

ABBREVIATED PRELIMINARY ASSESSMENT

IDOL CITY MINE



Malheur National Forest
Grant County, Oregon

October 2002

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY.....	ii
1.0 INTRODUCTION.....	1
2.0 SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERISTICS.....	1
3.0 SITE SAMPLING AND TEST RESULTS.....	2
4.0 SUMMARY.....	2
5.0 RECOMMENDATION.....	2

APPENDICES

Appendix A	Abbreviated Preliminary Assessment Checklist
Appendix B	Photographs

EXECUTIVE SUMMARY

Cascade Earth Sciences (CES) performed an Abbreviated Preliminary Assessment for the Idol City Mine (Site) to determine the need for further site characterization. A Niton XL-722S x-ray fluorescent (XRF) unit was used for *in situ* field screening of the waste piles for selected potential metallic contaminants. In addition, an Horiba U-22 was used to assess water quality parameters of adit seep water. However, water and sediment samples were not collected as part of the assessment.

Two metals exceeded the 2002 EPA Region IX Industrial Preliminary Remediation Goals (PRG). The lead PRG [750 milligrams per kilogram (mg/kg)] was exceeded in two samples analyzed at the Site, and seven samples analyzed from the Site exceeded the arsenic cancer endpoint PRG (1.6 mg/kg).

Based on the *in situ* screening of waste rock with the Niton XRF unit and the proximity of the waste piles to the Gold Gulch drainage and Trout Creek, a Site Inspection (SI) is warranted. As part of the SI, surface water and pore space water samples should be collected from both the Gold Gulch drainage and Trout Creek. In addition to analyzing the water samples for the EPA target analyte list (TAL) for total metals, field parameter readings pH, conductivity, turbidity, dissolved oxygen, temperature, total dissolved solids, and oxygen reduction potential should be collected. Benthic and sediment samples should also be collected at surface water sampling locations and analyzed for the TAL for total metals. The waste rock piles should be sampled with depth in order to determine the lateral and vertical extent of impacted material. Background soil samples should also be collected from undisturbed upgradient areas. All soil and waste rock samples should be analyzed for the TAL for total metals, acid-base accounting (ABA), and pH. In addition, a wildlife, plant and fisheries survey should be conducted to determine what effects, if any, the Site has had on ecological receptors.

ABBREVIATED PRELIMINARY ASSESSMENT IDOL CITY MINE

1.0 INTRODUCTION

An Abbreviated Preliminary Assessment (APA) was performed at the Idol City Mine by Cascade Earth Sciences (CES) in accordance with the EPA “Guidance for Performing Preliminary Assessments Under CERCLA”, EPA “Improving Site Assessment: Abbreviated Preliminary Assessments” of 1999, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the National Contingency Plan as outlined in 40 CFR Parts 300.410(c)(1)(i-v).

The purpose of this investigation was to determine whether or not there is a potential for a release of contaminants to the environment and/or to human health. The purpose of an APA is to determine whether further site characterization is warranted. A Niton XL-722 Dual Source x-ray fluorescent (XRF) and Horiba U-22 were utilized to help in the preliminary screening.

2.0 SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERISTICS

The Idol City Mine (Site) is located approximately 20 miles northeast of Burns, Oregon on Forest Service Road (FR) 3935-630. The Site is accessed from the east by entering FR 630 from FR 600. The remainder of the Site occupies the Gold Gulch drainage in a generally southern direction for a distance of approximately 0.8 miles. All Site features observed were in or on the banks of the drainage.

The legal description for the site is; Latitude: 43°46’41”, Longitude: 118°53’30”, Section 4 and 9, T21S, R32E, USGS 7 ½ minute quadrangle map – Devine Ridge North. The Site is situated in the Gold Gulch drainage near the confluence with Trout Creek. The Site is located in the Harney Mining District (aka, Idol City – Trout Creek District).

The Site consists of an apparent flooded shaft, an open adit (Adit 1), a partially collapsed adit (Adit 2), two collapsed adits (Adit 3 and Adit 4), a number of apparent trenches or cuts, in excess of ten waste piles, ponds, buildings, collapsed structures, a head frame, an abandoned truck, and other debris. In general from north to south the Site consists of:

- Two buildings are located at the north end of the Site near the confluence of Trout Creek and the Gold Gulch drainage and near the junction of FR 630 with FR 600.
- A waste rock pile is located east of the building on the south side of FR 630.
- Adit 2, which is partially collapsed, located on the east side of FR 630 south of the buildings (Photograph 1).
- Southeast of the shaft is a small trench with a wooden portal and a small waste rock pile. A garbage dump is located across the road to the east from the small trench.
- The shaft and head frame are located southwest of Adit 3, which is collapsed, and adjacent to the Gold Gulch drainage. The shaft is flooded and appears collapsed (Photograph 2).
- Several waste rock piles are located north of the shaft and adjacent to the Gold Gulch drainage. Some small waste rock piles and a prospect opening toward the creek are located on the west side in this area as well.
- Adit 3, which is either a prospect or collapsed adit, is located east of the shaft, opening toward the Gold Gulch drainage.
- A partially collapsed log cabin is located south of Adit 3. A small prospect is present immediately north of the cabin, opening toward the drainage.
- A large waste rock pile is located west of the cabin and adjacent to the drainage (Photograph 3). Another large waste rock pile is located just across the drainage.
- A small shack and an abandoned truck are located approximately 100 feet south of the waste piles.

- An apparent trench is present approximately 150 feet south of the truck. Water was observed seeping from this trench and forming a small pool.
- The next several hundred feet of the drainage includes a number of ponds, likely related to placer mining, and prospects into the hillside. The majority of the prospects are on the east side of the Gold Gulch drainage with no obvious tailings associated with them.
- Approximately ½ mile south of the shaft, an apparent collapsed adit (Adit 4) is present on the east side of the drainage. Waste rock from the adit extent across the drainage and have been cut by the drainage. A small seep was observed exiting the collapsed portal and draining toward the drainage (Photograph 4).
- An open adit (Adit 1) is present on the west side of the drainage approximately 0.8 mile from the junction with FR 600. The adit is on the west side of FR 630 with a waste rock pile and collapsed structure on the east side. The structure appears to have been built on a portion of the waste rock pile. No other significant structures or mining-related works (i.e., trenches, waste piles, adits, etc.) were observed south of this point.

Approximately five acres are disturbed on the Site according to the USFS survey (USFS, 2001); however, based on CES's assessment, it appears that approximately 10-15 acres are disturbed.

According to *Gold and Silver in Oregon* (Brooks and Ramp, 1968), a small amount of underground development was conducted at the Idol City Mine, but most of the production is a result of placer mining the valley fill in the Gold Gulch drainage. A total of approximately \$50,000 has been produced since discovery in 1891.

The waste piles are from hardrock mining and range from light yellow to gray in color. The country rock is a porphyritic andesite. Mineralization is limited to a shear zone in which the andesite has been altered or bleached for a distance of at least one mile (Brooks and Ramp, 1968). The commodity is gold.

Currently, the site is inactive.

3.0 SITE SAMPLING AND TEST RESULTS

A Niton XL-722S Dual Source XRF was used to assess the waste piles for potential metals contamination. *In situ* testing was performed on the Site per EPA Method 6200. Surface soils were removed to approximately 4 to 6 inches below grade in order to get below highly oxidized surface layers. Rocks, debris and other deleterious materials were removed. The soil was worked to gain a flat surface area on which to set the XRF. A total of nine sample points were analyzed from the waste rock pile.

No surface water, sediment, or adit discharge samples were collected and analyzed.

The following constituents exceeded 2002 EPA Region IX PRG industrial levels.

Location	Constituent	Results (mg/kg)	PRG (mg/kg)
Waste Rock Pile 1 (north of shaft)	Arsenic	305	1.6*
Waste Rock Pile 1 (north of shaft)	Lead	1780	750
Waste Rock Pile 3 (at shaft)	Arsenic	562	1.6*
Waste Rock Pile 3 (at shaft)	Lead	1630	750
Waste Rock Pile 6 (west of shaft, across Gold Gulch drainage)	Arsenic	170	1.6*
Waste Rock Pile 8 (east of 2 buildings near Trout Creek)	Arsenic	91	1.6*
Waste Rock Pile 9 (near Adit 1)	Arsenic	83	1.6*
Waste Rock Pile 9 (near Adit 1)	Arsenic	488	1.6*
Waste Rock Pile 10 (near Adit 4)	Arsenic	217	1.6*

* - the cancer endpoint for arsenic is 1.6 mg/kg and the noncancer endpoint for arsenic is 260 mg/kg.

One water quality assessment was collected using an Horiba U-22 from each of the following: shaft, trench south of the shaft, Adit 1, and Adit 4. Water quality parameters assessed were pH, specific conductance, turbidity, dissolved oxygen (DO), temperature, total dissolved solids (TDS), and oxygen reduction potential (ORP). Results of the water quality assessments are presented below.

Parameter	Shaft	Trench	Adit 1	Adit 4 ¹	Unit
pH	7.84	8.8	7.7	8.02	standard units
Specific Conductance	0.505	0.964	1.08	0.782	microsiemens/centimeter
Turbidity	87.4	438	101	-10 ²	nephelometric turbidity units
Dissolved Oxygen	2.86	7.83	2.75	3.51	milligrams per liter
Temperature	5.68	1.64	5.69	4.79	degrees Celsius
Total Dissolved Solids	320	630	700	500	milligrams per liter
Oxygen Reduction Potential	57	16	-12	120	millivolts

¹ - No deep pools of seep water were available for this reading which may affect some results.

² - Reading was flashing and may be incorrect

Based on the assessment, waste material appears to be entering the Gold Gulch drainage and Trout Creek. The ramification from this material entering an aquatic environment is unknown at this time.

4.0 SUMMARY

The Idol City Mine waste rock piles lay adjacent and within the floodplain of the Gold Gulch drainage. The Site is not near any residential areas or drinking water wells.

The constituents of concern that exceeded the 2002 EPA Region IX industrial levels in soil were arsenic and lead. At this time, it is unclear as to any impacts to the aquatic environment.

5.0 RECOMMENDATION

Based on the *in situ* screening of waste rock with the Niton XRF unit and the proximity of the waste piles to the Gold Gulch drainage and Trout Creek, a Site Inspection (SI) is warranted. As part of the SI, surface water and pore space water samples should be collected from both the Gold Gulch drainage and Trout Creek. In addition to analyzing the water samples for the EPA target analyte list (TAL) for total metals, field parameter readings pH, conductivity, turbidity, dissolved oxygen, temperature, total dissolved solids, and oxygen reduction potential should be collected. Benthic and sediment samples should also be collected at surface water sampling locations and analyzed for the TAL for total metals. The waste rock piles should be sampled with depth in order to determine the lateral and vertical extent of impacted material. Background soil samples should also be collected from undisturbed areas. All soil and waste rock samples should be analyzed for the TAL for total metals, acid-base accounting (ABA), and pH. In addition, a wildlife, plant and fisheries survey should be conducted to determine what effects, if any, the Site has had on ecological receptors.

REFERENCES

Brooks, Howard C. and Ramp Len. (1968) *Gold and Silver in Oregon*. State of Oregon Department of Geology and Mineral Industries Bulletin 61.

State of Oregon Department of Geology and Mineral Industries (1941). *Oregon Metal Mines Handbook*. Bulletin No. 14-B.

United States Department of Agriculture, Forest Service. (2001) *Abandoned Mined Lands Work Group Site Descriptions and Data*.

United States Geological Survey, 1988, *Topographic Map of the Vinegar Hill Quadrangle*, USGS, Reston, Virginia

APPENDIX A

ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

This checklist can be used to help the site investigator determine if an Abbreviated Preliminary Assessment (APA) is warranted. This checklist should document the rationale for the decision on whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

Checklist Preparer: Dustin Wasley, PE, Managing Engineer November 14, 2002
 (Name/Title) (Date)

P.O. Box 14725, Spokane, WA 99214 509-921-0290
 (Address) (Phone)

DustinW@cascade-earth.com
 (E-Mail Address)

Site Name: Idol City Mine

Site Location: The Mine is located approximately 20 miles northeast of Burns, Oregon on FR 3935-630. The Site is accessed from the east by entering FR 630 from FR 600. The remainder of the Site occupies the Gold Gulch drainage in a generally southern direction for a distance of approximately 0.8 miles.

Legal Description: Latitude: 43°46'41" Longitude: 118°53'30"

Describe the release (or potential release) and its probable nature: The waste rock piles are located adjacent to the shaft and within the floodplain of the Gold Gulch drainage. Seeps were observed emanating from several adits and trenches. The following table outlines the metals that exceed industrial levels of the PRGs.

<u>Location</u>	<u>Constituent</u>	<u>Results (mg/kg)</u>	<u>PRG (mg/kg)</u>
Waste Rock Pile 1 (north of shaft)	Arsenic	305	1.6*
Waste Rock Pile 1 (north of shaft)	Lead	1780	750
Waste Rock Pile 3 (at shaft)	Arsenic	562	1.6*
Waste Rock Pile 3 (at shaft)	Lead	1630	750
Waste Rock Pile 6 (west of shaft, across Gold Gulch drainage)	Arsenic	170	1.6*
Waste Rock Pile 8 (east of 2 buildings near Trout Creek)	Arsenic	91	1.6*
Waste Rock Pile 9 (near Adit 1)	Arsenic	83	1.6*
Waste Rock Pile 9 (near Adit 1)	Arsenic	488	1.6*
Waste Rock Pile 10 (near Adit 4)	Arsenic	217	1.6*

* - the cancer endpoint for arsenic is 1.6 mg/kg and the noncancer endpoint for arsenic is 260 mg/kg.

Part 1 - Superfund Eligibility Evaluation

If All answers are “no” go on to Part 2, otherwise proceed to Part 3	YES	NO
1. Is the site currently in CERCLIS or an “alias” of another site?		X
2. Is the site being addressed by some other remedial program (Federal, State, or Tribal)?		X
3. Are the hazardous substances potentially released at the site regulated under a statutory exclusion (i.e., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)?		X
4. Are the hazardous substances potentially released at the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?		X
5. Is there sufficient documentation to demonstrate that no potential for a release that could cause adverse environmental or human health impacts exist (i.e., comprehensive remedial investigation equivalent data showing no release above ARAR’s, completed removal action, documentation showing that no hazardous substance release have occurred, or an EPA approved risk assessment completed)?		X

Please explain all “yes” answer(s). _____

Part 2 - Initial Site Evaluation

For Part 2, if information is not available to make a “yes” or “no” response, further investigation may be needed. In these cases, determine whether an APA is appropriate. Exhibit 1 parallels the questions in Part 2. Use Exhibit 1 to make decisions in Part 3.

If the answer is “no” to any questions 1, 2, or 3, proceed directly to Part 3.	YES	NO
1. Does the site have a release or a potential to release?	X	
2. Does the site have uncontained sources containing CERCLA eligible substances?	X	
3. Does the site have documented on-site, adjacent, or nearby targets?	X	

If the answers to questions 1, 2, and 3 above were all “yes” then answer the questions below before proceeding to Part 3.	YES	NO
4. Does documentation indicate that a target (i.e., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site?		X
5. Is there an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site?	X	
6. Is there an apparent release and no documented on-site targets or targets immediately adjacent to the site, but there are nearby targets (i.e., targets within 1 mile)?	X	
7. Is there no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site?		X

Notes:

EXHIBIT 1

SITE ASSESSMENT DECISION GUIDELINES FOR A SITE

Exhibit 1 identifies different types of site information and provides some possible recommendations for further site assessment activities based on that information. You will use Exhibit 1 in determining the need for further action at the site, based on the answers to the questions in Part 2. Please use your professional judgment when evaluating a site. Your judgment may be different from the general recommendations for a site given below.

Suspected/Documented Site Conditions		APA	FULL PA	PA/SI	SI
1. There are no releases or potential to release.		Yes	No	No	No
2. No uncontained sources with CERCLA-eligible substances are present on site.		Yes	No	No	No
3. There are no on-site, adjacent, or nearby targets		Yes	No	No	No
4. There is documentation indicating that a target (i.e., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site.	Option 1: APA SI	Yes	No	No	Yes
	Option 2: PA/SI	No	No	Yes	No
5. There is an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site.	Option 1: APA SI	Yes	No	No	Yes
	Option 2: PA/SI	No	No	Yes	N/A
6. There is an apparent release and no documented on-site targets and no documented immediately adjacent to the site, but there are nearby targets. Nearby targets are those targets that are located within 1 mile of the site and have a relatively high likelihood of exposure to a hazardous substance migrating from the site.		No	Yes	No	No
7. There is no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site.		No	Yes	No	No

Part 3 - EPA Site Assessment Decision

When completing Part 3, use Part 2 and Exhibit 1 to select the appropriate decision. For example, if the answer to question 1 in Part 2 was “no,” then an APA may be performed and the “NFRAP” box below should be checked. Additionally, if the answer to question 4 in Part 2 is “yes,” then you have two options (as indicated in Exhibit 1): Option 1 -- conduct an APA and check the “Lower Priority SI” or “Higher Priority SI” box below; or Option 2 -- proceed with a combined PA/SI assessment.

Check the box that applies based on the conclusions of the APA:	
<input type="checkbox"/> NFRAP	<input type="checkbox"/> Refer to Removal Program – further site assessment needed
<input checked="" type="checkbox"/> Higher Priority SI	<input type="checkbox"/> Refer to Removal Program – NFRAP
<input type="checkbox"/> Lower Priority SI	<input type="checkbox"/> Site is being addressed as part of another CERCLIS site
<input type="checkbox"/> Defer to RCRA Subtitle C	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Defer to NRC	
Regional EPA Reviewer: _____	
Print Name/Signature	Date

PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION:

The lead PRGs was exceeded in two waste rock samples and the arsenic PRG was exceeded in seven waste rock samples at the Site. It appears as if small fractions of waste rock are entering the drainage of Gold Gulch and potentially Trout Creek. Therefore, a Site Inspection is warranted.

NOTES:

APPENDIX B

PHOTOGRAPHS



Photograph 1: Idol City Mine. Partially collapsed adit (Adit 2) near north end of Site. (Photograph by John Martin, CES, October 23, 2002, 10:16).



Photograph 2: Idol City Mine. Filled shaft near north end of Site. (Photograph by John Martin, CES, October 23, 2002, 10:13).



Photograph 3: Idol City Mine. Waste rock pile 5, west of collapsed cabin. Note two colors of waste material. (Photograph by John Martin, CES, October 23, 2002, 10:20).



Photograph 4: Idol City Mine. Pond in drainage approximately 0.25 miles south of Road 600. (Photograph by John Martin, CES, October 23, 2002, 10:28).



Photograph 5: Idol City Mine. Partially collapsed adit (Adit 1) approximately 0.8 miles south of Road 600 near end of worked area. (Photograph by John Martin, CES, October 23, 2002, 11:38).