



***Abandoned Mine Lands
Initial Investigation Report
Sterling Mine
Metaline, Washington***

***Prepared for
Washington State
Department of Ecology***

***June 25, 2007
(Revised September 13, 2007)
17274-01(ST)***



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Sterling Mine
Metaline, Washington**

**Prepared for
Washington State
Department of Ecology
Rick Roeder, Project Manager**

**June 25, 2007
17274-01(ST)**

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EXPIRES 12/13/2007

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CONTENTS

Page

| | |
|---|----|
| 1.0 EXECUTIVE SUMMARY | 1 |
| 2.0 INTRODUCTION | 1 |
| 3.0 SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERISTICS | 3 |
| 3.1 Site Location | 3 |
| 3.2 Site Description | 3 |
| 3.3 Site Ownership and Operations History | 6 |
| 4.0 SITE INVESTIGATION ACTIVITIES | 7 |
| 4.1 Soil and Waste Pile Sampling | 7 |
| 4.2 Surface Water and Seep Sampling | 7 |
| 4.3 Sediment Sampling | 7 |
| 5.0 ANALYTICAL RESULTS AND ENVIRONMENTAL HAZARD ASSESSMENT | 8 |
| 5.1 Soil | 8 |
| 5.2 Air | 8 |
| 5.3 Methodology for Threatened and Endangered Species Information | 9 |
| 6.0 SUMMARY AND CONCLUSIONS | 9 |
| 7.0 USE OF THIS REPORT | 10 |
| 8.0 REFERENCES | 10 |

TABLES

| | | |
|---|---|---|
| 1 | Sterling Mine Data Summary | 1 |
| 2 | Project Team Roles and Responsibilities | |
| 3 | Ownership Timeline | 7 |
| 4 | Sterling Mine Sample Inventory | |
| 5 | Analytical Results for Soil Samples - Sterling Mine | |
| 6 | Threatened and Endangered Species | |

Tables with no page number shown are included following page 10.

CONTENTS (Continued)

Page

FIGURES

- 1 Site Location Map
- 2 Vicinity Map
Standard Key for Site Plan
- 3 Site Plan
- 4 Mine Waste Rock Conceptual Site Model for Human and Ecological Risk

APPENDIX A FIELD DOCUMENTATION

**ABANDONED MINE LANDS INITIAL INVESTIGATION REPORT
STERLING MINE
METALINE, WASHINGTON**

1.0 EXECUTIVE SUMMARY

Information obtained during this assessment is summarized in Table 1.

Table 1 – Sterling Mine Data Summary

| | |
|--|--|
| Mine Name: | Sterling (10 patented claims; Huntting 1956) |
| Last Known Operation: | The Sterling Mine was a zinc, lead, and silver mine. Unspecified volumes of ore were produced in 1918 and 1926 (Huntting 1956). |
| Location: | 0.7 mile south of Metaline, Washington, by road. Latitude, Longitude: 48.8375°, 117.3912° Quadrangle Map: Metaline TRS: Township 39 N, Range 43 E, Section 32, SE 1/4, NE 1/4 |
| Features Observed | Eight waste rock piles (total about 779 cubic yards); Two open, dry adits; One closed, dry shaft and one open, dry shaft; Two open, dry trenches; Two dry prospects and one dry feature; and One debris pile and miscellaneous debris throughout site |
| Results above Criteria | The soil samples exceed MTCA human health criteria for arsenic, lead, and zinc; and ecological criteria for arsenic, cadmium, lead, mercury, silver, and zinc. |
| Work by Others | EPA START-2 (2002) |
| Potential Receptors / Degree of Hazard | Sterling Mine is located above the west bank of the Pend Oreille River with one waste rock pile extending to the west bank of the river. Human health risks possible. Risks to ecological receptors likely. Soil has the potential to fail TCLP cadmium and lead criteria for dangerous waste. |

2.0 INTRODUCTION

This report summarizes the results of the initial soil and surface water investigation at the Sterling Mine site located near Metaline, Washington (Figures 1 and 2). Hart Crowser performed this initial investigation for the Washington State Department of Ecology (Ecology) under Contract No. C06254

according to the Ecology Statement of Work (SOW) and project Sampling and Analysis Plan (SAP) prepared by Hart Crowser (Hart Crowser 2006).

The objectives of this initial investigation are to:

- Determine whether the site has released or has a potential to release hazardous substances to the environment at concentrations above Model Toxics Control Act (MTCA) human health or ecological screening levels, to identify sites that may require additional investigation and sampling;
- Identify and document waste source areas including estimates of waste mass and/or volume; and
- Identify and document the presence of potential waste transport pathways and receptors.

For this study, samples were collected of the soil-like fraction of waste rock, mine tailings, and/or natural soils that were potentially affected by mining. Analytical results were compared to the MTCA criteria for soils. Use of terms such as “soils” or “waste rock,” etc. are for convenience only and do not indicate potential future designation in accordance with Chapter 173-350 WAC, or Chapter 173-303 WAC, or other regulatory criteria.

Subsurface openings observed for this study may include shafts, adits, prospect pits, collapsed stopes, and/or excavations completed for other purposes. The terms used in this report are based on visual interpretation in the field and may not fully characterize historical site use.

Prior to commencing the site visit, Hart Crowser performed file reviews; evaluated aerial photographs, U.S. Forest Service and USGS maps; reviewed the Inventory of Washington Minerals; and reviewed county tax assessor records to:

- Identify the location of mines and associated features/structures;
- Identify property owners, mineral claimants, and mine operators; and
- Obtain contact information to gain permission for site access.

Table 2 presents the project team members and their roles and responsibilities for this investigation. A site visit was accomplished on May 17, 2007.

3.0 SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERISTICS

3.1 Site Location

The Sterling Mine is located approximately 0.7 mile south of Metaline, Washington, by road. Directions from Metaline, Washington, to the Sterling Mine are as follows:

- From the intersection of State Route 31 and South Main Avenue just south of Metaline, travel south on State Route 31.
- After 0.7 mile turn right at an unmarked road and park off to the side of the road adjacent to State Route 31.
- Walk north along State Route 31 for approximately 600 feet. An old road is located on the north side of State Route 31.
- Hike down the old road for approximately 620 feet to the Sterling Mine, which is located adjacent to the Pend Oreille River.

Only a standard passenger vehicle is necessary to travel to the specified parking area off State Route 31. The old road is relatively inaccessible, due to the steep road fill slope leading to the old road.

The access description provided herein is based on observations at the time the site was visited for this work. References to roads do not reflect property ownership, and does not imply that public access is available.

The Sterling Mine is located at latitude 48.8375°, longitude 117.3912° (WGS 1984) in Township 39 N, Range 43 E, Section 32, SE 1/4, NE 1/4 (Willamette Meridian) at elevation 2060 feet (USGS, 7.5 minute, Metaline Quadrangle, 1992).

3.2 Site Description

The Sterling Mine is an inactive zinc, lead, and silver mine. The last known date of operation was 1926. The mine is located above the west bank of the Pend Oreille River southeast of Linton Mountain. The natural terrain slopes downward at approximately 30 to 32 degrees to the east toward the Pend Oreille River. The mine is approximately 5.6 acres in area with a vertical relief of approximately 160 feet. The Sterling Mine includes eight waste rock piles, two

open adits, one open shaft, one closed shaft, two open trenches, two prospects, one prospect-like feature, and one debris pile (Figure 3).

Waste rock, WR-1, is located across from an adit, Adit 2, on the slope facing down and extending to the Pend Oreille River down and extends to the west bank of the Pend Oreille River (Photograph 1). WR-1 is approximately 125 cubic yards in volume and contains dry, gray, silty, sandy Gravel with occasional cobbles. Some oxidation of the waste rock is visible. Minor amounts of waste rock were visible in the Pend Oreille River during the field visit. The lower portion of WR-1 is mixed with river sediments and is covered in grassy vegetation, except where recent bank scour has occurred (Photograph 2). No evidence of seepage from WR-1 was observed.

The lower portion of the old road leading to the site appears to be composed of waste rock, WR-2 (Road). WR-2 (Road) is approximately 550 cubic yards in volume and is composed of damp, gray-brown, slightly silty, sandy Gravel. WR-2 (Road) appears to be a mix of waste rock, overburden soil, and potentially imported road fill. The waste rock in WR-2 (Road) is likely from an adjacent trench cut, Trench 1. No evidence of seepage from WR-2 was observed.

A third waste rock pile, WR-3, is located near the northeast end of WR-2 (Road). WR-3 is approximately 60 cubic yards in volume and composed of damp, gray, slightly silty, sandy Gravel with occasional cobbles. No evidence of seepage from WR-3 was observed.

West and upslope of WR-3 is a waste pile, WR-4, adjacent to a shaft, Shaft 2. WR-4 is approximately 32 cubic yards in volume and composed of moist, brownish gray, slightly silty, sandy Gravel with occasional cobbles. No evidence of seepage from WR-4 was observed.

A small waste rock pile adjacent to Adit 2, WR-5 is approximately 4 cubic yards in volume and composed of gray Cobbles and Gravel with overburden soil (damp to moist, tan, very silty Sand). No evidence of seepage from WR-5 was observed.

Three mine openings are centrally located in Sterling Mine (Photograph 3). A closed shaft, Shaft 1, is approximately 6 feet in diameter by 5 feet deep. Shaft 2 is northwest upslope from Shaft 1. Shaft 2 is approximately 6 feet in diameter by 15 feet long and is open to Shaft 1 below it. Adit 1 is blocked by soil but open to Shaft 1 to the north. Adit 1 is approximately 5 feet tall by 4 feet wide and 10 feet long. A trench, Trench 2, leads from the Adit 1 south-southeast to the old road. Trench 2 is approximately 4 feet deep by 4 feet wide by 75 feet long. All

of these features were dry with no evidence of drainage from them. Also, no evidence of animal activity was observed in these features.

Adit 2 is north of WR-3 and is blocked but remains open (Photograph 4). Adit 2 is approximately 6 feet tall by 5 feet wide and greater than 30 feet in length. Adit 2 was dry with no evidence of animal activity. A wooden bench and wooden box were observed inside Adit 2, as well as a plant growing on the wooden box inside the adit.

Trench 1 is a curved trench cut into the slope at the southwest end of WR-2 (Road). Trench 1 is approximately 145 feet long by 3 feet wide at the base to up to 25 feet wide at the surface and 5 to 13 feet deep. Trench 1 is dry with no evidence of drainage from it. Animal scat was observed in Trench 1.

A debris pile, DB-1, is located southeast of the intersection of Trench 1 and WR-2 (Road). DB-1 is approximately 50 feet long by 30 feet wide by 0.5 foot deep. DB-1 contains a mix of timber debris and rusted scrap metal parts, including rail car parts, stacked rail car ties, and steel cable. A collapsed structure remains at the east end of DB-1 (Photograph 5). Miscellaneous metal debris is spread around especially in the vicinity of DB-1 at the site. Two cut halves of a rusted, metal 55-gallon drum are located north of DB-1, adjacent to two concrete foundations, F-1. F-1 includes a southern 4-foot-long by 2-foot-wide by 2.5-foot concrete foundation with metal bolts protruding and a northern 3.5-foot square by 2-foot-tall foundation or potential assay furnace with a 2-cubic-foot cavity.

An unnamed creek flows east to the Pend Oreille River along the south end the Sterling Mine. The creek was flowing at approximately 30 gallons per minute and does not abut any mining features. The Sterling Mine is located on the Pend Oreille River, which flows from south to north.

Evidence of animal and human activity was observed at the Sterling Mine. Evidence of animal activity includes animal scat observed throughout the site. No evidence of human activity was observed directly at the site. However, along the old road north of Adit 2 a chewing tobacco tin with a January 2007 expiration date was observed.

Surrounding vegetation is evergreen trees, shrubs, grasses, and some deciduous trees. The ground is covered in forest duff. No vegetation appears distressed.

The approximate direction of surface water runoff is east toward the Pend Oreille River.

The nearest residence is located approximately 0.2 mile northeast of the Sterling Mine on the east bank of the Pend Oreille River.

EPA START-2 (2002) visited the Sterling Mine and, though described somewhat differently, identified similar features to those characterized in this report.

Additionally, a set of prospects was discovered south of the unnamed creek while searching for Sterling Mine. This area is referred to as Sterling South. Sterling South is approximately 140 feet south of the unnamed creek and 140 feet east of State Route 31. Sterling South contained three small waste rock piles (South WR-1, South WR-2, and South WR-3) associated with two prospects, South Prospect 1 and South Prospect 2, and a prospect-like feature, Feature 1.

The total volume of the three waste rock piles of Sterling South is approximately 8 cubic yards. The three waste rock piles are composed of moist, brown, slightly silty Sand with occasional gravel and cobbles; this material appears to be mainly overburden and topsoil with some cobble and gravel sized pieces of waste rock. No evidence of seepage was observed from the Sterling South waste rock piles.

South Prospect 1 is approximately 3 feet wide by 5 feet long by 1 foot deep, and South Prospect 2 is approximately 2 feet wide by 10 feet long by 1.5 feet wide. Feature 1 is approximately 8 feet in diameter by 2.5 feet deep. South Prospect 1, South Prospect 2, and Feature 1 were all dry with no evidence of drainage away from them.

Evidence of human activity was observed at Sterling South, but the items observed may be litter from traffic on State Route 31. The items included an ice cream wrapper and an old glass bottle.

3.3 Site Ownership and Operations History

Information on site ownership and operations is based on readily available public information and may not reflect all details of ownership and operations. An ownership timeline is shown in Table 3.

Table 3 – Ownership Timeline

| Year | Owner | Notes |
|-----------------------------------|--|--|
| Current Owner 43-39-32-50-0001 | Riley Creek Lumber Co. PO Box 220, LaClede, ID 83841 | Pend Oreille County Tax Assessor's Office |
| 1932-1949 | Metaline Mining & Leasing Co. Spokane, WA | Hunting (1956) |
| 1932 | Century Zinc Co. | |
| 1915-1926 | Sterling Silver-Lead Co. Produced in 1918 and 1926. | |
| 1886 | Mining began, small operations. "Metaline" name given to district because of the presence of galena at the surface. | Dings & Whitebread (1965) |

4.0 SITE INVESTIGATION ACTIVITIES

An initial site investigation was conducted on May 17, 2007. Photographs were taken and GPS data points and waste rock samples were collected. Mine features, photograph locations and directions, GPS waypoints, sample locations, and the likely direction of surface water flows are shown on Figure 3.

4.1 Soil and Waste Pile Sampling

Four waste rock samples were collected: one from WR-1, Sterling WR1-S1; one from WR-2 (Road), Sterling WR2-S1; one from WR-3, Sterling WR3-S1; and one from WR-4, Sterling WR4-S1. Sample descriptions are provided in Table 4.

4.2 Surface Water and Seep Sampling

No mine-related surface water or seeps from waste rock were observed at the time of the site visit; therefore, no water samples were collected.

4.3 Sediment Sampling

No drainage paths from mine features were observed during the site visit; therefore, no sediment samples were collected.

5.0 ANALYTICAL RESULTS AND ENVIRONMENTAL HAZARD ASSESSMENT

Soil quality data were compared to regulatory criteria for screening purposes as discussed below. Further analysis, including risk-based analyses may be appropriate in additional future site assessments.

EPA START-2 (2002) reported no samples were collected at the Sterling Mine.

5.1 Soil

Soil and waste rock sample analytical results are compared with applicable MTCA Method A cleanup levels, MTCA Method B cleanup levels for soil ingestion, soil ingestion and dermal contact combined, and with criteria for ecological protection of plants, soil biota, and wildlife. Arsenic concentrations in samples Sterling WR1-S1, Sterling WR2-S1, Sterling WR3-S1, and Sterling WR4-S1 exceed MTCA Method B human health criteria. Sample Sterling WR4-S1 also exceed MTCA Method A human health criteria for arsenic. Samples Sterling WR3-S1 and Sterling WR4-S1 exceed the ecological criteria for arsenic. Samples Sterling WR3-S1 and Sterling WR4-S1 exceed MTCA Method A human health criteria and ecological criteria for cadmium. MTCA Method A criteria for cadmium is based on protection of groundwater. All four samples exceed the ecological criteria for lead. Samples Sterling WR1-S1, Sterling WR3-S1, and Sterling WR4-S1 also exceed MTCA Method A human health criteria for lead and the ecological criteria for mercury. Sample Sterling WR3-S1 exceeds the ecological criteria for selenium. Sample Sterling WR4-S1 exceeds the ecological criteria for silver and the MTCA Method A human health criteria for zinc. Samples Sterling WR2-S1, Sterling WR3-S1, and Sterling WR4-S1 exceed ecological criteria for zinc.

While toxicity characteristic leaching procedure (TCLP) tests were not performed, the cadmium concentration in sample Sterling WR4-S1 and the lead concentrations in all four samples are sufficiently high to potentially fail TCLP criteria for dangerous waste.

5.2 Air

No airborne dust was observed during the site visit. The waste rock of WR-2, WR-3, and WR-5 and the Sterling South waste rock piles are covered in vegetation and forest duff and are sheltered from wind by the surrounding trees. WR-4 is semi-exposed, but surrounding trees and the limited exposure are likely to prevent significant airborne dust. WR-1 is exposed and on the bank of the Pend Oreille River. Thus WR-1 is less sheltered from wind, and there is potential to generate limited airborne dust. However, airborne dust does not appear to

be a significant concern at the site. The nearest human residences are approximately 0.2 mile away. Dust exposure is also possible for potential recreational users.

5.3 Methodology for Threatened and Endangered Species Information

We contacted the Washington State Department of Natural Resources (DNR), the Washington State Department of Fish and Wildlife (WDFW), the U.S. Fish and Wildlife Service (USFWS), and the Colville National Forest – USDA Forest Service to obtain information on the presence of state and federal threatened or endangered terrestrial and aquatic species. We determined that the WDFW maintained the most accurate and up-to-date information on species distribution in its Priority Habitats and Species (PHS) Database. We requested maps and narratives identifying documented species presence at the Sterling Mine. In addition, we contacted DNR and requested information on rare plants and high quality native wetland and terrestrial ecosystems within the vicinity of the Sterling Mine.

Our search ranges included a 4-mile radius for terrestrial species and a 15-mile radius for aquatic species.

We reviewed approximately 40 PHS maps and accompanying narratives to determine whether any threatened or endangered species were documented within our search ranges. We drew 4- and 15-mile radii around the Sterling Mine on a Colville National Forest Map. We then examined the PHS maps in relation to the search ranges for our project areas. All state and federal threatened and endangered species and habitats that occurred within our search ranges were recorded. Species and habitats that occurred on the edge of our search range were considered within the range and recorded.

A summary of the threatened and endangered species within our search ranges is provided in Table 6.

6.0 SUMMARY AND CONCLUSIONS

The Sterling Mine contains eight waste rock piles with an approximate combined volume of 779 cubic yards. Waste rock samples contain metals at concentrations above MTCA Method A, MTCA Method B, or ecological screening criteria. The main contaminants of concern are arsenic, cadmium, lead, mercury, silver, and zinc. Cadmium and lead concentrations have the potential to fail TCLP criteria for dangerous waste. Additional sampling and TCLP analysis are recommended to determine whether the waste rock would be

classified as dangerous waste. Due to the presence of waste rock on the west bank of the Pend Oreille River, there is potential for leaching of metals to the river.

Human health risks are most likely limited to potential recreational users of the site. MTCA Method A and B screening levels may overestimate risk to recreational users since their exposure duration is less than the duration for a residential scenario.

A site-specific terrestrial ecological evaluation (TEE) would be required to evaluate ecological risks.

Potential exposure pathways are shown on Figure 4.

7.0 USE OF THIS REPORT

Work for this project was performed, and this report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed, in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of the Washington State Department of Ecology for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

The information in this report is intended to be used to determine whether the site has released or has a potential to release hazardous substances to the environment at concentrations above Model Toxics Control Act (MTCA) human health or ecological screening levels.

8.0 REFERENCES

BLM (Bureau of Land Management) Website
<http://www.geocommunicator.gov/>

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Metaline Falls Historical Society, Metaline Falls, Washington.

Mindat.org website <http://www.mindat.org/index.php>

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Table 2 - Project Team Roles and Responsibilities

| Project Role | Personnel Assignment | Roles/Responsibilities |
|--|--|---|
| Ecology Project Manager | Rick Roeder Ecology (509) 454-7837 | Client Project Manager |
| Program Manager | Mike Bailey Hart Crowser (206) 324-9530 | Ensures that all work is carried out in accordance with contractual obligations and the Delivery Order statement of work. Assists the Project Manager as needed with technical decisions and in resolving issues. Final reviewer. |
| Project/Task Manager | Roger McGinnis Hart Crowser (206) 324-9530 | Overall responsibility for execution of the Work Plan. Coordinate with Client, Field Manager and Program Manager as necessary to resolve issues. |
| Corporate Health and Safety Officer (HSO) | Mike Ehlebracht Hart Crowser (206) 324-9530 | Overall responsibility for review and answering questions regarding H&S. |
| Field Manager and Site Safety Coordinators (SSC) | Mike Swenson Hart Crowser (206) 324-9530 | Ensures that explorations are conducted and samples are collected in accordance with project specifications. Coordinates field activities with Project and Program Managers. |
| Mine Information Research | Pat Reed Mike Swenson Hart Crowser (206) 324-9530 | Determined location of mine, access route, and ownership |
| Project Chemist | Anne Conrad Hart Crowser (206) 324-9530 | Performs laboratory coordination and data quality review to assure analytical methods and data are consistent with project needs and data quality objectives. |
| Laboratory Services | Kelley Bottem Analytical Resources, Inc. (206) 695-6211 | Analyzes soil, sediment, and water samples. |

Table 4 - Sterling Mine Sample Inventory

| Sample Name | Sample Location | Sample Description |
|---------------------------|--|---|
| Waste Rock Samples | | |
| Sterling-WR1-S1 | Approximately 7 feet down from top of pile on north side of WR-1 | Dry, gray, silty, sandy GRAVEL with occasional cobbles. Some oxidation visible. |
| Sterling-WR2-S1 | Approximately 3 feet down from top of pile on the southeast slope of WR-2 (Road) | Damp, gray-brown, slightly silty, sandy GRAVEL |
| Sterling-WR3-S1 | On top of WR-3 at east end of pile | Damp, gray, slightly silty, sandy GRAVEL with occasional cobbles |
| Sterling-WR4-S1 | Near center of WR-4 | Moist, brownish gray, slightly silty, sandy GRAVEL with occasional cobbles |

Table 5 - Analytical Results for Soil Samples - Sterling Mine

| Sample ID Sampling Date | MTCA Method A (a) | MTCA Method B | | Ecological Protection (c) Plant/Soil Biota/Wildlife | Sterling WR1-S1 5/17/2007 | Sterling WR2-S1 5/17/2007 | Sterling WR3-S1 5/17/2007 | Sterling WR4-S1 5/17/2007 |
|------------------------------|-------------------------|-----------------------|---|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | | Soil Ingestion (b) | Soil Ingestion & Dermal Contact (b) | | | | | |
| Total Metals in mg/kg | | | | | | | | |
| Antimony | -- | 32 | 29 | 5 / -- / -- | 0.2 UJ | 0.2 U | 0.3 | 1 |
| Arsenic | 20 | 0.67 | 0.62 | 10(d) / 60 / 132 | 8 | 8.4 | 16.3 | 32.1 |
| Beryllium | -- | 160 | 144 | 10 / -- / -- | 0.2 U | 0.2 U | 0.2 | 0.2 |
| Cadmium | 2 | 80 | 74 | 4 / 20 / 14 | 0.3 | 1 | 7.3 | 23.7 |
| Chromium | 2,000 ^e | 120,000 ^e | 44,571 ^e | 42 / 42 / 67 | 2.3 | 5.5 | 1.7 | 3.1 |
| Copper | -- | 2,960 | 2,700 | 100 / 50 / 217 | 5.1 J | 5.5 | 7.3 | 13.5 |
| Lead | 250 | -- | -- | 50 / 500 / 118 | 254 | 123 | 1970 | 22900 |
| Mercury | 2 | 24 | 18 | 0.3 / 0.1 / 5.5 | 0.46 | 0.08 | 1.3 | 1.82 |
| Nickel | -- | 1,600 | 1,441 | 30 / 200 / 980 | 4.3 | 11.7 | 8.6 | 8.6 |
| Selenium | -- | 400 | 360 | 1 / 70 / 0.3 | 0.5 U | 0.5 U | 0.9 | 2 U |
| Silver | -- | 400 | 360 | 2 / -- / -- | 0.2 U | 0.2 U | 0.4 | 3.5 |
| Thallium | -- | 5.6 | 5.0 | 1 / -- / -- | 0.2 U | 0.3 | 0.7 | 0.9 |
| Zinc | -- | 24,000 | 22,000 | 86 / 200 / 360 | 80 | 220 | 7210 | 47600 |

Notes:

U = Not detected at the detection limit indicated.

J = Estimated value.

-- Not established or Not applicable.

Bold - Concentration exceeds ecological criterion.

Box - Concentration exceeds MTCA Method A or Method B criterion.

(a) WAC 173-340-740(2), WAC 173-340-900 (Table 740-1). Model Toxics Control Act (MTCA) Method A.

(b) WAC 173-340-740(3). MTCA Method B Unrestricted land use soil cleanup standards. For carcinogenic constituents, the value presented is the lower of the non-carcinogenic and carcinogenic level calculated using Equations 740-1 and 740-2 for ingestion only. Equations 740-4 and 740-5 for ingestion and dermal contact. Information from CLARC 3.1 was used unless otherwise noted.

(c) WAC 173-340-740(3)(b)(ii), WAC 173-340-749, WAC 173-340-900 (Table 749-3).

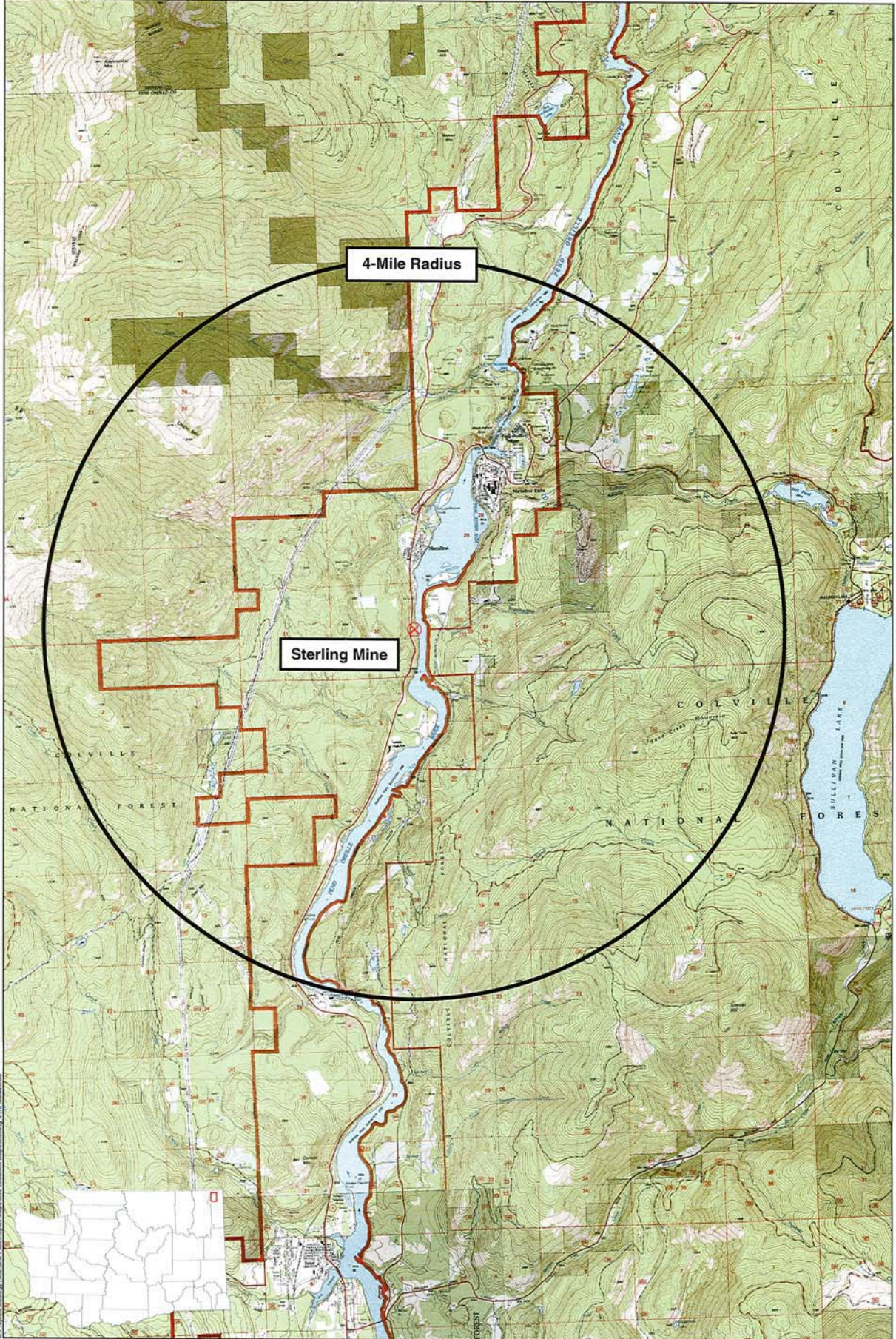
(d) Based on Arsenic V (10 mg/kg)

(e) Based on Chromium III

Table 6 - Threatened and Endangered Species

| Site Number | Site Name | Species | Federal Status | | State Status | | Narrative |
|-------------|--|--|----------------|---|--------------|---|---|
| | | | T | E | T | E | |
| 8 | Metaline Mining and Leasing Co. (Includes Sterling Mine) | Grizzly bear (<i>Ursus arctos</i>) | X | | | X | Flume Creek |
| | | Bull trout (<i>Salvelinus confluentus</i>) | X | | | | Pend Oreille River, Slate Creek, South Salmo River and Bench Creek |
| | | Woodland caribou (<i>Rangifer trandus</i>) | | X | | X | Beaver Creek and Slate Creek |
| | | Fisher (<i>Martes pennanti</i>) | | | | X | Slate Creek and Sullivan Lake |
| | | Bald eagle (<i>Haliaeetus leucocephalus</i>) | X | | X | | Pend Oreille River south of Metaline Falls and Sullivan Lake |
| | | Bull trout (<i>Salvelinus confluentus</i>) | X | | | | Pend Oreille River, Slate Creek, S. Salmo River, Bench Creek, Lower reach of Onion Creek, lower reach of Boulder Creek, Deep Creek, Big Sheep Creek and Deadman's Creek |
| | | Lynx (<i>Lynx canadensis</i>) | X | | X | | Flume Creek |
| | | Lynx (<i>Lynx canadensis</i>) | X | | X | | Crowell Mtn |
| | | Grizzly bear (<i>Ursus arctos</i>) | X | | | X | Flume Creek |
| | | Bull trout (<i>Salvelinus confluentus</i>) | X | | | | Pend Oreille River, Slate Creek, S. Salmo River, Bench Creek |
| | | Woodland caribou (<i>Rangifer trandus</i>) | | X | | X | Beaver Creek, Slate Creek |
| | | Fisher (<i>Martes pennanti</i>) | | | | X | Slate Creek |

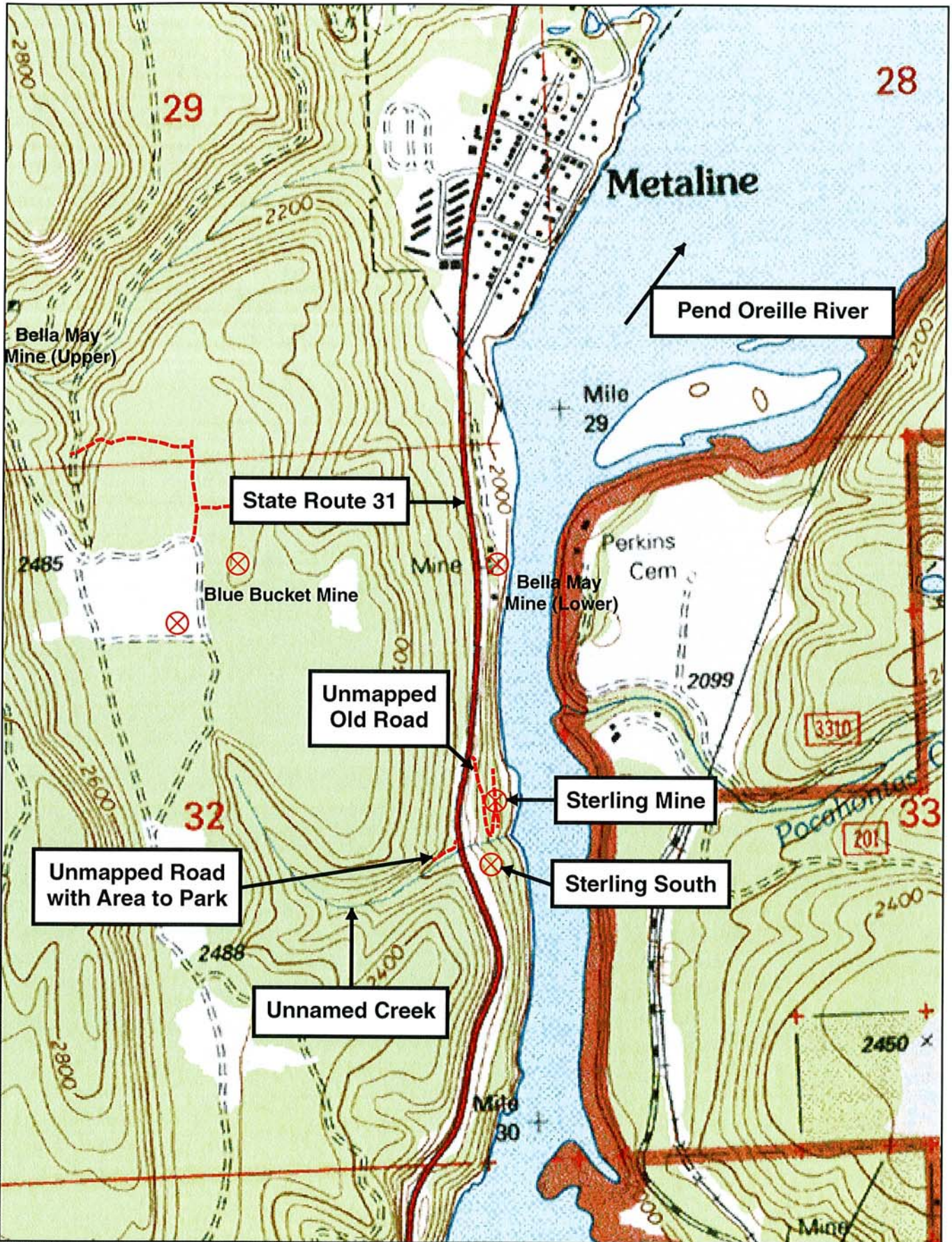
Site Location Map
Sterling Mine



Source: Base map prepared from USGS 7.5 Minute Series (Topographic) Abercrombie Mtn. Quadrangle (1992), Boundary Dam Quadrangle (1992), Ione Quadrangle (1992), Metaine Quadrangle (1992), Metaine Falls Quadrangle (1992), and Scotchman Lake Quadrangle (1992).




**Vicinity Map
Sterling Mine**



J:\Projects\Ecology\AML\GIS\Report Maps\Vicinity Maps\Sterling VM.mxd

Source: Base map prepared from USGS 7.5 Minute Series (Topographic) Metaline Quadrangle (1992).

0 500 1,000
Scale in Feet

 Mine Location Visited in Field



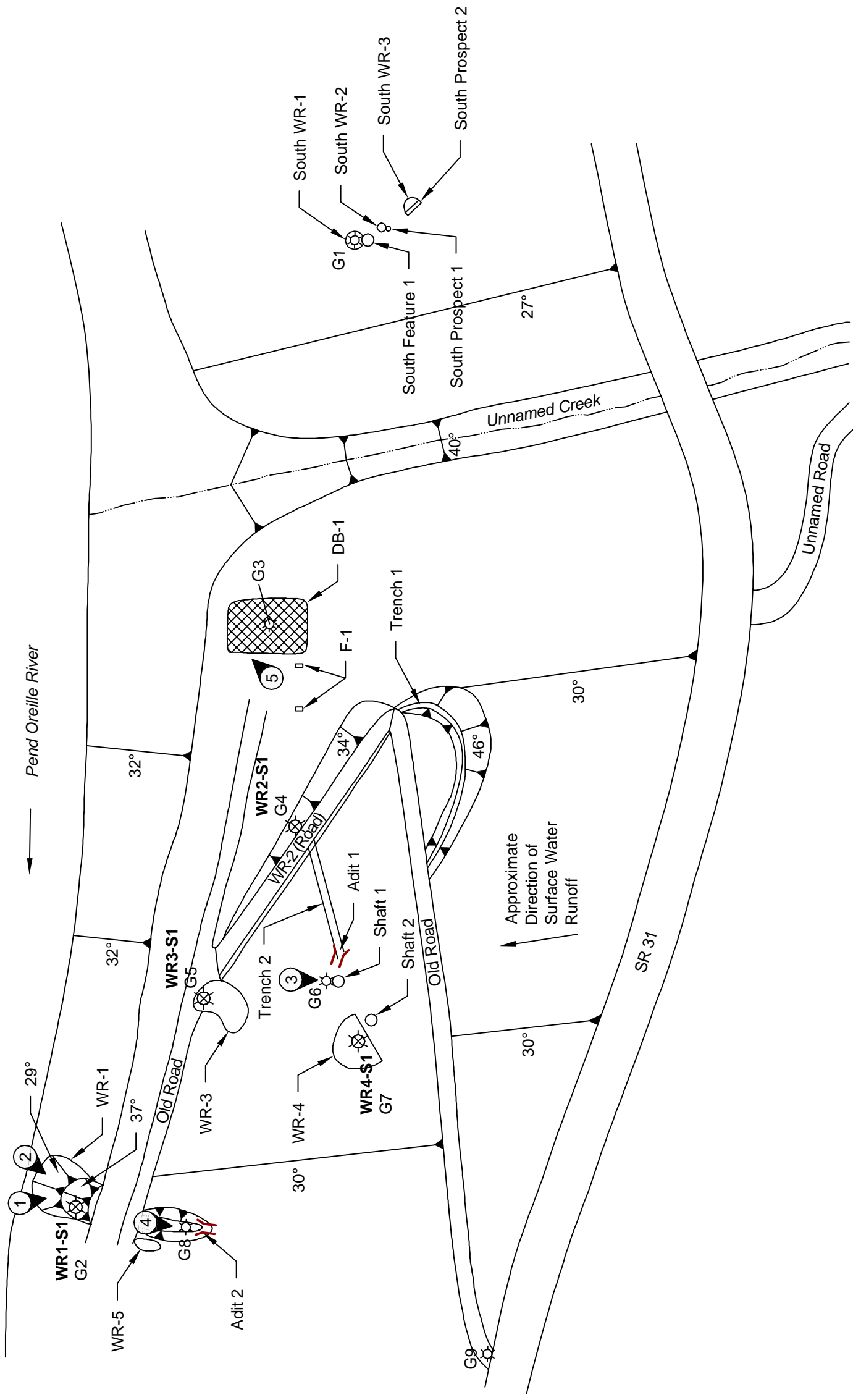
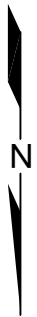
HARTCROWSER
17274-01 (ST) 6/07
Figure 2

Standard Key for Site Plan

Sterling Mine

| | | |
|--------|--|--|
| G2 | | GPS Data Point Location and Number |
| WR1-S2 | | Soil or Waste Rock Sample Location and Number (Note: Site name prefix also part of sample number) |
| W1 | | Water Sample Location and Number |
| 45 | | Composite Sediment Sample Location and Number |
| | | Adit |
| | | Shaft |
| | | Prospect/Pit |
| | | Building/Structure |
| | | Seep |
| | | Drainage Channel |
| | | Intermittent/Seasonal Drainage Channel |
| | | Wood Debris |
| | | Metal Debris |
| | | Soil or Seep Staining |
| | | Other Feature |
| | | Groundwater Well |
| | | Photo Location, Number, and Direction |
| A | | Approximate Cross Section Location and Designation |
| A' | | |

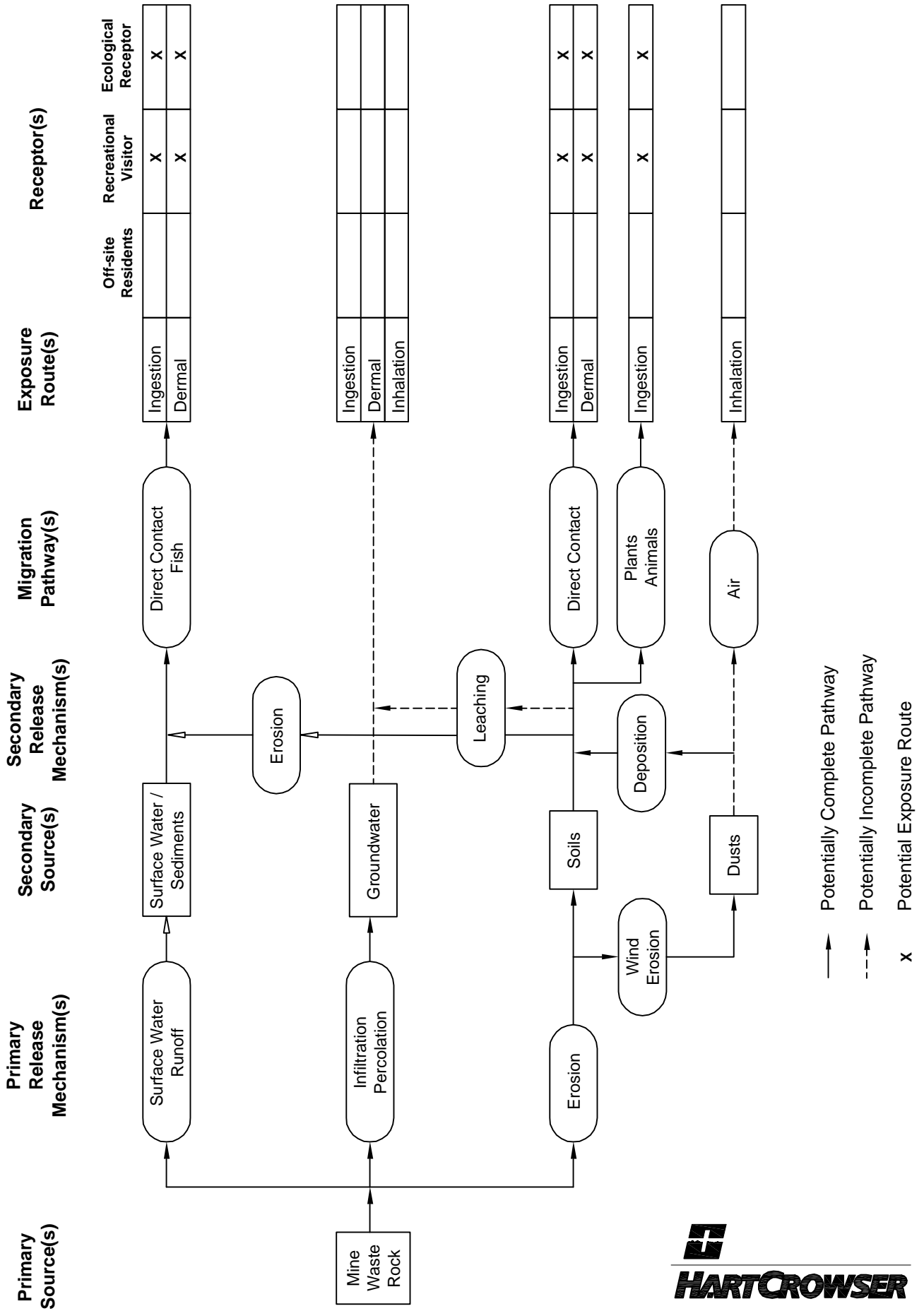
**Plan View
Sterling Mine**



EAL 06/14/07 1727400-107.dwg

Source: Base map prepared from field notes dated 05/17/07.

Mine Waste Rock Conceptual Site Model for Human and Ecological Risk Sterling Mine



**APPENDIX A
FIELD DOCUMENTATION**

AML Feature Inventory

Feature ID: SR-1002
 Surveyor(s): MTSAD/ML

USGS Quad: Metairie

Survey Date: 5-17-07

Directions to Site (from a main road or landmark appearing on map)

Partoff on road (Road Int. WPAZ) - Creek in ~200' South
can be down creek or ~300' N along STH 31 is a road
leading to the more area - have to hike in

Terrain Slope (Circle where applicable): 1. Flat 2. Vertical slope (if angled, report approx slope angle)
 slope angle: 30 deg

Physical Features / Sources

Mine Openings: shaft(s) pit(s) other (explain)

Openings Type / Control ID: shaft(s) pit(s) other (explain)

Dimensions (ft): nominal water present

Flow Rate (gpm): flow rate other (explain)

Flow Rate (l/min): flow rate other (explain)

Flow Rate (m³/h): flow rate other (explain)

Flow Rate (m³/d): flow rate other (explain)

Flow Rate (m³/wk): flow rate other (explain)

Flow Rate (m³/mo): flow rate other (explain)

Flow Rate (m³/yr): flow rate other (explain)

Flow Rate (m³/dec): flow rate other (explain)

Flow Rate (m³/cent): flow rate other (explain)

Flow Rate (m³/mill): flow rate other (explain)

Flow Rate (m³/decade): flow rate other (explain)

Flow Rate (m³/century): flow rate other (explain)

Flow Rate (m³/millennium): flow rate other (explain)

Flow Rate (m³/epoch): flow rate other (explain)

Flow Rate (m³/era): flow rate other (explain)

Flow Rate (m³/age): flow rate other (explain)

Flow Rate (m³/period): flow rate other (explain)

Flow Rate (m³/epoch): flow rate other (explain)

Flow Rate (m³/era): flow rate other (explain)

Flow Rate (m³/age): flow rate other (explain)

Flow Rate (m³/period): flow rate other (explain)

Flow Rate (m³/epoch): flow rate other (explain)

Flow Rate (m³/era): flow rate other (explain)

Flow Rate (m³/age): flow rate other (explain)

Flow Rate (m³/period): flow rate other (explain)

Flow Rate (m³/epoch): flow rate other (explain)

Flow Rate (m³/era): flow rate other (explain)

Flow Rate (m³/age): flow rate other (explain)

Flow Rate (m³/period): flow rate other (explain)

Flow Rate (m³/epoch): flow rate other (explain)

Flow Rate (m³/era): flow rate other (explain)

Flow Rate (m³/age): flow rate other (explain)

Flow Rate (m³/period): flow rate other (explain)

Flow Rate (m³/epoch): flow rate other (explain)

Flow Rate (m³/era): flow rate other (explain)

Flow Rate (m³/age): flow rate other (explain)

Flow Rate (m³/period): flow rate other (explain)

Flow Rate (m³/epoch): flow rate other (explain)

Flow Rate (m³/era): flow rate other (explain)

Flow Rate (m³/age): flow rate other (explain)

Flow Rate (m³/period): flow rate other (explain)

Flow Rate (m³/epoch): flow rate other (explain)

Flow Rate (m³/era): flow rate other (explain)

Flow Rate (m³/age): flow rate other (explain)

Flow Rate (m³/period): flow rate other (explain)

Flow Rate (m³/epoch): flow rate other (explain)

Flow Rate (m³/era): flow rate other (explain)

Flow Rate (m³/age): flow rate other (explain)

Flow Rate (m³/period): flow rate other (explain)

Flow Rate (m³/epoch): flow rate other (explain)

Flow Rate (m³/era): flow rate other (explain)

Animals Present (tick, date, effort)

Photo #

GPS

Passage

Notes

Other (explain)

Other (explain)

Other (explain)

Other (explain)

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Estimated Particle Size

Sample Name(s)

Soil Classification

Notes

Other (explain)

Other (explain)

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Other (explain)

Dimensions in ft

Shape in general

Seepage

Active / Inactive?

Vegetative Cover (mass / brush)

Disturbed

Vegetation

Recent Human Activity (Y/N)

Bottles, Containers

GPS

Sample Name(s)

Soil Classification

Notes

Other (explain)

Other (explain)

Other (explain)

Other (explain)

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Sample Name

Location

GPS Name

GPS Name

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GPS Name

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GPS Name

Sample Name

Location

GPS Name

GPS Name

GPS Name

GPS Name

GPS Name

GPS Name

AML Feature Inventory

Feature ID STC103
 Surveyor(s) MJS & BMK

page 2

Survey Date 5-17-07

Physical Features / Sources (Continued)

Mining Activity-Related Ponds or Liquid Containment Structures:

leach pond(s) tailings pond(s) tailings impoundment(s) other (explain)

| Pond Type / Count ID | Dimensions in ft (L x W x D) | Lined (Y/N) | Liquid Present (Y/N) | pH | Temp in C | Animals Present (e.g. bats, other) | Sample Name(s) | GPS |
|----------------------|------------------------------|-------------|----------------------|----|-----------|------------------------------------|----------------------------|----------------------------|
| <u>None</u> | <u>50 x 30 x 4</u> | <u>N</u> | <u>N</u> | | | <u>N</u> | <u>Butte - LP1 - S1-S2</u> | <u>GS: 1278985, 478985</u> |

Seeps(s) Creek(s) Pond(s) Lake(s)

| Type / Count ID | Location | Sample Name | Flowrate in GPM | pH | Cond in mS | Temp in C | Parameters: |
|--------------------|-----------------------------|------------------------------|-----------------|------------|--------------|-------------|-------------|
| (i.e.) Flume Creek | <u>GPS: 1278498, 478985</u> | <u>Butte - Flume Creek 1</u> | <u>0.1</u> | <u>6.2</u> | <u>0.153</u> | <u>10.9</u> | <u>None</u> |

Unlined pipe see Stealy South notes Penderolle River

Soil Staining Seep Staining

Seasonal Flow Paths or Channels

| Type / Count ID | Location | Color | Distance from Potential Contaminant Source to Receptor | Source & Receptor | Notes |
|-----------------|---------------------------------|---------------------|--|-------------------|------------------------|
| (i.e.) Stain 1 | <u>soil downslope of Adit 1</u> | <u>orange/brown</u> | <u>100' upslope of Flume Creek</u> | <u>fish</u> | <u>ferricrete-like</u> |

Seasonal Flow Paths or Channels

| Count / ID | Water Present (Y/N) | Sample Name | Flowrate in GPM | pH | Cond in mS | Temp in C | Distance from Potential Contaminant Source to Receptor | Source & Receptor |
|-------------------|---------------------|----------------------|-----------------|----|------------|-----------|--|-------------------|
| (i.e.) Drainage 1 | <u>N</u> | <u>Butte - Sed 1</u> | | | | | | |

Wetlands

| Count / ID | GPS | Flowrate in GPM | pH | Cond in mS | Temp in C | Distance from Potential Contaminant Source to Receptor | Source & Receptor |
|------------------|---------------------------|-----------------|------------|------------|-------------|--|-------------------|
| (i.e.) Wetland 1 | <u>GS: 127856, 478985</u> | <u>1 L/min</u> | <u>6.9</u> | <u>0.2</u> | <u>12.1</u> | <u>50' N of Pond Oreille River</u> | <u>None</u> |

AML Feature Inventory

Survey Date 5-17-07

Feature ID 516109
 Surveyor(s) MIS & BMA

Physical Features / Sources (Continued)

Water Supply Structures: GW Well(s) SW Intake(s) PR Toilet(s) Other (explain)

| Type / ID | Inner Diameter | Depth | Soil Type | Population Served | Distance from Potential Contaminant Source | GPS | General Location |
|-------------|----------------|-------|-----------|-------------------|--|-----|------------------|
| <u>None</u> | | | | | | | |

| AMI Present (Y/N) | AMI Footprint In R ² | Waste Associated with MI | Chemicals Associated with MI | GPS |
|-------------------|---------------------------------|--------------------------|------------------------------|-----|
| | <u>None</u> | | | |

Buildings / Structures

| Count / ID | Suspected Bldg. Use | Bldg. Condition | GPS | Comments |
|------------------------------|---|-----------------|-----|----------|
| <u>See debris 1 notes</u> | | | | |
| <u>F-1 - Other Buildings</u> | <u>Found. 1 - South Found. 4x2x25 w/rocks/bolts 17 top 2 north found. box conc. struct - vegetation been found on</u> | | | |

Liquid or Waste Containment Structures:

drum(s) tank(s) other (explain)

North Found. - 3.5 x 3.5 x 2 - center hollow 2' cube.

| Type / ID | Count | Volume in Gal. | Condition | Suspected Contents |
|-----------------|-----------------|-----------------|----------------------------|--------------------|
| <u>Cut drum</u> | <u>2 halves</u> | <u>55 total</u> | <u>dry, rusted, no lid</u> | <u>unknown</u> |

→ adj. to north found.

Debris / Refuse: Number assay equip & retools drum(s) scrap lumber scrap metal machinery other (explain)

| Type / ID | Number | Size | Location | Description |
|-------------------------------------|--------|----------------------|----------------------|--|
| <u>(a) scrap lumber & metal</u> | | | | |
| <u>debris 1</u> | | <u>5' x 10' x 1'</u> | <u>top of rail</u> | <u>lumber (some charred), nails, stakes, and sheet metal</u> |
| | | <u>50 x 30 x 25</u> | <u>near debris 1</u> | <u>timbers, SCRAP metal, rail car connection parts,</u> |
| | | | | <u>timbers scattered throughout</u> |

timbers w/ stakes sticking out

Other Observations:

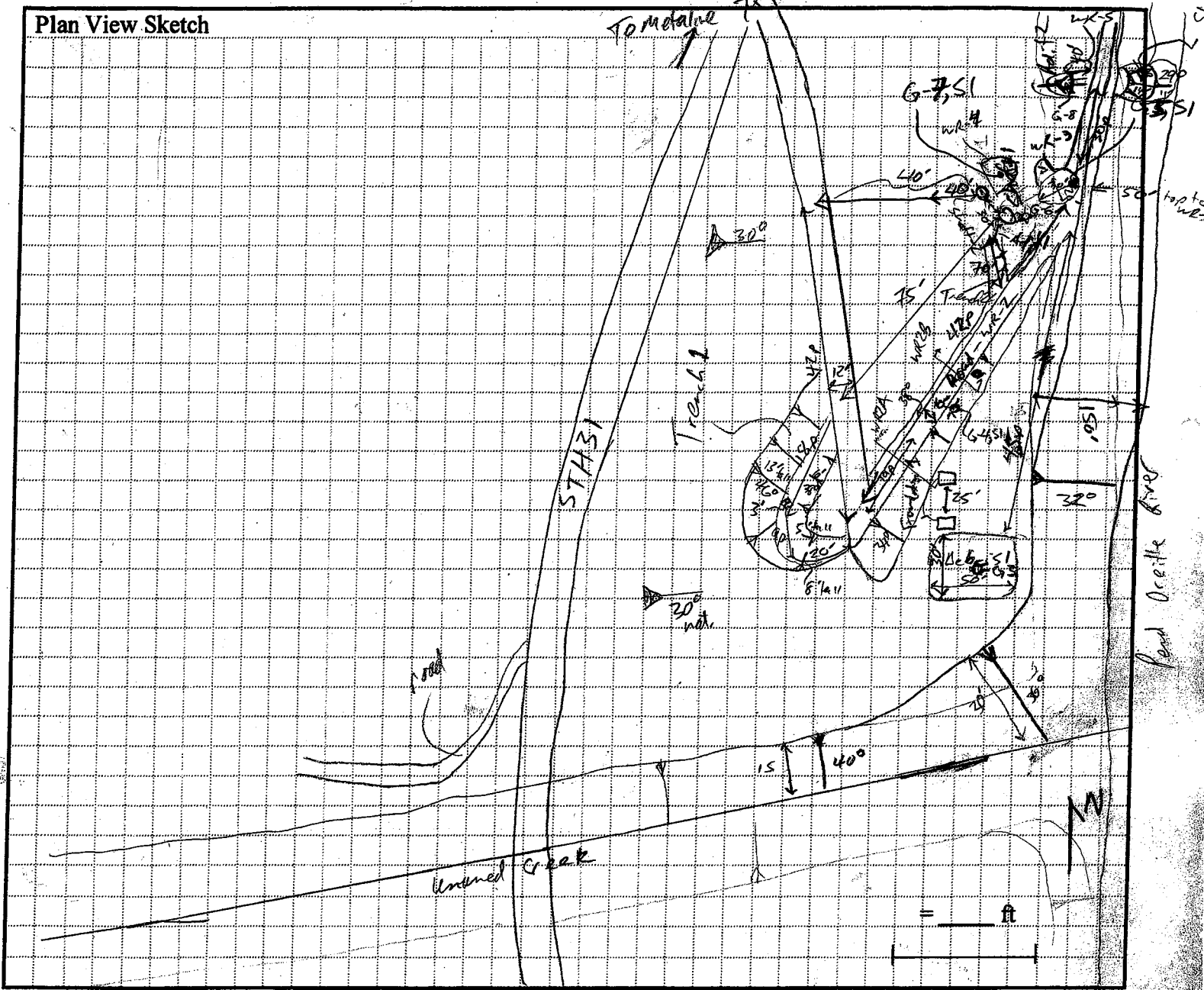
| Ground Cover | Vegetation | Evidence of Wildlife or Recent Human Activity | Description | Quantity | Endangered / Threatened? | Disturbed / Vegetation? | Comments |
|--------------|------------|---|--|----------|--------------------------|-------------------------|----------|
| | | | <u>Over burden soil & earth work</u> | | | | |
| | | | <u>Trees (evergreen, mainly spruce)</u> | | | | |
| | | | <u>Animal scat (dog) present site</u> | | | | |
| | | | <u>no evidence of recent human activity @ site</u> | | | | |

debris 1 (cont'd) - collapsed rail car structure (?) @ E end of debris 1, SCRAP metal duct pipe on N end of debris 1
Rail car hitch in debris 1 & below Foundations of F-1, rusted 3/4" steel cable thru F-1

AML FEATURE INVENTORY/MONITORING FIELD FORM

| | |
|------------|----------------------|
| Feature ID | Sterling |
| Date | 5-17-07 |
| Weather | Partly Hazy, 70-80°F |

Plan View Sketch



INCLUDE THE FOLLOWING IN THE FIELD SKETCH FOR:

North Arrow

Scale Bar

Photo Location(s) and View Direction(s)

Sample Location(s) and ID(s):

W-# Water

S-# Soil

T-# Tailings

R-# Rock (Waste)

O-# Ore

S-# Other (Describe)

FOOTPRINT(S) OF:

MILLS

BUILDINGS

STRUCTURES

MINING-RELATED PILES

OTHER

SURFACE WATER (PONDS, SEEPS, ETC.)

GPS Collection Location *

Elevation (Topographic Variation)

Slope Direction

AML Feature Inventory

Feature ID: Section 5 South
Surveyor(s): MJS/BMN

USES Quest: Metaline

Survey Date: 5-17-07

Directions to Site (from a main road or landmark appearing on map):

See map & GPS pts to provide directions
~ 100 S of Creek & rd, intersection & ~ 200' E of STA 31
(STA 31)

Terrain Slope (Circle where applicable): 1. Flat 2. Vertical 3. Sloped (if sloped, report approx slope angle) slope angle: 27 deg

Physical Features / Sources
Mine Openings: shaft(s) adit(s) pit(s) other (explain)

| Sampling Type / Count ID | Open / closed / collapsed / flooded | Lithol. | Dimensions in ft | Elevation in GPM | Parameters | |
|--------------------------|-------------------------------------|---------|------------------|------------------|------------|-----------|
| | | | | | pH | Temp in C |
| Feature 1 | Open | Clay | 5 x 10 x 8 | 0.5 L/min | 3.4 | 14.7 |
| Feature 2 | Open | Clay | 2 x 8 x 25 | | | |
| Feature 3 | Open | Clay | 2 x 8 x 25 | | | |
| Feature 4 | Open | Clay | 2 x 8 x 15 | | | |

Mining Activity-Related Piles:
 waste rock pile(s) debris pile(s) other (explain)
 slag pile(s) tailings pile(s) Recent Human Activity (N/A)

Disseminated Vegetation: 20% / 30% / 15%
Seepage: active / inactive: N / N
Slope in degrees: 38

| Pile Type / Count ID | Dimensions in ft | Approx. Volume | Vegetation | Seepage | GPS | Sample Material | Soil Classification | Estimated Pile Position |
|----------------------|------------------|----------------|------------|----------|------|------------------|--------------------------------------|-------------------------|
| WR-1 | 10 x 10 x 1 | 34 | N | inactive | GR-1 | Butte - WR1 - S1 | moist, grey, silty, v. sandy, Gravel | 0.5' - 4' |
| WR-2 | 25 x 1 | 28 | N | inactive | GR-1 | WR1-S1 | See Butte notes | |
| WR-3 | 10 x 15 x 3 | 38 | N | inactive | GR-1 | WR1-S1 | Moist, tan, v. silty, gravel, SAND | |

wk1 sample
Slightly redder
comp than
wk2, wk3
but wk1 has
water camp
as wk2&3,
too.

Sample Inventory
Sample Name: Old bottle near road prop 1, WR-2 (not n.n.wy & a but est. 20-30 yrs old from slope/style)

| Sample Name (S1 - Elevation - Sample Number) | Location | GPS Name | North/Easting | Soil Description | Soil # |
|--|---------------------------|----------------------|----------------------|---------------------------------------|-------------|
| WR1-S1 | Southern end of WR-1, top | GR- Butte - WR1 - S1 | GR- 1276956, 4769621 | moist, grey, silty, v. gravelly, Sand | Y, ASTM #10 |
| see prop notes | | | | | |

Miscellaneous Notes:
Feature 1 - possible Adit loc. - currently appears to be non-use from a prospect
Pic 2 - WR-3
Pic 3, 4 - WR-1
Pic 5 - Prop 2
All WR appear to be some mix of overburden soil & top soil
Pic 6 prop 1

AML Feature Inventory

Feature ID Steering South
 Surveyor(s) MIS & BMM

Survey Date 5-17-07

Physical Features / Sources (Continued)

Mining Activity-Related Ponds or Liquid Containment Structures:

- leach ponds(s)
 tailings pond(s)
 tailings impoundment(s)
 other (explain)

| Pond Type / Count ID | Dimensions in ft (L x W x D) | Lined (Y/N) | Liquid Present (Y/N) | pH | Cond in mS | Temp in C | Sample Name(s) | GPS |
|----------------------|------------------------------|-------------|----------------------|----|------------|-----------|----------------------------|----------------------------|
| <u>None</u> | <u>50 x 30 x 4</u> | <u>N</u> | <u>N</u> | | | | <u>Butte - LP1 - S1:S2</u> | <u>G5: 1278965, 476985</u> |

- Seep(s)
 Creek(s)
 Pond(s)
 Lake(s)

| Type / Count ID | GPS | Location | Sample Name | Flowrate in GPM | pH | Cond in mS | Temp in C | Parameters: |
|--|----------------------------|-----------------------------|------------------------------|-----------------|------------|--------------|-------------|-------------|
| <u>Creek to north of mine area - drainage to river not creek</u> | <u>G3: 1278486, 476985</u> | <u>southern site border</u> | <u>Butte - Flume Creek 1</u> | <u>0.1</u> | <u>6.2</u> | <u>0.153</u> | <u>10.9</u> | <u>None</u> |

- Soil Staining
 Seep Staining

Seasonal Flow Paths or Channels

| Type / Count ID | Location | Color | Distance from Potential Contaminant Source to Receptor | Source & Receptor | Notes |
|-----------------|---------------------------------|---------------------|--|-------------------|------------------------|
| <u>None</u> | <u>soil downslope of Adit 1</u> | <u>orange/brown</u> | <u>100' upslope of Flume Creek</u> | <u>fish</u> | <u>ferricrete-like</u> |

Seasonal Flow Paths or Channels

| Count / ID | Water Present (Y/N) | Sample Name | GPS | Flowrate in GPM | pH | Cond in mS | Temp in C | Distance from Potential Contaminant Source to Receptor | Source & Receptor |
|-------------|---------------------|----------------------|----------------------------|-----------------|----|------------|-----------|--|-------------------|
| <u>None</u> | <u>N</u> | <u>Butte - Sed 1</u> | <u>G1: 1278945, 476985</u> | | | | | <u>discharges into Flume Creek</u> | <u>fish</u> |

Wetlands

| Count / ID | GPS | Flowrate in GPM | pH | Cond in mS | Temp in C | Distance from Potential Contaminant Source to Receptor | Source & Receptor |
|-------------|---------------------------|-----------------|------------|------------|-------------|--|-------------------|
| <u>None</u> | <u>G7: 127856, 476985</u> | <u>1 L/min</u> | <u>5.9</u> | <u>0.2</u> | <u>12.1</u> | <u>50' N of Pend Oreille River</u> | <u>None</u> |

AML Feature Inventory

Feature ID Sterling South
 Survey Date 5-17-07
 Surveyor(s) M. T. S. B. M.

Physical Features / Sources (Continued)

Water Supply Structures: GW Well(s) SW Intake(s) Pit Toilets Other (explain) _____
 Distance from Potential Contaminant Source _____

| Type / ID | Inner Diameter | Depth | Soil Type | Population Served | GPS | General Location |
|-------------|----------------|-------|-----------|-------------------|-----|------------------|
| <u>None</u> | | | | | | |

Mills

| Mill Present (Y/N) | Mill Footprint in ft.² | Waste Associated with Mill | Chemicals Assoc. with Mill | GPS |
|--------------------|------------------------|----------------------------|----------------------------|-----|
| <u>N/A</u> | | | | |

Buildings / Structures

| Count / ID | Blgd. Footprint in ft.² | Suggested Bldg. Use | Bldg. Condition | GPS | Comments |
|-------------|-------------------------|---------------------|-----------------|-----|----------|
| <u>None</u> | | | | | |

Liquid or Waste Containment Structures:

drum(s) tank(s) other (explain) _____

| Type / ID | Count | Volume in Gal. | Condition | Suggested Contents |
|------------------|----------|----------------|----------------------------|--------------------|
| <u>(e) drums</u> | <u>1</u> | <u>55</u> | <u>dry, rusted, no lid</u> | <u>unknown</u> |
| <u>None</u> | | | | |

Debris / Refuse: heavy equip. & rotors drums(s) scrap lumber scrap metal machinery other (explain) _____

| Type / ID | Size | Location | Description |
|-------------------------------------|----------------------|--------------------|--|
| <u>(d) scrap lumber & metal</u> | <u>5' x 10' x 1'</u> | <u>lap of mill</u> | <u>lumber (some charred), reils, staves, and sheet metal</u> |
| <u>None</u> | | | |

Other Observations:

| Ground Cover | Vegetation | Evidence of Wildlife or Recent Human Activity | Description | Quantity | Endangered / Threatened / Sensitive? | Distributed / Uncommon? | Comments |
|--------------|------------|---|---|----------|--------------------------------------|-------------------------|---|
| | | | <u>Forest - dirt path - 100' x 100'</u> | | | | <u>Forest - dirt path - 100' x 100'</u> |
| | | | <u>Washed - debris - 100' x 100'</u> | | | | <u>Washed - debris - 100' x 100'</u> |
| | | | <u>Use stream nearby, some debris nearby - but not @ site</u> | | | | <u>Use stream nearby, some debris nearby - but not @ site</u> |

Native soil - light gray brown silty sand - A.H. Area and piles

05.10.07 LEAD KING

- G1 @ PROSPECT 1
↳ VERT CUT (SMALL)
W/ SMTH WIRE PILE
- G2 @ SHAFT 1
↳ MAIN SHAFT
- G3 @ LEAD KING - WRL-51 SAMPLE
↳ UPPER SAMPLE
↳ DRY, GREY, SL SILTY,
SANDY GRAVEL W/
1" - 3" COBBLES
- G4 @ LEAD KING - WRL-52 SAMPLE
↳ LOWER SAMPLE
↳ DRY, BROWN, SILTY,
SANDY GRAVEL W/
1" - 3" COBBLES
- G5 @ INT OF LEAD KING
↳ TURNOFF & BOUNDARY R.

05.10.07

STERLING MINE

- G1 @ ~~PROSPECT 1~~
↳ ~~VERT CUT (SMALL)~~
~~W/ SMTH WIRE PILE~~
- G2 @ ~~SHAFT 1~~
↳ ~~MAIN SHAFT~~
- G3 @ ~~LEAD KING - WRL-51 SAMPLE~~
↳ ~~UPPER SAMPLE~~
↳ ~~DRY, GREY, SL SILTY,
SANDY GRAVEL W/
1" - 3" COBBLES~~
↳ ~~APPEARS TO BE MOSTLY
TOPSOIL IN #12 STONE~~
- G4 @ ~~LEAD KING - WRL-52 SAMPLE~~
↳ ~~LOWER SAMPLE~~
↳ ~~DRY, BROWN, SILTY,
SANDY GRAVEL W/
1" - 3" COBBLES~~
↳ ~~SOME OXIDIZED WRE ROCK
ON WASTE ROCK PILE.~~
- G5 @ ~~INT OF LEAD KING~~
↳ ~~TURNOFF & BOUNDARY R.~~

DEBRIS PILE 1
↳ MINING STRUCTURES

WRL-51
DAMP, GRAY BROWN, SLTY,
SANDY GRAVEL → (0.1% S1)
ON SIDE OF LOWER MAIN ROADWAY

WRL-51
DAMP, GRAY SL SANDY SANDY,
GRAVEL W/ OCC COBBLE (60)

051707

STERLING CONT.

(66) STERLING SHAFT 1

WR4-S1

MOIST BROWNISH GREY

SL. SILTY, SANDY

GRAVEL w/OCC. CORKLES

(68) STERLING ADID 2

(FEW ROOTS)

5 POINTS

(69) STERLING HALL RD /

WAB1 INT

051807

NANCY CREEK

DIRECTIONS

FROM GRAVEL PIT

ON NANCY CREEK RD

OFF 375

0.3 MI UP TRAIL @

RIGHT ONTO

UNIMPROVED ROAD

LEFT @ FORK @ 0.6 MI

STOP @ 0.8 MI IN

CLEARING

PHOTO LOG

1 SCRAP LUMBER 1

2 " " 2

3 " " 2 (POT. OLD BLUE STAMP)

4 WR2 @

5 ADIT 1

6 SCRAP LUMBER 3

Ecology AML

| Sterling | | | | |
|-----------------|---------------------------|-----------------|----------------|------------------|
| Point | Coordinate Name | Northing | Easting | Elevation |
| G1 | STERLING SOUTH WR1 | 1292545 | 2389468 | 1996 |
| G2 | STERLING WR1 S1 | 1293221 | 2389581 | 2030 |
| G3 | STERLING DEBRIS PILE 1 | 1292793 | 2389503 | 2006 |
| G4 | STERLING WR2 S1 | 1292859 | 2389474 | 2044 |
| G5 | STERLING WR3 S1 | 1292975 | 2389495 | 2063 |
| G6 | STERLING SHAFT 1 | 1293010 | 2389462 | 2048 |
| G7 | STERLING WR4 S1 | 1293040 | 2389459 | 2048 |
| G8 | STERLING ADIT 2 | 1293174 | 2389480 | 2048 |
| G9 | STERLING HAUL RD/WA31 INT | 1293309 | 2389319 | 2104 |
| | Average | 1292992 | 2389471 | 2043 |

Notes:

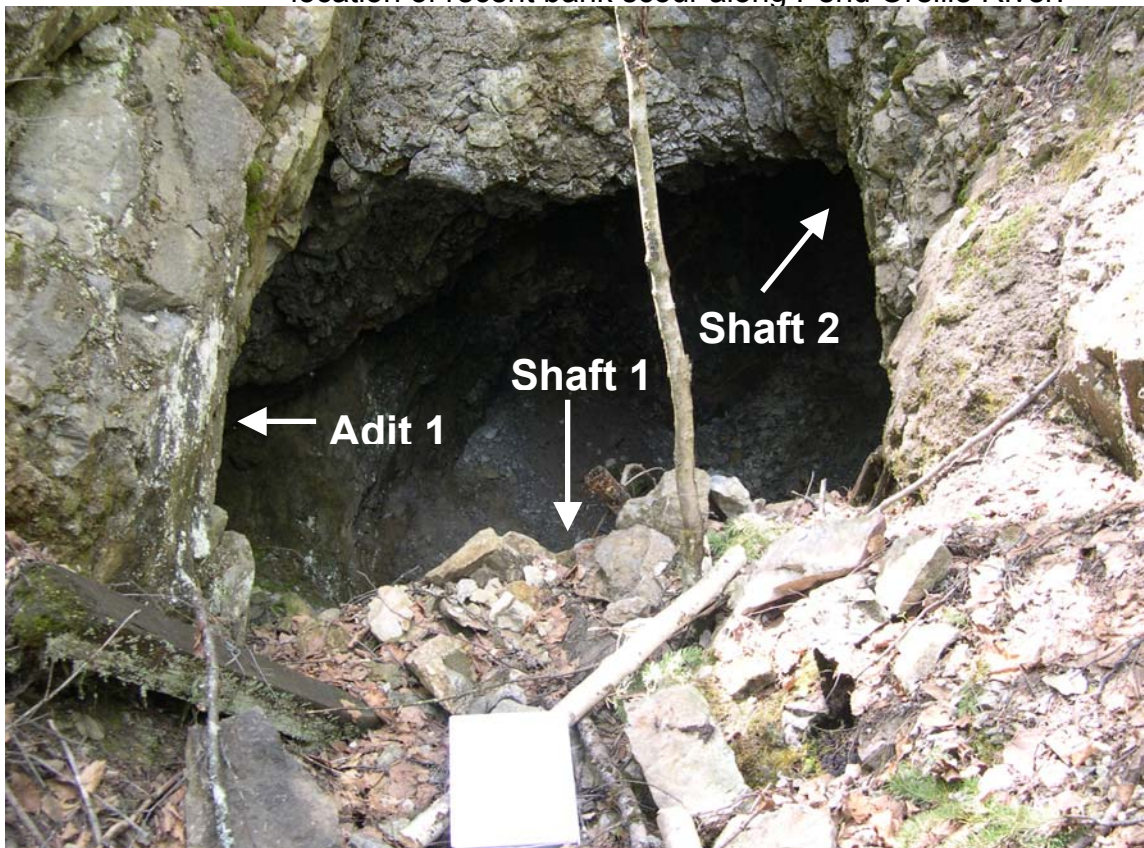
Northings and Eastings are reported in units of US Feet, relative to NAD 83 State Plane Coordinate System, Washington Zone South. Elevation is reported in units of US Feet, relative to Mean Sea Level.



Photograph 1 - View of WR-1. Note waste rock extends beyond bottom of picture frame, where it is covered in grasses and mixed with river sediment.



Photograph 2 - View of WR-1 waste rock mixed with river sediments in location of recent bank scour along Pend Oreille River.



Photograph 3 - View of Shaft 1 showing locations of Shaft 2 and Adit 1.



Photograph 4 - View of Adit 2.



Photograph 5 - View of collapsed structure at east end of DB-1.