	**0.0015**	**0.005**	29.3	0.162	7520	**0.1**	0.14
09/20/04	40.3	210	**0.6**	699	**0.15**	63	99.8	0.2	**0.025**	50.6	**0.0015**	**0.0035**	16.1	0.203	4890	**0.1**	0.11
Mean	36.9	248	1.2	768	0.48	44	105	0.11	0.025	60.5	0.0015	0.004	22.7	0.183	6205	0.1	0.13
Median	36.9	248	1.2	768	0.48	44	105	0.11	0.025	60.5	0.0015	0.004	22.7	0.183	6205	0.1	0.13
St. Deviation	4.8	54	0.8	97	0.5	27	8	0.1	0.0	13.9	0.0	0.001	9.3	0.029	1860	0.0	0.02
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	33.5	210	0.6	699	0.15	24.4	99.8	0.01	0.025	50.6	0.0015	0.0035	16.1	0.162	4890	0.1	0.11
Maximum	40.3	286	1.8	836	0.8	63	111	0.2	0.025	70.3	0.0015	0.005	29.3	0.203	7520	0.1	0.14
% of values undetected	0%	0%	0%	0%	50%	0%	0%	50%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccinium uliginosum-TE07																	
Sample Date																	
08/20/04	35.2	278	**2.5**	1050	**0.1**	144	24	0.06	**0.26**	42.6	**0.0015**	**0.005**	19.9	0.147	7330	**0.15**	0.11
Mean	35.2	278	2.5	1050	0.1	144	24	0.06	0.26	42.6	0.0015	0.005	19.9	0.147	7330	0.15	0.11
Median	35.2	278	2.5	1050	0.1	144	24	0.06	0.26	42.6	0.0015	0.005	19.9	0.147	7330	0.15	0.11
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	35.2	278	2.5	1050	0.1	144	24	0.06	0.26	42.6	0.0015	0.005	19.9	0.147	7330	0.15	0.11
Maximum	35.2	278	2.5	1050	0.1	144	24	0.06	0.26	42.6	0.0015	0.005	19.9	0.147	7330	0.15	0.11
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Vaccinium uliginosum-TE08																	
Sample Date																	
08/17/04	53.3	215	1480	446	**0.2**	28.1	42	**0.01**	**0.025**	32	**0.0015**	**0.0035**	18.1	0.439	3930	**0.1**	0.06
Mean	53.3	215	1480	446	0.2	28.1	42	0.01	0.025	32	0.0015	0.0035	18.1	0.439	3930	0.1	0.06
Median	53.3	215	1480	446	0.2	28.1	42	0.01	0.025	32	0.0015	0.0035	18.1	0.439	3930	0.1	0.06
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	53.3	215	1480	446	0.2	28.1	42	0.01	0.025	32	0.0015	0.0035	18.1	0.439	3930	0.1	0.06
Maximum	53.3	215	1480	446	0.2	28.1	42	0.01	0.025	32	0.0015	0.0035	18.1	0.439	3930	0.1	0.06
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Vaccinium uliginosum-TE05																
Sample Date																
08/20/04	3.51	35.3	0.12	2560	2060	0.05	0.17	1.04	6030	**0.05**	**0.006**	11.4	**0.01**	**2.5**	**0.11** J	29
09/20/04	3.91	36.3	0.15	1420	1750	0.025	0.08	1.1	2920	**0.05**	**0.005**	17.9	**0.003**	**2.5**	**0.12** J	44.5
Mean	3.71	35.8	0.14	1990	1905	0.038	0.13	1.07	4475	0.05	0.0055	14.7	0.007	2.5	0.12	37
Median	3.71	35.8	0.14	1990	1905	0.038	0.13	1.07	4475	0.05	0.0055	14.7	0.007	2.5	0.12	37
St. Deviation	0.28	0.7	0.02	806	219	0.018	0.06	0.04	2199	0.0	0.0007	4.6	0.005	0.0	0.01	11
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	3.51	35.3	0.12	1420	1750	0.025	0.08	1.04	2920	0.05	0.005	11.4	0.003	2.5	0.11	29
Maximum	3.91	36.3	0.15	2560	2060	0.05	0.17	1.1	6030	0.05	0.006	17.9	0.01	2.5	0.12	44.5
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	50%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	2	0	1	0	2	0
Vaccinium uliginosum-TE07																
Sample Date																
08/20/04	3.8	29.5	**0.03**	2210	428	0.051	0.38	1.24	3740	**0.05**	**0.0015**	**5**	**0.01**	**2.5**	**0.12** J	36
Mean	3.8	29.5	0.03	2210	428	0.051	0.38	1.24	3740	0.05	0.0015	5	0.01	2.5	0.12	36
Median	3.8	29.5	0.03	2210	428	0.051	0.38	1.24	3740	0.05	0.0015	5	0.01	2.5	0.12	36
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.8	29.5	0.03	2210	428	0.051	0.38	1.24	3740	0.05	0.0015	5	0.01	2.5	0.12	36
Maximum	3.8	29.5	0.03	2210	428	0.051	0.38	1.24	3740	0.05	0.0015	5	0.01	2.5	0.12	36
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Vaccinium uliginosum-TE08																
Sample Date																
08/17/04	4.54	23.9	0.07	1320	437	0.049	0.31	0.61	5360	**0.05**	0.094	**4.95**	**0.001**	**2.5**	**0.09** J	44.6
Mean	4.54	23.9	0.07	1320	437	0.049	0.31	0.61	5360	0.05	0.094	4.95	0.001	2.5	0.09	44.6
Median	4.54	23.9	0.07	1320	437	0.049	0.31	0.61	5360	0.05	0.094	4.95	0.001	2.5	0.09	44.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.54	23.9	0.07	1320	437	0.049	0.31	0.61	5360	0.05	0.094	4.95	0.001	2.5	0.09	44.6
Maximum	4.54	23.9	0.07	1320	437	0.049	0.31	0.61	5360	0.05	0.094	4.95	0.001	2.5	0.09	44.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Vaccinium uliginosum-TE11																	
Sample Date																	
08/21/04	67.4	199	**0.6**	440	**0.045**	121	70.4	**0.01**	**0.025**	36.3	**0.0015**	**0.0035**	12.1	0.059	5290	**0.1**	0.05
Mean	67.4	199	0.6	440	0.045	121	70.4	0.01	0.025	36.3	0.0015	0.0035	12.1	0.059	5290	0.1	0.05
Median	67.4	199	0.6	440	0.045	121	70.4	0.01	0.025	36.3	0.0015	0.0035	12.1	0.059	5290	0.1	0.05
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	67.4	199	0.6	440	0.045	121	70.4	0.01	0.025	36.3	0.0015	0.0035	12.1	0.059	5290	0.1	0.05
Maximum	67.4	199	0.6	440	0.045	121	70.4	0.01	0.025	36.3	0.0015	0.0035	12.1	0.059	5290	0.1	0.05
% of values undetected	0%	0%	100%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccinium uliginosum-TE12																	
Sample Date																	
08/21/04	64	200	**0.6**	339	**0.045**	140	35.5	**0.025**	**0.025**	28.9	**0.0015**	**0.0035**	25.5	0.773	6020	**0.15**	0.07
Mean	64	200	0.6	339	0.045	140	35.5	0.025	0.025	28.9	0.0015	0.0035	25.5	0.773	6020	0.15	0.07
Median	64	200	0.6	339	0.045	140	35.5	0.025	0.025	28.9	0.0015	0.0035	25.5	0.773	6020	0.15	0.07
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	64	200	0.6	339	0.045	140	35.5	0.025	0.025	28.9	0.0015	0.0035	25.5	0.773	6020	0.15	0.07
Maximum	64	200	0.6	339	0.045	140	35.5	0.025	0.025	28.9	0.0015	0.0035	25.5	0.773	6020	0.15	0.07
% of values undetected	0%	0%	100%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccinium uliginosum-TE13																	
Sample Date																	
08/19/04	51.7	140	**0.3**	545	**0.55**	43.8	51.3	**0.03**	**0.025**	33.7	**0.0015**	**0.0035**	15.9	0.106	5830	**0.4**	0.06
Mean	51.7	140	0.3	545	0.55	43.8	51.3	0.03	0.025	33.7	0.0015	0.0035	15.9	0.106	5830	0.4	0.06
Median	51.7	140	0.3	545	0.55	43.8	51.3	0.03	0.025	33.7	0.0015	0.0035	15.9	0.106	5830	0.4	0.06
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	51.7	140	0.3	545	0.55	43.8	51.3	0.03	0.025	33.7	0.0015	0.0035	15.9	0.106	5830	0.4	0.06
Maximum	51.7	140	0.3	545	0.55	43.8	51.3	0.03	0.025	33.7	0.0015	0.0035	15.9	0.106	5830	0.4	0.06
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	0%	0%
# of values between MDL and MRL	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Vaccinium uliginosum-TE11																
Sample Date																
08/21/04	2.55	26.8	0.05	2290	402	0.028	**0.04**	0.8	6750	**0.05**	**0.0015**	10.9	**0.001**	**2.5**	**0.13** J	37.1
Mean	2.55	26.8	0.05	2290	402	0.028	0.04	0.8	6750	0.05	0.0015	10.9	0.001	2.5	0.13	37.1
Median	2.55	26.8	0.05	2290	402	0.028	0.04	0.8	6750	0.05	0.0015	10.9	0.001	2.5	0.13	37.1
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.55	26.8	0.05	2290	402	0.028	0.04	0.8	6750	0.05	0.0015	10.9	0.001	2.5	0.13	37.1
Maximum	2.55	26.8	0.05	2290	402	0.028	0.04	0.8	6750	0.05	0.0015	10.9	0.001	2.5	0.13	37.1
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Vaccinium uliginosum-TE12																
Sample Date																
08/21/04	4.93	21.8	**0.03**	1150	505	0.034	0.12	1.59	4990	**0.05**	**0.0015**	**5**	**0.001**	**2.5**	**0.08** J	66.6
Mean	4.93	21.8	0.03	1150	505	0.034	0.12	1.59	4990	0.05	0.0015	5	0.001	2.5	0.08	66.6
Median	4.93	21.8	0.03	1150	505	0.034	0.12	1.59	4990	0.05	0.0015	5	0.001	2.5	0.08	66.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.93	21.8	0.03	1150	505	0.034	0.12	1.59	4990	0.05	0.0015	5	0.001	2.5	0.08	66.6
Maximum	4.93	21.8	0.03	1150	505	0.034	0.12	1.59	4990	0.05	0.0015	5	0.001	2.5	0.08	66.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Vaccinium uliginosum-TE13																
Sample Date																
08/19/04	4.14	23	0.06	1940	483	0.044	**0.025**	0.73	2990	**0.05**	**0.003**	**5**	**0.004**	**2.5**	**0.1** U	29.4
Mean	4.14	23	0.06	1940	483	0.044	0.025	0.73	2990	0.05	0.003	5	0.004	2.5	0.1	29.4
Median	4.14	23	0.06	1940	483	0.044	0.025	0.73	2990	0.05	0.003	5	0.004	2.5	0.1	29.4
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.14	23	0.06	1940	483	0.044	0.025	0.73	2990	0.05	0.003	5	0.004	2.5	0.1	29.4
Maximum	4.14	23	0.06	1940	483	0.044	0.025	0.73	2990	0.05	0.003	5	0.004	2.5	0.1	29.4
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	100%	0%	100%	100%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Vaccinium uliginosum-TE14																	
Sample Date																	
08/19/04	40.4	261	**0.5**	519	**0.55**	62.8	85.1	**0.01**	**0.025**	33	**0.0015**	**0.0035**	24.1	0.434	7710	**0.3**	0.12
Mean	40.4	261	0.5	519	0.55	62.8	85.1	0.01	0.025	33	0.0015	0.0035	24.1	0.434	7710	0.3	0.12
Median	40.4	261	0.5	519	0.55	62.8	85.1	0.01	0.025	33	0.0015	0.0035	24.1	0.434	7710	0.3	0.12
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	40.4	261	0.5	519	0.55	62.8	85.1	0.01	0.025	33	0.0015	0.0035	24.1	0.434	7710	0.3	0.12
Maximum	40.4	261	0.5	519	0.55	62.8	85.1	0.01	0.025	33	0.0015	0.0035	24.1	0.434	7710	0.3	0.12
% of values undetected					100%			100%	100%		100%	100%					
# of values between MDL and MRL			1													1	
Vaccinium uliginosum-TE15																	
Sample Date																	
08/19/04	52.6	362	1270	358	**0.25**	135	55.2	**0.04**	**0.025**	29	**0.0015**	**0.0035**	27.6	0.106	4720	**0.6**	0.1
Mean	52.6	362	1270	358	0.25	135	55.2	0.04	0.025	29	0.0015	0.0035	27.6	0.106	4720	0.6	0.1
Median	52.6	362	1270	358	0.25	135	55.2	0.04	0.025	29	0.0015	0.0035	27.6	0.106	4720	0.6	0.1
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	52.6	362	1270	358	0.25	135	55.2	0.04	0.025	29	0.0015	0.0035	27.6	0.106	4720	0.6	0.1
Maximum	52.6	362	1270	358	0.25	135	55.2	0.04	0.025	29	0.0015	0.0035	27.6	0.106	4720	0.6	0.1
% of values undetected					100%				100%		100%	100%					
# of values between MDL and MRL								1								1	
Vaccinium uliginosum-TE17																	
Sample Date																	
08/19/04	42.3	261	**0.8**	621	**0.25**	61.0	69.2	0.05	**0.025**	49.3	**0.0015**	**0.0035**	25.6	0.082	5300	**0.5**	0.09
09/20/04	39.2	228	**0.5**	298	**0.15**	92	97.2	0.17	**0.025**	46.7	**0.0015**	**0.025**	17.6	0.118	6450	**0.1**	0.09
Mean	40.8	245	0.7	460	0.20	77	83.2	0.11	0.025	48	0.0015	0.014	21.6	0.100	5880	0.3	0.09
Median	40.8	245	0.7	460	0.20	77	83.2	0.11	0.025	48	0.0015	0.014	21.6	0.100	5880	0.3	0.09
St. Deviation	2.2	23	0.2	228	0.07	22	19.8	0.08	0	1.8	0	0.015	5.7	0.025	810	0.3	0
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	39.2	228	0.5	298	0.15	61	69.2	0.05	0.025	46.7	0.0015	0.0035	17.6	0.082	5300	0.1	0.09
Maximum	42.3	261	0.8	621	0.25	92	97.2	0.17	0.025	49.3	0.0015	0.025	25.6	0.118	6450	0.5	0.09
% of values undetected					100%				100%		100%	100%				50%	
# of values between MDL and MRL			2													1	

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Vaccinium uliginosum-TE14																
Sample Date																
08/19/04	4.67	40	0.07	1910	554	0.045	0.06	1.75	7860	**0.05**	**0.0015**	**5**	**0.001**	**2.5**	**0.1** U	24.3
Mean	4.67	40	0.07	1910	554	0.045	0.06	1.75	7860	0.05	0.0015	5	0.001	2.5	0.1	24.3
Median	4.67	40	0.07	1910	554	0.045	0.06	1.75	7860	0.05	0.0015	5	0.001	2.5	0.1	24.3
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.67	40	0.07	1910	554	0.045	0.06	1.75	7860	0.05	0.0015	5	0.001	2.5	0.1	24.3
Maximum	4.67	40	0.07	1910	554	0.045	0.06	1.75	7860	0.05	0.0015	5	0.001	2.5	0.1	24.3
% of values undetected										100%	100%	100%	100%	100%	100%	
# of values between MDL and MRL																
Vaccinium uliginosum-TE15																
Sample Date																
08/19/04	4.7	29.7	0.11	1400	1430	0.049	0.07	0.87	4310	**0.1**	**0.0015**	31.2	**0.002**	**1.5**	**0.08** J	45.3
Mean	4.7	29.7	0.11	1400	1430	0.049	0.07	0.87	4310	0.1	0.0015	31.2	0.002	1.5	0.08	45.3
Median	4.7	29.7	0.11	1400	1430	0.049	0.07	0.87	4310	0.1	0.0015	31.2	0.002	1.5	0.08	45.3
St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	4.7	29.7	0.11	1400	1430	0.049	0.07	0.87	4310	0.1	0.0015	31.2	0.002	1.5	0.08	45.3
Maximum	4.7	29.7	0.11	1400	1430	0.049	0.07	0.87	4310	0.1	0.0015	31.2	0.002	1.5	0.08	45.3
% of values undetected											100%			100%		
# of values between MDL and MRL										1			1		1	
Vaccinium uliginosum-TE17																
Sample Date																
08/19/04	4.37	32	0.07	1540	432	0.045	0.42	0.99	6770	**0.05**	**0.003**	**7.5**	**0.001**	**6.3**	0.22	34.5
09/20/04	5.45	46.1	0.57	1350	502	0.036	0.348	2.04	2800	**0.05**	**0.0015**	14.8	**0.001**	**2.5**	**0.12** J	26.3
Mean	4.91	39	0.32	1450	467	0.041	0.38	1.52	4790	0.05	0.002	11.2	0.001	4.4	0.17	30.4
Median	4.91	39	0.32	1450	467	0.041	0.38	1.52	4790	0.05	0.002	11.2	0.001	4.4	0.17	30.4
St. Deviation	0.76	10	0.35	130	49	0.006	0.05	0.74	2810	0	0.001	5.2	0	2.7	0.07	5.8
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	4.37	32	0.07	1350	432	0.036	0.348	0.99	2800	0.05	0.0015	7.5	0.001	2.5	0.12	26.3
Maximum	5.45	46.1	0.57	1540	502	0.045	0.42	2.04	6770	0.05	0.003	14.8	0.001	6.3	0.22	34.5
% of values undetected										100%	50%		100%	50%		
# of values between MDL and MRL											1	1		1	1	

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Vaccinium vitis-idaea-Berry-TE05																	
Sample Date																	
09/20/04	15.2	**4**	**0.7**	4360	**0.15**	45	124	0.2	**0.03**	4.7	**0.0015**	**0.004**	8.3	**0.011**	723	**0.15**	0.04
Mean	15.2	4	0.7	4360	0.15	45	124	0.2	0.03	4.7	0.0015	0.004	8.3	0.011	723	0.15	0.04
Median	15.2	4	0.7	4360	0.15	45	124	0.2	0.03	4.7	0.0015	0.004	8.3	0.011	723	0.15	0.04
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	15.2	4	0.7	4360	0.15	45	124	0.2	0.03	4.7	0.0015	0.004	8.3	0.011	723	0.15	0.04
Maximum	15.2	4	0.7	4360	0.15	45	124	0.2	0.03	4.7	0.0015	0.004	8.3	0.011	723	0.15	0.04
% of values undetected	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Vaccinium vitis-idaea-Berry-TE08																	
Sample Date																	
09/20/04	14.6	**4**	**0.35**	4230	**0.15**	14	312	0.12	**0.025**	2	**0.0015**	**0.0035**	6.9	**0.0035**	802	**0.3**	0.04
Mean	14.6	4	0.35	4230	0.15	14	312	0.12	0.025	2	0.0015	0.0035	6.9	0.0035	802	0.3	0.04
Median	14.6	4	0.35	4230	0.15	14	312	0.12	0.025	2	0.0015	0.0035	6.9	0.0035	802	0.3	0.04
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	14.6	4	0.35	4230	0.15	14	312	0.12	0.025	2	0.0015	0.0035	6.9	0.0035	802	0.3	0.04
Maximum	14.6	4	0.35	4230	0.15	14	312	0.12	0.025	2	0.0015	0.0035	6.9	0.0035	802	0.3	0.04
% of values undetected	0%	100%	100%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Vaccinium vitis-idaea-Berry-TE12																	
Sample Date																	
09/20/04	15.9	**2**	**0.6**	4100	**0.15**	19	43.9	0.2	**0.025**	4.4	**0.0015**	**0.0035**	8.7	**0.015**	686	**0.15**	0.03
Mean	15.9	2	0.6	4100	0.15	19	43.9	0.2	0.025	4.4	0.0015	0.0035	8.7	0.015	686	0.15	0.03
Median	15.9	2	0.6	4100	0.15	19	43.9	0.2	0.025	4.4	0.0015	0.0035	8.7	0.015	686	0.15	0.03
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	15.9	2	0.6	4100	0.15	19	43.9	0.2	0.025	4.4	0.0015	0.0035	8.7	0.015	686	0.15	0.03
Maximum	15.9	2	0.6	4100	0.15	19	43.9	0.2	0.025	4.4	0.0015	0.0035	8.7	0.015	686	0.15	0.03
% of values undetected	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Vaccinium vitis-idaea-Berry-TE05																
Sample Date																
09/20/04	1.94	93.7	0.18	347	305	**0.005**	0.089	10.8	4090	**0.05**	**0.0015**	19.9	**0.013**	**2.85**	**0.07** J	7.9
Mean	1.94	93.7	0.18	347	305	0.005	0.089	10.8	4090	0.05	0.0015	19.9	0.013	2.85	0.07	7.9
Median	1.94	93.7	0.18	347	305	0.005	0.089	10.8	4090	0.05	0.0015	19.9	0.013	2.85	0.07	7.9
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.94	93.7	0.18	347	305	0.005	0.089	10.8	4090	0.05	0.0015	19.9	0.013	2.85	0.07	7.9
Maximum	1.94	93.7	0.18	347	305	0.005	0.089	10.8	4090	0.05	0.0015	19.9	0.013	2.85	0.07	7.9
% of values undetected	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Vaccinium vitis-idaea-Berry-TE08																
Sample Date																
09/20/04	1.48	71.6	0.13	396	300	**0.016**	0.059	10.9	3970	**0.05**	**0.0015**	15.8	**0.01**	**2.5**	**0.13** J	7.6
Mean	1.48	71.6	0.13	396	300	0.016	0.059	10.9	3970	0.05	0.0015	15.8	0.01	2.5	0.13	7.6
Median	1.48	71.6	0.13	396	300	0.016	0.059	10.9	3970	0.05	0.0015	15.8	0.01	2.5	0.13	7.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.48	71.6	0.13	396	300	0.016	0.059	10.9	3970	0.05	0.0015	15.8	0.01	2.5	0.13	7.6
Maximum	1.48	71.6	0.13	396	300	0.016	0.059	10.9	3970	0.05	0.0015	15.8	0.01	2.5	0.13	7.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0
Vaccinium vitis-idaea-Berry-TE12																
Sample Date																
09/20/04	2	68.3	0.19	316	187	**0.011**	**0.021**	8.86	3920	**0.05**	**0.008**	16.6	**0.006**	**2.5**	**0.07** J	6.6
Mean	2	68.3	0.19	316	187	0.011	0.021	8.86	3920	0.05	0.008	16.6	0.006	2.5	0.07	6.6
Median	2	68.3	0.19	316	187	0.011	0.021	8.86	3920	0.05	0.008	16.6	0.006	2.5	0.07	6.6
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2	68.3	0.19	316	187	0.011	0.021	8.86	3920	0.05	0.008	16.6	0.006	2.5	0.07	6.6
Maximum	2	68.3	0.19	316	187	0.011	0.021	8.86	3920	0.05	0.008	16.6	0.006	2.5	0.07	6.6
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Vaccinium vitis-idaea-TE05																	
Sample Date																	
09/20/04	43	**48.6**	**0.3**	948	**0.15**	16	87.3	0.26	**0.025**	54.9	**0.0015**	**0.0035**	12	**0.038**	5780	**0.1**	0.11
Mean	43	48.6	0.3	948	0.15	16	87.3	0.26	0.025	54.9	0.0015	0.0035	12	0.038	5780	0.1	0.11
Median	43	48.6	0.3	948	0.15	16	87.3	0.26	0.025	54.9	0.0015	0.0035	12	0.038	5780	0.1	0.11
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	43	48.6	0.3	948	0.15	16	87.3	0.26	0.025	54.9	0.0015	0.0035	12	0.038	5780	0.1	0.11
Maximum	43	48.6	0.3	948	0.15	16	87.3	0.26	0.025	54.9	0.0015	0.0035	12	0.038	5780	0.1	0.11
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Vaccinium vitis-idaea-TE06																	
Sample Date																	
08/20/04	40	**11**	**2.1**	**99**	**0.1**	30	49.6	**0.01**	**0.025**	64.5	**0.0015**	**0.005**	14.9	0.128	5060	**0.1**	0.08
Mean	40	11	2.1	99	0.1	30	49.6	0.01	0.025	64.5	0.0015	0.005	14.9	0.128	5060	0.1	0.08
Median	40	11	2.1	99	0.1	30	49.6	0.01	0.025	64.5	0.0015	0.005	14.9	0.128	5060	0.1	0.08
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	40	11	2.1	99	0.1	30	49.6	0.01	0.025	64.5	0.0015	0.005	14.9	0.128	5060	0.1	0.08
Maximum	40	11	2.1	99	0.1	30	49.6	0.01	0.025	64.5	0.0015	0.005	14.9	0.128	5060	0.1	0.08
% of values undetected	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccinium vitis-idaea-TE08																	
Sample Date																	
08/17/04	43.7	**43**	1390	192	**0.2**	3.7	61.9	**0.01**	**0.025**	42.4	**0.0015**	**0.0035**	15.2	**0.019**	5380	**0.1**	0.07
09/20/04	43.8	**12.2**	**0.4**	575	**0.15**	13	107	0.08	**0.025**	20.7	**0.0015**	**0.0035**	10.7	**0.0035**	5260	**0.1**	0.04
Mean	43.8	28	695	384	0.18	8.4	84	0.05	0.025	31.6	0.0015	0.0035	13.0	0.011	5320	0.1	0.06
Median	43.8	28	695	384	0.18	8.4	84	0.05	0.025	31.6	0.0015	0.0035	13.0	0.011	5320	0.1	0.06
St. Deviation	0.1	22	983	271	0.04	6.6	32	0.05	0.0	15.3	0.0	0.0	3.2	0.0	84.9	0.0	0.02
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	43.7	12.2	0.4	192	0.15	3.7	61.9	0.01	0.025	20.7	0.0015	0.0035	10.7	0.0035	5260	0.1	0.04
Maximum	43.8	43	1390	575	0.2	13	107	0.08	0.025	42.4	0.0015	0.0035	15.2	0.019	5380	0.1	0.07
% of values undetected	0%	0%	0%	0%	100%	0%	0%	50%	100%	0%	100%	100%	0%	50%	0%	100%	0%
# of values between MDL and MRL	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Vaccinium vitis-idaea-TE05																
Sample Date																
09/20/04	3.24	21.6	0.13	1400	2510	0.038	0.07	1.35	3400	**0.05**	**0.01**	16	**0.011**	**2.5**	**0.07** J	23.5
Mean	3.24	21.6	0.13	1400	2510	0.038	0.07	1.35	3400	0.05	0.01	16	0.011	2.5	0.07	23.5
Median	3.24	21.6	0.13	1400	2510	0.038	0.07	1.35	3400	0.05	0.01	16	0.011	2.5	0.07	23.5
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.24	21.6	0.13	1400	2510	0.038	0.07	1.35	3400	0.05	0.01	16	0.011	2.5	0.07	23.5
Maximum	3.24	21.6	0.13	1400	2510	0.038	0.07	1.35	3400	0.05	0.01	16	0.011	2.5	0.07	23.5
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0
Vaccinium vitis-idaea-TE06																
Sample Date																
08/20/04	3.48	22	**0.04**	1270	1090	0.039	**0.025**	2.2	5240	**0.1**	**0.0015**	**6.1**	**0.01**	**2.5**	**0.09** J	27.8
Mean	3.48	22	0.04	1270	1090	0.039	0.025	2.2	5240	0.1	0.0015	6.1	0.01	2.5	0.09	27.8
Median	3.48	22	0.04	1270	1090	0.039	0.025	2.2	5240	0.1	0.0015	6.1	0.01	2.5	0.09	27.8
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.48	22	0.04	1270	1090	0.039	0.025	2.2	5240	0.1	0.0015	6.1	0.01	2.5	0.09	27.8
Maximum	3.48	22	0.04	1270	1090	0.039	0.025	2.2	5240	0.1	0.0015	6.1	0.01	2.5	0.09	27.8
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%
# of values between MDL and MRL	0	0	1	0	0	0	0	0	0	1	0	1	0	0	1	0
Vaccinium vitis-idaea-TE08																
Sample Date																
08/17/04	3.58	25.6	0.08	1300	1080	0.068	0.1	0.58	4870	**0.05**	**0.002**	16.1	**0.006**	**2.5**	**0.07** J	21.8
09/20/04	2.84	22.3	0.08	1310	2250	0.034	**0.048**	0.81	3580	**0.05**	**0.0015**	12.3	**0.001**	**2.5**	**0.14** J	24.4
Mean	3.21	23.95	0.08	1305	1665	0.051	0.074	0.695	4225	0.05	0.00175	14.2	0.0035	2.5	0.11	23.1
Median	3.21	23.95	0.08	1305	1665	0.051	0.074	0.695	4225	0.05	0.00175	14.2	0.0035	2.5	0.11	23.1
St. Deviation	0.52	2.33	0.00	7	827	0.024	0.04	0.16	912	0.00	0.00	2.7	0.004	0.0	0.05	1.8
# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum	2.84	22.3	0.08	1300	1080	0.034	0.048	0.58	3580	0.05	0.0015	12.3	0.001	2.5	0.07	21.8
Maximum	3.58	25.6	0.08	1310	2250	0.068	0.1	0.81	4870	0.05	0.002	16.1	0.006	2.5	0.14	24.4
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	50%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2	0

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Total Solids percent	Chloride mg/kg	Fluoride mg/kg	Sulfate mg/kg	Total Cyanide mg/kg	Ammonia mg/kg	Aluminum mg/kg	Antimony mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Bismuth mg/kg	Boron mg/kg	Cadmium mg/kg	Calcium mg/kg	Chromium mg/kg	Cobalt mg/kg
Vaccinium vitis-idaea-TE10																	
Sample Date																	
08/21/04	74.5	297	**0.6**	419	**0.1**	**0.6**	76.7	**0.025**	**0.025**	47.7	**0.0015**	**0.0035**	11.1	**0.01**	4370	**0.1**	0.05
Mean	74.5	297	0.6	419	0.1	0.6	76.7	0.025	0.025	47.7	0.0015	0.0035	11.1	0.01	4370	0.1	0.05
Median	74.5	297	0.6	419	0.1	0.6	76.7	0.025	0.025	47.7	0.0015	0.0035	11.1	0.01	4370	0.1	0.05
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	74.5	297	0.6	419	0.1	0.6	76.7	0.025	0.025	47.7	0.0015	0.0035	11.1	0.01	4370	0.1	0.05
Maximum	74.5	297	0.6	419	0.1	0.6	76.7	0.025	0.025	47.7	0.0015	0.0035	11.1	0.01	4370	0.1	0.05
% of values undetected	0%	0%	100%	0%	0%	100%	0%	100%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
Vaccinium vitis-idaea-TE11																	
Sample Date																	
08/21/04	56.7	**44**	**0.6**	568	**0.045**	2.1	69.9	0.61	**0.025**	45.7	**0.0015**	**0.0035**	14.4	**0.0035**	4940	**0.1**	0.05
Mean	56.7	44	0.6	568	0.045	2.1	69.9	0.61	0.025	45.7	0.0015	0.0035	14.4	0.0035	4940	0.1	0.05
Median	56.7	44	0.6	568	0.045	2.1	69.9	0.61	0.025	45.7	0.0015	0.0035	14.4	0.0035	4940	0.1	0.05
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	56.7	44	0.6	568	0.045	2.1	69.9	0.61	0.025	45.7	0.0015	0.0035	14.4	0.0035	4940	0.1	0.05
Maximum	56.7	44	0.6	568	0.045	2.1	69.9	0.61	0.025	45.7	0.0015	0.0035	14.4	0.0035	4940	0.1	0.05
% of values undetected	0%	0%	100%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	100%	0%	100%	0%
# of values between MDL and MRL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccinium vitis-idaea-TE12																	
Sample Date																	
09/20/04	44.4	**15.7**	**0.4**	852	**0.15**	**11**	85.5	0.16	**0.025**	48.4	**0.0015**	**0.025**	12.6	**0.013**	5490	**0.1**	0.05
Mean	44.4	15.7	0.4	852	0.15	11	85.5	0.16	0.025	48.4	0.0015	0.025	12.6	0.013	5490	0.1	0.05
Median	44.4	15.7	0.4	852	0.15	11	85.5	0.16	0.025	48.4	0.0015	0.025	12.6	0.013	5490	0.1	0.05
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	44.4	15.7	0.4	852	0.15	11	85.5	0.16	0.025	48.4	0.0015	0.025	12.6	0.013	5490	0.1	0.05
Maximum	44.4	15.7	0.4	852	0.15	11	85.5	0.16	0.025	48.4	0.0015	0.025	12.6	0.013	5490	0.1	0.05
% of values undetected	0%	0%	0%	0%	100%	0%	0%	0%	100%	0%	100%	100%	0%	0%	0%	100%	0%
# of values between MDL and MRL	0	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0

Key: **Bold Results** = Parameter undetected by test, value shown is 1/2 MDL or 1/2 MRL
If result was not detected at the lab MDL, the value shown is 1/2 MDL.
If result was validation flagged U or UJ, the value shown is 1/2 MRL.
Green Results = Estimate result reported by laboratory below reporting limit (MRL)
MDL = Method Detection Limit.
MRL = Method Reporting Limit.
NA = Not Applicable.
Note: All results reported on dry weight basis, except total solids reported on wet weight basis.

Appendix 10.4C
Plant Samples Results Summary, Transportation-corridor Study Area, 2004

SPECIES - LOCATION ID	Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
Vaccinium vitis-idaea-TE10																
Sample Date																
08/21/04	1.93	37.9	0.14	996	870	0.026	0.12	11.4	3240	**0.05**	**0.0015**	13.5	**0.004**	**2.45**	**0.08** J	16.3
Mean	1.93	37.9	0.14	996	870	0.026	0.12	11.4	3240	0.05	0.0015	13.5	0.004	2.45	0.08	16.3
Median	1.93	37.9	0.14	996	870	0.026	0.12	11.4	3240	0.05	0.0015	13.5	0.004	2.45	0.08	16.3
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	1.93	37.9	0.14	996	870	0.026	0.12	11.4	3240	0.05	0.0015	13.5	0.004	2.45	0.08	16.3
Maximum	1.93	37.9	0.14	996	870	0.026	0.12	11.4	3240	0.05	0.0015	13.5	0.004	2.45	0.08	16.3
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Vaccinium vitis-idaea-TE11																
Sample Date																
08/21/04	3.53	23.8	0.09	1430	1140	0.044	**0.005**	1.29	4440	**0.05**	**0.015**	20.7	**0.002**	**2.45**	**0.07** J	23.2
Mean	3.53	23.8	0.09	1430	1140	0.044	0.005	1.29	4440	0.05	0.015	20.7	0.002	2.45	0.07	23.2
Median	3.53	23.8	0.09	1430	1140	0.044	0.005	1.29	4440	0.05	0.015	20.7	0.002	2.45	0.07	23.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	3.53	23.8	0.09	1430	1140	0.044	0.005	1.29	4440	0.05	0.015	20.7	0.002	2.45	0.07	23.2
Maximum	3.53	23.8	0.09	1430	1140	0.044	0.005	1.29	4440	0.05	0.015	20.7	0.002	2.45	0.07	23.2
% of values undetected	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0
Vaccinium vitis-idaea-TE12																
Sample Date																
09/20/04	2.85	22.2	0.37	1120	1550	0.04	**0.024**	0.84	3350	**0.05**	**0.0015**	12.4	**0.004**	**2.5**	**0.14** J	22.2
Mean	2.85	22.2	0.37	1120	1550	0.04	0.024	0.84	3350	0.05	0.0015	12.4	0.004	2.5	0.14	22.2
Median	2.85	22.2	0.37	1120	1550	0.04	0.024	0.84	3350	0.05	0.0015	12.4	0.004	2.5	0.14	22.2
St. Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	2.85	22.2	0.37	1120	1550	0.04	0.024	0.84	3350	0.05	0.0015	12.4	0.004	2.5	0.14	22.2
Maximum	2.85	22.2	0.37	1120	1550	0.04	0.024	0.84	3350	0.05	0.0015	12.4	0.004	2.5	0.14	22.2
% of values undetected	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
# of values between MDL and MRL	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0

10.5 Sediment—Transportation-corridor Study Area

10.5.1 Introduction

This section presents the findings of the trace elements study for sediment for the transportation-corridor study area in the Bristol Bay drainages. Sediment samples were collected from ponds and streams in 2004 and 2005 and analyzed to assess spatial and temporal variability of trace elements, anions, and cations. No sediment samples were collected from this study area in 2006 through 2008.

10.5.2 Study Objectives

The objective of this study was to establish baseline concentrations of NOCs in stream and pond sediments in the study area.

10.5.3 Study Area

The transportation-corridor study area for NOCs in sediment is the same as that for soil and vegetation (Section 10.4.3), although the sampling locations are different (Figure 10.4-1).

10.5.4 Scope of Work

The 2004 and 2005 field work for the trace elements study in the transportation-corridor study area was conducted by Bristol Environmental & Engineering Services Corporation according to the approach described in the Pebble Project consolidated study program (Appendix E of this environmental baseline document). The work for the trace elements study for sediment in the transportation-corridor study area in 2004 and 2005 is described below. No field activities were conducted in this study area during 2006 through 2008.

10.5.4.1 2004

- Collection of 27 sediment samples from 14 locations in streams, and analysis for trace elements, anions, and cations.
- Collection of 10 sediment samples from five ponds, and analysis for trace elements, anions, and cations.

10.5.4.2 2005

- Collection of 28 sediment samples from nine locations in streams, and analysis for trace elements, anions, and cations.
- Collection of 15 sediment samples from five ponds, and analysis for trace elements, anions, and cations.

Sediment sampling locations in streams were the same locations where surface water samples were collected and coincide with monitoring stations used in the hydrology study. Stream sediments were collected at the same time as surface water samples.

10.5.5 Methods

Unless otherwise stated, the methods for the sediment study in the transportation-corridor study area were the same as those used in the mine study area (Section 10.2.5). The laboratory analyses for the sediment

samples are listed in Table 10.5-1. A photographic log of the sampling work is provided in Appendix 10.5A.

10.5.6 Data Reduction

Below is a summary of how the raw data were processed and used in data evaluation. Freshwater sediment data were collected in 2004 and 2005. The following general statistics were compiled for each waterbody type (i.e., stream or pond) for both years combined (Tables 10.5-2 and 10.5-3):

- The FOD.
- Minimum and maximum detected concentrations.
- Minimum and maximum MDLs and MRLs.
- Mean and median concentrations.
- Standard deviations and CVs.

Only validated data for primary samples were used for data evaluation. For the summary statistics, non-detect results were included as one-half the MDL, and non-detect results flagged with a "U" or "UJ" qualifier were included as one-half the MRL.

10.5.7 Results and Discussion

Streams and ponds are different habitat types, i.e., flowing water and non-flowing water, and the data evaluation for sediment focused primarily on each of these habitat types separately, although data for all sediment samples combined are discussed briefly.

Eighty sediment samples were collected in 2004 and 2005 and analyzed. Of these, 37 samples were collected in 2004 and 43 were collected in 2005. All samples were analyzed for trace elements, anions, and cations (Tables 10.5-2 and 10.5-3). The data represent 20 separate locations in the transportation-corridor study area.

Laboratory analytical results by sample location are in Appendix 10.5B. Sediment data are presented on a dry weight basis with the exception of total solids data, which are presented on a wet weight basis.

Box-and-whisker plots for sediment are presented in Appendix 10.5C. For these plots, non-detect results were excluded to avoid artificially skewing the shape of the plots, although non-detect results flagged with a "U" or "UJ" qualifier were included as one-half the MRL value.

10.5.7.1 Evaluation of Streams

Fifty-five sediment samples were collected from 15 stream sampling locations during 2004 through 2005 and were analyzed for NOCs.

Trace Elements

Twenty-five of the 26 trace elements for which samples were analyzed were detected above MDLs in at least 22 percent (12 or more) of the stream sediment samples (Table 10.5-2). Fourteen trace elements were present in 100 percent of these sediment samples. Antimony, arsenic, beryllium, and molybdenum were found in 73 to 95 percent of samples. Cadmium, silver, and thallium were present in 42 to 65

percent. Bismuth, boron, mercury, and selenium, along with tin, were detected in less than 40 percent of stream sediment samples. Tin was detected in only one stream sediment sample (2 percent).

The highest mean concentrations in stream sediments were for iron (15,000 mg/kg) and aluminum (8,400 mg/kg), followed by magnesium (3,700 mg/kg) and calcium (3,600 mg/kg). Potassium and manganese had mean concentrations of 521 mg/kg and 342 mg/kg, respectively. All other trace elements had mean concentrations below 51 mg/kg.

Variability in concentrations was generally low for stream sediments. Only two trace elements —mercury and thallium—had CVs greater than 1.0. The overall mean CV for trace elements in stream sediment samples was 0.71.

Anions and Cations

All anions and cations were detected in at least 44 percent of stream sediment samples, although none were detected in all samples (Table 10.5-2).

The highest mean concentrations in stream sediments were for sodium (233 mg/kg) and sulfate (115 mg/kg), while cyanide had the lowest mean concentration (0.048 mg/kg).

The variability for anions and cations was higher than for trace elements. All ions but sodium had CVs greater than 1.0, and both fluoride and sulfate exhibited CVs greater than 4.0.

10.5.7.2 Evaluation of Ponds

Twenty-five sediment samples were collected from five ponds during 2004 and 2005.

Trace Elements

All 26 trace elements for which samples were analyzed were detected above MDLs in at least some sediment samples from ponds. Twenty-five of the 26 trace elements were detected in at least 16 percent (four or more) of the pond sediment samples. Fifteen trace elements were present in 100 percent of the samples (Table 10.5-3). (These are the same 14 trace elements that were detected in all stream sediment samples, plus arsenic.) Boron, mercury, silver, and thallium, as well as tin, were detected in fewer than 25 percent of pond sediment samples, and tin was detected in only one pond sediment sample.

The highest mean concentrations for trace elements in pond sediments were for iron (8,900 mg/kg) and aluminum (7,100 mg/kg), followed by calcium (2,500 mg/kg) and magnesium (2,200 mg/kg). Potassium and manganese had mean concentrations of 272 mg/kg and 154 mg/kg, respectively. All other trace elements had mean concentrations below 33 mg/kg.

Variability was generally low for elemental concentrations in pond sediment samples. Four trace elements —arsenic, mercury, selenium, and thallium—had CV values greater than 1.0. Two of these (mercury and thallium) were detected in less than 25 percent of samples. The overall mean CV for trace elements in pond sediments was 0.70, which is very close to the mean CV of 0.71 calculated for stream sediments.

Anions and Cations

All of the anions and cations were detected above MDLs in at least 44 percent (11 or more) of the pond sediment samples (Table 10.5-3). Chloride and sodium were present in 100 percent of the samples.

The highest mean concentrations for cations and anions in pond sediments were for sodium (246 mg/kg) and ammonia as nitrogen (167 mg/kg), while cyanide had the lowest mean concentration (0.11 mg/kg).

As with the stream sediment samples, anions and cations in pond sediment samples had higher variability than did trace elements, with four of six CVs being greater than 1.0.

10.5.7.3 Comparison of Naturally Occurring Constituent Concentrations by Type of Waterbody

Variability in concentrations of trace elements was similar between pond and stream sediment samples for the transportation-corridor study area. Variability of concentrations within a single pond/stream over time was generally lower than variability among all combined pond sediment samples or all combined stream sediment samples. Various patterns emerge from evaluation of chemical-specific concentrations across the waterbodies, as described below. (For ease of readability, concentrations greater than 1,000 mg/kg were rounded to the nearest hundred for presentation in the following discussion.)

The highest mean concentrations of trace elements in both stream and pond sediment samples were for iron (15,000 mg/kg in streams and 8,900 mg/kg in ponds) and aluminum (8,400 mg/kg in streams and 7,100 mg/kg in ponds; Tables 10.5-2 and 10.5-3). Calcium, magnesium, manganese, and potassium were the other elements with mean concentrations above 100 mg/kg in both types of waterbodies. The lowest mean concentrations were for mercury and thallium, which both had mean concentrations of 0.019 mg/kg for stream sediments, while mercury (0.014 mg/kg) was lower than thallium (0.016 mg/kg) for pond sediments. Concentrations for all of these trace elements were lower in sediment samples from ponds than in those from streams.

Elemental concentrations were generally consistent between waterbody types, except for five trace elements. Iron and potassium had nearly twice the mean concentration in stream sediments (15,000 mg/kg and 521 mg/kg, respectively) as in pond sediments (8,900 mg/kg and 272 mg/kg, respectively). Copper and manganese had mean concentrations in stream sediments (16.5 mg/kg and 342 mg/kg, respectively) that were more than twice their respective concentrations in pond sediments (6.48 mg/kg and 154 mg/kg, respectively). Selenium, conversely, had a mean concentration in pond sediments (0.64 mg/kg) more than 3 times higher the mean concentration in stream sediments (0.19 mg/kg). Three other trace elements—bismuth, cadmium, and tin—had higher mean concentrations in pond samples (0.063 mg/kg, 0.18 mg/kg, and 0.80 mg/kg, respectively) than in stream samples (0.060 mg/kg, 0.14 mg/kg, and 0.58 mg/kg, respectively), but for all three elements the mean concentrations for the two sediment sources were within a factor of 2. All other trace elements had higher mean concentrations in stream samples than in pond samples, except beryllium with had the same mean concentration (0.16 mg/kg) for both stream and pond sediments.

Several trace elements (antimony, beryllium, boron, cadmium, mercury, molybdenum, silver, and thallium) were detected more frequently in stream sediments than in pond sediments (Tables 10.5-2 and 10.5-3). This was most notable for antimony, molybdenum, silver, and thallium, each of which showed an FOD for stream sediments that was about 20 to 30 percent higher than its FOD for pond sediments. The FODs for arsenic, bismuth, selenium, and tin were slightly (5, 6, 20, and 2 percent, respectively) higher for pond samples than for stream samples.

For anions and cations, ammonia (as nitrogen) the mean concentration was 5 times higher for pond sediment samples than for stream samples. Cyanide had a mean concentration for pond sediments that

was about 2 times higher than the concentration for stream sediments. The mean chloride concentration for pond sediments was higher than, but was less than 2 times higher than, the mean for stream sediments. Mean concentrations for fluoride and sodium were relatively consistent between stream and pond samples. Unlike the trend observed for trace elements, where stream sediment samples had the majority of higher mean concentrations, sulfate was the only anion or cation with a higher mean concentration for stream samples than for pond samples. The mean sulfate concentration for stream sediment was slightly less than 2 times higher than the mean for pond sediment.

These comparisons indicate that ponds and streams have different signatures of natural levels of some trace elements, anions, and cations. These differences may be related to the constant movement of water in streams compared to the lack of flow in ponds. The lack of flow may allow some NOCs to build up in sediment over time, particularly those that bind to particulates and/or are less soluble in water and are thus more likely to remain in sediment.

10.5.8 Summary

The study of NOCs in sediment in the Bristol Bay drainages portion of the transportation-corridor study area focused on a 1-mile-wide corridor between the mine study area and the Cook Inlet drainages. The primary objective of this study is to collect baseline data to provide scientific documentation of the naturally occurring levels of trace elements, anions, and cations in sediment in the study area.

In 2004 and 2005, 80 primary sediment samples were collected from streams and ponds and analyzed for NOCs including trace elements, anions, and cations. Of these samples, 55 were collected from 15 separate locations in streams, and 25 were collected from five separate locations in ponds.

All NOCs for which samples were analyzed were detected in at least some sediment samples. Evaluation of the analytical results indicated relative consistency in mean concentrations between waterbody types for many NOCs in sediment, but a wide variability of mean concentrations between waterbody types for some NOCs. Mean concentrations of trace elements were generally consistent between stream sediments and pond sediments, except for iron, copper, manganese, potassium, and selenium. Copper, iron, manganese, and potassium had higher mean concentrations for stream sediments than for pond sediments, and selenium had a higher mean concentration for pond sediments. For anions and cations, ammonia (as nitrogen) showed the most variability between waterbody types and had higher concentrations in sediment samples from ponds. Of the anions and cations, only sulfate had a higher mean concentration for stream sediment samples than for pond sediment samples.

Samples of sediment from ponds and from streams in the transportation-corridor study area have different signatures of natural levels of some trace elements, anions, and cations; therefore, any long-term monitoring of NOCs in sediment should be conducted in each of these different types of waterbodies to ensure that representative data are compiled.

TABLES

TABLE 10.5-1
Analytical Methods for Stream Sediment, Transportation-corridor Study Area

Analyte	Method
Trace Elements [a]	SW 6010/6020 (ICP/ICP-MS)/E200.7/E200.8
Sodium	SW6020
Mercury	SW7471 (CVAA)
Ammonia (as nitrogen)	SM4500NH3G
Chloride, Fluoride, and Sulfate	E300.0
Cyanide, Total	SM4500CE/SW9012A
Acid-volatile Sulfide	Draft E1991
Simultaneously Extractable Metals	SW6010B/E200.7

Notes:

a. Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Pb, K, Mg, Mn, Mo, Ni, Sb, Se, Sn, Tl, V, Zn (chemical abbreviations are defined in Appendix D of this environmental baseline document).

E = Methods for Chemical Analysis of Inorganic Substances in Environmental Samples, EPA/600/R-93-100, August 1993, and Methods for the Determination of Metals in Environmental Samples, EPA/600/4-91-010, June 1991.

SM = Standard Methods for the Examination of Water and Wastewater, 20th Edition.

SW = U.S. Environmental Protection Agency Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Third edition, September 1986.

TABLE 10.5-2
Stream Sediment, Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004-2005

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements[c]									
Aluminum	55 / 55	100%	2,360 - 16,200	0.59 - 61.2	1.91 - 197	8,427	7,410	3,823	0.45
Antimony	40 / 55	73%	0.035 - 0.27	0.030 - 0.21	0.10 - 0.66	0.075	0.070	0.054	0.71
Arsenic	52 / 55	95%	0.45 - 35.1	0.30 - 1.87	0.96 - 6.02	8.17	4.11	8.09	0.99
Barium	55 / 55	100%	15.4 - 143	0.090 - 0.66	0.29 - 2.12	50.7	45.3	31.0	0.61
Beryllium	53 / 55	96%	0.034 - 0.34	0.030 - 0.21	0.096 - 0.66	0.16	0.15	0.073	0.46
Bismuth	12 / 55	22%	0.062 - 0.21	0.059 - 0.41	0.19 - 1.33	0.060	0.038	0.053	0.88
Boron	18 / 55	33%	0.74 - 8.23	0.36 - 5.06	1.15 - 16.3	2.30	1.54	1.56	0.68
Cadmium	36 / 55	65%	0.062 - 0.45	0.059 - 0.41	0.19 - 1.33	0.14	0.11	0.11	0.79
Calcium	55 / 55	100%	828 - 7,440	8.99 - 124	28.7 - 395	3,559	3,040	1,772	0.50
Chromium	55 / 55	100%	1.35 - 19.0	0.12 - 0.80	0.38 - 2.65	7.63	7.34	4.27	0.56
Cobalt	55 / 55	100%	0.86 - 13.5	0.14 - 0.99	0.48 - 3.31	4.72	3.90	2.60	0.55
Copper	55 / 55	100%	3.79 - 56.2	0.17 - 1.19	0.57 - 3.98	16.5	8.87	16.0	0.97
Iron	55 / 55	100%	3,810 - 36,400	2.99 - 306	9.63 - 987	14,965	14,800	6,005	0.40
Lead	55 / 55	100%	0.65 - 17.0	0.059 - 0.41	0.19 - 1.33	4.94	3.31	3.83	0.78
Magnesium	55 / 55	100%	539 - 8,040	8.99 - 911	28.7 - 2,910	3,668	3,510	1,773	0.48
Manganese	55 / 55	100%	50.0 - 1,420	0.059 - 0.78	0.19 - 2.51	342	290	201	0.59
Mercury	12 / 55	22%	0.014 - 0.22	0.012 - 0.020	0.039 - 0.065	0.019	0.0073	0.041	2.09
Molybdenum	40 / 55	73%	0.32 - 3.22	0.30 - 2.05	0.96 - 6.63	0.71	0.64	0.59	0.83
Nickel	55 / 55	100%	1.16 - 13.0	0.059 - 0.41	0.19 - 1.33	4.67	4.18	2.62	0.56
Potassium	55 / 55	100%	84.6 - 1,570	29.7 - 219	95.7 - 706	521	480	288	0.55
Selenium	9 / 55	16%	0.15 - 0.56	0.14 - 0.99	0.48 - 3.31	0.19	0.096	0.14	0.72
Silver	26 / 55	47%	0.031 - 0.11	0.030 - 0.22	0.096 - 0.71	0.044	0.032	0.032	0.72
Thallium	23 / 55	42%	0.013 - 0.094	0.0059 - 0.041	0.019 - 0.13	0.019	0.0039	0.023	1.22
Tin	1 / 55	2%	1.30 - 1.30	0.30 - 2.19	0.96 - 7.06	0.58	0.49	0.17	0.29
Vanadium	55 / 55	100%	8.81 - 198	0.90 - 6.64	2.87 - 21.2	39.8	31.3	27.3	0.69
Zinc	55 / 55	100%	9.71 - 92.3	0.30 - 2.97	0.96 - 9.57	42.1	37.7	16.7	0.40
Anions and Cations[c]									
Ammonia (as nitrogen)	45 / 55	82%	4.29 - 184	2.75 - 15.7	8.72 - 49.9	32.5	19.9	38.5	1.18
Chloride	51 / 55	93%	0.41 - 39.3	0.27 - 0.51	0.87 - 1.63	2.45	1.15	5.33	2.18
Cyanide	27 / 55	49%	0.028 - 0.31	0.026 - 0.032	0.052 - 0.063	0.048	0.016	0.055	1.14
Fluoride	24 / 55	44%	0.31 - 84.0	0.27 - 15.2	0.87 - 49.1	2.75	0.41	12.0	4.35
Sodium	53 / 55	96%	67.0 - 960	29.7 - 219	95.7 - 706	233	189	168	0.72
Sulfate	54 / 55	98%	0.49 - 3,760	0.27 - 3.05	0.87 - 9.83	115	6.90	514	4.46

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.5-3

Pond Sediment, Data Summary and Descriptive Statistics, Transportation-corridor Study Area, 2004-2005

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Range of Method Reporting Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements[c]									
Aluminum	25 / 25	100%	3,090 - 10,400	0.59 - 61.2	1.91 - 197	7,096	7,550	1,946	0.27
Antimony	13 / 25	52%	0.033 - 0.27	0.030 - 0.14	0.096 - 0.46	0.066	0.053	0.063	0.96
Arsenic	25 / 25	100%	0.92 - 43.5	0.30 - 1.43	0.96 - 4.61	6.47	4.10	10.0	1.54
Barium	25 / 25	100%	9.17 - 69.5	0.090 - 0.60	0.29 - 1.91	31.2	26.5	17.6	0.56
Beryllium	23 / 25	92%	0.034 - 0.34	0.030 - 0.20	0.096 - 0.64	0.16	0.17	0.083	0.51
Bismuth	7 / 25	28%	0.062 - 0.15	0.059 - 0.29	0.19 - 0.92	0.063	0.052	0.040	0.63
Boron	6 / 25	24%	0.64 - 4.01	0.33 - 14.3	1.07 - 46.1	2.04	1.52	1.33	0.65
Cadmium	15 / 25	60%	0.082 - 0.69	0.059 - 0.29	0.19 - 0.92	0.18	0.13	0.17	0.99
Calcium	25 / 25	100%	952 - 4,260	8.98 - 59.8	28.7 - 191	2,546	2,350	1,066	0.42
Chromium	25 / 25	100%	1.66 - 13.0	0.12 - 0.55	0.38 - 1.84	7.26	7.69	3.02	0.42
Cobalt	25 / 25	100%	0.81 - 4.96	0.14 - 0.69	0.48 - 2.30	3.01	3.14	1.19	0.40
Copper	25 / 25	100%	1.99 - 12.5	0.17 - 0.83	0.57 - 2.77	6.48	6.43	2.87	0.44
Iron	25 / 25	100%	2,600 - 15,600	2.97 - 306	9.57 - 987	8,914	8,670	3,283	0.37
Lead	25 / 25	100%	1.29 - 9.27	0.059 - 0.29	0.19 - 0.92	4.09	4.26	2.28	0.56
Magnesium	25 / 25	100%	683 - 4,260	8.98 - 59.8	28.7 - 191	2,220	2,650	1,197	0.54
Manganese	25 / 25	100%	29.6 - 310	0.059 - 0.40	0.19 - 1.27	154	151	72.1	0.47
Mercury	4 / 25	16%	0.012 - 0.085	0.012 - 0.054	0.039 - 0.18	0.014	0.0070	0.016	1.20
Molybdenum	14 / 25	56%	0.31 - 1.16	0.30 - 1.43	0.96 - 4.61	0.50	0.47	0.28	0.56
Nickel	25 / 25	100%	0.39 - 7.55	0.059 - 0.29	0.19 - 0.92	3.39	3.43	1.87	0.55
Potassium	25 / 25	100%	102 - 518	29.6 - 197	95.6 - 637	272	251	134	0.49
Selenium	9 / 25	36%	0.34 - 6.01	0.14 - 0.69	0.48 - 2.30	0.64	0.30	1.26	1.98
Silver	4 / 25	16%	0.032 - 0.048	0.030 - 0.20	0.096 - 0.64	0.031	0.020	0.023	0.73
Thallium	6 / 25	24%	0.015 - 0.083	0.0059 - 0.029	0.019 - 0.092	0.016	0.0031	0.026	1.58
Tin	1 / 25	4%	1.31 - 1.31	0.30 - 1.43	0.96 - 4.61	0.80	0.49	0.56	0.71
Vanadium	25 / 25	100%	5.58 - 39.1	0.90 - 4.33	2.87 - 13.8	24.1	22.4	8.72	0.36
Zinc	25 / 25	100%	10.8 - 50.7	0.30 - 1.43	0.96 - 4.61	32.6	33.8	11.0	0.34
Anions and Cations[c]									
Ammonia (as nitrogen	24 / 25	96%	4.39 - 672	2.88 - 30.7	9.13 - 97.6	167	79.1	196	1.17
Chloride	25 / 25	100%	0.54 - 12.8	0.27 - 1.47	0.86 - 4.74	4.09	2.12	3.84	0.94
Cyanide	12 / 25	48%	0.027 - 1.60	0.026 - 0.29	0.053 - 0.59	0.11	0.027	0.31	2.82
Fluoride	11 / 25	44%	0.66 - 16.7	0.27 - 1.47	0.86 - 4.74	3.06	0.74	4.52	1.48
Sodium	25 / 25	100%	107 - 463	29.6 - 197	95.6 - 637	246	234	100	0.41
Sulfate	24 / 25	96%	1.30 - 287	0.27 - 1.47	0.86 - 4.74	65.2	16.2	89.5	1.37

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. All data presented on a dry weight basis.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

APPENDICES

APPENDIX 10.5A

Photographic Log, Sediment Sampling, Transportation-corridor Study Area

APPENDIX 10.5A

Photo Log for Sediment Sampling: Transportation Corridor, Bristol Bay Drainage



2004 Sediment Sampling Site Pond 1



2004 Sediment Sampling Site Pond 3



2004 Sediment Sampling Site Pond 1



2004 Sediment Sampling Site Pond 3



2004 Sediment Sampling Site Pond 2



2004 Sediment Sampling Site Pond 4



2004 Sediment Sampling Site Pond 5



2004 Sediment Sampling - Decontamination



2004 Sediment Sampling – Decontamination



2004 Sediment Sampling - Decontamination

APPENDIX 10.5B

Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Total Solids	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
GS3A																		
	Sample Date																	
	08/19/04		2.40	**0.15**	9.23	0.073	64.0	12900	**0.093**	3.71	139	0.144	**0.0298**	**6.88**	**0.030**	6570	10.8	7.92
	09/25/04		2.37	**0.15**	10.1	0.052	13.0	10600	**0.052**	2.74	107	**0.074**	**0.0305**	**5.71**	**0.031**	5570	8.91	6.08
	05/03/05		1.62	4.52	29.7	**0.047**	109	15600	**0.015**	4.11	132	0.124	**0.0302**	**1.51**	**0.030**	7100	8.73	7.58
	07/13/05	74.0	**0.71**	**0.20**	2.25	**0.035**	57.0	15500	**0.103**	3.58	122	**0.103**	**0.206**	**2.06**	**0.206**	6480	4.64	6.55
	09/10/05	74.5	**0.21**	**0.21**	1.61	**0.015**	24.3	15400	**0.043**	3.43	143	**0.121**	**0.0408**	4.63	**0.041**	6580	8.77	7.19
Mean		74.3	1.46	1.0	10.6	0.044	53.5	14000	0.061	3.51	129	0.11	0.0673	4.16	0.067	6460	8.37	7.06
Median		74.3	1.62	0.20	9.23	0.047	57.0	15400	0.052	3.58	132	0.12	0.0305	4.63	0.031	6570	8.77	7.19
St. Deviation		0.4	0.98	1.9	11.4	0.022	37.7	2210	0.036	0.50	14.5	0.026	0.077	2.32	0.077	550	2.26	0.75
# of values		2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Minimum		74.0	0.21	0.15	1.61	0.015	13.0	10600	0.015	2.74	107	0.074	0.0298	1.51	0.030	5570	4.64	6.08
Maximum		74.5	2.40	4.52	29.7	0.073	109	15600	0.103	4.11	143	0.144	0.206	6.88	0.206	7100	10.8	7.92
% of values undetected			20%	80%		20%			40%			20%	100%	40%	100%			
# of values between MDL and MRL			1			2			3			2		2				
GS4A																		
	Sample Date																	
	07/31/04		**0.63**	**0.15**	6.90	**0.014**	13.5	4800	**0.092**	**0.79**	59.7	**0.059**	**0.0756**	**1.50**	**0.062**	2420	9.70	4.21
	09/25/04		2.30	**0.16**	33.3	**0.055**	**4.5**	3850	**0.046**	**0.57**	62.2	**0.043**	**0.0300**	**1.50**	**0.030**	1990	5.67	3.45
	05/03/05		1.09	**0.33**	8.51	**0.015**	**8.8**	4190	**0.015**	**0.63**	52.8	**0.061**	**0.0670**	**1.53**	**0.031**	2150	5.17	3.25
	07/15/05	79.2	**0.43**	**0.40**	4.20	**0.015**	**3.8**	3440	**0.068**	**1.12**	63.7	**0.069**	**0.0376**	**1.88**	**0.169**	2370	5.45	3.51
	09/10/05	79.2	**0.20**	**0.63**	3.06	**0.015**	**7.0**	4600	**0.019**	**0.91**	53.5	**0.042**	**0.0385**	1.39	**0.078**	1900	6.18	3.22
Mean		79.2	0.93	0.33	11.2	0.023	7.5	4180	0.048	0.80	58.4	0.055	0.0497	1.56	0.074	2170	6.43	3.53
Median		79.2	0.63	0.33	6.90	0.015	7.0	4190	0.046	0.79	59.7	0.059	0.0385	1.50	0.062	2150	5.67	3.45
St. Deviation		0.0	0.83	0.20	12.5	0.018	3.9	550	0.033	0.22	5.0	0.012	0.0202	0.19	0.057	230	1.86	0.40
# of values		2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Minimum		79.2	0.20	0.15	3.06	0.014	3.8	3440	0.015	0.57	52.8	0.042	0.0300	1.39	0.030	1900	5.17	3.22
Maximum		79.2	2.30	0.63	33.3	0.055	13.5	4800	0.092	1.12	63.7	0.069	0.0756	1.88	0.169	2420	9.70	4.21
% of values undetected			20%	60%		80%	20%		40%				60%	80%	40%			
# of values between MDL and MRL			2	2		1	3		3	5		5	2		3			
GS4B																		
	Sample Date																	
	09/25/04		7.25	**0.15**	12.7	**0.014**	**1.5**	2410	**0.015**	**0.28**	15.4	**0.034**	**0.0307**	**1.54**	**0.031**	828	2.49	0.86
Mean			7.25	0.15	12.7	0.014	1.5	2410	0.015	0.28	15.4	0.034	0.0307	1.54	0.031	828	2.49	0.86
Median			7.25	0.15	12.7	0.014	1.5	2410	0.015	0.28	15.4	0.034	0.0307	1.54	0.031	828	2.49	0.86
St. Deviation			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
# of values		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum			7.25	0.15	12.7	0.014	1.5	2410	0.015	0.28	15.4	0.034	0.0307	1.54	0.031	828	2.49	0.86
Maximum			7.25	0.15	12.7	0.014	1.5	2410	0.015	0.28	15.4	0.034	0.0307	1.54	0.031	828	2.49	0.86
% of values undetected				100%		100%	100%		100%	100%			100%	100%	100%			
# of values between MDL and MRL												1						

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
GS3A																	
	Sample Date																
	08/19/04	41.0	20800	1.45	5960	235	0.168	**0.149**	6.49	1050	**0.232**	**0.0946**	428	**0.0030**	**0.480**	75.9	36.6
	09/25/04	33.8	15900	0.95	4560	161	**0.0223**	**0.153**	5.62	781	**0.074**	**0.0153**	272	**0.0031**	**0.492**	58.8	28.5
	05/03/05	45.1	17600	1.98	6170	221	**0.0297**	**0.321**	6.95	1070	**0.073**	**0.0151**	401	**0.0030**	**0.486**	63.7	59.9
	07/13/05	49.5	16900	2.07	5480	185	**0.0253**	**1.03**	5.47	954	**0.497**	**0.103**	**420**	**0.0938**	**1.03**	61.8	39.2
	09/10/05	44.2	17200	1.42	5660	209	**0.0081**	**0.204**	6.62	1030	**0.099**	**0.0204**	382	**0.0041**	**0.660**	59.3	37.5
	Mean	42.7	17680	1.6	5570	202	0.0507	0.370	6.23	977	0.19	0.0496	381	0.021	0.629	63.9	40.3
	Median	44.2	17200	1.5	5660	209	0.0253	0.204	6.49	1030	0.10	0.0204	401	0.0031	0.492	61.8	37.5
	St. Deviation	5.84	1850	0.46	620	29	0.0661	0.373	0.65	118	0.181	0.0449	63	0.0405	0.234	7.0	11.7
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	33.8	15900	0.95	4560	161	0.0081	0.149	5.47	781	0.073	0.0151	272	0.0030	0.480	58.8	28.5
	Maximum	49.5	20800	2.07	6170	235	0.168	1.03	6.95	1070	0.497	0.103	428	0.0938	1.03	75.9	59.9
	% of values undetected						20%	80%			80%	80%		80%	100%		
	# of values between MDL and MRL						3	1			1	1	1	1			
GS4A																	
	Sample Date																
	07/31/04	40.7	18700	2.74	2750	219	**0.0060**	**0.822**	3.40	956	**0.242**	**0.0150**	226	**0.0127**	**0.483**	51.5	28.0
	09/25/04	42.1	9620	2.17	2270	175	**0.0060**	**0.683**	3.25	902	**0.073**	**0.0150**	165	**0.0030**	**0.483**	30.2	26.4
	05/03/05	42.5	8950	2.38	2300	168	**0.0059**	**0.794**	3.02	906	**0.074**	**0.0153**	960	**0.0031**	**0.494**	29.2	26.1
	07/15/05	56.2	6350	3.12	2660	184	**0.0074**	**1.07**	3.07	944	**0.091**	**0.0188**	244	0.0471	**0.605**	24.8	31.8
	09/10/05	38.7	10400	2.40	2270	192	**0.0076**	**0.661**	3.05	770	**0.093**	**0.0192**	163	**0.0039**	**0.620**	28.7	30.0
	Mean	44.0	10800	2.56	2450	188	0.0066	0.806	3.16	896	0.11	0.0166	352	0.014	0.537	32.9	28.5
	Median	42.1	9620	2.40	2300	184	0.0060	0.794	3.07	906	0.091	0.0153	226	0.0039	0.494	29.2	28.0
	St. Deviation	6.96	4670	0.37	240	20	0.0008	0.163	0.16	74	0.072	0.0022	342	0.019	0.069	10.6	2.4
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	38.7	6350	2.17	2270	168	0.0059	0.661	3.02	770	0.073	0.0150	163	0.0030	0.483	24.8	26.1
	Maximum	56.2	18700	3.12	2750	219	0.0076	1.07	3.40	956	0.242	0.0192	960	0.0471	0.620	51.5	31.8
	% of values undetected						100%				100%	100%		60%	100%		
	# of values between MDL and MRL							5						1			
GS4B																	
	Sample Date																
	09/25/04	3.98	3810	0.65	539	50	**0.0059**	**0.154**	1.23	**85**	**0.074**	**0.0154**	109	**0.0031**	**0.495**	15.8	9.7
	Mean	3.98	3810	0.65	539	50	0.0059	0.154	1.23	85	0.074	0.0154	109	0.0031	0.495	15.8	9.7
	Median	3.98	3810	0.65	539	50	0.0059	0.154	1.23	85	0.074	0.0154	109	0.0031	0.495	15.8	9.7
	St. Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	# of values	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	3.98	3810	0.65	539	50	0.0059	0.154	1.23	85	0.074	0.0154	109	0.0031	0.495	15.8	9.7
	Maximum	3.98	3810	0.65	539	50	0.0059	0.154	1.23	85	0.074	0.0154	109	0.0031	0.495	15.8	9.7
	% of values undetected						100%	100%			100%	100%		100%	100%		
	# of values between MDL and MRL									1							

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Total Solids	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
GS6A																		
	Sample Date																	
	07/21/04		2.47	**0.66**	64.1	0.160	87.8	7360	**0.062**	7.06	27.6	0.134	**0.0303**	**1.52**	0.276	2250	3.38	7.63
	09/24/04		7.10	**0.15**	74.0	0.150	11.7	7410	**0.083**	35.1	47.6	0.145	0.202	**1.54**	0.342	2370	2.05	13.5
	Mean		4.79	0.41	69.1	0.155	49.8	7390	0.073	21.1	37.6	0.140	0.116	1.53	0.309	2310	2.72	10.6
	Median		4.79	0.41	69.1	0.155	49.8	7390	0.073	21.1	37.6	0.140	0.116	1.53	0.309	2310	2.72	10.6
	St. Deviation		3.27	0.36	7.0	0.007	53.8	40	0.015	19.8	14.1	0.008	0.121	0.02	0.047	80	0.94	4.15
	# of values	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum		2.47	0.15	64.1	0.150	11.7	7360	0.062	7.06	27.6	0.134	0.0303	1.52	0.276	2250	2.05	7.63
	Maximum		7.10	0.66	74.0	0.160	87.8	7410	0.083	35.1	47.6	0.145	0.202	1.54	0.342	2370	3.38	13.5
	% of values undetected			50%									50%	100%				
	# of values between MDL and MRL			1					2									
GS8A																		
	Sample Date																	
	07/21/04		**0.54**	**0.36**	2.41	**0.014**	**8.1**	3020	**0.015**	**0.27**	19.3	0.113	**0.0297**	**1.49**	**0.030**	1590	2.75	1.48
	09/24/04		2.41	**0.86**	**0.73**	**0.037**	**1.4**	2600	**0.015**	3.59	18.8	**0.078**	**0.0299**	**1.50**	**0.030**	996	1.35	1.04
	05/03/05		**0.61**	**0.15**	3.32	**0.014**	**6.4**	2550	**0.015**	**0.45**	16.8	**0.087**	**0.0303**	**1.52**	**0.082**	1200	1.80	1.29
	07/15/05	83.6	**0.18**	**0.18**	**0.49**	**0.014**	**3.5**	2360	**0.018**	**0.18**	20.1	**0.092**	**0.0356**	**1.78**	**0.184**	1240	2.66	1.42
	09/09/05	76.0	**0.64**	**0.66**	2.54	**0.014**	**12.9**	5660	**0.020**	**0.71**	34.6	**0.121**	**0.0393**	**0.74**	**0.097**	1930	3.19	1.93
	Mean	79.8	0.88	0.44	1.9	0.018	6.4	3240	0.016	1.0	21.9	0.098	0.0329	1.40	0.085	1390	2.35	1.43
	Median	79.8	0.61	0.36	2.4	0.014	6.4	2600	0.015	0.45	19.3	0.092	0.0303	1.50	0.082	1240	2.66	1.42
	St. Deviation	5.4	0.88	0.31	1.2	0.010	4.4	1380	0.002	1.4	7.2	0.018	0.0043	0.39	0.063	370	0.75	0.33
	# of values	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	76.0	0.18	0.15	0.49	0.014	1.4	2360	0.015	0.18	16.8	0.078	0.0297	0.74	0.030	996	1.35	1.04
	Maximum	83.6	2.41	0.86	3.32	0.037	12.9	5660	0.020	3.59	34.6	0.121	0.0393	1.78	0.184	1930	3.19	1.93
	% of values undetected		20%	60%		80%	40%		100%	40%			100%	80%	40%			
	# of values between MDL and MRL		3	2	2	1	3			2		4		1	3			
GS11A																		
	Sample Date																	
	07/23/04		**0.75**	**0.39**	6.5	**0.014**	**1.6**	9340	**0.088**	1.78	34.3	0.181	**0.0306**	**1.53**	**0.031**	5630	3.15	3.48
	09/23/04		4.54	3.13	23.7	**0.041**	**1.5**	6440	**0.015**	**0.72**	16.9	0.126	**0.0302**	**1.51**	**0.030**	3880	3.39	3.58
	05/03/05		**0.64**	**0.15**	4.1	**0.015**	10.2	5890	**0.015**	**0.85**	22.5	0.099	**0.0297**	**1.49**	**0.085**	3780	1.91	2.90
	07/16/05	76.8	**0.49**	**0.20**	**0.9**	**0.016**	**3.9**	9950	**0.089**	1.58	34.2	0.195	**0.0393**	**1.97**	**0.252**	5760	4.04	3.53
	09/08/05	79.0	**0.48**	**0.63**	2.5	**0.015**	**7.2**	10900	**0.045**	1.47	34.0	0.246	**0.0377**	1.68	**0.162**	5770	3.37	4.14
	Mean	77.9	1.38	0.90	7.5	0.020	4.9	8500	0.050	1.3	28.4	0.169	0.0335	1.63	0.11	4960	3.17	3.53
	Median	77.9	0.64	0.39	4.1	0.015	3.9	9340	0.045	1.5	34.0	0.181	0.0306	1.53	0.085	5630	3.37	3.53
	St. Deviation	1.6	1.77	1.26	9.3	0.012	3.8	2210	0.037	0.47	8.2	0.058	0.0046	0.20	0.095	1040	0.78	0.44
	# of values	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	76.8	0.48	0.15	0.9	0.014	1.5	5890	0.015	0.72	16.9	0.099	0.0297	1.49	0.030	3780	1.91	2.90
	Maximum	79.0	4.54	3.13	23.7	0.041	10.2	10900	0.089	1.78	34.3	0.246	0.0393	1.97	0.252	5770	4.04	4.14
	% of values undetected			60%		80%	60%		40%				100%	80%	40%			
	# of values between MDL and MRL		4	1	1	1	1		3	2					3			

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
GS6A																	
	Sample Date																
	07/21/04	4.21	11300	5.89	1370	695	**0.0060**	1.17	1.64	189	**0.244**	0.104	281	0.0271	**0.489**	33.0	66.6
	09/24/04	4.45	11900	7.94	2570	1420	**0.0060**	1.26	1.87	150	**0.376**	0.108	147	**0.0031**	**0.498**	22.5	92.3
	Mean	4.33	11600	6.92	1970	1058	0.0060	1.22	1.76	170	0.310	0.106	214	0.015	0.493	27.8	79.5
	Median	4.33	11600	6.92	1970	1058	0.0060	1.22	1.76	170	0.310	0.106	214	0.015	0.493	27.8	79.5
	St. Deviation	0.17	420	1.45	850	513	0.0000	0.064	0.16	28	0.093	0.003	95	0.0170	0.006	7.4	18.2
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	4.21	11300	5.89	1370	695	0.0060	1.17	1.64	150	0.244	0.104	147	0.0031	0.489	22.5	66.6
	Maximum	4.45	11900	7.94	2570	1420	0.0060	1.26	1.87	189	0.376	0.108	281	0.0271	0.498	33.0	92.3
	% of values undetected						100%				50%			50%	100%		
	# of values between MDL and MRL										1						
GS8A																	
	Sample Date																
	07/21/04	4.29	12800	3.11	1010	263	**0.0060**	**0.353**	1.41	232	**0.240**	**0.0149**	**82**	**0.0030**	**0.479**	31.1	26.6
	09/24/04	4.25	4550	3.50	1040	209	**0.0060**	**0.150**	1.16	186	**0.072**	**0.0150**	**67**	**0.0030**	**0.482**	8.8	22.6
	05/03/05	4.09	6350	3.96	1140	202	**0.0059**	**0.318**	2.20	262	**0.073**	**0.0152**	**84**	**0.0030**	**0.488**	17.5	23.6
	07/15/05	5.71	4680	4.42	1340	240	**0.0071**	**0.360**	1.36	278	**0.086**	**0.0178**	**89**	0.0251	**0.575**	12.3	34.6
	09/09/05	6.98	9570	9.30	2020	280	**0.0077**	**0.723**	4.18	494	**0.095**	**0.0966**	**123**	**0.0218**	**0.635**	17.0	35.5
	Mean	5.06	7590	4.86	1310	239	0.0065	0.381	2.06	290	0.11	0.0319	89	0.011	0.532	17.3	28.6
	Median	4.29	6350	3.96	1140	240	0.0060	0.353	1.41	262	0.086	0.0152	84	0.0030	0.488	17.0	26.6
	St. Deviation	1.25	3550	2.53	420	34	0.0008	0.210	1.25	119	0.071	0.0362	21	0.0113	0.070	8.5	6.1
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	4.09	4550	3.11	1010	202	0.0059	0.150	1.16	186	0.072	0.0149	67	0.0030	0.479	8.8	22.6
	Maximum	6.98	12800	9.30	2020	280	0.0077	0.723	4.18	494	0.240	0.0966	123	0.0251	0.635	31.1	35.5
	% of values undetected						100%	20%			100%	80%		60%	100%		
	# of values between MDL and MRL							4				1	5	1			
GS11A																	
	Sample Date																
	07/23/04	8.64	15700	2.65	3530	368	**0.0060**	**0.153**	1.82	595	**0.074**	**0.0581**	196	**0.0031**	**0.493**	39.8	34.1
	09/23/04	10.9	14400	2.15	2950	325	**0.0060**	**0.151**	1.68	413	**0.073**	**0.0315**	126	**0.0030**	**0.487**	34.4	29.8
	05/03/05	6.71	8970	2.17	2590	262	**0.0059**	**0.149**	1.53	438	**0.072**	**0.0149**	138	**0.0030**	**0.479**	24.9	27.4
	07/16/05	30.9	16500	3.13	3580	367	**0.0077**	**0.197**	1.84	613	**0.095**	**0.0197**	229	**0.0245**	**0.635**	36.9	34.8
	09/08/05	8.91	14500	3.26	3670	413	**0.0075**	**0.189**	2.29	635	**0.091**	**0.0491**	192	**0.0038**	**0.610**	29.4	37.5
	Mean	13.2	14010	2.67	3260	347	0.0066	0.168	1.83	539	0.081	0.0346	176	0.0075	0.541	33.1	32.7
	Median	8.91	14500	2.65	3530	367	0.0060	0.153	1.82	595	0.074	0.0315	192	0.0031	0.493	34.4	34.1
	St. Deviation	10.0	2950	0.52	470	57	0.0009	0.023	0.28	105	0.011	0.0186	43	0.0095	0.075	6.0	4.1
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	6.71	8970	2.15	2590	262	0.0059	0.149	1.53	413	0.072	0.0149	126	0.0030	0.479	24.9	27.4
	Maximum	30.9	16500	3.26	3670	413	0.0077	0.197	2.29	635	0.095	0.0581	229	0.0245	0.635	39.8	37.5
	% of values undetected						100%	100%			100%	40%		80%	100%		
	# of values between MDL and MRL											3		1			

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Total Solids	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
GS12A																		
	Sample Date																	
	08/01/04		**0.44**	**0.13**	4.36	**0.015**	13.8	7190	**0.155**	3.17	20.3	0.162	**0.0649**	8.23	**0.099**	3040	5.03	4.00
	09/22/04		5.21	**0.43**	17.7	**0.034**	17.4	7710	**0.043**	2.96	20.8	0.180	**0.0306**	**1.53**	**0.082**	2830	6.19	4.45
	Mean		2.83	0.28	11.0	0.025	15.6	7450	0.099	3.07	20.6	0.171	0.0478	4.88	0.091	2940	5.61	4.23
	Median		2.83	0.28	11.0	0.025	15.6	7450	0.099	3.07	20.6	0.171	0.0478	4.88	0.091	2940	5.61	4.23
	St. Deviation		3.37	0.21	9.4	0.013	2.5	370	0.079	0.15	0.4	0.013	0.0243	4.74	0.012	150	0.82	0.32
	# of values	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum		0.44	0.13	4.36	0.015	13.8	7190	0.043	2.96	20.3	0.162	0.0306	1.53	0.082	2830	5.03	4.00
	Maximum		5.21	0.43	17.7	0.034	17.4	7710	0.155	3.17	20.8	0.180	0.0649	8.23	0.099	3040	6.19	4.45
	% of values undetected			50%		50%							50%	50%				
	# of values between MDL and MRL		1	1		1			2				1		2			
GS14A																		
	Sample Date																	
	07/20/04		1.33	**0.43**	36.1	**0.049**	35.0	7120	0.121	12.9	39.0	0.223	**0.0617**	**1.49**	**0.077**	2680	8.47	3.60
	09/22/04		2.54	**1.51**	123	0.076	33.0	7410	**0.081**	12.5	46.7	0.188	**0.0307**	**1.54**	**0.031**	2550	8.03	3.71
										1								
	Mean		1.94	0.97	79.6	0.063	34.0	7270	0.10	12.7	42.9	0.206	0.0462	1.51	0.054	2620	8.25	3.66
	Median		1.94	0.97	79.6	0.063	34.0	7270	0.10	12.7	42.9	0.206	0.0462	1.51	0.054	2620	8.25	3.66
	St. Deviation		0.86	0.76	61.4	0.019	1.4	210	0.028	0.28	5.4	0.025	0.0219	0.04	0.033	90	0.31	0.08
	# of values	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum		1.33	0.43	36.1	0.049	33.0	7120	0.081	12.5	39.0	0.188	0.0307	1.49	0.031	2550	8.03	3.60
	Maximum		2.54	1.51	123	0.076	35.0	7410	0.121	12.9	46.7	0.223	0.0617	1.54	0.077	2680	8.47	3.71
	% of values undetected			50%									50%	100%	50%			
	# of values between MDL and MRL			1		1			1				1		1			
GS14B																		
	Sample Date																	
	07/23/04		2.03	**0.50**	63.1	0.120	76.3	10600	0.109	5.89	35.5	0.249	**0.0300**	**1.50**	**0.084**	5480	7.34	3.47
	09/22/04		4.83	**1.51**	201	0.098	24.3	9570	**0.070**	5.27	32.6	0.237	**0.0298**	**1.49**	**0.030**	4590	7.09	3.40
	05/03/05		1.83	**0.41**	14.5	0.057	79.4	12200	**0.015**	6.50	40.2	0.199	**0.0299**	**1.50**	0.200	5960	7.30	3.70
	07/15/05	60.6	1.63	**0.52**	**0.25**	**0.049**	92.4	10800	**0.122**	6.71	51.4	0.285	**0.0505**	**2.53**	0.445	6590	9.90	4.31
	09/09/05	78.4	**0.61**	**0.64**	**1.3**	**0.015**	17.1	13500	**0.064**	7.57	44.0	0.272	**0.0392**	1.94	0.331	5900	6.66	4.06
	Mean	69.5	2.19	0.72	56	0.068	57.9	11330	0.076	6.39	40.7	0.248	0.0359	1.79	0.22	5700	7.66	3.79
	Median	69.5	1.83	0.52	15	0.057	76.3	10800	0.070	6.50	40.2	0.249	0.0300	1.50	0.20	5900	7.30	3.70
	St. Deviation	12.6	1.58	0.45	85	0.042	34.6	1530	0.042	0.87	7.4	0.033	0.0091	0.46	0.172	740	1.28	0.39
	# of values	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	60.6	0.61	0.41	0.25	0.015	17.1	9570	0.015	5.27	32.6	0.199	0.0298	1.49	0.030	4590	6.66	3.40
	Maximum	78.4	4.83	1.51	201	0.120	92.4	13500	0.122	7.57	51.4	0.285	0.0505	2.53	0.445	6590	9.90	4.31
	% of values undetected			40%	20%	20%			20%				100%	80%	20%			
	# of values between MDL and MRL		1	3	1	1			3						1			

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
GS12A																	
	Sample Date																
	08/01/04	7.51	12600	3.56	3710	298	**0.0059**	**0.512**	3.01	418	**0.243**	**0.0479**	133	**0.0161**	**0.486**	30.2	43.3
	09/22/04	8.26	14500	3.58	4100	332	**0.0060**	**0.153**	3.28	376	**0.074**	**0.0381**	157	**0.0031**	**0.494**	30.6	42.0
	Mean	7.89	13550	3.57	3910	315	0.0060	0.333	3.15	397	0.16	0.0430	145	0.0096	0.490	30.4	42.7
	Median	7.89	13550	3.57	3910	315	0.0060	0.333	3.15	397	0.16	0.0430	145	0.0096	0.490	30.4	42.7
	St. Deviation	0.53	1340	0.01	280	24	0.0001	0.254	0.19	30	0.120	0.0069	17	0.0092	0.005	0.3	0.9
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	7.51	12600	3.56	3710	298	0.0059	0.153	3.01	376	0.074	0.0381	133	0.0031	0.486	30.2	42.0
	Maximum	8.26	14500	3.58	4100	332	0.0060	0.512	3.28	418	0.243	0.0479	157	0.0161	0.494	30.6	43.3
	% of values undetected						100%	50%			100%			50%	100%		
	# of values between MDL and MRL							1				2		1			
GS14A																	
	Sample Date																
	07/20/04	6.65	14300	3.69	3420	419	**0.0060**	**0.831**	4.85	331	**0.240**	**0.0464**	124	**0.0096**	**0.479**	31.0	41.0
	09/22/04	6.05	13500	4.21	2980	388	**0.0226**	**0.643**	5.10	309	**0.074**	**0.0469**	139	**0.0031**	**0.495**	29.7	40.4
	Mean	6.35	13900	3.95	3200	404	0.014	0.737	4.98	320	0.16	0.0467	132	0.0063	0.487	30.4	40.7
	Median	6.35	13900	3.95	3200	404	0.014	0.737	4.98	320	0.16	0.0467	132	0.0063	0.487	30.4	40.7
	St. Deviation	0.42	570	0.37	310	22	0.0117	0.133	0.18	16	0.117	0.0004	11	0.0046	0.011	0.9	0.4
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	6.05	13500	3.69	2980	388	0.0060	0.643	4.85	309	0.074	0.0464	124	0.0031	0.479	29.7	40.4
	Maximum	6.65	14300	4.21	3420	419	0.0226	0.831	5.10	331	0.240	0.0469	139	0.0096	0.495	31.0	41.0
	% of values undetected						50%				100%			100%	100%		
	# of values between MDL and MRL						1	2				2					
GS14B																	
	Sample Date																
	07/23/04	6.62	15700	4.09	3730	443	**0.0060**	**0.717**	3.89	490	**0.242**	**0.0799**	232	**0.0030**	**0.483**	33.5	46.3
	09/22/04	5.67	13100	3.79	2990	394	**0.0060**	**0.502**	3.82	398	**0.072**	**0.0578**	183	**0.0030**	**0.481**	27.0	41.5
	05/03/05	6.07	14900	4.54	3330	422	**0.0060**	**0.787**	4.58	505	**0.153**	**0.0150**	242	**0.0030**	**0.483**	31.3	46.5
	07/15/05	9.30	15400	5.22	4370	510	0.145	**0.912**	4.71	622	**0.409**	**0.0253**	297	0.0328	**0.815**	37.6	52.3
	09/09/05	6.81	18500	5.31	4230	549	**0.0076**	**0.956**	4.11	568	**0.095**	**0.0914**	214	**0.0039**	**0.630**	32.7	55.3
	Mean	6.89	15520	4.59	3730	464	0.034	0.775	4.22	517	0.19	0.0539	234	0.0091	0.578	32.4	48.4
	Median	6.62	15400	4.54	3730	443	0.0060	0.787	4.11	505	0.15	0.0578	232	0.0030	0.483	32.7	46.5
	St. Deviation	1.42	1950	0.67	580	64	0.0620	0.180	0.40	85	0.137	0.0333	42	0.0132	0.147	3.8	5.4
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	5.67	13100	3.79	2990	394	0.0060	0.502	3.82	398	0.072	0.0150	183	0.0030	0.481	27.0	41.5
	Maximum	9.30	18500	5.31	4370	549	0.145	0.956	4.71	622	0.409	0.0914	297	0.0328	0.815	37.6	55.3
	% of values undetected						80%				80%	40%		80%	100%		
	# of values between MDL and MRL							5			1	3					

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Total Solids	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
GS17A																		
	Sample Date																	
	07/20/04		1.20	**0.42**	20.4	0.067	23.8	12200	0.274	14.7	33.9	0.274	**0.113**	**1.53**	**0.160**	3320	15.2	7.35
	09/21/04		3.87	**1.52**	141	0.075	25.1	13200	0.139	19.0	40.4	0.250	**0.170**	**3.66**	**0.144**	3290	16.2	8.38
	05/05/05		**0.79**	1.56	16.9	**0.013**	41.3	13100	**0.035**	17.2	72.9	0.257	**0.153**	**1.50**	0.210	3350	14.1	8.33
	07/16/05	74.9	**0.53**	**0.49**	5.01	**0.028**	**19.9**	13500	0.173	14.3	45.3	0.245	**0.112**	**4.33**	0.311	3310	16.8	8.18
	09/08/05	74.8	**0.95**	**0.67**	4.25	**0.016**	51.4	16200	0.139	20.7	53.3	0.344	**0.210**	3.33	**0.256**	3940	18.6	10.4
										1.0								
	Mean	74.9	1.47	0.93	37.5	0.040	32.3	13640	0.15	17.2	49.2	0.274	0.152	2.87	0.216	3440	16.2	8.53
	Median	74.9	0.95	0.67	16.9	0.028	25.1	13200	0.14	17.2	45.3	0.257	0.153	3.33	0.210	3320	16.2	8.33
	St. Deviation	0.1	1.37	0.56	58.3	0.029	13.5	1510	0.086	2.75	15.0	0.041	0.041	1.29	0.069	280	1.7	1.13
	# of values	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	74.8	0.53	0.42	4.25	0.013	19.9	12200	0.035	14.3	33.9	0.245	0.112	1.50	0.144	3290	14.1	7.35
	Maximum	74.9	3.87	1.56	141	0.075	51.4	16200	0.274	20.7	72.9	0.344	0.210	4.33	0.311	3940	18.6	10.4
	% of values undetected			40%		40%								40%				
	# of values between MDL and MRL		3	2		1	1		1				5	2	3			
GS18A																		
	Sample Date																	
	07/20/04		2.56	**0.83**	245	0.180	111	9400	0.101	17.0	57.2	0.285	**0.155**	**1.50**	0.263	3240	8.38	4.15
	09/21/04		5.40	**32.6**	805	0.088	56.9	8570	**0.065**	13.8	53.7	0.270	**0.150**	**3.64**	0.249	2740	9.25	4.69
	Mean	NA	3.98	17	525	0.134	84.0	8990	0.083	15.4	55.5	0.278	0.153	2.57	0.256	2990	8.82	4.42
	Median	NA	3.98	17	525	0.134	84.0	8990	0.083	15.4	55.5	0.278	0.153	2.57	0.256	2990	8.82	4.42
	St. Deviation	NA	2.01	22.47	396	0.065	38.3	590	0.025	2.26	2.5	0.011	0.004	1.52	0.010	350	0.62	0.38
	# of values	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	NA	2.56	0.83	245	0.088	56.9	8570	0.065	13.8	53.7	0.270	0.150	1.50	0.249	2740	8.38	4.15
	Maximum	NA	5.40	32.6	805	0.180	111	9400	0.101	17.0	57.2	0.285	0.155	3.64	0.263	3240	9.25	4.69
	Lowest fifth percentile	#NUM!	2.70	2.42	273.0	0.093	59.6	8612	0.067	13.96	53.9	0.271	0.1503	1.60	0.250	2765	8.42	4.18
	% of values undetected													50%				
	# of values between MDL and MRL			2					1				2	1				

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
GS17A																	
	Sample Date																
	07/20/04	14.5	24200	9.09	7330	526	**0.0060**	**0.899**	9.36	528	**0.246**	**0.0681**	196	0.0410	**0.492**	55.1	67.3
	09/21/04	15.3	22800	11.9	6660	542	0.2210	**0.988**	9.83	417	**0.328**	**0.0596**	186	**0.0031**	**0.500**	53.8	65.2
	05/05/05	15.5	24700	14.4	6580	546	**0.0060**	**0.967**	9.38	520	**0.193**	**0.0150**	185	**0.0030**	**0.485**	57.7	73.1
	07/16/05	16.7	27300	11.6	7850	552	**0.0080**	**1.11**	9.70	532	**0.319**	**0.0198**	191	0.0689	**0.640**	59.6	75.9
	09/08/05	19.1	29100	14.6	8040	614	**0.0079**	1.39	13.0	529	**0.321**	**0.0709**	219	**0.0261**	**0.660**	66.4	84.6
	Mean	16.2	25620	12.3	7290	556	0.050	1.07	10.3	505	0.281	0.0467	195	0.028	0.555	58.5	73.2
	Median	15.5	24700	11.9	7330	546	0.008	0.988	9.70	528	0.319	0.0596	191	0.026	0.500	57.7	73.1
	St. Deviation	1.79	2540	2.27	670	34	0.0957	0.194	1.55	50	0.060	0.0271	14	0.028	0.087	4.9	7.7
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	14.5	22800	9.09	6580	526	0.0060	0.899	9.36	417	0.193	0.0150	185	0.0030	0.485	53.8	65.2
	Maximum	19.1	29100	14.6	8040	614	0.221	1.39	13.0	532	0.328	0.0709	219	0.0689	0.660	66.4	84.6
	% of values undetected						80%				40%	40%		40%	100%		
	# of values between MDL and MRL							4			3	3		1			
GS18A																	
	Sample Date																
	07/20/04	9.46	17800	10.6	3840	258	**0.0060**	1.74	4.86	381	**0.241**	**0.0679**	178	0.0549	**0.483**	31.3	65.1
	09/21/04	8.87	16300	10.1	3910	257	**0.0140**	1.29	5.35	312	**0.357**	**0.0762**	129	**0.0030**	**0.482**	29.8	66.6
	Mean	9.17	17050	10.4	3880	258	0.010	1.52	5.11	347	0.299	0.0721	154	0.029	0.482	30.6	65.9
	Median	9.17	17050	10.4	3880	258	0.010	1.52	5.11	347	0.299	0.0721	154	0.029	0.482	30.6	65.9
	St. Deviation	0.42	1060	0.35	50	1	0.0057	0.318	0.35	49	0.082	0.0059	35	0.0367	0.000	1.1	1.1
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	8.87	16300	10.1	3840	257	0.0060	1.29	4.86	312	0.241	0.0679	129	0.0030	0.482	29.8	65.1
	Maximum	9.46	17800	10.6	3910	258	0.0140	1.74	5.35	381	0.357	0.0762	178	0.0549	0.483	31.3	66.6
	Lowest fifth percentile	8.90	16375	10.13	3844	257	0.0064	1.313	4.88	315	0.247	0.0683	131	0.0056	0.482	29.9	65.2
	% of values undetected						50%				50%			50%	100%		
	# of values between MDL and MRL						1				1	2					

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Total Solids	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
GS20																		
	Sample Date																	
	07/22/04		**0.81**	**0.31**	74.8	0.310	33.5	7200	**0.081**	13.7	48.6	0.147	**0.0302**	**1.51**	**0.030**	2770	6.73	3.71
	09/20/04		3.13	2.53	167	0.067	**4.29**	6670	**0.080**	11.7	48.3	0.128	**0.0297**	**1.49**	**0.030**	2240	6.31	3.06
Sample 1	07/16/05	77.5	**0.95**	**0.19**	**0.80**	**0.014**	23.3	7220	**0.086**	18.6	77.8	0.139	**0.0390**	**1.95**	**0.215**	2810	7.49	3.59
Sample 2	07/16/05		**1.15**	**0.22**	1.45	**0.03**	48.2	5670	**0.091**	15.0	48.7	**0.119**	**0.0438**	**5.520**	**0.238**	2170	7.95	4.35
Sample 3	07/16/05		1.44	**0.20**	**1.08**	**0.015**	25.2	5690	**0.095**	21.7	49.0	0.166	**0.0406**	**2.03**	0.382	2960	8.8	4.02
Sample 4	07/16/05		**0.54**	**0.20**	**0.51**	**0.015**	**3.6**	6060	**0.086**	21.2	55.9	0.182	**0.0390**	**1.95**	0.429	3610	11.0	5.85
	09/08/05	79.9	**0.75**	**0.19**	4.41	**0.015**	20.7	9090	**0.046**	19.1	72.4	0.123	**0.0382**	1.89	**0.176**	3080	9.74	5.16
Mean		78.7	1.25	0.55	36	0.07	22.7	6800	0.081	17.3	57.2	0.143	0.0372	2.33	0.21	2810	8.29	4.25
Median		78.7	0.95	0.20	1	0.015	23.3	6670	0.086	18.6	49.0	0.139	0.0390	1.95	0.22	2810	7.95	4.02
St. Deviation		1.7	0.88	0.87	64	0.109	15.7	1200	0.016	3.85	12.6	0.023	0.0053	1.42	0.155	500	1.67	0.97
# of values		2	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Minimum		77.5	0.54	0.19	0.51	0.014	3.60	5670	0.046	11.7	48.3	0.119	0.0297	1.49	0.030	2170	6.31	3.06
Maximum		79.9	3.13	2.53	167	0.310	48.2	9090	0.095	21.7	77.8	0.182	0.0438	5.52	0.429	3610	11.00	5.85
Lowest fifth percentile		77.62	0.60	0.19	0.6	0.014	3.8	5676	0.056	12.30	48.4	0.120	0.0298	1.49	0.030	2191	6.44	3.22
% of values undetected				71%		57%							100%	71%	29%			
# of values between MDL and MRL			5	1	3		1		7			1		1	3			
GS20A																		
	Sample Date																	
	07/20/04		3.46	**0.72**	153	0.110	184	8270	0.100	13.4	32.6	0.132	**0.0305**	**1.53**	**0.110**	3370	4.86	2.99
	09/21/04		39.3	84.0	3760	0.098	149	7910	0.107	27.7	45.8	0.164	**0.0302**	**5.57**	**0.133**	4560	7.46	2.90
Mean		NA	21.4	42.4	1957	0.10	167	8090	0.103	20.6	39.2	0.148	0.0303	3.55	0.122	3970	6.16	2.95
Median		NA	21.4	42.4	1957	0.10	167	8090	0.103	20.6	39.2	0.148	0.0303	3.55	0.122	3970	6.16	2.95
St. Deviation		NA	25.34	59	2551	0.008	24.7	250	0.005	10.1	9.3	0.023	0.0002	2.86	0.016	840	1.84	0.06
# of values		0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		NA	3.46	0.72	153	0.098	149	7910	0.100	13.4	32.6	0.132	0.0302	1.53	0.110	3370	4.86	2.90
Maximum		NA	39.3	84.0	3760	0.110	184	8270	0.107	27.7	45.8	0.164	0.0305	5.57	0.133	4560	7.46	2.99
Lowest fifth percentile		#NUM!	5.25	4.88	333.4	0.099	150.8	7928	0.100	14.12	33.3	0.134	0.0302	1.73	0.111	3430	4.99	2.90
% of values undetected													100%	50%				
# of values between MDL and MRL				1										1	2			

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
GS20																	
	Sample Date																
	07/22/04	4.47	15500	2.48	3510	402	**0.0060**	**0.519**	4.43	344	**0.073**	**0.0362**	189	**0.0030**	**0.487**	33.2	38.8
	09/20/04	3.79	12100	2.89	2580	205	**0.0211**	**0.375**	3.86	279	**0.072**	0.107	189	0.0883	**0.479**	29.1	24.3
Sample 1	07/16/05	4.53	16000	2.75	3350	390	**0.0076**	**0.570**	4.06	392	**0.094**	**0.0195**	210	0.0305	**0.630**	34.0	37.7
Sample 2	07/16/05	4.35	10000	3.21	2180	328	**0.0085**	**0.539**	4.63	228	**0.353**	**0.1095**	**110**	0.0369	**1.095**	**19.9**	24.7
Sample 3	07/16/05	4.02	13700	3.18	4120	334	**0.0080**	**0.695**	4.99	368	**0.327**	**0.0203**	237	0.0448	**0.655**	40.5	41.4
Sample 4	07/16/05	5.85	14900	2.98	5420	412	0.0786	**0.831**	6.33	439	**0.314**	**0.0195**	244	0.0360	**0.630**	47.7	50.8
	09/08/05	4.98	18600	3.31	4110	515	**0.0075**	**0.591**	6.11	369	**0.093**	**0.0473**	209	**0.0038**	**0.615**	36.4	45.3
Mean		4.57	14400	2.97	3610	369	0.020	0.589	4.92	346	0.189	0.0513	198	0.035	0.656	34.4	37.6
Median		4.47	14900	2.98	3510	390	0.0080	0.570	4.63	368	0.094	0.0362	209	0.036	0.630	34.0	38.8
St. Deviation		0.68	2790	0.29	1080	95	0.0265	0.143	0.97	71	0.134	0.0403	45	0.0287	0.207	8.7	9.9
# of values		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Minimum		3.79	10000	2.48	2180	205	0.0060	0.375	3.86	228	0.072	0.0195	110	0.0030	0.479	19.9	24.3
Maximum		5.85	18600	3.31	5420	515	0.0786	0.831	6.33	439	0.353	0.110	244	0.0883	1.095	47.7	50.8
Lowest fifth percentile		3.86	10630	2.56	2300	242	0.0064	0.418	3.92	243	0.072	0.0195	133	0.0032	0.481	22.7	24.4
% of values undetected							71%				100%	57%	14%	29%	100%		
# of values between MDL and MRL							1	7				2				1	
GS20A																	
	Sample Date																
	07/20/04	5.75	9110	2.22	2360	164	**0.0155**	3.22	2.81	194	0.556	**0.0153**	398	0.0347	**0.492**	24.1	28.1
	09/21/04	8.24	14900	3.06	1450	290	**0.0213**	2.80	3.43	150	0.564	**0.0606**	314	**0.0030**	1.30	32.5	32.0
Mean		7.00	12010	2.64	1910	227	0.0184	3.01	3.12	172	0.560	0.0379	356	0.019	0.896	28.3	30.1
Median		7.00	12010	2.64	1910	227	0.0184	3.01	3.12	172	0.560	0.0379	356	0.019	0.896	28.3	30.1
St. Deviation		1.76	4090	0.59	640	89	0.0041	0.297	0.44	31	0.006	0.0321	59	0.0224	0.572	5.9	2.8
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		5.75	9110	2.22	1450	164	0.0155	2.80	2.81	150	0.556	0.0153	314	0.0030	0.492	24.1	28.1
Maximum		8.24	14900	3.06	2360	290	0.0213	3.22	3.43	194	0.564	0.0606	398	0.0347	1.30	32.5	32.0
Lowest fifth percentile		5.87	9400	2.26	1496	170	0.0158	2.821	2.84	152	0.556	0.0175	318	0.0046	0.532	24.5	28.3
% of values undetected												50%		50%	50%		
# of values between MDL and MRL							2					1					

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Total Solids	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
GS23																		
	Sample Date																	
	07/14/05	75.5	**0.20**	**0.20**	**1.3**	**0.014**	**3.7**	13300	**0.042**	5.05	57.9	**0.116**	**0.0406**	**2.03**	**0.134**	6410	19.0	9.36
	09/09/05	76.9	**0.41**	**0.20**	1.49	**0.014**	17.0	15100	**0.020**	3.68	118	**0.096**	**0.0395**	3.52	**0.040**	7440	13.6	10.7
Mean		76.2	0.31	0.20	1.4	0.014	10	14200	0.031	4.37	88.0	0.106	0.0401	2.78	0.087	6930	16.3	10.0
Median		76.2	0.31	0.20	1.4	0.014	10	14200	0.031	4.37	88.0	0.106	0.0401	2.78	0.087	6930	16.3	10.0
St. Deviation		1.0	0.15	0	0.2	0.000	9.4	1270	0.015	0.97	42.5	0.014	0.0008	1.05	0.067	730	3.82	0.95
# of values		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum		75.5	0.20	0.20	1.3	0.014	3.7	13300	0.020	3.68	57.9	0.096	0.0395	2.03	0.040	6410	13.6	9.36
Maximum		76.9	0.41	0.20	1.49	0.014	17.0	15100	0.042	5.05	118	0.116	0.0406	3.52	0.134	7440	19.0	10.7
Lowest fifth percentile		75.57	0.21	0.20	1.3	0.014	4.3	13390	0.021	3.75	60.9	0.097	0.0396	2.10	0.044	6462	13.87	9.43
% of values undetected			50%	100%		100%	50%		50%				100%	50%	50%			
# of values between MDL and MRL			1		1				1			2			1			
NHRIV																		
	Sample Date																	
	07/22/04		1.97	**0.16**	68.4	**0.047**	21.4	6050	0.126	3.87	33.5	0.184	**0.0298**	**1.49**	**0.096**	2160	9.56	3.28
	09/20/04		1.53	**0.80**	61.5	**0.014**	**1.5**	5110	**0.067**	3.82	27.7	0.148	**0.0307**	**3.09**	**0.031**	2050	10.3	3.55
	05/05/05		1.78	1.97	31.2	**0.014**	35.2	6860	**0.015**	9.15	36.0	**0.161**	**0.0297**	**1.49**	**0.152**	2390	8.97	4.08
	07/11/05	81.9	**0.85**	**0.19**	2.71	**0.015**	**22.1**	6110	**0.188**	**2.46**	38.5	**0.094**	**0.1865**	**0.19**	**0.187**	2220	3.91	3.11
	09/07/05	80.8	**0.75**	**0.62**	3.65	**0.016**	16.2	8130	0.174	3.36	33.1	0.215	**0.0356**	1.76	**0.137**	2330	10.1	3.90
Mean		81.4	1.38	0.75	33.5	0.021	19	6450	0.11	4.53	33.8	0.16	0.0624	1.6	0.12	2230	8.57	3.58
Median		81.4	1.53	0.62	31.2	0.015	21	6110	0.13	3.82	33.5	0.16	0.0307	1.5	0.14	2220	9.56	3.55
St. Deviation		0.8	0.55	0.74	31.0	0.015	12.2	1120	0.073	2.64	4.0	0.045	0.0694	1.03	0.060	140	2.65	0.41
# of values		2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Minimum		80.8	0.75	0.16	2.71	0.014	1.5	5110	0.015	2.46	27.7	0.094	0.0297	0.19	0.031	2050	3.91	3.11
Maximum		81.9	1.97	1.97	68.4	0.047	35.2	8130	0.188	9.15	38.5	0.215	0.1865	3.09	0.187	2390	10.3	4.08
% of values undetected				60%		80%	20%		20%			20%	100%	60%	40%			
# of values between MDL and MRL			2	1		1	1		2	1		1		1	3			
POND1																		
	Sample Date																	
	08/02/04		**0.54**	**0.13**	15.7	**0.035**	57.7	7310	0.162	13.6	31.3	0.193	**0.0297**	**1.48**	**0.030**	1810	10.9	2.84
	09/23/04		4.30	6.73	42.9	0.120	179	3450	**0.075**	3.96	13.0	0.102	**0.0300**	**1.50**	**0.030**	2350	9.53	0.81
	05/05/05		1.43	**0.16**	5.96	**0.015**	35.4	9400	**0.067**	32.5	39.3	0.289	**0.0775**	**1.49**	**0.086**	1890	11.8	4.68
	07/12/05	74.3	**0.98**	**0.21**	**0.21**	**0.014**	27.5	7920	0.269	43.5	26.5	0.341	**0.0960**	**2.05**	**0.235**	1870	13.0	4.39
	09/08/05	22.9	9.79	**2.18**	4.44	**0.015**	528.0	3910	**0.066**	5.08	18.6	**0.066**	**0.132**	**1.36**	**0.132**	2370	10.8	**0.82**
Mean		48.6	3.41	1.9	13.8	0.040	166	6400	0.13	19.7	25.7	0.20	0.0729	1.58	0.10	2060	11.2	2.71
Median		48.6	1.43	0.21	5.96	0.015	57.7	7310	0.075	13.6	26.5	0.19	0.0775	1.49	0.086	1890	10.9	2.84
St. Deviation		36.3	3.86	2.85	17.2	0.046	212	2600	0.089	17.5	10.4	0.118	0.0439	0.27	0.086	280	1.29	2
# of values		2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Minimum		22.9	0.54	0.13	0.21	0.014	27.5	3450	0.066	3.96	13.0	0.066	0.0297	1.36	0.030	1810	9.53	0.81
Maximum		74.3	9.79	6.73	42.9	0.120	528	9400	0.269	43.5	39.3	0.341	0.132	2.05	0.235	2370	13.0	4.68
% of values undetected				80%	20%	60%			20%			20%	60%	80%	60%			
# of values between MDL and MRL			2			1			2				2	1	2			1

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
GS23																	
	Sample Date																
	07/14/05	45.8	36400	0.93	5840	240	**0.0079**	**0.412**	8.01	708	**0.328**	**0.0203**	751	0.0287	**0.655**	198	33.5
	09/09/05	56.1	20400	0.82	6200	216	**0.0078**	**0.198**	10.0	1570	**0.096**	**0.0198**	743	**0.0158**	**0.635**	95.6	35.4
	Mean	51.0	28400	0.88	6020	228	0.0079	0.305	9.01	1139	0.21	0.0200	747	0.0223	0.645	147	34.5
	Median	51.0	28400	0.88	6020	228	0.0079	0.305	9.01	1139	0.21	0.0200	747	0.0223	0.645	147	34.5
	St. Deviation	7.28	11310	0.08	250	17	0.0001	0.152	1.41	610	0.164	0.0004	6	0.0091	0.014	72.4	1.3
	# of values	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Minimum	45.8	20400	0.82	5840	216	0.0078	0.198	8.01	708	0.096	0.0198	743	0.0158	0.635	95.6	33.5
	Maximum	56.1	36400	0.93	6200	240	0.0079	0.412	10.0	1570	0.328	0.0203	751	0.0287	0.655	198	35.4
	Lowest fifth percentile	46.32	21200	0.83	5858	217	0.0078	0.208	8.11	751	0.107	0.0198	743	0.0164	0.636	100.7	33.6
	% of values undetected						100%	50%			100%	100%			100%		
	# of values between MDL and MRL							1						1			
NHRIV																	
	Sample Date																
	07/22/04	9.29	12500	7.85	3180	217	**0.0059**	**0.363**	5.52	480	**0.072**	**0.0313**	140	**0.0096**	**0.480**	28.2	40.2
	09/20/04	12.7	12400	8.55	3010	232	**0.0060**	**0.153**	5.62	407	**0.074**	**0.0422**	127	**0.0031**	**0.494**	29.5	36.4
	05/05/05	13.3	14800	9.14	3580	310	**0.0059**	**0.661**	6.05	545	**0.072**	**0.0149**	153	**0.0030**	**0.479**	30.3	47.0
	07/11/05	8.88	14400	8.10	2700	234	**0.0073**	**0.935**	3.51	**517**	**0.452**	**0.0935**	**94**	**0.0666**	**0.935**	37.0	34.8
	09/07/05	10.7	15200	17.0	3670	223	**0.0072**	**0.451**	7.65	519	**0.287**	**0.0502**	161	0.0345	**0.575**	27.3	41.7
	Mean	11.0	13860	10.1	3230	243	0.0065	0.513	5.67	494	0.19	0.0464	135	0.023	0.592	30.5	40.0
	Median	10.7	14400	8.55	3180	232	0.0060	0.451	5.62	517	0.074	0.0422	140	0.0096	0.494	29.5	40.2
	St. Deviation	1.98	1320	3.87	400	38	0.0007	0.298	1.48	54	0.173	0.0295	27	0.0274	0.196	3.8	4.8
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	8.88	12400	7.85	2700	217	0.0059	0.153	3.51	407	0.072	0.0149	94	0.0030	0.479	27.3	34.8
	Maximum	13.3	15200	17.0	3670	310	0.0073	0.935	7.65	545	0.452	0.0935	161	0.0666	0.935	37.0	47.0
	% of values undetected						100%	40%			100%	40%	20%	60%	100%		
	# of values between MDL and MRL							3		1		3		1			
POND1																	
	Sample Date																
	08/02/04	4.40	12500	4.26	2920	141	**0.0059**	**0.148**	3.59	500	**0.239**	**0.0148**	129	**0.0030**	**0.478**	20.3	33.8
	09/23/04	2.49	2600	2.11	683	30	**0.0060**	**0.150**	1.73	174	**0.335**	**0.0150**	165	**0.0030**	**0.484**	7.0	10.8
	05/05/05	10.6	15600	9.27	3680	268	**0.0059**	**0.700**	7.55	518	**0.072**	**0.0149**	107	**0.0030**	**0.481**	35.3	40.0
	07/12/05	8.11	14300	7.80	4260	268	**0.0078**	**0.730**	6.06	518	**0.330**	**0.0205**	**123**	0.0476	**0.660**	34.0	48.2
	09/08/05	3.09	2990	2.71	719	37	**0.0259**	**0.655**	1.92	**251**	**0.318**	**0.0655**	**213**	**0.0132**	**2.12**	**5.6**	12.3
	Mean	5.74	9600	5.23	2450	149	0.010	0.477	4.17	392	0.26	0.0261	147	0.014	0.845	20	29.0
	Median	4.40	12500	4.26	2920	141	0.0060	0.655	3.59	500	0.32	0.0150	129	0.0030	0.484	20	33.8
	St. Deviation	3.49	6310	3.16	1670	118	0.0088	0.300	2.57	166	0.111	0.0221	42	0.0193	0.717	14.2	16.8
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	2.49	2600	2.11	683	30	0.0059	0.148	1.73	174	0.072	0.0148	107	0.0030	0.478	5.6	10.8
	Maximum	10.6	15600	9.27	4260	268	0.0259	0.730	7.55	518	0.335	0.0655	213	0.0476	2.12	35.3	48.2
	% of values undetected						100%	60%			80%	100%		80%	100%		
	# of values between MDL and MRL							2		1	1		2			1	

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Total Solids	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
POND2																		
	Sample Date																	
	08/02/04		1.64	**0.14**	16.2	**0.014**	69.4	7660	**0.076**	4.28	25.2	0.209	**0.0302**	**1.51**	**0.030**	1610	6.53	3.20
	09/23/04		9.83	**0.15**	17.4	**0.027**	**1.5**	7210	**0.065**	4.06	21.0	0.194	**0.0633**	**1.53**	**0.031**	1600	8.91	3.78
	05/03/05		1.57	1.24	52.6	**0.015**	45.9	8720	**0.015**	3.79	20.7	0.159	**0.0719**	**1.51**	**0.082**	1550	8.03	3.63
	07/12/05	78.4	**0.91**	**0.66**	1.82	**0.015**	50.5	8190	0.206	4.77	19.9	**0.297**	**0.149**	**1.98**	**0.154**	2030	9.77	4.31
	09/08/05	85.3	**1.04**	**0.59**	1.30	**0.014**	37.8	8480	**0.064**	4.46	23.5	0.213	**0.0888**	1.61	**0.127**	1740	8.13	4.96
	Mean	81.9	3.00	0.56	17.9	0.017	41	8050	0.085	4.27	22.1	0.214	0.0806	1.63	0.085	1710	8.27	3.98
	Median	81.9	1.57	0.59	16.2	0.015	46	8190	0.065	4.28	21.0	0.209	0.0719	1.53	0.082	1610	8.13	3.78
	St. Deviation	4.9	3.83	0.45	20.9	0.006	25.0	610	0.071	0.37	2.2	0.051	0.0438	0.20	0.056	190	1.20	0.68
	# of values	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	78.4	0.91	0.14	1.30	0.014	1.5	7210	0.015	3.79	19.9	0.159	0.0302	1.51	0.030	1550	6.53	3.20
	Maximum	85.3	9.83	1.24	52.6	0.027	69.4	8720	0.206	4.77	25.2	0.297	0.149	1.98	0.154	2030	9.77	4.96
	% of values undetected			60%		80%	20%		20%				20%	80%	40%			
	# of values between MDL and MRL		2	1		1			3			1	4		3			
POND3																		
	Sample Date																	
	08/02/04		1.67	3.63	256	0.230	216	8750	**0.053**	4.10	53.3	0.188	**0.0300**	**1.50**	0.210	3770	6.70	3.45
	09/23/04		6.01	16.7	287	0.120	73.2	8450	**0.033**	4.62	62.0	0.202	**0.0618**	**4.01**	0.265	4010	8.39	3.89
	05/03/05		2.55	6.73	197	**0.035**	128	6890	**0.015**	4.29	50.4	0.136	**0.0300**	**1.50**	0.213	3250	5.49	3.14
	07/12/05	35.8	**2.72**	**0.43**	21.1	**0.033**	223	7550	**0.119**	8.15	62.5	**0.254**	**0.0840**	**4.19**	0.693	4260	9.36	3.99
	09/08/05	56.7	**1.56**	**0.88**	42.1	**0.015**	82.4	8470	**0.027**	4.36	69.5	**0.166**	**0.0545**	**1.55**	**0.217**	3840	7.69	3.89
	Mean	46.3	2.90	5.7	161	0.087	145	8020	0.049	5.10	59.5	0.189	0.0521	2.55	0.320	3830	7.53	3.67
	Median	46.3	2.55	3.6	197	0.035	128	8450	0.033	4.36	62.0	0.188	0.0545	1.55	0.217	3840	7.69	3.89
	St. Deviation	14.8	1.81	6.7	122	0.090	71.6	780	0.041	1.71	7.7	0.044	0.0229	1.42	0.210	370	1.50	0.36
	# of values	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	35.8	1.56	0.43	21.1	0.015	73.2	6890	0.015	4.10	50.4	0.136	0.0300	1.50	0.210	3250	5.49	3.14
	Maximum	56.7	6.01	16.7	287	0.230	223	8750	0.119	8.15	69.5	0.254	0.0840	4.19	0.693	4260	9.36	3.99
	% of values undetected			40%		20%			40%				80%	60%				
	# of values between MDL and MRL		2			2			3			2	1	2	1			

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
POND2																	
	Sample Date																
	08/02/04	6.80	11300	5.13	3130	232	**0.0060**	**0.404**	3.43	348	**0.244**	**0.0151**	151	**0.0030**	**0.487**	21.9	32.9
	09/23/04	7.26	11000	5.04	3060	219	**0.0059**	**0.309**	4.91	347	**0.074**	**0.0322**	128	**0.0031**	**0.493**	22.7	36.0
	05/03/05	6.77	9870	5.80	3170	189	**0.0059**	**0.442**	4.55	349	**0.073**	**0.0151**	184	**0.0030**	**0.486**	28.3	33.8
	07/12/05	10.7	10300	7.30	3330	235	**0.0075**	**1.160**	5.23	**452**	**0.410**	**0.0985**	**234**	0.0775	1.31	39.1	41.8
	09/08/05	8.66	13200	6.28	4220	310	**0.0070**	**0.495**	5.81	352	**0.086**	**0.0396**	168	**0.0036**	**0.570**	31.1	50.7
	Mean	8.04	11130	5.91	3380	237	0.0064	0.562	4.79	370	0.18	0.0401	173	0.018	0.669	28.6	39.0
	Median	7.26	11000	5.80	3170	232	0.0060	0.442	4.91	349	0.086	0.0322	168	0.0031	0.493	28.3	36.0
	St. Deviation	1.67	1290	0.93	480	45	0.0007	0.341	0.89	46	0.149	0.0344	40	0.0333	0.360	7.0	7.4
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	6.77	9870	5.04	3060	189	0.0059	0.309	3.43	347	0.073	0.0151	128	0.0030	0.486	21.9	32.9
	Maximum	10.7	13200	7.30	4220	310	0.0075	1.160	5.81	452	0.410	0.0985	234	0.0775	1.31	39.1	50.7
	% of values undetected						100%				80%	60%		80%	80%		
	# of values between MDL and MRL							5		1	1	2	1				
POND3																	
	Sample Date																
	08/02/04	5.00	8470	4.47	2960	151	**0.0060**	**0.467**	3.76	277	0.505	**0.0150**	307	**0.0030**	**0.483**	19.8	37.1
	09/23/04	5.70	8610	5.43	2840	155	**0.0060**	**0.684**	4.71	271	**0.390**	**0.0377**	242	**0.0030**	**0.483**	21.7	42.7
	05/03/05	4.24	7250	3.78	2650	155	**0.0121**	**0.548**	4.04	245	**0.073**	**0.0150**	235	**0.0030**	**0.484**	19.1	35.7
	07/12/05	7.54	12400	6.53	3330	159	**0.0163**	**0.419**	4.70	407	2.900	**0.0419**	315	0.0790	**1.35**	25.4	49.4
	09/08/05	4.64	8670	4.56	3180	185	**0.0106**	**0.274**	5.04	342	**0.132**	**0.0274**	312	**0.0055**	**0.880**	20.8	40.3
	Mean	5.42	9080	4.95	2990	161	0.010	0.478	4.45	308	0.80	0.0274	282	0.019	0.736	21.4	41.0
	Median	5.00	8610	4.56	2960	155	0.011	0.467	4.70	277	0.39	0.0274	307	0.0030	0.484	20.8	40.3
	St. Deviation	1.30	1950	1.06	270	14	0.0044	0.152	0.53	66	1.187	0.0125	40	0.0337	0.384	2.5	5.4
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	4.24	7250	3.78	2650	151	0.0060	0.274	3.76	245	0.073	0.0150	235	0.0030	0.483	19.1	35.7
	Maximum	7.54	12400	6.53	3330	185	0.0163	0.684	5.04	407	2.900	0.0419	315	0.0790	1.35	25.4	49.4
	% of values undetected						80%	40%			40%	80%		80%	100%		
	# of values between MDL and MRL						1	3			1	1					

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Station		Total Solids	Chloride	Fluoride	Sulfate	Total Cyanide	Ammonia	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt
		percent	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
POND4																		
	Sample Date																	
	08/02/04		12.8	2.84	201	**0.145**	672	8380	**0.052**	**0.97**	32.8	0.178	**0.0304**	**1.52**	**0.188**	3380	5.71	1.93
	09/23/04		9.05	12.5	173	0.120	125	6520	**0.047**	1.77	40.9	0.185	**0.0301**	**1.51**	0.238	4130	7.16	2.81
	05/03/05		9.69	12.1	172	1.60	367	7260	**0.015**	1.46	32.4	0.125	**0.0306**	**1.53**	0.304	3450	5.09	2.19
	07/12/05	20.9	5.50	**0.74**	11.8	**0.015**	509	6020	**0.072**	**4.28**	30.3	**0.072**	**0.143**	**7.15**	**0.624**	3480	6.26	**2.20**
	09/08/05	24.4	10.4	**2.04**	11.4	**0.015**	543	10400	**0.063**	**2.18**	45.8	**0.173**	**0.126**	**2.85**	**0.322**	3820	8.20	2.80
	Mean	22.7	9.49	6.0	114	0.38	443	7720	0.050	2.1	36.4	0.147	0.0719	2.91	0.335	3650	6.48	2.39
	Median	22.7	9.69	2.8	172	0.12	509	7260	0.052	1.8	32.8	0.173	0.0306	1.53	0.304	3480	6.26	2.20
	St. Deviation	2.5	2.64	5.8	94.1	0.69	208	1740	0.021	1.3	6.6	0.048	0.0572	2.44	0.170	320	1.22	0.40
	# of values	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	20.9	5.50	0.74	11.4	0.015	125	6020	0.015	0.97	30.3	0.072	0.0301	1.51	0.188	3380	5.09	1.93
	Maximum	24.4	12.8	12.5	201	1.60	672	10400	0.072	4.28	45.8	0.185	0.143	7.15	0.624	4130	8.20	2.81
	% of values undetected			40%		60%			60%			20%	100%	80%				
	# of values between MDL and MRL								2	3		1		1	3			1
POND5																		
	Sample Date																	
	08/03/04		**0.58**	**0.15**	6.82	**0.014**	12.0	3230	**0.015**	**0.92**	11.2	**0.040**	**0.0297**	**1.49**	**0.030**	1070	1.66	1.45
	09/24/04		2.12	**0.15**	11.5	**0.045**	**4.39**	3090	**0.015**	**1.16**	11.6	**0.034**	**0.0302**	**1.51**	**0.030**	952	1.74	1.45
	05/04/05		2.82	4.01	56.7	**0.048**	79.1	6080	**0.015**	1.08	9.17	**0.051**	**0.0305**	**1.53**	**0.031**	1470	3.92	2.49
	07/16/05	59.8	1.72	**0.67**	13.7	0.057	92.8	8160	**0.026**	**0.97**	14.7	**0.103**	**0.0520**	**2.59**	**0.052**	2380	4.32	4.28
	09/10/05	72.9	**1.01**	**0.69**	9.36	**0.015**	26.9	5910	**0.021**	1.44	14.5	**0.064**	**0.0412**	**0.64**	**0.041**	1580	2.37	1.90
	Mean	66.4	1.65	1.1	19.6	0.036	43.0	5290	0.018	1.1	12.2	0.058	0.0367	1.5	0.037	1490	2.80	2.31
	Median	66.4	1.72	0.67	11.5	0.045	26.9	5910	0.015	1.1	11.6	0.051	0.0305	1.5	0.031	1470	2.37	1.90
	St. Deviation	9.3	0.89	1.6	20.9	0.020	40.3	2140	0.005	0.21	2.3	0.028	0.0098	0.69	0.010	560	1.24	1.18
	# of values	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	59.8	0.58	0.15	6.82	0.014	4.4	3090	0.015	0.92	9.2	0.034	0.0297	0.64	0.030	952	1.66	1.45
	Maximum	72.9	2.82	4.01	56.7	0.057	92.8	8160	0.026	1.44	14.7	0.103	0.0520	2.59	0.052	2380	4.32	4.28
	% of values undetected			60%		40%			100%				100%	80%	100%			
	# of values between MDL and MRL		2	1		2	1			3		5		1				

Key: **Bold Results** = Parameter undetected by test, value shown is 1/2 MDL or 1/2 MRL.
If result was not detected at the lab MDL, the value shown is 1/2 MDL.
If result was validation flagged U or UJ, the value shown is 1/2 MRL.
Green Results = Estimate result reported by laboratory below reporting limit (MRL).
MDL = Method Detection Limit.
MRL = Method Reporting Limit.
NA = Not Applicable.
Note: All results reported on dry weight basis, except total solids reported on wet weight basis.

Appendix 10.5-B
Sediment Samples Results Summary, Transportation-corridor Study Area, 2004-2005

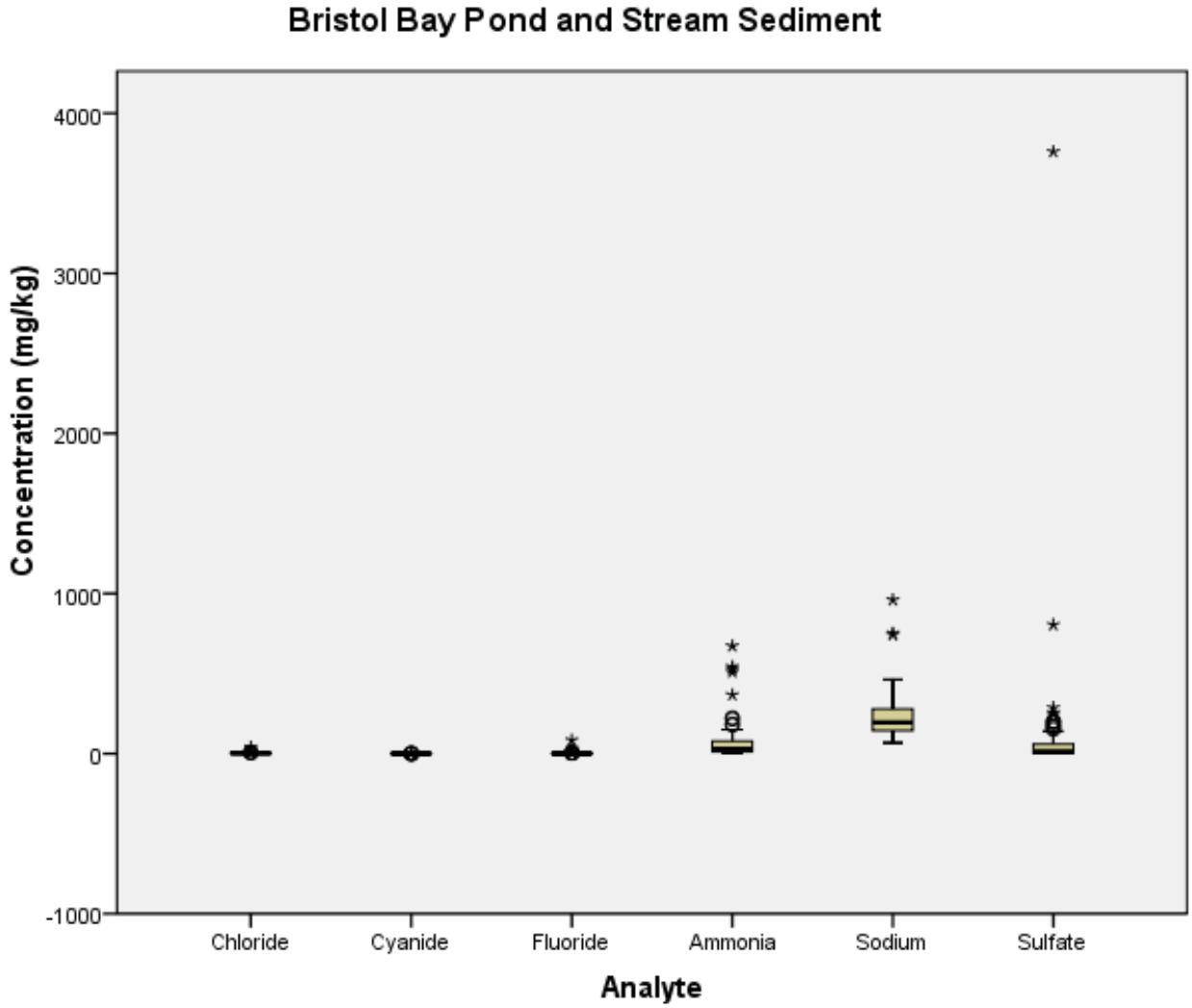
Station		Copper mg/kg	Iron mg/kg	Lead mg/kg	Magnesium mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Potassium mg/kg	Selenium mg/kg	Silver mg/kg	Sodium mg/kg	Thallium mg/kg	Tin mg/kg	Vanadium mg/kg	Zinc mg/kg
POND4																	
	Sample Date																
	08/02/04	5.76	6350	1.96	1250	79	**0.0180**	**0.630**	2.04	169	0.949	**0.0152**	360	**0.0031**	**0.491**	19.7	28.8
	09/23/04	7.26	6110	2.11	1300	98	**0.0060**	1.06	3.05	154	0.910	**0.0481**	353	**0.0030**	**0.486**	31.6	35.1
	05/03/05	6.04	5480	1.98	1150	76	0.0850	**0.892**	2.33	159	0.648	**0.0153**	336	**0.0031**	**0.494**	28.1	31.4
	07/12/05	6.43	8770	1.76	1220	84	**0.0272**	**0.715**	2.12	**197**	6.01	**0.0715**	**389**	**0.0825**	**2.31**	28.8	31.6
	09/08/05	9.09	10300	2.49	1370	103	**0.0243**	**0.625**	3.43	**175**	**0.304**	**0.0625**	463	**0.0126**	**2.03**	36.0	37.4
	Mean	6.92	7400	2.06	1260	88	0.032	0.784	2.59	171	1.76	0.0425	380	0.021	1.16	28.8	32.9
	Median	6.43	6350	1.98	1250	84	0.024	0.715	2.33	169	0.910	0.0481	360	0.0031	0.494	28.8	31.6
	St. Deviation	1.34	2050	0.27	80	12	0.0307	0.188	0.61	17	2.387	0.0263	50	0.0347	0.923	6.0	3.4
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	5.76	5480	1.76	1150	76	0.0060	0.625	2.04	154	0.304	0.0152	336	0.0030	0.486	19.7	28.8
	Maximum	9.09	10300	2.49	1370	103	0.0850	1.06	3.43	197	6.01	0.0715	463	0.0825	2.31	36.0	37.4
	% of values undetected						60%	40%			20%	80%		80%	100%		
	# of values between MDL and MRL						1	2		2		1	1	1			
POND5																	
	Sample Date																
	08/03/04	1.99	5440	1.29	988	146	**0.0060**	**0.149**	0.39	125	**0.239**	**0.0149**	194	**0.0030**	**0.479**	14.7	21.8
	09/24/04	2.42	5780	1.58	980	116	**0.0060**	**0.151**	0.88	102	**0.073**	**0.0151**	150	**0.0030**	**0.486**	15.0	27.4
	05/04/05	11.0	8740	1.57	871	136	**0.0059**	**0.353**	1.27	105	**0.074**	**0.0153**	207	**0.0031**	**0.492**	35.8	17.8
	07/16/05	12.5	8240	1.59	912	112	**0.0216**	**0.259**	1.09	**107**	**0.418**	**0.0259**	404	**0.0296**	**0.835**	22.4	14.6
	09/10/05	3.44	8570	5.53	1320	156	**0.0082**	**0.206**	1.11	160	**0.100**	**0.0206**	277	**0.0149**	**0.665**	19.1	24.5
	Mean	6.27	7350	2.31	1010	133	0.0095	0.223	0.95	120	0.18	0.0183	246	0.011	0.591	21.4	21.2
	Median	3.44	8240	1.58	980	136	0.0060	0.206	1.09	107	0.10	0.0153	207	0.0031	0.492	19.1	21.8
	St. Deviation	5.06	1610	1.80	180	19	0.0068	0.086	0.34	24	0.15	0.0049	99	0.0118	0.157	8.7	5.1
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	1.99	5440	1.29	871	112	0.0059	0.149	0.39	102	0.073	0.0149	150	0.0030	0.479	14.7	14.6
	Maximum	12.5	8740	5.53	1320	156	0.0216	0.353	1.27	160	0.418	0.0259	404	0.0296	0.835	35.8	27.4
	% of values undetected						80%	80%			100%	100%		60%	100%		
	# of values between MDL and MRL						1	1		1				2			

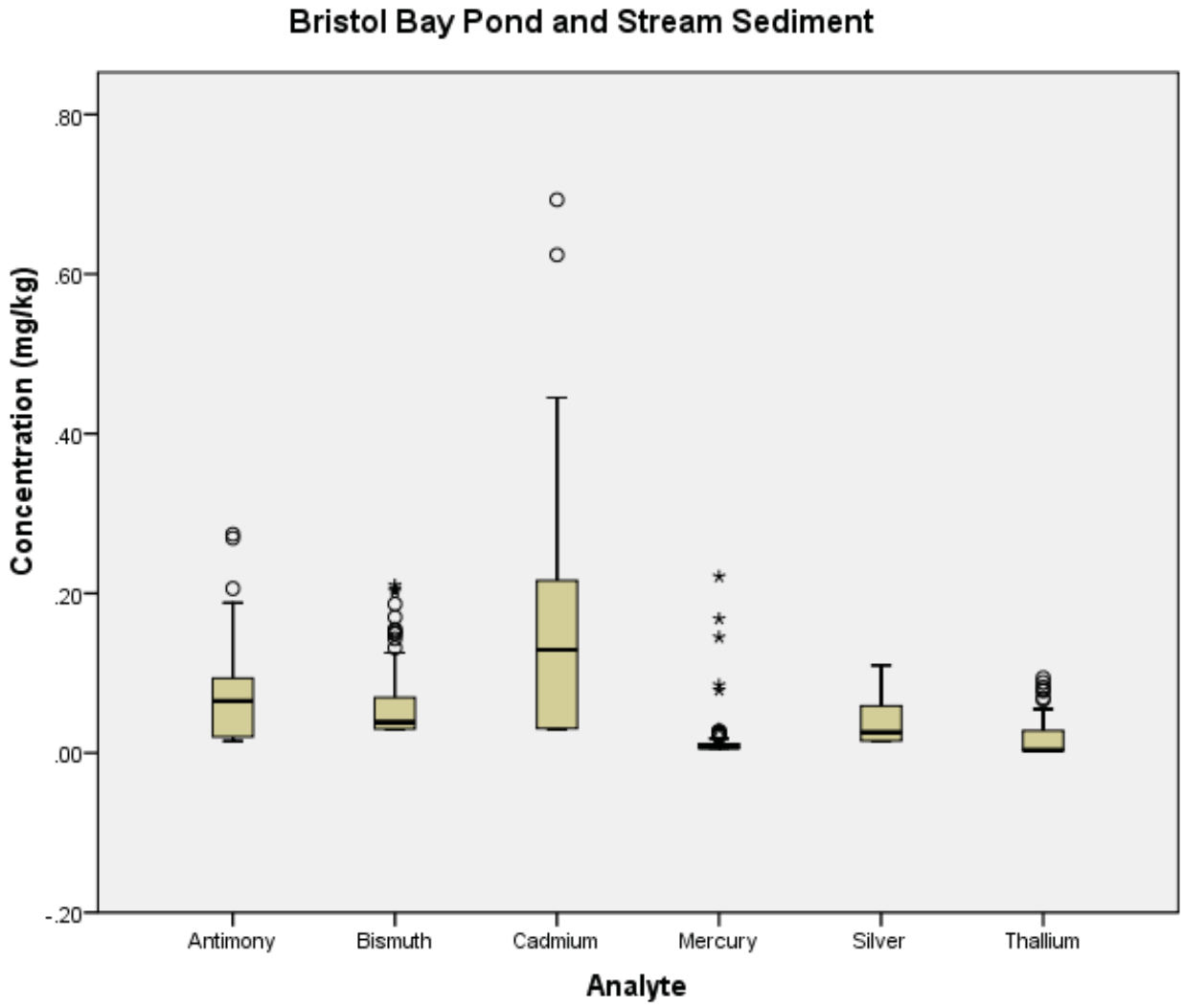
Key: **Bold Results** = Parameter undetected by test, value shown is 1/2 MDL or 1/2 MRL.
If result was not detected at the lab MDL, the value shown is 1/2 MDL.
If result was validation flagged U or UJ, the value shown is 1/2 MRL.
Green Results = Estimate result reported by laboratory below reporting limit (MRL).
MDL = Method Detection Limit.
MRL = Method Reporting Limit.
NA = Not Applicable.
Note: All results reported on dry weight basis, except total solids reported on wet weight basis.

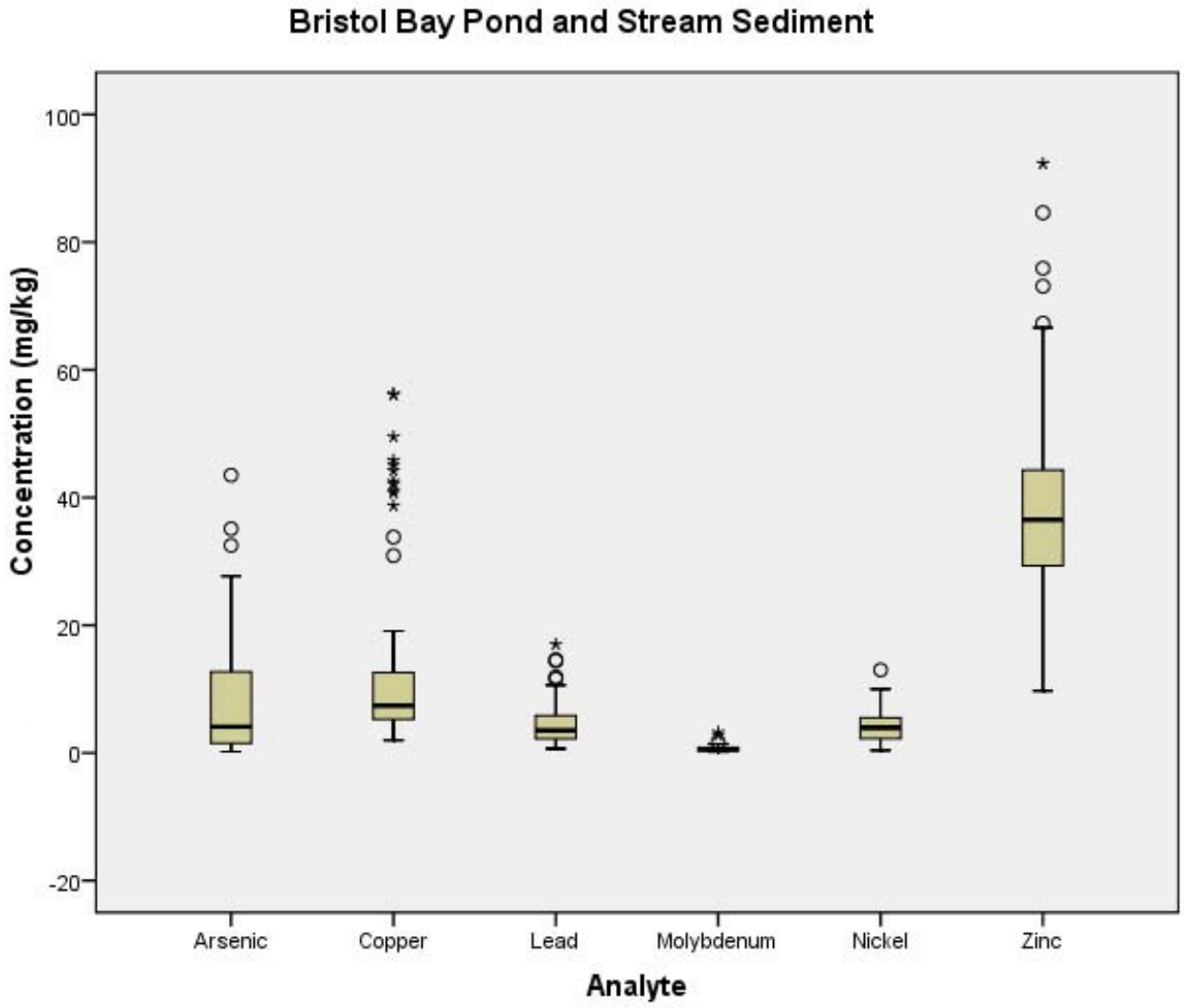
APPENDIX 10.5C

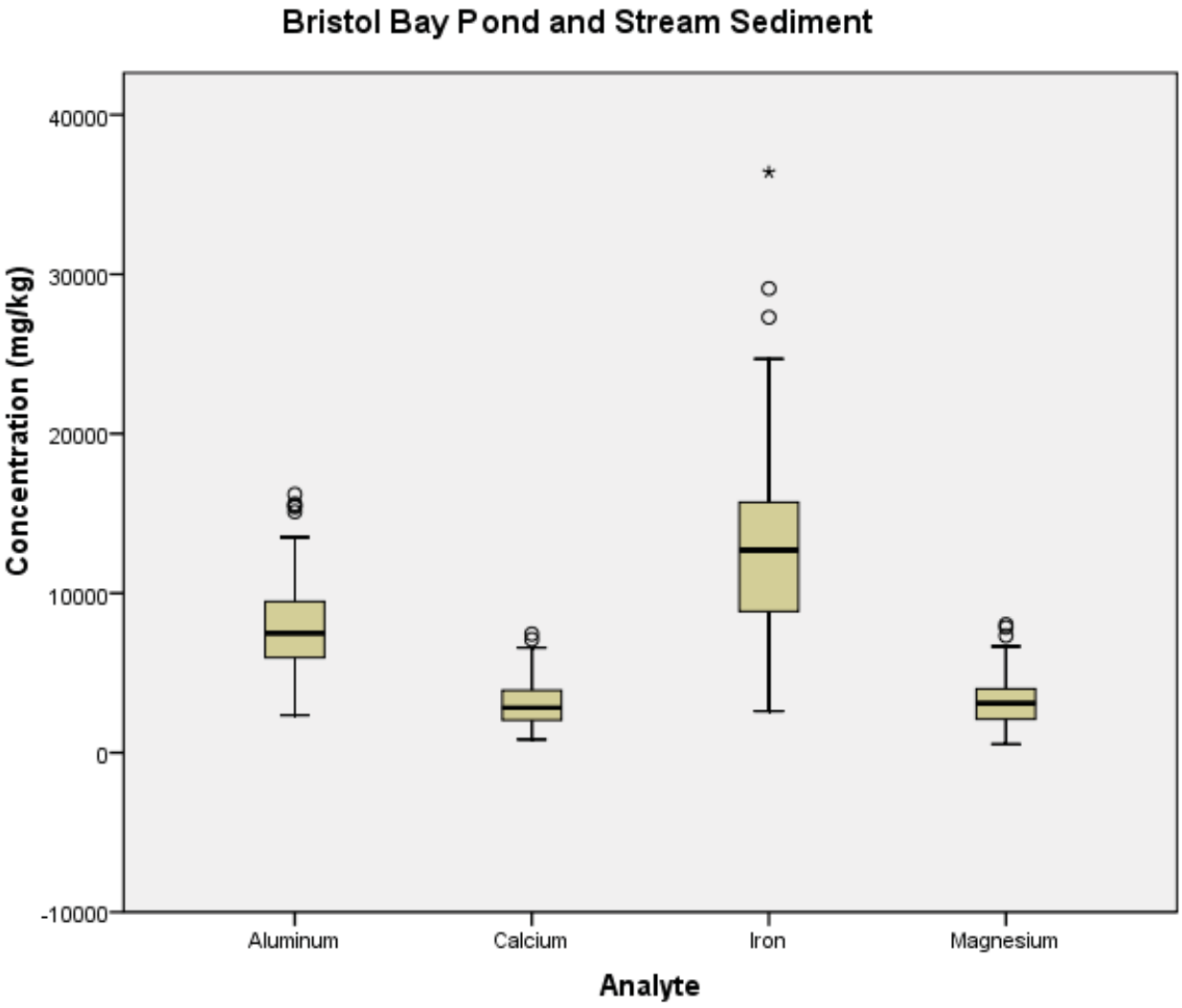
Box-and-Whisker Plots for Sediment Data, Transportation-corridor Study Area, 2004-2005

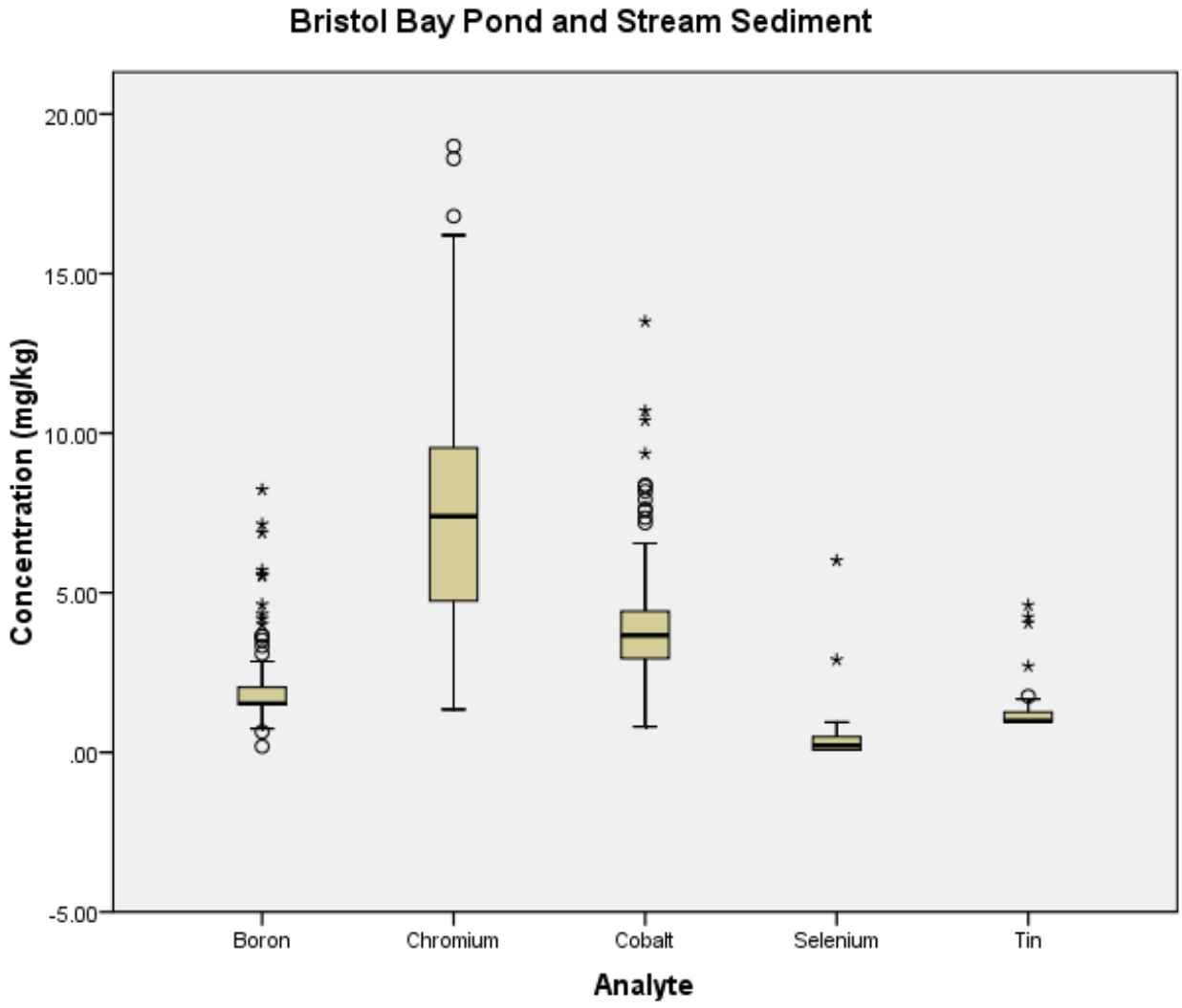
Boxplot Legend: This legend applies to all sediment boxplots for the transportation-corridor study area. Each box represents a distribution of results. The length of the box represents the interquartile range of the analyte and contains 50 percent of the results. The horizontal line inside the box represents the median value. The lowest and highest results are represented by the ends of the lines protruding from the top and bottom of the box.

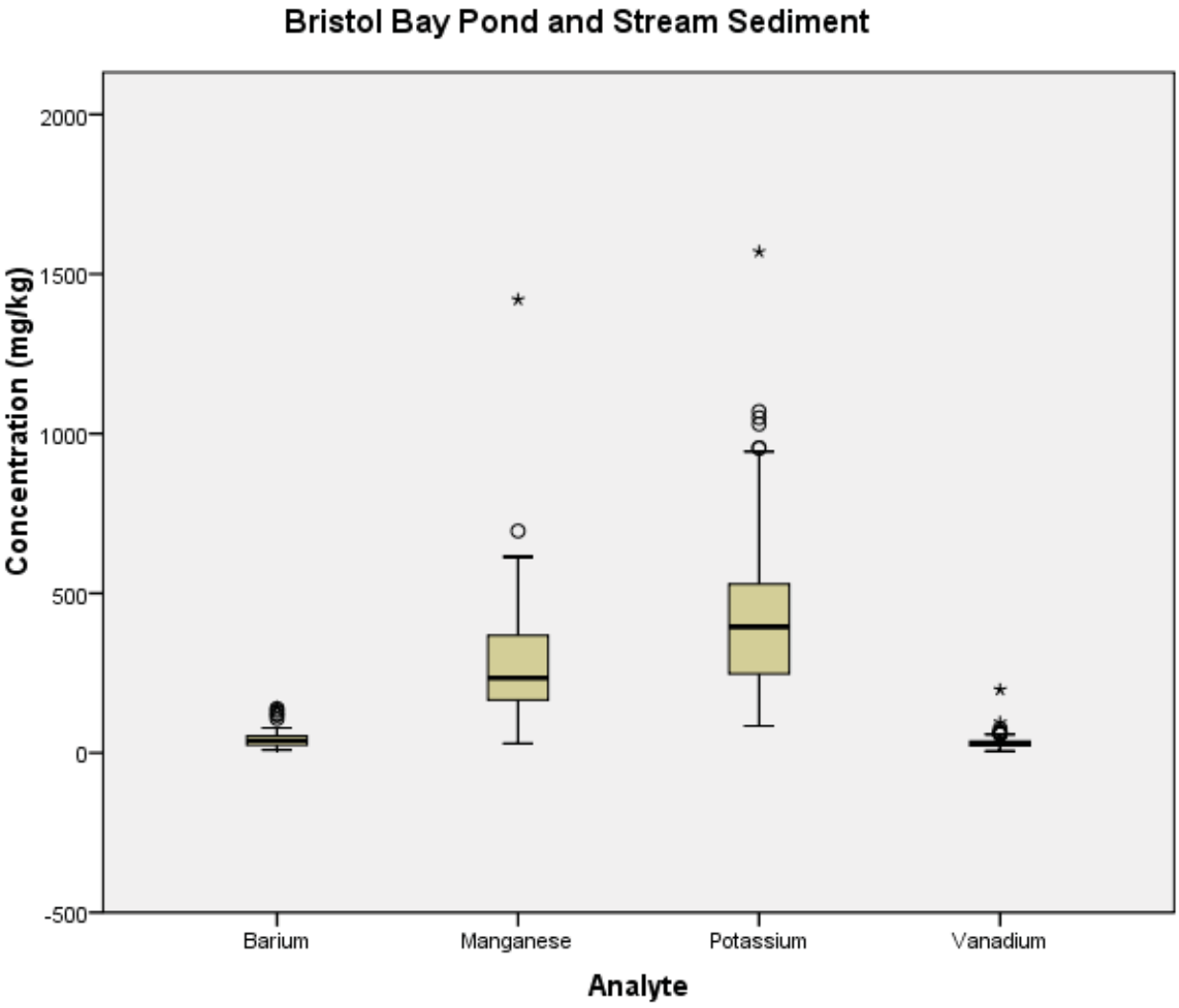



Bristol Bay Pond and Stream Sediment
Concentration (mg/kg)
.80
.60
.40
.20
.00
-.20
Antimony
Bismuth
Cadmium
Mercury
Silver
Thallium
Analyte


Bristol Bay Pond and Stream Sediment
Concentration (mg/kg)
100
80
60
40
20
0
-20
Arsenic
Copper
Lead
Molybdenum
Nickel
Zinc
Analyte


Bristol Bay Pond and Stream Sediment
Concentration (mg/kg)
40000
30000
20000
10000
0
-10000
Aluminum
Calcium
Iron
Magnesium
Analyte


Bristol Bay Pond and Stream Sediment
Concentration (mg/kg)
20.00
15.00
10.00
5.00
.00
-5.00
Boron
Chromium
Cobalt
Selenium
Tin
Analyte


Bristol Bay Pond and Stream Sediment
Concentration (mg/kg)
2000
1500
1000
500
0
-500
Barium
Manganese
Potassium
Vanadium
Analyte

10.6 Fish Tissue—Transportation-corridor Study Area

10.6.1 Introduction

The sections below present the findings of the trace elements study of fish for the transportation-corridor study area. Coho salmon and Dolly Varden were collected in 2004 and 2005 from three creeks that traverse the study area.

10.6.2 Study Objectives

The objectives of this study were to determine baseline concentrations of NOCs in fish tissues and to evaluate spatial and temporal variability of NOCs in fish tissues from the transportation-corridor study area.

10.6.3 Study Area

The study of trace elements in fish for the transportation-corridor study area focused on the 1-mile-wide corridor between the mine study area and the boundary between the Bristol Bay and Cook Inlet drainages. The transportation-corridor study area and fish sampling locations are depicted on Figure 10.4-1. The study of NOCs in fish tissue focused on three creeks that traverse the transportation corridor. The working names for these creeks are Red Creek, Bear Den Creek, and Ursa Creek.

10.6.4 Scope of Work

The 2004 and 2005 field studies were conducted by HDR Inc. in accordance with the approach described in the consolidated study program for Pebble Project (Appendix E of this environmental baseline document). The scopes of work for each year are described below.

10.6.4.1 2004

- Collection of 11 Dolly Varden from Red Creek and whole-body analysis for trace elements.
- Collection of 11 coho salmon from Bear Den Creek and whole-body analysis for trace elements.
- Collection of 11 coho salmon from Ursa Creek and whole-body analysis for trace elements.

10.6.4.2 2005

- Collection of 10 Dolly Varden from Red Creek and whole-body analysis for trace elements.
- Collection of 10 coho salmon from Bear Den Creek and whole-body analysis for trace elements.
- Collection of 10 coho salmon from Ursa Creek and whole-body analysis for trace elements.

10.6.5 Methods

Unless otherwise noted, the same procedures were followed in the transportation-corridor study area as were used in the mine study area.

The fish samples collected in 2004 and 2005 were analyzed for antimony, arsenic, cadmium, copper, lead, mercury, nickel, selenium, and silver. In addition, the samples collected in 2005 were analyzed for beryllium, chromium, molybdenum, thallium, and zinc. The methods used for these analyses were the same as those used for analysis of the fish samples from the mine study area. Fish samples from the transportation-corridor study area were not analyzed for methyl-mercury. Based on results obtained for the mine study area (Section 10.3), it was assumed that most of the total mercury detected in fish samples was in the methylated form; therefore, total mercury concentrations can be assumed to be equal to methyl-mercury.

10.6.6 Data Reduction

Data from analysis of whole-body fish samples were collected in 2004 and 2005. The methods by which the raw data were processed and how they were used for data evaluation are the same as those described for the mine study area (Section 10.3.6).

As with the mine study area, fish-tissue data from each of the sampled creeks in the transportation-corridor study area were evaluated separately to enable comparison of the variability of trace element concentrations across different creeks. The analytical results for the fish samples are presented by sampling location in Appendix 10.6A. Fish-tissue data are presented on dry weight basis with the exception of percent solids, which was calculated on a wet weight basis.

10.6.7 Results and Discussion

Sixty-three fish samples from three creeks were analyzed in 2004 and 2005: 33 samples in 2004 (Table 10.6-1) and 30 samples in 2005 (Table 10.6-2). All were whole-body samples; no discrete liver or muscle tissues from fish collected from the transportation-corridor study area were analyzed because of the small size of the fish and the need for a minimum amount of material for analysis.

The results discussed below are for primary samples across all locations and species. Statistics presented in the summary tables are based on only validated data.

In 2004, each of the nine target analytes was detected above the MDL in at least some samples. Seven trace elements—arsenic, cadmium, copper, lead, mercury, nickel, and silver—were detected in all 33 samples (Table 10.6-1). Selenium was detected in 94 percent of the samples. Of the detected chemicals, only antimony was infrequently detected (found in 6 percent of the samples). Copper had the highest mean concentration (6.02 mg/kg) in 2004, followed by selenium (1.09 mg/kg). The other trace elements had mean concentrations below 1.0— 0.79 mg/kg for nickel, 0.47 mg/kg for arsenic, and 0.18 mg/kg for mercury, Very low concentrations (mean concentrations of less than 0.10 mg/kg) of antimony, cadmium, lead, and silver were detected.

In 2005, 13 of 14 trace elements were detected in at least one fish sample. Eight of the trace elements—arsenic, cadmium, copper, mercury, nickel, silver, thallium, and zinc—were detected in all 30 samples (Table 10.6-2). Chromium, lead, molybdenum, and selenium were detected in 70 to 83 percent of samples. Antimony (3 percent) and beryllium (not detected in any samples) were the only two trace elements detected in fewer than 70 percent of the samples.

Zinc had the highest mean concentration (114 mg/kg) in 2005, followed by copper (8.46 mg/kg). Arsenic, chromium, mercury, nickel, and selenium had concentrations between 0.14 mg/kg (mercury) and 1.62 mg/kg (selenium).Very low concentrations (mean concentrations less than 0.10 mg/kg) of antimony, cadmium, lead, molybdenum, silver, and thallium were detected.

10.6.7.1 Ursa Creek

Only coho salmon were collected from Ursa Creek. In 2004, 11 samples were collected and in 2005, 10 samples were collected. Data for fish collected from this creek in both years are summarized in Table 10.6-3.

Arsenic, cadmium, copper, chromium, copper, lead, mercury, molybdenum, nickel, silver, thallium, and zinc were detected in all of the samples. Selenium was detected in 71 percent of the samples Antimony was detected above the MDL in only one sample, which was collected in 2005. Beryllium was not detected in any samples. .

Zinc had the highest mean concentration (124 mg/kg) for the samples from Ursa Creek, with the mean concentrations for all other trace elements being at least 25 times lower. Copper, chromium, and selenium were the only other trace elements with mean concentrations of 1.0 mg/kg or higher (4.19 mg/kg, 1.22 mg/kg, and 1.03 mg/kg, respectively).

Because only salmon were collected from this creek, the results for the creek allow an evaluation of variability only within a given species. Except for nickel (CV of 1.03), the CVs for all trace elements are below 1.0, indicating low variability. This is expected for samples from the same species in the same location over two different years.

10.6.7.2 Red Creek

Eleven Dolly Varden were collected in 2004 from Red Creek, and 10 were collected in 2005 (Table 10.6-4). Nine trace elements (arsenic, cadmium, copper, mercury, nickel, selenium, silver, thallium, and zinc) were detected in 100 percent of the Red Creek samples, lead and chromium were detected in 81 and 80 percent of samples, respectively, and molybdenum was detected in 10 percent of samples. Antimony and beryllium were the only two trace elements that were not detected in any of the samples.

Zinc was present at the highest concentrations in fish samples from Red Creek (mean concentration of 86.5 mg/kg). Copper (mean concentration of 12.6 mg/kg), selenium (mean concentration of 1.94 mg/kg), nickel (mean concentration of 1.38 mg/kg), and chromium (mean concentration of 1.29 mg/kg) were the only other trace elements that had mean concentrations greater than 1.0 mg/kg.

Because only salmon were collected from this creek, the results for the creek allow an evaluation of variability only within a given species. Except for lead (CV of 1.22) and nickel (CV of 1.17), the CVs for Red Creek are below 1.0.

10.6.7.3 Bear Den Creek

Eleven coho salmon were collected from Bear Den Creek in 2004, and 10 were collected in 2005. Nine trace elements (arsenic, cadmium, copper, mercury, molybdenum, nickel, silver, thallium, and zinc) were

detected in 100 percent of the samples from Bear Den Creek (Table 10.6-5). All trace elements except beryllium and antimony were detected in at least 70 percent of samples. Antimony was detected in only two samples (10 percent), both from 2004. Beryllium was not detected in any of the samples.

Zinc was present in fish tissues from Bear Den Creek at the highest concentrations (mean concentration of 131 mg/kg). Copper (mean concentration of 4.78 mg/kg) and selenium (mean concentration of 1.06 mg/kg) were the only other trace elements that had mean concentrations greater than 1.0 mg/kg.

Because only coho salmon were collected from this creek, only an analysis of variability within a given species is possible. Except for lead (CV of (1.55) and nickel (CV of 1.01), the CVs are all below 1.0.

10.6.7.4 Statistical Comparison of Results for Fish from Different Creeks

The following discussion compares and contrasts results for whole-body fish analyses from the three different creeks sampled in the transportation-corridor study area in 2004 and 2005. Bar graphs showing concentrations of individual trace elements in fish samples from each of the three creeks are presented in Figures 10.6-1 through 10.6-12.

Because a different species of fish was collected from Red Creek than from the other creeks in the study area, comparison of the results for this creek to results for the other creeks can identify differences between the results but does not clearly indicate whether the source of those differences is environmental differences between creeks or differences in chemical uptake between fish species.

In a comparison of Red Creek to Ursa Creek, lead was not detected in 19 percent of the fish samples from Red Creek; however, the mean concentration of lead for Red Creek (0.039 mg/kg) was similar to that for Ursa Creek (0.033 mg/kg), where lead was detected in all samples (Figure 10.6-5). Mean concentrations for chromium in fish samples also were similar for Red Creek (1.29 mg/kg) and Ursa Creek (1.22 mg/kg) (Figure 10.6-3). The similarity of the results for samples from Red Creek, where only Dolly Varden were sampled, to those from Ursa Creek, where only coho salmon were sampled, implies that the two species from these two creeks have similar concentrations of some trace elements in their tissues. Concentrations of other trace elements vary between the two creeks and species by up to a factor of 3.

In a comparison of Red Creek and Bear Den Creek, the mean concentrations for arsenic (Figure 10.6-1), silver (Figure 10.6-10), and thallium (Figure 10.6-11) were similar for fish samples from Red Creek (0.30 mg/kg, 0.016 mg/kg, and 0.010 mg/kg, respectively) and Bear Den Creek (0.34 mg/kg, 0.012 mg/kg, and 0.012, respectively). As with Red and Ursa creeks, the similarity in the results for fish samples from Bear Den Creek, where only coho salmon were sampled, to those from Red Creek, where only Dolly Varden were sampled, implies that the two species from these two creeks have similar concentrations of some trace elements in their tissues. Concentrations of other trace elements in fish samples vary between the two creeks and species by up to a factor of 4.

In a comparison of Ursa Creek and Bear Den Creek, the mean concentrations for copper (Figure 10.6-4), molybdenum (Figure 10.6-7), nickel (Figure 10.6-8), selenium (Figure 10.6-9), and zinc (Figure 10.6-12) were similar for fish samples from Ursa Creek (4.19 mg/kg, 0.089 mg/kg, 0.79 mg/kg, 1.03 mg/kg, and 124 mg/kg, respectively) and Bear Den Creek (4.78 mg/kg, 0.089 mg/kg, 0.87 mg/kg, 1.06 mg/kg, and 131 mg/kg, respectively). Concentrations of the other trace elements in fish samples vary between the two

creeks by up to a factor of 4. Coho salmon were sampled in both creeks, so similarities and differences are likely related to the relative substrates (e.g., sediment) in the two creeks.

In a comparison of all three creeks there were similarities in fish tissue concentrations for chromium, lead, and arsenic between fish from Red Creek and one of the other creeks, but the mean concentrations of these trace elements for fish from Ursa Creek and Bear Den Creek were always different.. The mean chromium concentration for fish from Bear Den Creek (0.33 mg/kg) was almost 4 times lower than the means for fish from Ursa Creek (1.22 mg/kg) and Red Creek (1.29 mg/kg; Figure 10.6-3). The mean lead concentration for fish from Bear Den Creek (0.097 mg/kg) was almost 3 times higher than those for fish from the other creeks (0.033 mg/kg for Ursa Creek and 0.039 mg/kg for Red Creek; Figure 10.6-5). The mean arsenic concentrations for fish from Bear Den Creek (0.34 mg/kg) and for Red Creek (0.30 mg/kg) were similar, as previously noted, but the mean for fish from Ursa Creek (0.87 mg/kg) was almost 3 times higher than those for fish from the other two creeks (Figure 10.6-1). Because coho salmon were sampled in both Ursa Creek and Bear Den Creek, while Dolly Varden were sampled only in Red Creek, the differences in concentrations for these trace elements between Bear Den Creek and Ursa Creek are more likely due to differences in concentrations in sediment between the streams rather than to species-specific differences in uptake, but this cannot be determined with the currently available data for sediment. (Higher concentrations in sediment are often associated with higher concentrations in fish as a result of uptake through the diet and direct ingestion of sediment.)

When comparing other elements between all three creeks, the trend of Red Creek showing similarities with one of the other creeks, and no similarities being demonstrated between Ursa Creek and Bear Den Creek was not apparent. Concentrations of the other elements were typically different in Red Creek than in the other two creeks. For example, the mean concentration for copper in fish samples from Red Creek (12.6 mg/kg) was about 3 times the mean concentrations in fish from Ursa Creek (4.19 mg/kg) and from Bear Den Creek (4.78 mg/kg; Figure 10.6-4). The mean mercury concentration for Red Creek (0.080 mg/kg) was about 2 to 3 times lower than the mean concentrations for the other two creeks (0.18 mg/kg for Ursa Creek and 0.22 mg/kg for Bear Den Creek; Figure 10.6-6). Molybdenum was detected in only one sample from Red Creek, compared to all samples from the other two creeks, and the concentration in the Red Creek sample (0.029 mg/kg) was also about 3 times lower than the mean concentrations for the other two creeks (0.089 mg/kg for both creeks) (Figure 10.6-7). Zinc was the element with the highest mean concentration for all three creeks, and the mean concentrations for Ursa and Bear Den creeks (124 mg/kg and 131 mg/kg, respectively) were substantially higher than that for Red Creek (86.5 mg/kg; Figure 10.6-12). The mean concentrations for cadmium were similar for all three creeks (from 0.23 mg/kg to 0.30 mg/kg; Figure 10.6-2).

Based on available sediment data, it is not possible to determine if concentrations of these trace elements in sediment from Red Creek are similarly unique when compared to concentrations in sediments from the other creeks; therefore, it is not possible to establish whether the differences in elemental concentrations in fish samples between Red Creek and the other two creeks are related to differences between the habitats or to some other factor such as species-specific differences in uptake.

10.6.8 Summary

The Pebble Project trace elements study was initiated in 2004. The study of trace elements in fish for the transportation-corridor study area focused on the 1-mile-wide corridor between the mine study area and

the boundary between the Bristol Bay and Cook Inlet drainages. Whole-body fish samples were collected in 2004 and 2005 from three creeks that traverse the study area.

The objectives of this study were to determine baseline concentrations of NOCs in fish tissues and to evaluate spatial and temporal variability of NOCs in fish tissues from the transportation-corridor study area.

In 2004 and 2005, whole-body fish samples were collected in the study area and analyzed for trace elements. Sixty-three primary fish samples, representing 42 coho salmon and 21 Dolly Varden, were collected from Ursa Creek, Red Creek, and Bear Den Creek. Sampling was conducted at the same locations in two consecutive years.

All trace elements, for which samples were analyzed, except beryllium, were detected in at least some fish samples. Arsenic, cadmium, chromium, copper, lead, mercury, selenium, silver, thallium, and zinc were detected in at least 70 percent of samples from all locations in a given year. Molybdenum was only detected in 10 percent of samples from Red Creek. Antimony was detected in only 6 percent of samples in 2004 and 3 percent of samples in 2005.

Evaluation of the analytical results indicated a general consistency among creeks and between species for most elements. Mean concentrations for the different creeks were generally within a factor of 2, with the exceptions of arsenic, copper, mercury, molybdenum, chromium, and lead. Mean concentrations for copper, mercury, and molybdenum differed between Red Creek and the other two creeks. The mean concentration for copper in fish collected from Red Creek was roughly 3 times the concentrations found in the other two creeks, and the mean mercury concentration was 2 times lower for fish from this creek than those for fish from the other two creeks. Molybdenum was detected in fish from Red Creek at a much lower frequency than for the other creeks (1 percent compared to 100 percent), and the molybdenum concentration for the Red Creek fish was about 3 times lower than the mean concentrations for fish from the other creeks. Red Creek is the only creek from which the Dolly Varden species was sampled and only Dolly Varden were collected there, whereas only coho salmon were collected from the other creeks. Differences between Red Creek and the other creeks may, therefore, be related to species-specific chemical uptake or to differences in sediment chemistry between different locations (higher concentrations in sediment are expected to lead to higher concentrations in fish as a result of uptake through feeding and direct ingestion of sediment). The mean arsenic concentration for fish collected from Ursa Creek was 3 times the mean concentrations for the other two creeks, and the mean lead concentration was three times higher for Bear Den Creek relative to the other two creeks. The mean chromium concentration for fish from Bear Den Creek was 4 times lower than the mean concentrations for fish from the other two creeks. Differences in chemistry results between Ursa and Bear Den creeks are more likely to be due to differences in sediment chemistry than to differences in species-specific uptake because the same species was used for all analyses between these two creeks, but this cannot be determined with the data that are currently available.

Based on evaluation of the existing data, different fish species from different creeks in the Bristol Bay drainages portion of the transportation-corridor study area have similar patterns and levels of trace elements in their tissues, with several exceptions.

TABLES

TABLE 10.6-1
Trace Elements in Whole Fish, Transportation-corridor Study Area, 2004

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c, d]								
Antimony	2 / 33	6%	0.0080 - 0.0080	0.0050 - 0.0060	0.0028	0.0025	0.0013	0.47
Arsenic	33 / 33	100%	0.23 - 1.11	0.030 - 0.030	0.47	0.37	0.24	0.51
Cadmium	33 / 33	100%	0.0080 - 0.042	0.0050 - 0.0060	0.020	0.019	0.0088	0.44
Copper	33 / 33	100%	2.76 - 15.2	0.070 - 0.080	6.02	5.30	2.85	0.47
Lead	33 / 33	100%	0.0090 - 0.72	0.0070 - 0.0080	0.076	0.039	0.12	1.62
Mercury	33 / 33	100%	0.014 - 0.45	0.30 - 1.50	0.18	0.15	0.12	0.66
Nickel	33 / 33	100%	0.26 - 4.18	0.030 - 0.030	0.79	0.66	0.68	0.85
Selenium	31 / 33	94%	0.40 - 2.10	0.40 - 0.40	1.09	1.10	0.48	0.44
Silver	33 / 33	100%	0.0050 - 0.028	0.0040 - 0.0050	0.011	0.0090	0.0047	0.45

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. Data are reported on a dry weight basis and represent results for dolly varden and coho salmon samples.

d. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were not conducted only in 2004.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

TABLE 10.6-2
Trace Elements in Whole Fish, Transportation-corridor Study Area, 2005

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]								
Antimony	1 / 30	3%	0.0080 - 0.0080	0.0080 - 0.0080	0.0041	0.0040	0.00073	0.18
Arsenic	30 / 30	100%	0.20 - 1.63	0.050 - 0.050	0.54	0.36	0.39	0.73
Beryllium [d]	0 / 30	0%	NA - NA	0.0030 - 0.0030	NA	NA	NA	NA
Cadmium	30 / 30	100%	0.014 - 0.053	0.0040 - 0.0040	0.032	0.031	0.0099	0.31
Chromium [d]	25 / 30	83%	0.30 - 3.20	0.30 - 0.30	0.95	0.80	0.78	0.82
Copper	30 / 30	100%	2.34 - 23.8	0.020 - 0.020	8.46	4.25	7.23	0.85
Lead	23 / 30	77%	0.020 - 0.22	0.020 - 0.020	0.034	0.030	0.038	1.10
Mercury	30 / 30	100%	0.023 - 0.35	0.60 - 0.60	0.14	0.11	0.077	0.57
Molybdenum [d]	21 / 30	70%	0.060 - 0.12	0.050 - 0.050	0.069	0.080	0.033	0.47
Nickel	30 / 30	100%	0.30 - 5.80	0.10 - 0.10	1.26	0.65	1.53	1.21
Selenium	25 / 30	83%	1.12 - 3.62	0.30 - 0.30	1.62	1.60	0.73	0.45
Silver	30 / 30	100%	0.0040 - 0.030	0.0020 - 0.0020	0.014	0.013	0.0063	0.43
Thallium [d]	30 / 30	100%	0.0060 - 0.016	0.0020 - 0.0020	0.010	0.010	0.0025	0.24
Zinc [d]	30 / 30	100%	72.2 - 158	0.070 - 0.070	114	120	23.0	0.20

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. Data are reported on a dry weight basis and represent results for dolly varden and coho salmon samples.

d. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.6-3
Trace Elements in Whole Fish (Coho Salmon) from Ursa Creek, Transportation-corridor Study Area, 2004 and 2005

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]								
Antimony	1 / 21	5%	0.0080 - 0.0080	0.0080 - 0.0080	0.0034	0.0025	0.0013	0.38
Arsenic	21 / 21	100%	0.44 - 1.63	0.030 - 0.050	0.87	0.83	0.31	0.36
Beryllium [d]	0 / 10	0%	NA - NA	0.0030 - 0.0030	NA	NA	NA	NA
Cadmium	21 / 21	100%	0.0080 - 0.053	0.0040 - 0.0050	0.023	0.019	0.013	0.58
Chromium [d]	10 / 10	100%	0.80 - 1.70	0.30 - 0.30	1.22	1.25	0.36	0.29
Copper	21 / 21	100%	2.76 - 15.2	0.020 - 0.070	4.19	3.40	2.68	0.64
Lead	21 / 21	100%	0.020 - 0.091	0.0070 - 0.020	0.033	0.030	0.016	0.48
Mercury	21 / 21	100%	0.082 - 0.35	0.60 - 0.80	0.18	0.17	0.071	0.39
Molybdenum [d]	10 / 10	100%	0.060 - 0.11	0.050 - 0.050	0.089	0.090	0.017	0.19
Nickel	21 / 21	100%	0.30 - 4.18	0.030 - 0.10	0.79	0.60	0.82	1.03
Selenium	15 / 21	71%	0.90 - 1.90	0.30 - 0.40	1.03	1.10	0.45	0.44
Silver	21 / 21	100%	0.0040 - 0.019	0.0020 - 0.0040	0.0090	0.0080	0.0040	0.44
Thallium [d]	10 / 10	100%	0.0060 - 0.011	0.0020 - 0.0020	0.0087	0.0080	0.0017	0.20
Zinc [d]	10 / 10	100%	103 - 142	0.070 - 0.070	124	124	11.9	0.096

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. Data are reported on a dry weight basis and represent results for dolly varden and coho salmon samples.

d. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.6-4
Trace Elements in Whole Fish (Dolly Varden) from Red Creek, Transportation-corridor Study Area, 2004 and 2005

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]								
Antimony	0 / 21	0%	NA - NA	0.0050 - 0.0080	NA	NA	NA	NA
Arsenic	21 / 21	100%	0.21 - 0.38	0.030 - 0.050	0.30	0.28	0.042	0.14
Beryllium [d]	0 / 10	0%	NA - NA	0.0030 - 0.0030	NA	NA	NA	NA
Cadmium	21 / 21	100%	0.0090 - 0.043	0.0040 - 0.0060	0.024	0.022	0.010	0.41
Chromium [d]	8 / 10	80%	0.40 - 3.20	0.30 - 0.30	1.29	0.80	1.07	0.83
Copper	21 / 21	100%	5.1 - 23.8	0.020 - 0.080	12.6	10.4	5.93	0.47
Lead	17 / 21	81%	0.0090 - 0.22	0.0070 - 0.020	0.039	0.022	0.048	1.22
Mercury	21 / 21	100%	0.014 - 0.21	0.60 - 1.50	0.080	0.078	0.048	0.59
Molybdenum [d]	1 / 10	10%	0.060 - 0.060	0.050 - 0.050	0.029	0.025	0.011	0.39
Nickel	21 / 21	100%	0.26 - 5.80	0.030 - 0.10	1.38	0.57	1.62	1.17
Selenium	21 / 21	100%	1.20 - 3.62	0.30 - 0.40	1.94	1.79	0.58	0.30
Silver	21 / 21	100%	0.0060 - 0.030	0.0020 - 0.0050	0.016	0.015	0.0063	0.39
Thallium [d]	10 / 10	100%	0.0080 - 0.014	0.0020 - 0.0020	0.010	0.0095	0.0020	0.19
Zinc [d]	10 / 10	100%	72.2 - 103	0.070 - 0.070	86.5	84.3	9.94	0.11

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. Data are reported on a dry weight basis and represent results for dolly varden and coho salmon samples.

d. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

TABLE 10.6-5
Trace Elements in Whole Fish (Coho Salmon) from Bear Den Creek, Transportation-corridor Study Area, 2004 and 2005

Analyte	Frequency of Detection [a]	Percent Detected	Range of Detects (mg/kg) (Min - Max)	Range of Method Detection Limits (mg/kg) (Min - Max)	Mean [b] (mg/kg)	Median [b] (mg/kg)	Standard Deviation [b]	Coefficient of Variation
Trace Elements [c]								
Antimony	2 / 21	10%	0.0080 - 0.0080	0.0050 - 0.0050	0.0037	0.0040	0.0016	0.43
Arsenic	21 / 21	100%	0.20 - 0.49	0.030 - 0.050	0.34	0.36	0.086	0.25
Beryllium [d]	0 / 10	0%	NA - NA	0.0030 - 0.0030	NA	NA	NA	NA
Cadmium	21 / 21	100%	0.018 - 0.053	0.0040 - 0.0050	0.030	0.026	0.0086	0.29
Chromium [d]	7 / 10	70%	0.30 - 0.60	0.30 - 0.30	0.33	0.30	0.15	0.47
Copper	21 / 21	100%	2.34 - 11.1	0.020 - 0.070	4.78	4.41	2.27	0.47
Lead	18 / 21	86%	0.020 - 0.72	0.0070 - 0.020	0.097	0.060	0.15	1.55
Mercury	21 / 21	100%	0.088 - 0.45	0.30 - 0.80	0.22	0.15	0.12	0.57
Molybdenum [d]	10 / 10	100%	0.060 - 0.12	0.050 - 0.050	0.089	0.090	0.017	0.19
Nickel	21 / 21	100%	0.30 - 4.50	0.030 - 0.10	0.87	0.69	0.89	1.01
Selenium	20 / 21	95%	0.40 - 1.81	0.30 - 0.40	1.06	1.10	0.49	0.47
Silver	21 / 21	100%	0.0080 - 0.028	0.0020 - 0.0040	0.012	0.010	0.0044	0.38
Thallium [d]	10 / 10	100%	0.0070 - 0.016	0.0020 - 0.0020	0.012	0.012	0.0028	0.23
Zinc [d]	10 / 10	100%	113 - 158	0.070 - 0.070	131	131	13.4	0.10

Notes:

a. Number of samples with detectable concentrations / total number of samples analyzed.

b. When calculating the mean, median, and standard deviation, non-detect results were included as one-half the method detection limit. Non-detect results assigned a "U" or "UJ" qualifier were included as one-half the method reporting limit.

c. Data are reported on a dry weight basis and represent results for dolly varden and coho salmon samples.

d. Analyses for beryllium, chromium, molybdenum, thallium, and zinc were conducted only in 2005.

mg/kg = milligram per kilogram.

min = minimum.

max = maximum.

NA = not applicable; analyte not detected in any samples.

FIGURES

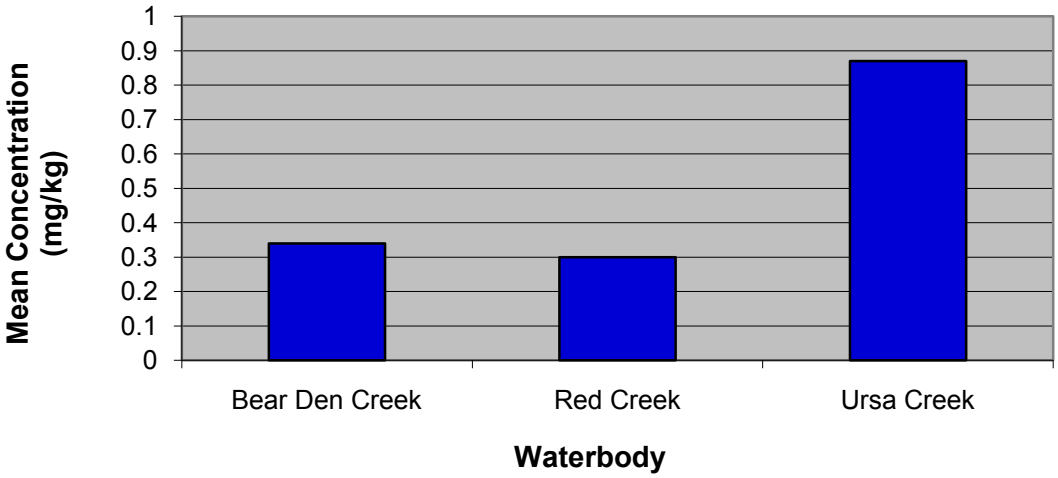


FIGURE 10.6-1
Mean Arsenic Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

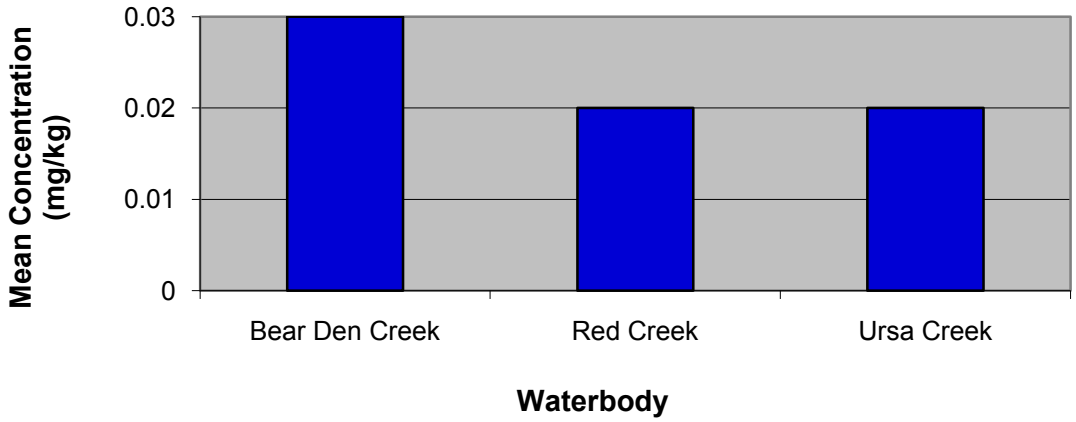


FIGURE 10.6-2
Mean Cadmium Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

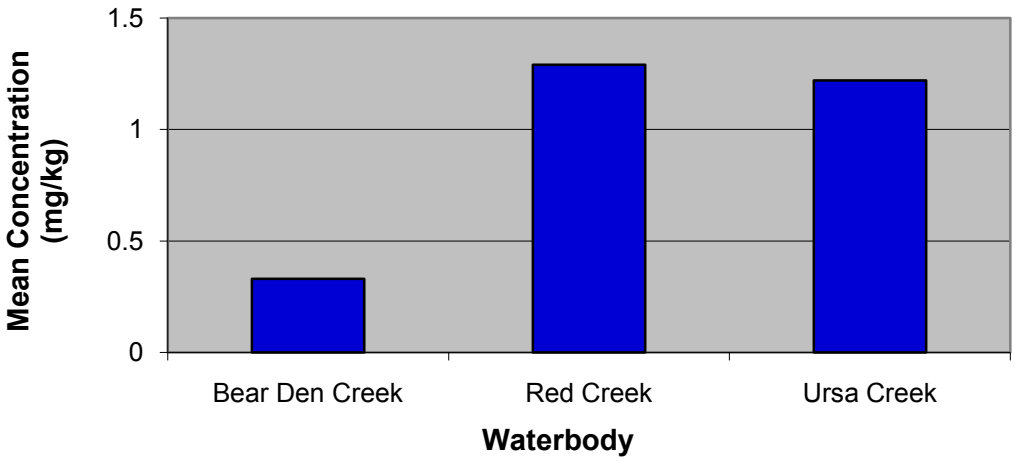


FIGURE 10.6-3
Mean Chromium Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

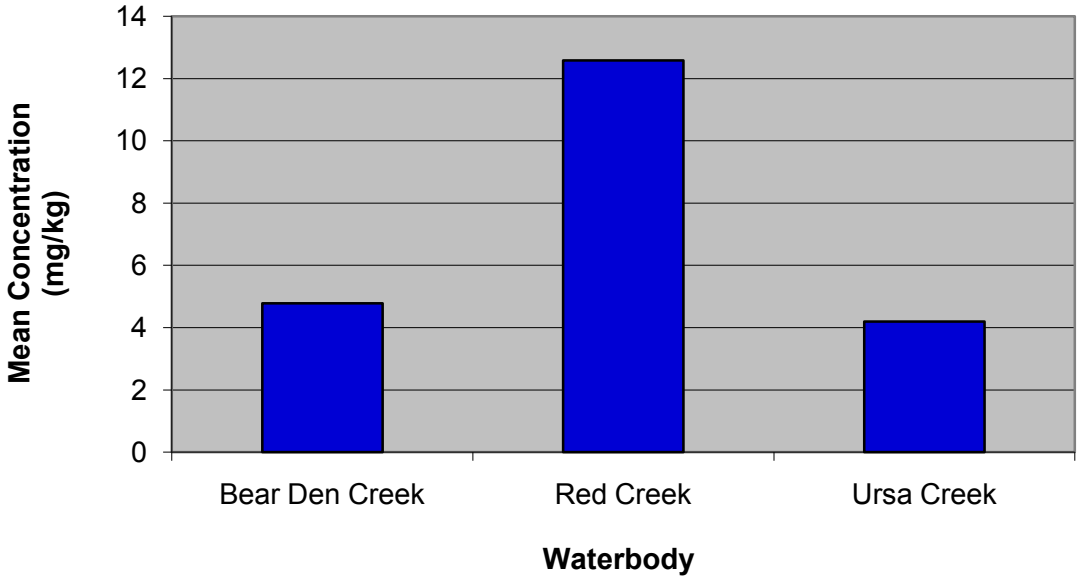


FIGURE 10.6-4
Mean Copper Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

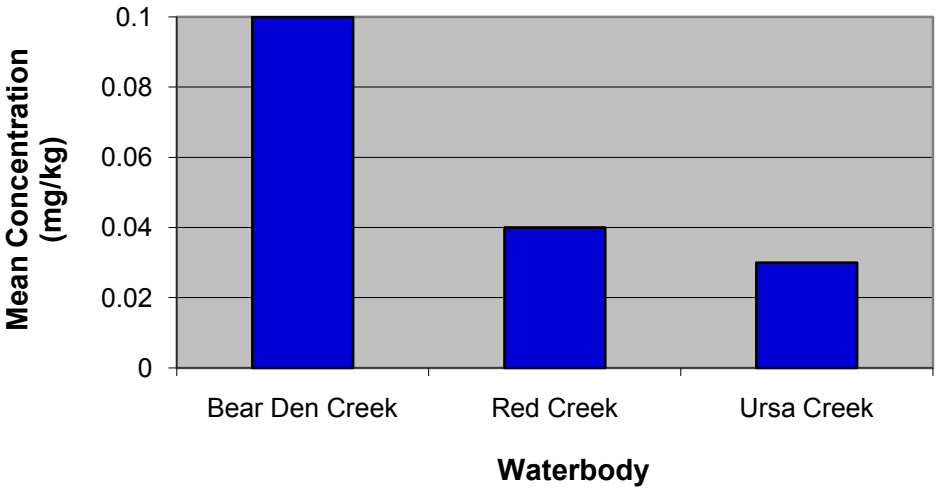


FIGURE 10.6-5
Mean Lead Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

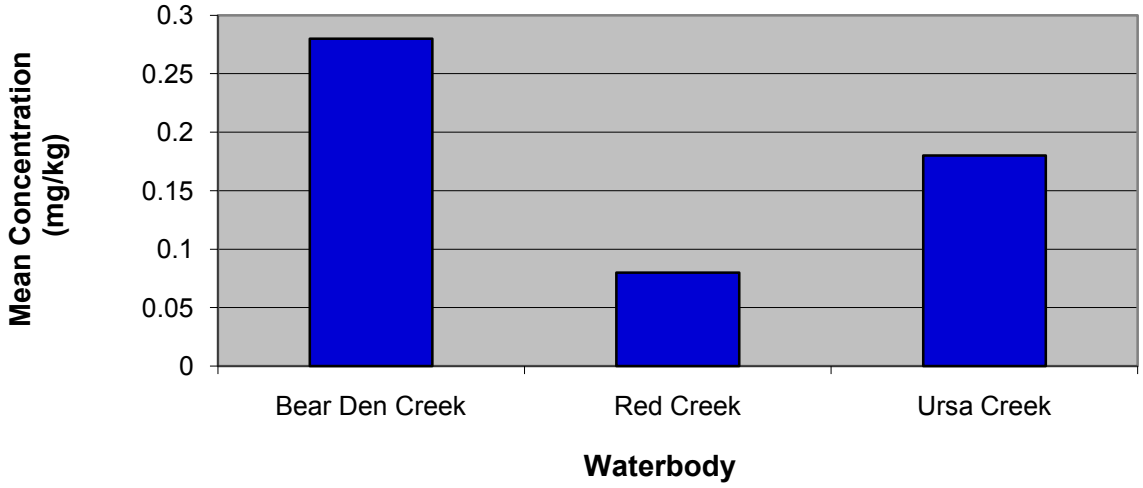


FIGURE 10.6-6
Mean Mercury Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

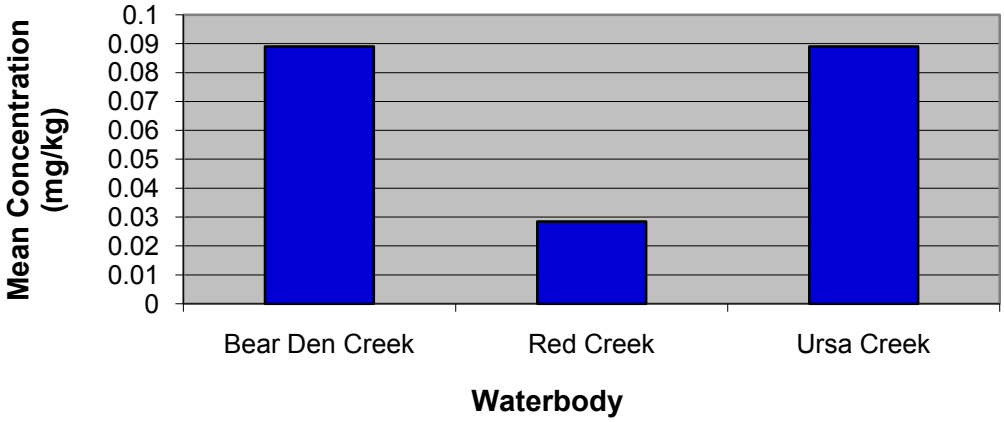


FIGURE 10.6-7
Mean Molybdenum Concentrations in Whole Fish ,Transportation-corridor Study Area, 2004-2005

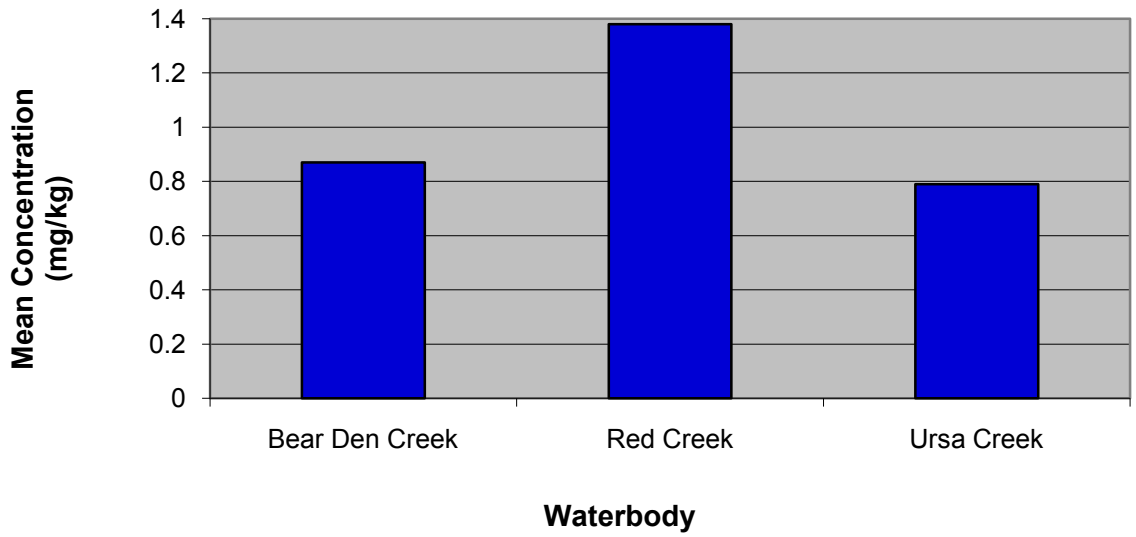


FIGURE 10.6-8
Mean Nickel Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

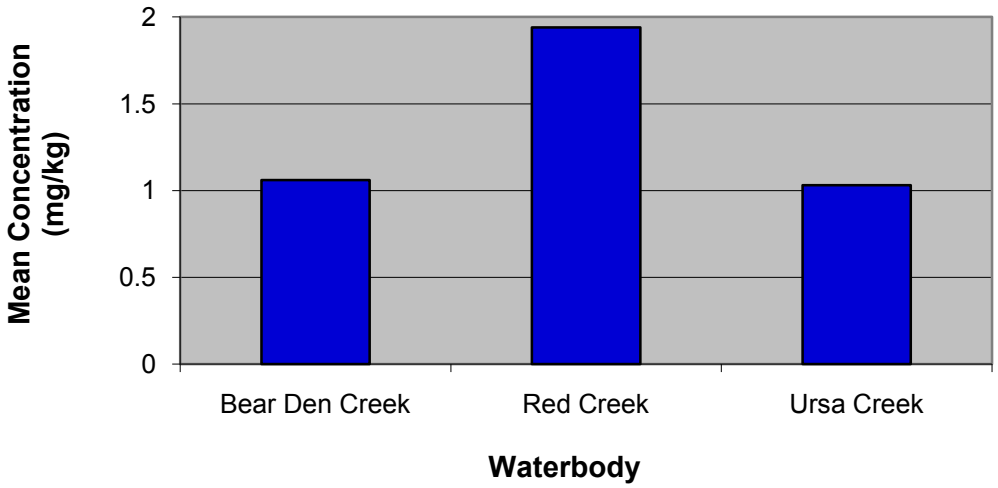


FIGURE 10.6-9
Mean Selenium Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

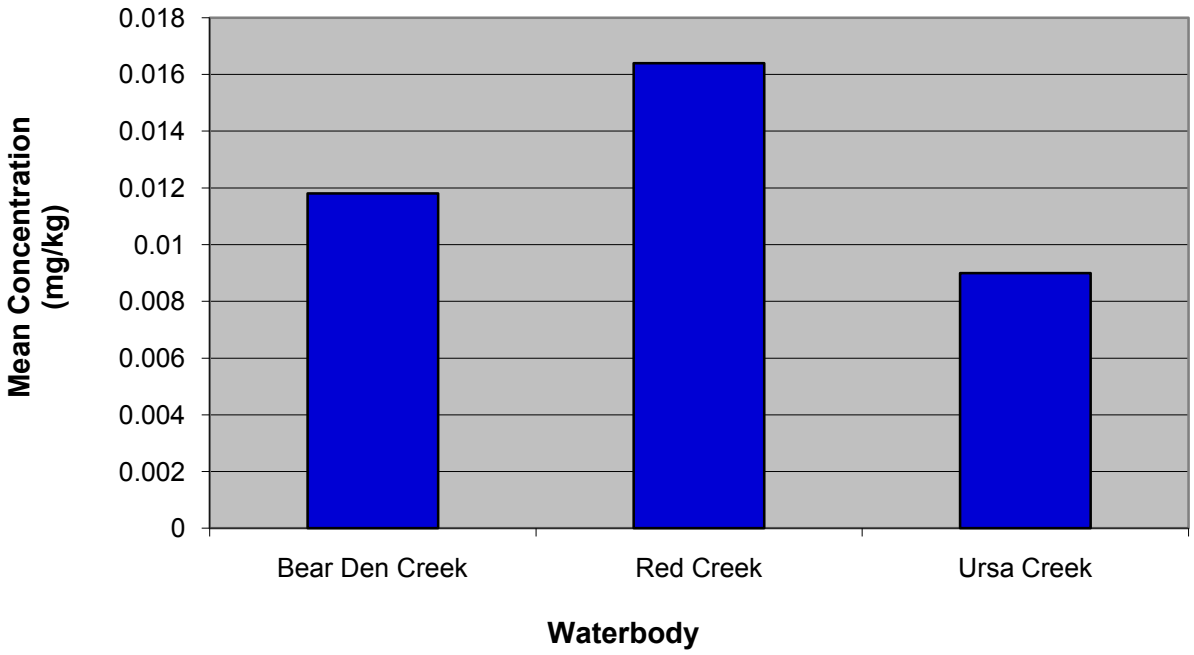


FIGURE 10.6-10
Mean Silver Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

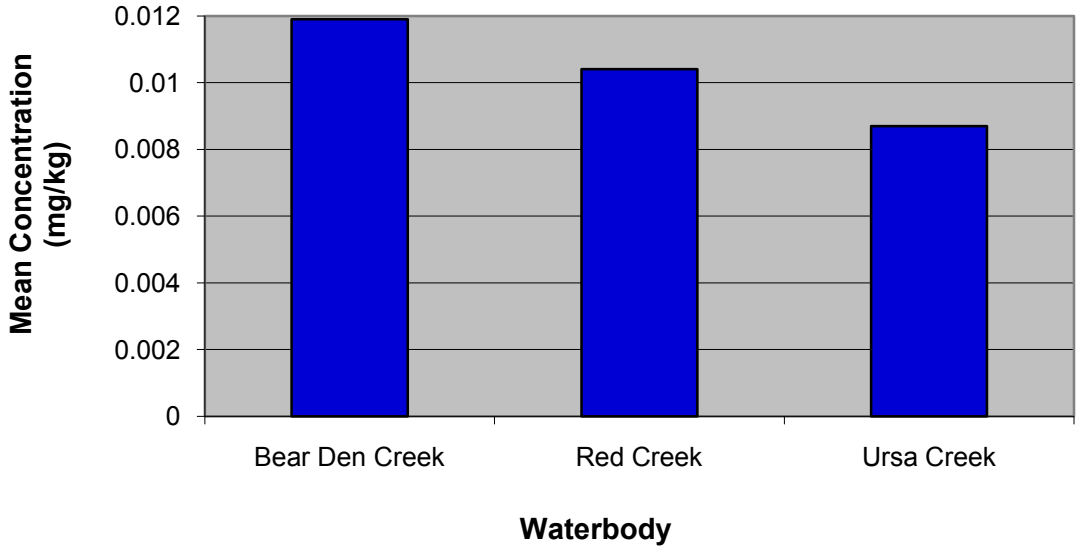


FIGURE 10.6-11
Mean Thallium Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

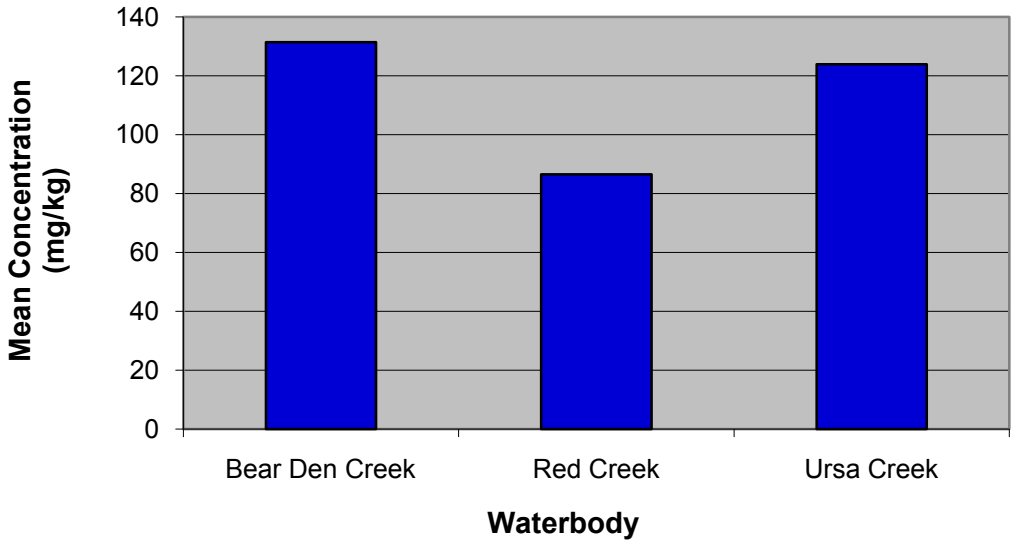


FIGURE 10.6-12
Mean Zinc Concentrations in Whole Fish, Transportation-corridor Study Area, 2004-2005

APPENDICES

APPENDIX 10.6A

Freshwater Fish Samples Results Summary, Transportation-corridor Study Area, 2004-2005

Appendix 10.6A
Freshwater Fish Samples Results Summary,
Transportation-corridor Study Area, 2004-2005

STATION AND SPECIES		Total Solids percent	Antimony mg/kg	Arsenic mg/kg	Beryllium mg/kg	Cadmium mg/kg	Chromium mg/kg	Copper mg/kg	Lead mg/kg	Mercury mg/kg	Methyl Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Selenium mg/kg	Silver mg/kg	Thallium mg/kg	Zinc mg/kg
Transportation Corridor Bear Den Creek (BDC, BEARDEN)-Oncorhynchus kisutch-WHOLE BODY TISSUE-Age JUVENILE																	
Sample Date	**Fish ID #**																
09/05/04	1	26.7	**0.0025**	**0.45**		0.025		5.3	0.129	0.373			1.17	**0.7**	**0.009**		
09/05/04	2	24.2	**0.0025**	**0.36**		0.032		4.58	0.088	0.251			0.73	**0.7**	**0.01**		
09/05/04	3	27.1	**0.0025**	**0.44**		0.025		8.12	0.143	0.275			1.42	**0.4**	0.028		
09/05/04	4	26.2	**0.0025**	**0.41**		0.023		7.05	0.171	0.3			0.66	**0.2**	**0.008**		
09/05/04	5	26.7	**0.0025**	**0.38**		0.04		3.9	0.052	0.395			0.67	**0.6**	**0.009**		
09/05/04	6	26.5	**0.0025**	**0.27**		0.033		4.04	0.142	0.448			0.67	**0.5**	**0.009**		
09/05/04	7	26.5	**0.0025**	**0.27**		0.024		5.86	0.721	0.126			0.69	**0.6**	**0.015**		
09/05/04	8	27.4	**0.0025**	**0.37**		**0.018**		3.83	0.041	0.311			0.71	**0.7**	**0.008**		
09/05/04	9	25.8	**0.0025**	**0.42**		0.026		4.88	0.087	0.318			1.14	1.1	**0.013**		
09/05/04	10	23.6	**0.008** J	**0.35**		0.025		6.13	0.072	0.301			0.56	**0.6**	**0.01**		
09/05/04	201	24.6	**0.008** J	**0.35**		0.032		5.47	0.08	0.387			0.94	1	**0.014**		
08/23/05	1	26.3	**0.004**	**0.2**	**0.0015**	0.023	**0.3**	2.34	**0.01**	0.139		0.06	0.7	1.46	**0.009**	**0.01**	131
08/23/05	2	25.2	**0.004**	**0.24**	**0.0015**	0.02	**0.3**	3.35	**0.01**	0.147		0.07	4.5	1.42	**0.009**	**0.009**	123
08/23/05	3	23.5	**0.004**	**0.22**	**0.0015**	0.023	**0.4**	7.47	0.03	0.105		0.09	0.8	1.81	**0.008**	**0.013**	127
08/23/05	4	20.4	**0.004**	**0.35**	**0.0015**	0.036	**0.3**	11.1	0.02	0.101		0.09	0.9	1.64	**0.013**	**0.015**	131
08/23/05	5	22.1	**0.004**	**0.37**	**0.0015**	0.025	**0.4**	4.41	0.03	0.0932		0.11	0.6	1.7	**0.012**	**0.012**	149
08/23/05	6	23.3	**0.004**	**0.21**	**0.0015**	0.037	0.6	2.81	0.06	0.0879		0.09	0.3	1.12	**0.012**	**0.007**	113
08/23/05	7	22.7	**0.004**	**0.4**	**0.0015**	0.044	**0.15**	2.5	0.06	0.0986		0.09	0.3	1.53	**0.012**	**0.014**	130
08/23/05	8	22.4	**0.004**	**0.24**	**0.0015**	0.029	**0.15**	2.41	**0.01**	0.0977		0.08	0.3	1.29	**0.01**	**0.011**	119
08/23/05	9	20.6	**0.004**	**0.49**	**0.0015**	0.053	**0.15**	2.5	0.04	0.109		0.12	0.3	1.55	**0.016**	**0.016**	158
08/23/05	10	21.0	**0.004**	**0.39**	**0.0015**	0.031	0.5	2.43	0.04	0.0976		0.09	0.3	1.56	**0.013**	**0.012**	133
Mean		24.4	0.004	0.34	0.0015	0.03	0.3	4.8	0.1	0.217	NA	0.09	0.9	1.1	0.012	0.012	131
Median		24.6	0.004	0.36	0.0015	0.026	0.3	4.41	0.06	0.147	NA	0.09	0.69	1.1	0.01	0.012	131
St. Deviation		2.3	0.002	0.09	0	0.009	0.2	2.3	0.15	0.124	NA	0.02	0.9	0.5	0.004	0.003	13
# of values		21	21	21	10	21	10	21	21	21	NA	10	21	21	21	10	10
Minimum		20.4	0.0025	0.2	0.0015	0.018	0.15	2.34	0.01	0.0879	NA	0.06	0.3	0.2	0.008	0.007	113
Maximum		27.4	0.008	0.49	0.0015	0.053	0.6	11.1	0.721	0.448	NA	0.12	4.5	1.81	0.028	0.016	158
% of values undetected			91%	5%	100%	5%	30%		14%					5%	5%		
# of values between MDL and MRL			2	21		1	5		1					8	20	10	

Appendix 10.6A
Freshwater Fish Samples Results Summary,
Transportation-corridor Study Area, 2004-2005

STATION AND SPECIES		Total Solids percent	Antimony mg/kg	Arsenic mg/kg	Beryllium mg/kg	Cadmium mg/kg	Chromium mg/kg	Copper mg/kg	Lead mg/kg	Mercury mg/kg	Methyl Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Selenium mg/kg	Silver mg/kg	Thallium mg/kg	Zinc mg/kg
Transportation Corridor Red Creek (RC, REDCREEK)-Salvelinus malma Walbaum-WHOLE BODY TISSUE-Age NOT SPECIFIED																	
Sample Date	**Fish ID #**																
09/04/04	1	29.3	**0.003**	**0.35**		**0.021**		10.5	**0.018**	0.127			0.48	2.1	**0.015**		
09/04/04	2	31.4	**0.0025**	**0.32**		**0.012**		5.37	**0.009**	0.0853			0.26	1.7	**0.008**		
09/04/04	3	28.2	**0.0025**	**0.26**		**0.015**		10.4	0.022	0.0925			0.41	1.6	**0.013**		
09/04/04	4	30.9	**0.0025**	**0.28**		**0.019**		10	**0.018**	0.0375			0.36	2	**0.018**		
09/04/04	5	31.2	**0.0025**	**0.23**		**0.014**		7.55	0.113	0.0225			0.36	1.6	**0.012**		
09/04/04	6	33.6	**0.0025**	**0.27**		**0.017**		8.17	**0.015**	0.0288			0.3	1.7	**0.012**		
09/04/04	7	30.9	**0.0025**	**0.28**		0.022		9.16	0.029	0.122			0.57	1.4	**0.014**		
09/04/04	8	31.9	**0.0025**	**0.26**		0.02		6.71	0.046	0.0576			0.44	1.5	**0.007**		
09/04/04	9	32.1	**0.0025**	**0.3**		**0.009**		5.1	0.057	0.0653			0.45	1.2	**0.006**		
09/04/04	10	28.8	**0.0025**	**0.35**		0.022		8.86	0.059	0.15			0.87	1.6	**0.012**		
09/04/04	201	31.7	**0.0025**	**0.28**		**0.015**		7.78	0.029	0.0138			0.38	1.2	**0.017**		
08/23/05	1	28.7	**0.004**	**0.34**	**0.0015**	0.042	3.2	15.9	0.04	0.0227		**0.025**	5.8	3.62	0.021	**0.009**	72.2
08/23/05	2	25.8	**0.004**	**0.3**	**0.0015**	0.029	2.4	18.8	0.04	0.078		**0.025**	2.4	2.81	0.021	**0.009**	78.5
08/23/05	3	28.7	**0.004**	**0.34**	**0.0015**	0.04	2.2	18.9	0.03	0.0953		**0.025**	3.4	2.59	**0.018**	**0.012**	84.3
08/23/05	4	27.3	**0.004**	**0.28**	**0.0015**	0.021	0.8	17.7	**0.01**	0.0943		**0.025**	1.5	2.06	**0.019**	**0.009**	102
08/23/05	5	26.7	**0.004**	**0.31**	**0.0015**	0.043	0.8	23.4	0.02	0.0446		**0.025**	1.1	2.67	0.028	**0.011**	103
08/23/05	6	26.7	**0.004**	**0.21**	**0.0015**	0.026	**0.15**	8.33	**0.01**	0.0559		**0.025**	0.5	1.59	**0.014**	**0.009**	84.3
08/23/05	7	26	**0.004**	**0.26**	**0.0015**	0.025	**0.4**	18.9	**0.01**	0.11		**0.025**	1.5	2.07	0.024	**0.01**	83.3
08/23/05	8	22.1	**0.004**	**0.38**	**0.0015**	0.034	0.8	18.2	0.02	0.105		**0.025**	1	1.83	0.03	**0.014**	90.3
08/23/05	9	26.2	**0.004**	**0.28**	**0.0015**	0.031	**0.15**	10.6	**0.01**	0.207		**0.025**	1.5	1.79	**0.015**	**0.013**	89.1
08/23/05	10	26.9	**0.004**	**0.32**	**0.0015**	0.023	2	23.8	0.22	0.0713		0.06	5.5	2.16	0.02	**0.008**	78.3
Mean		28.8	0.003	0.3	0.0015	0.024	1.3	12.6	0.04	0.08	NA	0.029	1.4	1.9	0.016	0.010	87
Median		28.7	0.003	0.28	0.0015	0.022	0.8	10.4	0.022	0.078	NA	0.025	0.57	1.79	0.015	0.010	84
St. Deviation		2.8	0.001	0.04	0	0.01	1.1	5.9	0.05	0.048	NA	0.011	1.6	0.6	0.006	0.002	10
# of values		21	21	21	10	21	10	21	21	21	NA	10	21	21	21	10	10
Minimum		22.1	0.0025	0.21	0.0015	0.009	0.15	5.1	0.009	0.0138	NA	0.025	0.26	1.2	0.006	0.008	72.2
Maximum		33.6	0.004	0.38	0.0015	0.043	3.2	23.8	0.22	0.207	NA	0.06	5.8	3.62	0.03	0.014	103
% of values undetected			100%		100%	5%	20%		23%			90%			5%		
# of values between MDL and MRL				21		8	1		4						15	10	

Appendix 10.6A
Freshwater Fish Samples Results Summary,
Transportation-corridor Study Area, 2004-2005

STATION AND SPECIES	Sample Date	Fish ID #	Total Solids percent	Antimony mg/kg	Arsenic mg/kg	Beryllium mg/kg	Cadmium mg/kg	Chromium mg/kg	Copper mg/kg	Lead mg/kg	Mercury mg/kg	Methyl Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg	Selenium mg/kg	Silver mg/kg	Thallium mg/kg	Zinc mg/kg
Transportation Corridor URSA100B (URSA100B)-Oncorhynchus kisutch-WHOLE BODY TISSUE-Age JUVENILE																		
	08/31/04	1	29.2	**0.0025**	1.11		**0.014**		3.46	0.027	0.169			0.51	1.4	**0.007**		
	08/31/04	2	28.2	**0.0025**	0.9		0.022		3.09	0.03	0.225			0.57	1.2	**0.011**		
	08/31/04	3	29.5	**0.0025**	0.51		**0.009**		3.01	0.021	0.117			0.67	1.3	**0.007**		
	09/06/04	4	27.6	**0.0025**	1.03		0.042		3.39	0.039	0.203			0.92	1.1	**0.013**		
	09/07/04	5	26.8	**0.0025**	0.81		**0.012**		4.37	0.027	0.174			0.91	1	**0.009**		
	09/07/04	6	26.6	**0.0025**	0.62		**0.016**		3.48	0.033	0.114			0.62	1.1	**0.006**		
	09/07/04	7	28.5	**0.0025**	0.52		**0.012**		4.04	0.091	0.155			4.18	1	**0.005**		
	09/07/04	8	29.1	**0.0025**	0.83		**0.012**		3.01	0.02	0.111			0.66	1.2	**0.006**		
	09/07/04	9	30.3	**0.0025**	0.7		**0.009**		2.76	0.02	0.082			1.5	**0.9**	**0.005**		
	09/07/04	10	26.9	**0.0025**	**0.44**		**0.008**		15.2	0.038	0.128			0.85	1	**0.005**		
	09/07/04	201	27.8	**0.0025**	0.68		**0.013**		4.08	0.031	0.241			0.6	**0.2**	**0.008**		
	08/23/05	1	24	**0.004**	1.04	**0.0015**	0.04	1.6	3.18	0.03	0.261		0.11	0.3	**0.5**	**0.019**	**0.008**	113
	08/23/05	2	24	**0.004**	0.87	**0.0015**	0.032	1.4	3.49	0.04	0.185		0.09	0.3	1.8	**0.014**	**0.01**	131
	08/23/05	3	24.9	**0.004**	0.64	**0.0015**	0.025	0.8	3.01	0.02	0.12		0.08	0.7	1.6	**0.007**	**0.007**	115
	08/23/05	4	25	**0.004**	0.63	**0.0015**	0.038	0.9	3.14	0.02	0.107		0.07	0.4	1.9	**0.004**	**0.006**	103
	08/23/05	5	23.7	**0.004**	0.96	**0.0015**	0.031	0.9	4.85	0.04	0.133		0.11	0.4	1.2	**0.009**	**0.008**	128
	08/23/05	6	24.2	**0.004**	1.25	**0.0015**	0.053	0.8	3.4	0.03	0.345		0.1	0.4	**0.5**	**0.008**	**0.008**	125
	08/23/05	7	23.5	**0.004**	1.37	**0.0015**	**0.019**	1.1	4.09	0.03	0.211		0.08	0.5	**0.5**	**0.011**	**0.011**	121
	08/23/05	8	24.2	**0.004**	1.63	**0.0015**	0.026	1.5	3.13	0.03	0.311		0.1	0.6	**0.5**	**0.01**	**0.01**	139
	08/23/05	9	24.9	**0.008** J	0.57	**0.0015**	**0.014**	1.7	2.93	0.02	0.238		0.06	0.4	**0.5**	**0.009**	**0.008**	122
	08/23/05	10	17.4	**0.004**	1.16	**0.0015**	0.043	1.5	6.83	0.05	0.22		0.09	0.7	1.2	**0.017**	**0.011**	142
	Mean		26.0	0.003	0.9	0.0015	0.023	1.2	4.2	0.03	0.183	NA	0.09	0.8	1	0.01	0.009	124
	Median		26.6	0.0025	0.83	0.0015	0.019	1.3	3.4	0.03	0.174	NA	0.09	0.6	1.1	0.008	0.008	124
	St. Deviation		2.9	0.001	0.3	0	0.013	0.4	2.7	0.02	0.071	NA	0.02	0.8	0.5	0	0.002	12
	# of values		21	21	21	10	21	10	21	21	21	NA	10	21	21	21	10	10
	Minimum		17.4	0.0025	0.44	0.0015	0.008	0.8	2.76	0.02	0.082	NA	0.06	0.3	0.2	0.004	0.006	103
	Maximum		30.3	0.008	1.63	0.0015	0.053	1.7	15.2	0.091	0.345	NA	0.11	4.18	1.9	0.019	0.011	142
	% of values undetected			95%		100%	5%								27%			
	# of values between MDL and MRL			1	1		11			1					1	22	10	

Key: All results are calculated on dry weight basis with exception of percent solids which is calculated on a wet weight basis.
Bold Results = Parameter undetected by test, value shown is 1/2 MDL or 1/2 MRL.
If result was not detected at the lab MDL, the value shown is 1/2 MDL.
If result was flagged U or UJ by validation, the value shown is 1/2 MRL.
Green Results = Estimated result reported by laboratory below reporting limit (MRL).
MDL = Method Detection Limit.
MRL = Method Reporting Limit.
NA = Not Applicable.

10.7 Iliamna Lake, Mussel Tissue and Sediment

10.7.1 Introduction

An integrated study of water quality, mussel tissue, sediment, and zooplankton was conducted to characterize baseline conditions for Iliamna Lake. The Iliamna Lake study objectives, study area (including maps), scope of work, methods, and results are described in full in Appendix B of this environmental baseline document. A brief overview of the results of analyses of mussel tissue and sediment from the Iliamna Lake study is presented below.

10.7.2 Summary of Results and Discussion for Mussel Samples

Mussels were sampled as part of the Iliamna Lake study because they are known to be sensitive indicators of changes to aquatic habitat and water quality. Samples of mussels and sediment were collected from four nearshore sites in 2005 and 2006 to characterize baseline conditions for trace elements and for PAHs. The four sites were at Whistlewing Bay, Bucket Lake, Finn Bay, and Flat Lake.

Molybdenum concentrations in mussels ranged from 0.33 mg/kg for Bucket Lake to 0.83 mg/kg for Finn Bay, with the highest median concentration of 0.59 mg/kg occurring for Whistlewing Bay. Selenium was found in freshwater mussel tissue at concentrations up to 4.00 mg/kg, with the highest concentration and the highest median concentration both being for Flat Island. Arsenic concentrations ranged from 2.04 mg/kg for Finn Bay to 4.95 mg/kg for Whistlewing Bay, with the highest median concentration for Whistlewing Bay. Nickel concentrations ranged from 1.13 mg/kg for Flat Island to 7.81 mg/kg for Finn Bay, with the highest median concentration also for Finn Bay. Lead concentrations in mussel tissues ranged from 0.05 mg/kg to 1.16 mg/kg, with the highest concentration being for Bucket Lake. Bucket Lake also had the highest median concentrations of lead and nickel in sediments.

Mussel tissue analyses showed mercury concentrations ranging from 0.053 to 0.282 mg/kg. The highest concentrations of mercury occurred for Bucket Lake. Mercury was not detected in water or sediment at any of the four sites.

No PAH compounds were detected in any mussel samples analyzed for PAHs.

Fluctuations in concentrations of some trace elements in sediments appeared to be associated with similar fluctuations in results for mussel tissue; however, sample sizes were insufficient to test for true correlations.

10.7.3 Summary of Results and Discussion for Sediment Sampling

Sediment samples were collected along with the mussel samples from the four nearshore sites at Whistlewing Bay, Bucket Lake, Finn Bay, and Flat Lake in 2005 and 2006. In 2005, sediment samples also were collected at four deeper-water sites not associated with mussel samples—at Pile Bay, Knutson Bay, Northeast Bay, and Roadhouse Bay. The sediment data provide baseline information on aquatic conditions in the lake.

Nitrate+nitrite (as nitrogen) was not detected in any of the sediment samples. Results for ammonia (as nitrogen) in sediment ranged from 79 to 362 mg/kg for Knutson Bay, from 99 to 245 mg/kg for Northeast Bay, and from 40 to 87 mg/kg for Pile Bay. In addition, there was one concentration of 69 mg/kg in a sediment sample for Roadhouse Bay.

Calcium concentrations in sediment samples ranged from 2,200 to 5,430 mg/kg, with the highest concentration found for Northeast Bay. Sodium concentrations in sediments ranged from 154 to 971 mg/kg, with the highest concentration for Northeast Bay. Magnesium concentrations in sediments ranged from 1,070 to 4,510 mg/kg, with the highest concentration for Pile Bay. Potassium concentrations in sediments ranged from 381 to 1,590 mg/kg, with the highest concentration found for Northeast Bay. Median concentrations for calcium and sodium in sediments were highest for Northeast Bay, and median concentrations for magnesium and potassium in sediments were highest for Pile Bay.

Iron concentrations in sediments ranged from 7,490 to 26,400 mg/kg, with the highest concentration recorded for Knutson Bay. Aluminum concentrations in sediments ranged from 4,540 to 11,200 mg/kg, with the highest concentration recorded for Knutson Bay. Median aluminum concentrations in sediments over the course of the study were highest for Northeast Bay (9,600 mg/kg), although median concentrations in sediments from Pile Bay were almost as high (9,530 mg/kg). Manganese concentrations in sediments ranged from 150 to 591 mg/kg, with the highest concentration recorded for Pile Bay. Median concentrations for iron and manganese were also highest for Pile Bay.

For the four sites sampled for both mussels and sediment, zinc concentrations in sediment samples were undetected except for Bucket Lake, where concentrations ranged from 158 to 216 mg/kg, with a median value of 174 mg/kg. Copper concentrations were detected for all four sites, with the highest value (72.7 mg/kg) recorded for Bucket Lake. Median concentrations for copper were highest for Flat Island.

For all sampling sites, detectable zinc concentrations in sediment samples ranged from 23.2 to 58.3 mg/kg, with the lowest concentration occurring for Roadhouse Bay and the highest concentration occurring for Pile Bay. Detectable copper concentrations in sediments from all sites ranged from 4.60 to 90.6 mg/kg, with the lowest concentration recorded for Roadhouse Bay and the highest for Pile Bay.

Molybdenum concentrations in sediments ranged from undetected to 8.47 mg/kg, with the highest concentration occurring for Knutson Bay. Arsenic concentrations in sediments ranged from lowest (undetected) to highest (6.02 mg/kg) for Northeast Bay. Nickel concentrations in sediments ranged from 2.30 to 6.39 mg/kg, with the lowest concentration occurring for Roadhouse Bay and the highest for Northeast Bay. Lead concentrations in sediments ranged from 2.09 to 7.76 mg/kg, with the lowest concentration occurring for Roadhouse Bay and the highest for Knutson Bay. Median concentrations for zinc, copper, and lead in sediments were highest for Pile Bay, and median concentrations for arsenic and nickel in sediments were highest for Northeast Bay.

Sediments samples collected in 2005 were analyzed for mercury. Mercury was not detected above the MRL in any of the sediment samples.

The majority of results for cyanide in sediment were undetected above the MRL. Cyanide was detected above the MRL for Knutson Bay in June 2005 (0.077 mg/kg) and October (0.056 mg/kg) 2005 and for Northeast Bay (0.190 mg/kg) and Pile Bay (0.058 mg/kg) in June 2005.

Sediments were sampled for organic constituents, including total organic carbon (TOC), volatile compounds (benzene, toluene, ethylbenzene, and xylenes [BTEX] and GRO), and semivolatile compounds (PAHs, DRO, and RRO). TOC results ranged from 0.621 percent (Roadhouse Bay) to 13.9 percent (Flat Island). The TOC levels found in sediment samples from the four nearshore mussel-collection sites were much higher than TOC concentrations in sediments from the deeper-water sites. Results for RRO were above the MRL in sediments from Bucket Lake, Flat Island, and Finn Bay, and several PAH compounds were found in the sediments from Bucket Lake. No other organic compounds were detected in the sediment samples.

Although these data provide insight into potential trends and the baseline conditions for Iliamna Lake, it is important to note that all findings are based on relatively small sample sizes; therefore, they must be interpreted with caution. (Appendix B of this environmental baseline document presents a more integrated analysis of the water quality, mussel-tissue, sediment, and zooplankton sampling.)