



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

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C. L. "Butch" Otter, Governor
John H. Tippetts, Director

September 9, 2016

Mr. Ken Marcy
U.S. Environmental Protection Agency Region 10
12928 SW 276th Street
Vashon, WA 98070

Subject: Abbreviated Preliminary Assessment for Volcano and Ajax Mines, Elmore County, Idaho

Dear Mr. Marcy:

The Idaho Department of Environmental Quality (DEQ) completed the enclosed Abbreviated Preliminary Assessment (APA) for the Volcano and Ajax Mines under a cooperative agreement with Region 10 of the United States Environmental Protection Agency (EPA). Under this cooperative agreement, DEQ provides technical support for completion of preliminary assessments.

The Volcano and Ajax Mines are located on private property and this assessment was conducted with landowner permission. The property owner accompanied DEQ during the site visit on July 27, 2016. Collection of samples was determined unnecessary at the sites visited.

Based on current conditions and uses, historic information, data observations made during the site visit, potential pathways of contaminants to receptors, and potential exposures to ecological and human receptors, DEQ recommends **No Remedial Action Planned (NRAP)** at this time.

This PA/SI report can also be found on DEQ's preliminary assessment web page:
<http://www.deq.idaho.gov/preliminary-assessments>.

If you have any questions, please feel free to give me a call at (208) 373-0296 or email dana.swift@deq.idaho.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Dana Swift".

Dana Swift
Mine Waste Project Coordinator

Enclosures

cc: Ann T. Wilson

Abbreviated Preliminary Assessment for Volcano and Ajax Mines

Elmore County



**State of Idaho
Department of Environmental Quality**

September 2016

Acknowledgments

DEQ would like to thank Ms. Ann T. Wilson for permitting access and accompanying DEQ staff to the mine sites.

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Introduction

This abbreviated preliminary assessment (APA) for the Volcano and Ajax Mines in the Volcano Mining District, Elmore County, Idaho provides the rationale for the No Remedial Action Planned (NRAP) determination that no additional assessments or site inspections are necessary at this time. Section 1 provides the APA checklist (modified from EPA, 1999) filled out by the assessor to determine that an APA was warranted. The following sections contain additional relevant information and evidence to support the APA, including historic and geologic information (Section 2); current site conditions and photographs (Section 3); maps (Section 4); and references (Section 5). During this assessment, the Idaho Department of Environmental Quality (DEQ) used references from historic reports which often have different spellings for claim names, town sites, and/or geographic features. DEQ has retained the spelling from the original source document.

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Date of Site Inspection: 7/27/2016

Site Inspectors: Dana Swift and Rob Hanson, DEQ State Office

Site Names: Volcano and Ajax Mines

Previous Names (aka): None

Site Owner: Ann T. Wilson

Site Locations: Volcano Mine: The Volcano Mine is accessible by vehicle. From Mountain Home take Highway 20 north for approximately 40 miles, turn south on County Line School Road for 2.5 miles, and turn right (west) on Hill City Road for seven miles. Turn left on an unnamed dirt road for 2.5 miles, and the site is on the north side of the road. A locked gate is present at the start of the unnamed dirt road. The property owner accompanied access to the sites.

Ajax Mine: The Ajax Mine is accessible by foot approximately 2 miles southwest of the Volcano Mine.

Volcano Mine: Township 2 South, Range 11 East, Section 19

Ajax Mine: Township 2 South, Range 10 East, Section 25

Volcano Mine: **Latitude:** 43.2409473494 **Longitude:** -115.201877843

Ajax Mine: **Latitude:** 43.2167474833 **Longitude:** -115.217677967

Description of release (or potential release) and its probable nature:

The Volcano and Ajax Mines were investigated by DEQ on July 27, 2016 for potential releases of heavy metals or other deleterious materials (such as petroleum products and ore processing chemicals) by surface water, soil exposure, ground water or air pathways. Section 2 of this report contains historical and geological information available for this site. The Idaho Geological Survey (IGS) lists the following commodities for both mines: copper, gold, lead, silver, and zinc. No production information was available from IGS.

Section 1. APA Checklist**Task 1—Superfund Eligibility Evaluation**

Assessor, if all answers are “no,” continue to task 2; otherwise, explain any “yes” answers below and then skip to task 3.

- | | YES | NO |
|--|-------------------------------------|-------------------------------------|
| 1. Is the site currently in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) or an “alias” of another site? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Is the site being addressed by some other remediation program (i.e., federal, state, or tribal)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Are the hazardous substances that may be released from the site regulated under a statutory exclusion (e.g., 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 Nuclear Regulatory Commission, Uranium Mill Tailings Radiation Control Act, or Occupational Safety and Health Administration)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Are the hazardous substances that may be released from the site excluded by policy considerations (i.e., deferred to Resource Conservation and Recovery Act corrective action)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Is there sufficient documentation to demonstrate that there is no potential for a release that constitutes risk to human or ecological receptors (e.g., comprehensive remedial investigation equivalent data showing no release above applicable or relevant and appropriate requirements (ARARs), completed removal action, documentation showing that no hazardous substance releases have occurred, or an EPA-approved risk assessment)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Assessor, please explain all “yes” answer(s):

Regarding question 5: A reconnaissance level preliminary assessment was conducted to determine if any potential sources or associated releases could be identified due to historical mining practices. No concerns were identified during desktop research. No concerns with past mining activities or evidence of other hazardous or deleterious materials were observed during the July 27, 2016 site inspection.

Task 2—Initial Site Evaluation

If information is not available to make a “yes” or “no” response below, further investigation may be needed. In these cases, the assessor should determine whether an APA is appropriate.

If the answer is “no” to <i>any</i> of questions 1, 2, or 3, proceed directly to task 3.	YES	NO
1. Does the site have a release or a potential to release?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Does the site have uncontained sources containing CERCLA-eligible substances?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Does the site have documented on-site, adjacent, or nearby targets?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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

Notes:

At the time of the site inspection, there was no mining related water present and no identified releases or potentials for release at either Volcano or Ajax Mines. The closest residential dwellings are more than four miles northeast of the Volcano Mine site and approximately three miles west of the Ajax Mine site. No on-site targets were identified. The mine sites are located on private property and access is unrestricted. Current land uses include recreational activities and cattle grazing. Potential risks to human or ecological receptors associated with these mine sites are minimal.

Table 1 parallels the questions above and should be used by the assessor to make decisions during task 3. Table 1 identifies different types of site information and provides some possible recommendations for further site assessment activities based on that information. The assessor should use Table 1 in determining the need for further action at the site, based on the answers to the questions in task 2. Assessors should use professional judgment when evaluating a site. An assessor’s individual judgment may be different from the general recommendations for a site given below.

Table 1. Site assessment decision guidelines for a site.

Suspected/Documented Site Conditions	EPA-Recommended Site Assessment Activities
1. There are no releases or potential to release.	APA
2. No uncontained sources with CERCLA-eligible substances are present on site.	APA
3. There are no on-site, adjacent, or nearby targets.	APA
4. There is documentation indicating that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site.	APA → SI or PA/SI
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.	APA → SI or PA/SI
6. There is an apparent release and no documented on-site targets and no documented targets 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 migration from the site.	Full PA
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.	Full PA

Task 3—DEQ Site Assessment Decision

When completing task 3, the assessor should use task 2 and Table 1 to select the appropriate decision. For example, if the answer to question 1 in task 2 was “no,” then an APA is appropriate and the “NRAP” box below should be checked. Additionally, if the answer to question 4 in task 2 is “yes,” then two options are available (as indicated in Table 1): (1) proceed with an APA and check the “Lower Priority SI” or “Higher Priority SI” box below or (2) proceed with a combined PA/SI.

Check the box that applies based on the conclusions of the APA checklist:

- No Remedial Action Planned (NRAP) Defer to NRC
 Higher Priority SI Refer to Removal Program
 Lower Priority SI Site is being addressed as part of another CERCLIS site
 Defer to RCRA Subtitle C Other: _____

DEQ Preparer:

Dana Swift

9/9/2016

Dana Swift

Date

Please explain the rationale for your decision:

As a result of DEQ’s research and site observations, a NRAP designation is recommended for the Volcano and Ajax Mines. Supporting information is included in the following sections.

Section 2. Historic and Geologic Information

The following historical and geological information is quoted directly from an Economic Geology article *Geology and Mineralization of the Volcano District, Elmore County, Idaho* (Allen 1952). The figure referenced in this quote has not been duplicated in this report.

ABSTRACT.

The gold-silver base metal-quartz veins and lodes of the Volcano district are located along the south margin of Camas Prairie in Elmore County, Idaho. The veins and lodes are fissure fillings with minor replacements intimately associated with granophyric dikes, both of an early Tertiary age, and are localized by an east-northeast shear zone in a quartz monzonite facies of the Idaho batholith. The emplacement of the dikes and mineralized veins was controlled by fractures resulting from the Laramide disturbance. The deposits have been exhumed from beneath a cover of Pliocene rhyolite and Pleistocene basalt.

The vein and lode deposits consist of networks of small quartz seams and stringers with a N 60-70° E trend and steep northwest dips along complex fracture zones. The lodes have been worked for gold, although all contain minor amounts of silver, copper, lead, and zinc.

Wall rock alteration appears excessive for the small degree of metallic mineralization. Sericitization, silicification, albitization, and epidotization, in that order, have highly altered the monzonitic rock for distances up to 25 feet adjacent to the veins and lodes.

INTRODUCTION.

The Volcano mining district, which lies astride the boundary between Elmore and Camas Counties, Idaho, about 25 miles by road west-southwest of Fairfield (Fig. 1), embraces an area of more than usual geologic interest, principally because of certain features of its mineralization and attendant wall rock alteration.

The following historical and geological information is quoted directly from a University of Idaho M.S. Thesis *Geology and Ore Deposits of the Volcano District Elmore County, Idaho* (Allen 1940):

Volcano Group

The Volcano property is near the east boundary of Section 13, T. 2 S., R. 10 E.B.M., about one mile directly south of the Glens Ferry road. Development work consists of a tunnel, now caved, that has been driven in a southerly direction from the portal and numerous prospect pits along the outcrop of the main quartz lode. The outcrop trends N. 75 degrees E. and dips 57 degrees north and can be traced for approximately 1000 feet along the strike. The narrow lode is made up of many quartz seams, the widest of which ranges from fifteen to twenty-four inches and contains fine-grained massive quartz that is cut by coarse, comb quartz. With the exception of scattered crystals of pyrite, the veins contain no sulphides.

Ajax Claim

The Ajax claim and tunnel is located on the headwaters of the west fork of King Hill Creek in the northwest quarter of Section 25, T. 2 S., R. 10 E.B.M. A 225 foot cross-cut has been driven in quartz monzonite and fine-grained dike rock. Several quartz stringers three to five inches thick are cut by this work and can also be seen outcropping on the hill above the tunnel. Both vein quartz and adjacent country rock are highly stained with malachite. Small crystals of pyrite and chalcopyrite can be seen in the quartz, but they are not plentiful. Assay returns on the vein quartz and silicified country rock give 0.10 oz. Au and 0.8 oz. Ag a ton.

Section 3. Current Site Conditions and Photographs

Volcano and Ajax Mine site observations and photographs were collected during the DEQ site inspection on July 27, 2016. The weather was approximately 85°F, sunny, and no clouds. No evidence of past mining or mining related water was observed at the Volcano or Ajax Mine sites during the visit. Both sites were well vegetated with occasional rock outcrops. Current land use is cattle grazing. Collection of samples was determined unnecessary at these sites. Photos 1 through 5 show the area surrounding the Volcano Mine site. Photos 6 and 7 show the area surrounding the Ajax Mine site.



Photo 1. Volcano Mine site, looking east.



Photo 2. Volcano Mine site, looking north.



Photo 3. Dry creek bed on Volcano Mine site location, looking southeast.



Photo 4. Volcano Mine site, looking south.



Photo 5. Volcano Mine site, looking west.



Photo 6. Looking southwest at Ajax Mine site.



Photo 7. Looking south at Ajax Mine site.

Section 4. Maps

The Volcano and Ajax Mine sites are located in Elmore County northeast of Mountain Home, Idaho (Figure 1). Specific site location details are included in the above checklist. The generalized geology of this area is shown in Figure 2 with a description included in Section 2 of this report.

Figure 3 shows the surface water, public water systems, and domestic wells within a four mile radius of the mine sites and wetlands within a two mile radius of the sites. There are no public water systems within the four mile radius of either Volcano Mine or Ajax Mine. There are six domestic wells within the four mile radius of Volcano Mine and two domestic wells within the four mile radius of Ajax Mine. There are numerous wetlands within the four mile radius of both mines. King Hill Creek flows through Idaho Department of Lands (IDL) property just south of the parcel where Ajax Mine is located.

Based on ownership and property boundaries obtained from the parcel maps for Elmore County (Idaho State Tax Commission 2016), the nearest residential dwelling is located more than four miles east of Volcano Mine; and the nearest residential dwelling to Ajax Mine is three miles to the west. Occupancy and duration of occupancy of these residences is unknown. No schools or day care facilities are known to be located within four miles of the mine sites. The potential for exposure from the soil and air pathways are minimal.

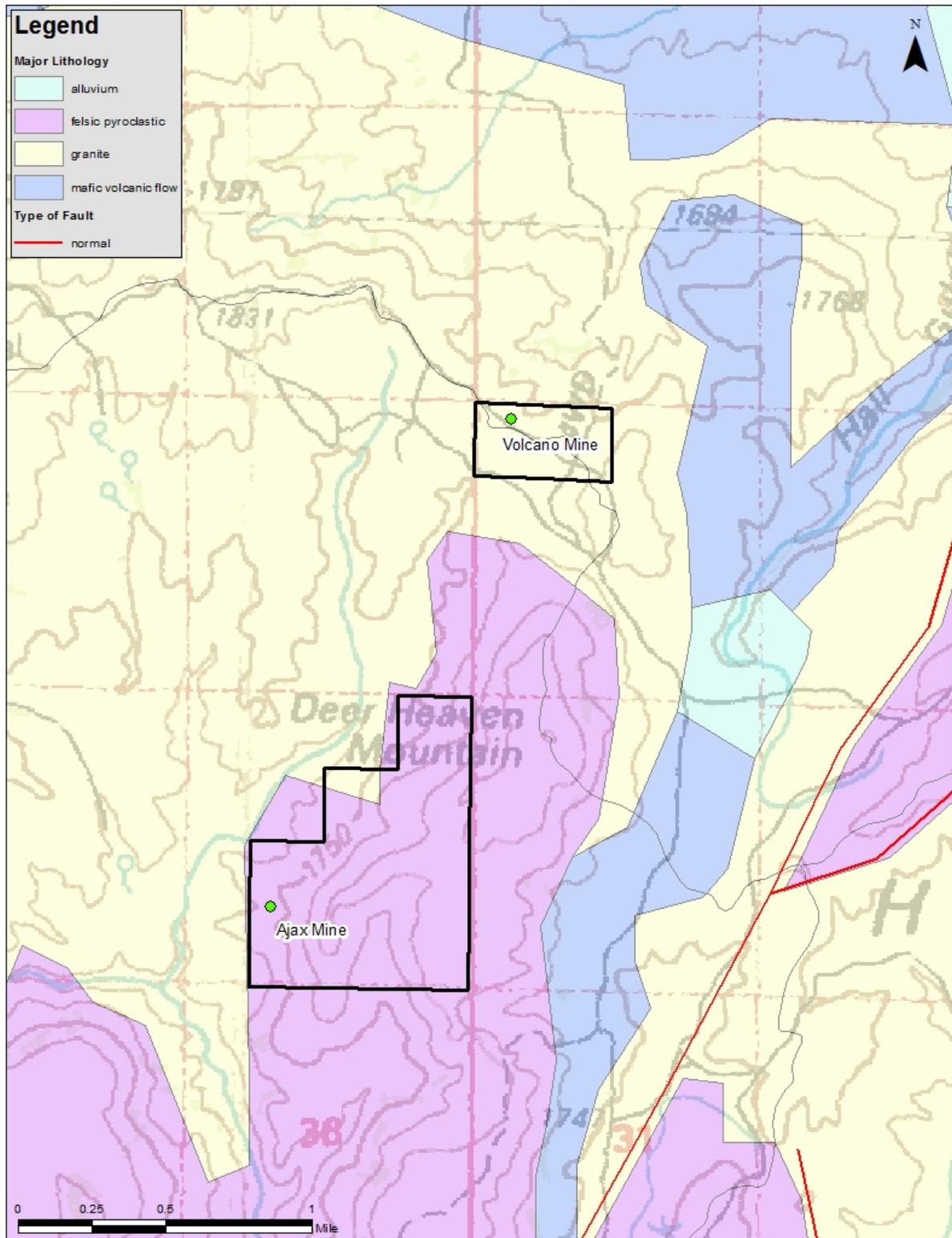


Figure 2. Map of major lithology in the vicinity of Volcano and Ajax Mines.

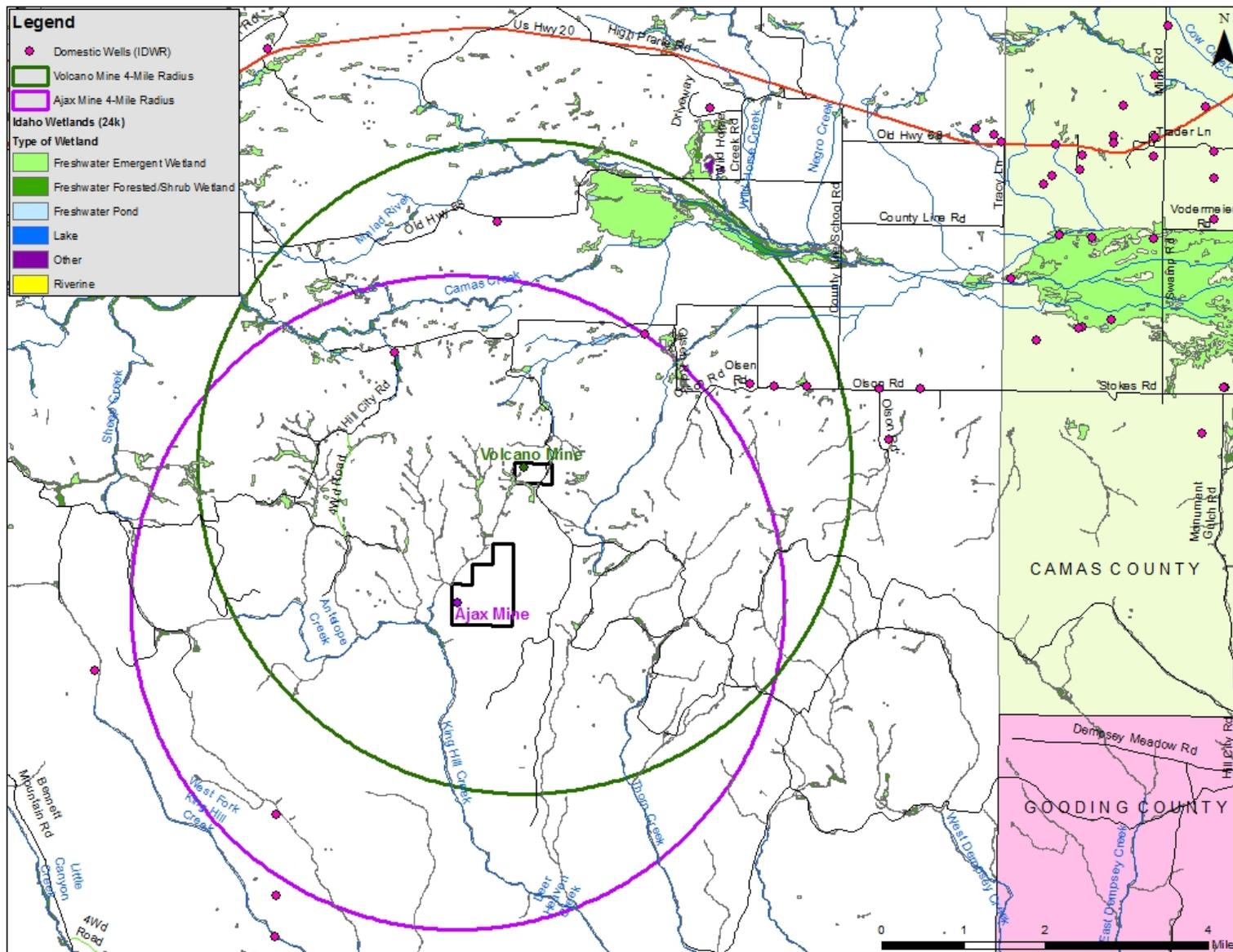


Figure 3. Surface water, domestic wells, and wetlands in the vicinity of Volcano and Ajax Mines.

Section 5. References

- Allen, R.M. 1940. *Geology and Ore Deposits of the Volcano District Elmore County, Idaho*. University of Idaho M.S. Thesis.
- Allen, R.M. 1952. *Geology and Mineralization of the Volcano District, Elmore County, Idaho* Economic Geology Vol. 47, Issue 8, pp. 815-821.
- IGS (Idaho Geological Survey). 2016. <http://www.idahogeology.org/webmap/?show=mines>
- Idaho State Tax Commission. GIS/Cartography: County Parcel Maps. Elmore County. Accessed July 2016. <http://tax.idaho.gov/gis/parcelmaps.cfm>