ABBREVIATED PRELIMINARY ASSESMENT

ANTIMONY QUEEN

Okanogan National Forest
Okanogan County, Washington

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EXECUTIVE SUMMARY

The Forest Service performed an Abbreviated Site Assessment for the Antimony Queen mine (Site) to determine the need for further site characterization. The Site waste piles are placed on steep side slopes and a portion are located within the Gold Creek floodplain. A Niton XRF unit was used for In Situ field screening of the waste piles for any potential contaminants. Water and sediment samples were not collected.

Three elements exceeded EPA Region IX Preliminary Remediation Goals (PRG) as to acceptable industrial levels in soil. The elements were arsenic, antimony and nickel. It is apparent material is moving into Gold Creek from erosion forces.

Based on the proximity of the Site to Gold Creek and to residential areas approximately one mile downstream from the Site, it is recommended a Site Inspection be performed.

ABBREVIATED PRELIMINARY ASSESSMENT
ANTIMONY QUEEN

1.0 INTRODUCTION

An Abbreviated Preliminary Assessment (APA) was performed by the US Forest Service 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 XRF 700 Series was utilized to help in the preliminary screening of this site.

2.0 SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERISTICS

The Antimony Queen (Site) is located approximately 5 miles southwest of Carlton, WA, on Forest Service Road 4340. The legal description for the site is; Latitude: 48°06'22", Longitude: 120°02'21", Sec 11, T 31 N, R 21 E, USGS Quadrangle Map - Hungry Mountain. The site is situated on steep hillsides adjacent to Gold Creek. The Site is located in the mining district of Methow Squaw Creek.

The Site consists of four adits (Inventory of Washington Minerals: Part II, Metallic Minerals, 1956. Washington Division of Mines and Geology Bulletin 37) of which only the two lowest were located. The lower of these two adits is open and water is draining from its portal. Flow is very low, less than a gallon per minute. The higher adit is caved. The largest waste pile sits at the portals of and directly below these adits. The toe of a smaller waste pile, apparently originating from another working higher on the hillside, lies upstream from the main waste pile. Both occupy steep side slopes and lie partially in the flood zone of Gold Creek. There are no structures, other than the adits, in the area. Accessing the site requires crossing Gold Creek on foot as there are no bridges or roads on the Site. Approximately two acres are disturbed on the Site.

"A small amount of ore was extracted and may have been shipped in 1906. About 10 years later, 1000 tons of stibnite ore and several hundred tons of antimony oxide, which had been manufactured in a small plant near the mine, were shipped. About 2/3 of a carload of ore was shipped in 1941. Development includes three main adits and about 1000 feet of workings." (ibid., p. 18)

The waste piles are from hardrock mining and contain coloration indicative of high iron content. The host rock is argillite and graywacke. The ore minerals included of stibnite, jamesonite, arsenopyrite, pyrite, galena, sphalerite, and scheelite. Gangue minerals included calcite, pyrite, and pyrrhotite. Commodities for the Site consisted of antimony, gold, lead, zinc, tungsten and arsenic.

Currently, the site is inactive.

3.0 SITE SAMPLING AND TEST RESULTS

A Niton XRF, XL-722S was used to assess the waste piles for potential 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 Niton.

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

The following constituents exceeded EPA Region IX PRG industrial levels.

Location	Constituent	Result (mg/kg)	PRG (mg/kg)
Side Slope of Large Waste Pile	Arsenic	7200	2.7
	Antimony	3920	820
Upper Level of Large Waste Pile	Arsenic	7468	2.7
	Antimony	10,899	820
	Nickel	56,883	41,000
Toe of Small Waste Pile	Arsenic	6816	2.7
	Antimony	1989	820
	Nickel	74,598	41,000

It is apparent that material is entering Gold Creek. The ramification from this material entering an aquatic environment is unknown at this time.

4.0 SUMMARY

A portion of the Antimony Queen waste piles lay within the flood plan of Gold Creek. It was apparent erosion forces are contributing some material to Gold Creek. The site lies approximately one mile upstream from residential areas. It is suspected these residences have domestic water wells.

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

5.0 RECOMMENDATION

Based on the In Situ screening of the waste piles with the Niton XRF unit, the proximity of the waste piles to Gold Creek, the proximity of residences to the Site and EPA's APA Checklist (Appendix A), it is recommended that a Site Investigation (SI) be completed. As part of this investigation, water samples from pore spaces of the stream gravels should be collected as well as sampling of the benthic organisms. In addition to testing water samples from the pore spaces of

the gravels for the presence of metallic elements, water parameters such as pH, conductivity, turbidity, dissolved oxygen, temperature, total dissolved solids, and oxygen reduction potential are required. The waste piles should be sampled at depth and a determination of volumes should be calculated. The water from the lower adit should be sampled and tested for the field parameters as outlined above as well as for elemental contaminants. Acid base accounting (ABA) is required. Sediment samples are to be collected from the center of the stream and preferably at depth and analyzed. Surface water samples are also required.

Appendix A

ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

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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: Dennis Boles, Environmental Engineer (Name/Title) — July 29, 2002 (Date)

Winema NF, 2819 Dahlia St, Klamath Falls, OR 97601 (Address) — 541-219-1201 (Phone)

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Site Name: Antimony Queen

Previous Names (if any): New Deal, Dixie Queen, Reedy, Silver Seal

Site Location: The site is located approximately 5 miles southwest of Carlton on FS Road 4340. The site is located on the riparian area of Gold Creek.

Legal Description: Latitude: 48°06'22" Longitude: 120°02'21"

Describe the release (or potential release) and its probable nature: Gold Creek runs at the toe of the waste pile. The following elements exceed industrial levels of the PRGs and the results and relevant PRG industrial levels are listed in parentheses:

Side Slope of Waste Pile: Arsenic – 7200 mg/kg (2.7 mg/kg), Antimony – 3920 (820)

Upper Level of Waste Pile: Arsenic – 7468, Antimony – 10,899, Nickel – 56,883 (41,000)

Site Adjacent to the Main Waste Pile: Arsenic – 6816, Antimony – 1989, Nickel – 74,598

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

<u>Part 3 - EPA Site Assessment Decision</u>

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:

( ) NFRAP
(X) Higher Priority SI
( ) Lower Priority SI
( ) Defer to RCRA Subtitle C
( ) Defer to NRC
( ) Refer to Removal Program – further site assessment needed
( ) Refer to Removal Program – NFRAP
( ) Site is being addressed as part of another CERCLIS site
( ) Other: _____

Regional EPA Reviewer: _____ _____
Print Name/Signature Date

PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION:

The toe of the waste pile at Antimony Queen is on the floodplain of Gold Creek. It is obvious that material is transported to Gold Creek during rain and snow melt situations. Considering there are residential users within one (1) mile downstream of the site, an SI is warranted for this site. Also, water samples from the pore spaces of the gravels of Gold Creek should be collected both up and down stream from the site and analyzed for impacts to benthic organisms. Arsenic, antimony, and nickel all exceed the EPA Region IX PRGs for industrial levels. ABA should be performed at the site.

NOTES:

The site sits on steep side slopes and getting equipment on the waste piles is impossible. Based on this, hand tools will be required in order to collect soil samples for laboratory evaluation and to determine the volume of material on-site as well as any impact to groundwater in the area.