Second Periodic Review
US EPA Anderson Calhoun Mine Mill

3384 Calhoun Mine Rd, Colville, Stevens County
Facility Site ID: 8070626, Cleanup Site ID: 4519

Toxics Cleanup Program, Eastern Region

Washington State Department of Ecology
Spokane, Washington

October 2023

Document Information

This document is available on the Department of Ecology's US EPA Anderson Calhoun Mine Mill cleanup site page.[1]

Related Information

- Facility Site ID: 8070626
- Cleanup Site ID: 4519

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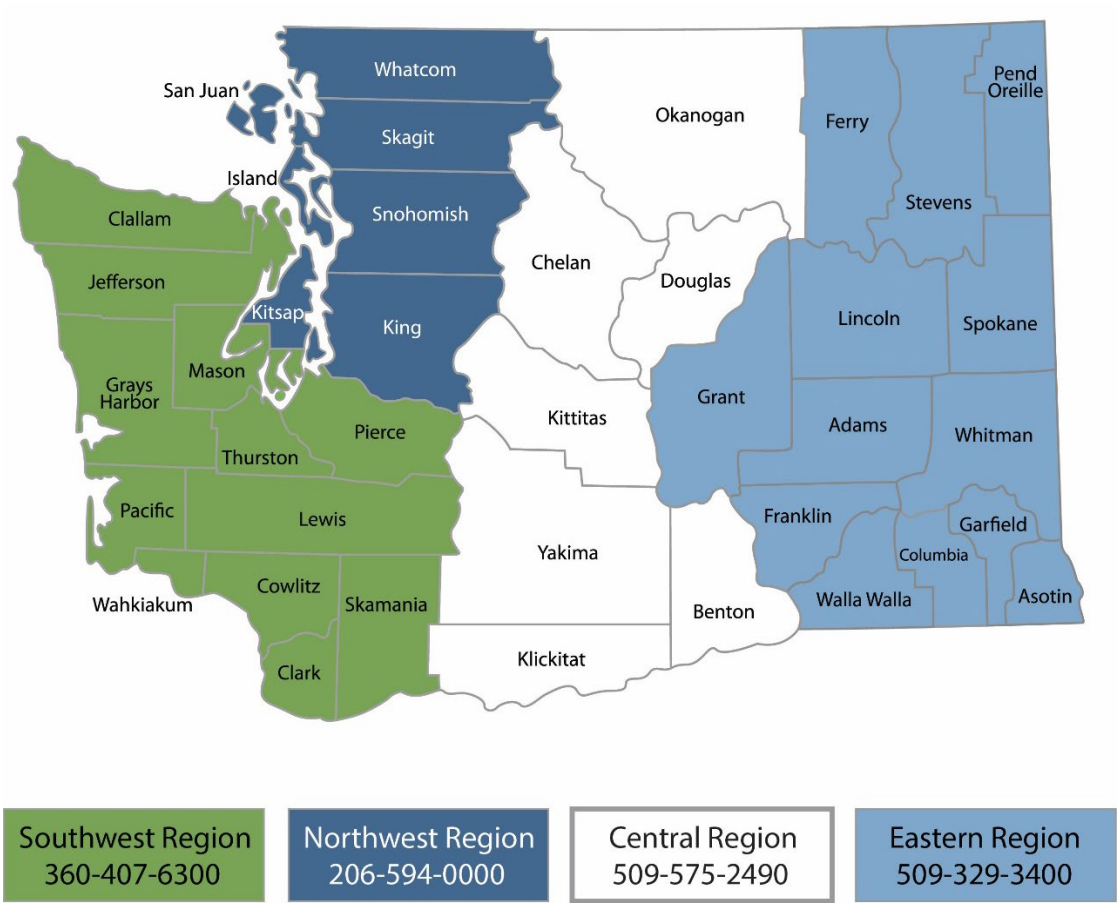
[1] https://apps.ecology.wa.gov/cleanupsearch/site/4519
[2] https://ecology.wa.gov/About-us/Who-we-are/Our-Programs/Toxics-Cleanup
[3] https://ecology.wa.gov/About-us/Accountability-transparency/Our-website/Accessibility

Department of Ecology's Regional Offices

Map of Counties Served



Southwest Region 360-407-6300	Northwest Region 206-594-0000	Central Region 509-575-2490	Eastern Region 509-329-3400

Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

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Introduction

The Washington State Department of Ecology (Ecology) reviewed post-cleanup site conditions and monitoring data to ensure human health and the environment are being protected at the US EPA Anderson Calhoun Mine Mill cleanup site (Site). Site cleanup was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC). This is the second periodic review conducted for this Site. Ecology completed the first periodic review(s) in September 2017.

Cleanup activities at this Site were completed as removal actions under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) authority by the United States Environmental Protection Agency (USEPA) in 2002 and 2010. Residual concentrations of metals that exceeded MTCA cleanup levels remain on the property. The MTCA cleanup levels for soil and groundwater are established under WAC 173-340-740[4] and WAC 173-340-720,[5] respectively.

Ecology determined institutional controls in the form of an environmental covenant would be required as part of the cleanup action for the Site. WAC 173-340-420(2)[6] requires Ecology to conduct a periodic review of certain sites every five years. For this Site, a periodic review is required because an institutional control was required as part of the cleanup action.

When evaluating whether human health and the environment are being protected, Ecology must consider the following factors (WAC 173-340-420(4)):

a) The effectiveness of ongoing or completed cleanup actions, including the effectiveness of engineered controls and institutional controls in limiting exposure to hazardous substances remaining at the site

b) New scientific information for individual hazardous substances or mixtures present at the site

c) New applicable state and federal laws for hazardous substances present at the site

d) Current and projected site and resource uses

e) The availability and practicability of more permanent remedies

f) The availability of improved analytical techniques to evaluate compliance with cleanup levels

Ecology publishes a notice of all periodic reviews in the *Site Register* and provides an opportunity for public comment.

[4] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-740
[5] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-720
[6] https://app.leg.wa.gov/wac/default.aspx?cite=173-340-420

Summary of Site Conditions

Site description and history

The Anderson Calhoun Mine and Mill Site is 30 miles northeast of Colville, Washington. The Site is the location of former zinc, lead, and barium mining and milling operations. The Site is approximately 200 acres, and mining and milling operations affected approximately 92 acres of the property. Remnants of ore milling operations include a 43-acre tailings impoundment containing an estimated one million cubic yards of lead-zinc and barium tailings.

The Site is at elevations between 2,140 and 2,500 feet above mean sea level within Sections 2 and 3, Township 39 North, Range 41 East of the Willamette Meridian. The Site was established in 1910 to mine zinc ores. In 1965, a 1,200-ton-per-day flotation mill was constructed on the Site. The mill operated between 1965 and the early 1980s when the Site was abandoned. In the 1980s, the mill was used to process barite ores extracted from mines in the Flagstaff Mountain area about three miles southwest of Northport, Washington.

The Site was involuntarily acquired by Stevens County in the mid-1990s due to delinquent property taxes. The Site was purchased by Daniel and Dale Dawson from Stevens County at a tax sale in 2002. Mr. and Mrs. Dawson owned the Site during the cleanup.

During milling operations, about 900,000 cubic yards of lead-zinc tailings and an unknown quantity of barite tailings were deposited in an on-site impoundment.

A vicinity map is in Appendix A, and a Site plan is in Appendix B.

Site investigations

USEPA first investigated the property as part of a preliminary assessment and site inspection conducted for Upper Columbia River Mines and Mills in 2001. The property investigation identified two small zinc pit mines, the remains of a 1,200-ton flotation mill, a tailings impoundment, numerous 55-gallon drums, oil-filled transformers and other electrical equipment, and other structures and equipment associated with mining and milling activities. The investigation also documented elevated concentrations of metals in the tailings impoundment and in soils near the mill.

Between October 27 and November 3, 2002, USEPA conducted a time-critical removal action to remove and dispose of containers and drums containing hazardous and non-hazardous substances and electrical equipment containing polychlorinated biphenyls. USEPA completed a Removal Action Report in March 2003, concluding that further assessment of the property was necessary and identifying potentially responsible parties. In August 2004, USEPA entered into an agreement with three potentially responsible parties to prepare an Engineering Evaluation and Cost Analysis (EE/CA).

The EE/CA concluded the lead-zinc and barium tailings at the property presented unacceptable human health and ecological risks. The contaminants of concern included barium, cadmium, copper, lead, selenium, and zinc.

Cleanup actions

In an Action Memorandum dated October 11, 2007, USEPA selected a non-time critical removal action to address risks at the property. The selected removal action called for the excavation and consolidation of contaminated materials in the tailings impoundment, which would be covered with a protective barrier and protected with access controls. The protective barrier was composed of a minimum of 12 inches of coarse-grained soil seeded with a mix of dryland pasture grasses suitable for local climatic conditions. Access controls to the protective barrier consisted of metal T-posts and barbed wire fencing around the perimeter of the barrier.

In 2010, the USEPA implemented the selected removal action. The action generally consisted of consolidating and capping tailings, metals-contaminated soil and mine waste, demolishing several mine/mill structures, and installing barbed-wire fencing to control livestock access.

The Agreement for Payment of Response Costs (CERCLA Docket Number 10-2010-0105), referred to as the Settlement Agreement, between USEPA and Blue Tee, Corp. (Blue Tee), a responsible party for the removal action, required Blue Tee to conduct monitoring and repair activities at the Site for a period of five years after USEPA completed the removal action.

Following the removal action, USEPA delayed the responsibility for maintenance and repair at the Site to Blue Tee because high surface water run-off flows in spring 2011 caused damage to the cap: erosion damaged drainage systems in the capped area and differential settling on the western portion of the cap created a large area of ponded water. The high surface water run-off conditions and cattle grazing also contributed to weak vegetation growth on the western portion and south slope of the cap. USEPA conducted repairs and improvements to the drainage system, backfilled the area of ponded water, and fertilized and re-seeded the western portion and south slope of the cap in October 2011 before turning the Site over to Blue Tee for the start of maintenance and repair activities.

The Settlement Agreement required Blue Tee to conduct semiannual and annual inspections of the capped tailings area and drainage systems at the Site to assess the continuing effectiveness of the removal action for a period of five years. The Maintenance and Repair Plan included field activities that were to be conducted as part of Site inspections, laboratory analyses of samples collected in the field, and reporting. An annual inspection report was generated and submitted to Ecology through 2016, after which Blue Tee was no longer required to conduct inspections.

Beginning in 2017, Ecology would conduct inspections every five years as part of the periodic review process.

Cleanup standards

Cleanup standards include cleanup levels, the location where these cleanup levels must be met (point of compliance), and any other regulatory requirements that apply to the Site. WAC 173-340-704[7] states MTCA Method A may be used to establish cleanup levels at sites that have few hazardous substances, are undergoing a routine cleanup action, and where numerical standards are available for all indicator hazardous substances in the media for which the Method A cleanup level is being used. Method B may be used at any site and is the most common method for setting cleanup levels when sites are contaminated with substances not listed under Method A. Method C cleanup levels may be used to set soil and air cleanup levels at industrial sites.

MTCA Method A cleanup levels for unrestricted land use were determined to be appropriate for contaminants at this Site. The cleanup actions conducted at the Site were determined to be routine, few hazardous substances were found at the Site, and numerical standards were available in the MTCA Method A table for each hazardous substance.

The point of compliance is the area where the cleanup levels must be attained. For soil cleanup levels based on the protection of groundwater, as they are for this Site, the point of compliance is established as soils throughout the Site (standard point of compliance).

Environmental Covenant

Ecology determined that institutional controls would be required as part of the cleanup action to document the remaining contamination, protect the cleanup action, and protect human health and the environment. On August 11, 2011, institutional controls in the form of an environmental covenant[8] (Covenant) were recorded for the Site.

The Covenant recorded for the Site imposes the following limitations:

1. Any activity that may result in the release or exposure to the environment of hazardous substances beneath the protective barrier, create a new exposure pathway for hazardous substances beneath the protective barrier, or impair or interfere with the integrity of the protective barrier, shall be prohibited unless prior written approval for the activity is provided by Ecology. Some examples of activities that are prohibited in the protective barrier area without prior written approval include the following: drilling, digging, excavating, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capacity, piercing the surface with a rod, spike or similar item, bulldozing, or earthwork.
2. The Owner shall maintain the metal T-post fence and any associated access gates as depicted in Exhibit B for the purpose of restricting access to the protective barrier, and shall repair any damage that affects the integrity or functionality of the fence. The

[7] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-704
[8] https://apps.ecology.wa.gov/cleanupsearch/document/63231

Owner shall obtain written approval from Ecology prior to replacing the metal t-post fence with an alternative access control. The Owner may allow for cattle grazing on the protective barrier, provided that grass is well established across the barrier, and provided that the requirements of this Covenant are satisfied.

3. The Owner shall notify and obtain written approval from Ecology prior to dismantling, demolishing, or otherwise removing structures, buildings, and appurtenances thereto that were used for ore mining and milling activities and are located on the Property. In the event such structures, buildings, and appurtenances must be dismantled, demolished, or removed to abate a safety or public health hazard caused by a sudden and unexpected event, Owner shall notify Ecology within 24 hours of the start of such abatement actions.
4. The Owner shall provide thirty days advanced written notice to Ecology of the Owner's intent to convey or transfer, in whole or in part, any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for maintenance of the metal t-post fence and associated access gates, and continued maintenance and repair of the twelve-inch-thick cap of clean soil.
5. The Owner shall restrict all permits, licenses, and leases at or on any portion of the Property to uses and activities consistent with this Environmental Covenant, and shall notify all permittees, licensees, and lessees of the restrictions and limitations placed on the Property by this Environmental Covenant.
6. The Owner shall allow authorized representatives of EPA, Ecology, and Blue Tee Corporation the right to enter the Property at reasonable times to evaluate the CERCLA action, the protective barrier, to take samples, to inspect any other response actions conducted at the Property, to conduct maintenance and repair activities, and to conduct any other action that may be necessary to ensure that the removal action continues to protect human health and the environment.
7. The Owner shall notify and obtain written approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Environmental Covenant. Ecology may approve any inconsistent use only after public notice and comment.

Periodic Review

Effectiveness of completed cleanup actions

During the Site visit Ecology conducted on October 27, 2022, the remedy appears to be functioning as intended. The Site is a private undeveloped recreational property. Fencing around the tailings cell continues to prevent livestock from grazing on the cap, although visual evidence shows gates have been left open allowing cattle to access the cap at times. The gate

from the public roadway accessing the Site is typically open, but there is no evidence the public is entering the fenced tailings cell. There is evidence of public access to other portions of the Site, but this does not pose a threat of exposure to hazardous materials; it only poses a threat of physical hazard from remaining mine and mill infrastructure.

There are signs of animal activity on the edges of the tailings cell. Burrowing animals appear to be exposing small amounts of tailings along the west cell perimeter. This area is not easily accessible by the public and does not pose a threat of exposure to hazardous materials, but this disturbance should continue to be monitored during subsequent Site inspections.

The Site sold in 2019 in compliance with requirements of the environmental covenant. According to the Stevens County Assessor's Office, David Durbin owns the Site. Maintenance of the fencing and continued adherence to the terms of the environmental covenant are required. A photo log is in Appendix C.

Direct contact

The cleanup actions were intended to eliminate exposure to contaminated soil at the Site. Exposure pathways to contaminated soils by ingestion and direct contact were reduced by combination of physical access restrictions and institutional controls. Fencing and the lack of direct vehicular access are effective at preventing public access to the Site. The extensive amount of fill and overburden on the portions of the Site containing tailings effectively prevents possible exposure to these materials.

Institutional controls

Institutional controls in the form of a Covenant were implemented at the Site in 2011. The Covenant remains active and discoverable through the Stevens County Auditor. Ecology found no evidence a new instrument has been recorded that limits the effectiveness or applicability of the Covenant. This Covenant prohibits activities that will result in the release of contaminants contained as part of the cleanup action and prohibits any use of the property that is inconsistent with the Covenant, unless approved by Ecology in advance. This Covenant ensures the long-term integrity of the cleanup action will be protected.

New scientific information for individual hazardous substances or mixtures present at the Site

There is no new relevant scientific information for the hazardous substances remaining at the Site.

New applicable state and federal laws for hazardous substances present at the Site

There are no new applicable or relevant state or federal laws for hazardous substances remaining at the Site.

Current and projected Site and resource uses

The Site remains vacant. The perimeter fencing at the Site remains in excellent condition and prevents public access to the tailings cell area. The current property owner has upgraded the gate posts and gates to ensure the cap remains protected. He intends to recreate at the property, park his recreational vehicle, and possibly build a small retirement residence. Ecology has performed soil screening using a portable x-ray fluorescence device so he can make informed decisions about his property use. The areas he plans to use received full remediation by the USEPA. The current Site use is not likely to have a negative impact on the protectiveness of the cleanup action.

Availability and practicability of more permanent remedies

The remedy implemented included containing hazardous substances, and it continues to be protective of human health and the environment. While more permanent remedies may be available, they are still not practicable at this Site.

Availability of improved analytical techniques to evaluate compliance with cleanup levels

The analytical methods used at the time of the cleanup action were capable of detection below the selected MTCA cleanup levels. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.

Conclusions

- The cleanup actions completed at the Site appear to be protective of human health and the environment.
- Soil cleanup levels have not been met at the Site; however, the cleanup action is determined to comply with cleanup standards under WAC 173-340-740(6)(f), since the long-term integrity of the containment system is ensured and the requirements for containment technologies have been met.
- The Covenant for the property is in place and is effective in protecting human health and the environment from exposure to hazardous substances and the integrity of the cleanup action.

Based on this periodic review, Ecology has determined the requirements of the Covenant are being followed. No additional cleanup actions are required by the property owner at this time. The property owner is responsible for continuing to inspect the Site to ensure the integrity of the cap is maintained.

Next review

Ecology will schedule the next review for the Site five years from the date of this periodic review. If additional cleanup actions or institutional controls are required, the next periodic review will be scheduled five years after those activities are completed.

References

USEPA, *Engineering Evaluation/Cost Analysis*, April 2007.

USEPA, *Oversight of Maintenance and Repair Activities*, February 22, 2010.

GeoEngineers, *Final Maintenance and Repair Plan*, May 4, 2012.

GeoEngineers, *Annual Maintenance and Repair Report*, Spring 2015 and September 25, 2015.

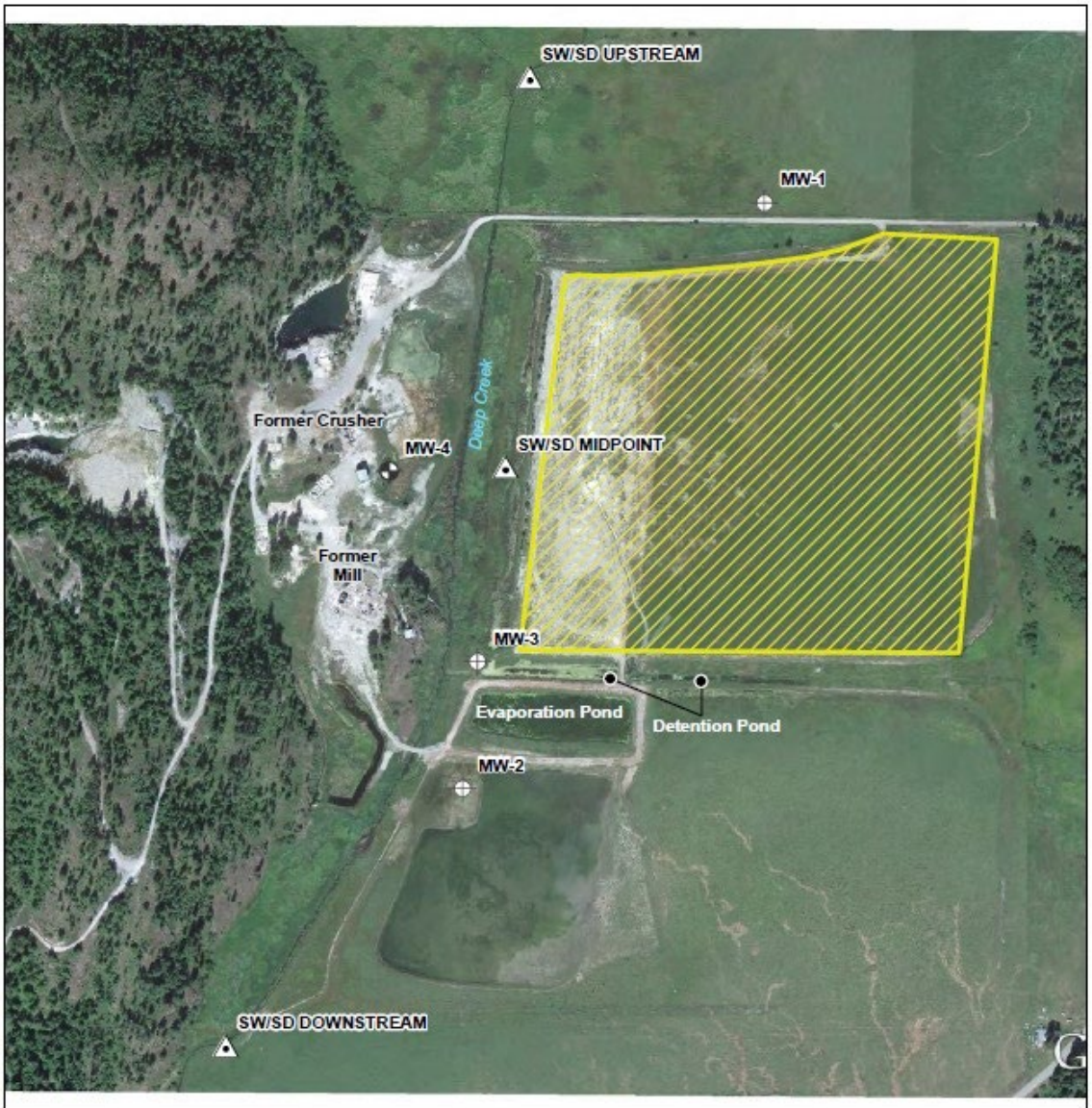
Ecology. *Environmental Covenant*. August 10, 2011.

Ecology. *Periodic Review*. September 2017.

Ecology. Site visit. October 27, 2022.

Appendix A. Vicinity Map

Appendix B. Site Plan



Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
Data Sources: Aerial image from Google Earth Pro, 08/16/2012.
Projection: NAD 1983, UTM Zone 11 North.

Appendix C. Photo Log

Photo 1: Panoramic view of wetland and capped area looking east

Photo 2: Access road looking east

Photo 3: Former mill area looking southeast