DRAFT FINAL REPORT

PHASE 1A REMEDIAL INVESTIGATION REPORT

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VERSHIRE, VERMONT

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Section ONE

This Phase 1A Remedial Investigation (RI) Report presents the results of the first phase of remedial investigation activities performed at the Ely Mine Superfund Site (hereafter referred to as the Site) located in the town of Vershire, Vermont. These investigations were designed to delineate the nature and extent of impacts to soil, surface water, sediment, and groundwater resulting from onsite surface and subsurface mine wastes. Human health and ecological risk assessments as well as investigations of the impact of the Underground Workings will be conducted during future phases of work. Investigations were also performed across a broader study area encompassing the Site for the purpose of general reconnaissance and assessing the extent of downgradient impacts. The Site and adjoining areas are collectively referred to as the Study Area.

The U.S. Environmental Protection Agency (EPA) is the lead governmental agency coordinating the Ely Mine Remedial Actions, and the U.S. Army Corps of Engineers (USACE) is providing technical assistance to EPA through Interagency Agreement DW96-940259-01. This RI Report has been prepared by URS Corporation (URS) for the USACE New England District under Contract No. DACW41-03-D-0001, Delivery Order No. DB-02. This Report was prepared in accordance with USACE's September 6, 2007 Addendum to the Statement of Work for the Ely Mine and was developed in general accordance with the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA 1988).

The purpose of the Phase 1A RI Report is to describe investigations conducted, present investigation results, and summarize the current environmental understanding of the Ely Mine Superfund Site. The RI activities included:

- Assessing surface water, sediment, soil, and groundwater quality;
- Identifying and evaluating the fate and transport of constituents of interest in environmental media; and,
- Characterizing the Study Area sufficiently to support the Risk Assessments and Phase 1B investigation plans being performed by EPA and their contractors.
- Providing site characterization information sufficient to support the development and evaluation of remedial alternatives as part of the Feasibility Study (FS).

1.1 REPORT ORGANIZATION

In addition to Section 1, the Phase 1A RI Report is organized as follows:

- ***Section 2*** ***Study Area Investigation***: This section provides a description of RI activities including investigatory methods and sample locations.
- ***Section 3*** ***Physical Characteristics***: This section provides a description of site characteristics associated with mine-related activities, including surface and subsurface mine features, hydrology, geology, hydrogeology, and ecology.
- ***Section 4*** ***Nature and Extent of Contamination***: This section presents a summary of analytical data as they relate to environmental media throughout the Site.
- ***Section 5*** ***Fate and Transport of Impacts***: This section examines potential routes of migration and environmental fate and transport for constituents of interest.

1.2 SITE BACKGROUND

The Ely Mine is an abandoned copper mine located in Vershire, Orange County, Vermont. Historic mining activities occurred primarily within the Ely Brook watershed, which comprises the south-facing slope of Dwight Hill. Primary physical features of the Site include Dwight Hill to the north and Schoolhouse Brook to the south. Ely Brook bisects the area of historic mining activities. Mining features include adits and shafts formerly used to access and service the Underground Workings and the remains of 19^{th} and early 20^{th} century mine structures and mine waste areas (e.g., Smelter Area, roast beds, waste ore piles). The property is currently managed for commercial timber harvest and is owned by Ely Mine Forest, Inc. and Green Crow Corporation.

1.2.1 Site Description

The Site encompasses approximately 1,800 acres located east of South Vershire Road, approximately 4 miles southeast of the village of Vershire Center and approximately 5 miles northwest of the village of West Fairlee.

Elevations in the Study Area range from approximately 1,000 feet above mean sea level (MSL) near South Vershire Road to approximately 1,600 feet above MSL at the crest of a northwest-southeast trending ridge in the northern portion of the Site. North-south trending ridges bound the Ely Brook valley to the east and west, with elevations ranging from 1,350 to 1,450 feet above MSL. The aforementioned northwest-southeast trending ridge bounds the northern portion of the valley. The main entrance to the Underground Workings of the mine and several adits and shafts are located on the southern face of the northwest-southeast trending ridge; the Underground Workings originate from these openings and extend northeast for approximately 3,300 feet beneath the ridge, reaching a termination depth of between 20 and 50 feet below MSL. The Site Locus is presented on Figure 1-1.

1.2.2 Site History

A detailed account of site operational history is provided in the United States Geological Survey (USGS) Guidebook Series, Volume 35, *Part II. Environmental Geochemistry and Mining History of Massive Sulfide Deposits in the Vermont Copper Belt* (Hammarstrom et al. 2001).

According to available historical records, the ore body was discovered in 1813 and explored in the 1830s. Significant mining activities began in 1853 when the Vermont Copper Mining Company was incorporated. Ore from the early activities at the Ely Mine was shipped to smelters located along the east coast for processing. Onsite smelting operations began in 1867 and continued with some interruptions until 1905. In addition to processing site ore, the site smelters also processed ore from the Pike Hill Mines during the period of operation, which is located north of the Site in East Corinth, Vermont.

Between 1868 and 1880, the average annual production at the mine was approximately 1 million pounds of ingot copper (Hammarstrom et al. 2001), and during the highest production period in the 1870s annual copper production from the Site exceeded 3 million pounds. At the peak of production, the Ely Mine was the third largest producing copper mine in the United States (Public Archaeology Laboratory [PAL] 2005). The mine's total copper production is estimated to be between 30 and 40 million pounds.

The Vermont Copper Mining Company collapsed in 1883 and passed through several owners until George Westinghouse purchased the operation in 1899 and proceeded to experiment with methods to extract copper from low-grade ore (Hammarstrom et al. 2001). Westinghouse abandoned the property in 1905. Following the cessation of mine operations by Westinghouse, two significant ore and mine waste reprocessing operations were performed at the Site. An onsite Flotation Mill was constructed and operated between 1917 and 1918 to process ore from the existing ore dump piles. Reportedly, 19,000 tons of ore was processed through the mill during the period of operation, which ceased following World War I (PAL 2005). Later, between 1949 and 1950, approximately 60,000 tons of waste ore were transported for processing to the Elizabeth Mine Flotation Mill, located approximately 7.5 miles south of the Site, yielding 1.2 million pounds of copper (PAL 2005).

The Site was listed on the National Priorities List on September 13, 2002. Since that listing, EPA has been compiling existing information related to the Site, and has coordinated and led investigation efforts to complete the RI. Data incorporated into this Phase 1A RI were obtained by the USGS, Cold Region Research and Engineering Lab (CRREL), and by Arthur D. Little, Inc. (ADL) and URS (both under contract to USACE). Significant site understanding has also been obtained from the historic resources investigations performed by PAL under contract to the USACE. PAL's work, performed in support of Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR Part 800, is summarized in reports referenced within this document.

1.2.3 Previous and Ongoing Investigations – Other Agencies

Prior to the implementation of RI activities at the Site, environmental investigations at the Ely Mine were performed by the U.S. Bureau of Mines (USBM), by the Vermont Department of Environmental Conservation (VTDEC), and by the USGS. Additionally, coincident to the performance of the Phase 1A RI, additional investigations and assessments have been performed by the Agency for Toxic Substances and Disease Registry (ATSDR) and by EPA.

The USBM, in conjunction with the VTDEC, performed evaluations of acid mine drainage (AMD) and acid rock drainage (ARD) impacts at the Site to Ely Brook between 1993 and 1995. In spring 1995, these evaluations included testing of an experimental limestone-based passive treatment system along Ely Brook to determine whether a passive technology was feasible to address the large-scale acidic drainages at the Site. The USBM's field-scale passive treatment system consisted of limestone and a sulfate reducing bioreactor cell that received and treated re-directed discharges from site drainages. Based on the data obtained, the USBM concluded that the passive treatment system improved the overall water quality of the mine drainage by removing metals and increasing the pH (McSurdy et al. undated).

The VTDEC inventoried fish species and evaluated the macrobenthic community in Schoolhouse Brook in 1988 and in 1991. They determined that the macroinvertebrate community in Schoolhouse Brook was impacted by mine drainage due to copper concentrations. In a 2002 study, the USACE CRREL characterized spring runoff from the mine and determined it to be highly acidic and highly impacted with metal constituents from the mined ore. The pH of seepage from the mine-waste piles was found to be generally less than 3.5 (standard units[1]) and concentrations of target analyte list (TAL) metals including copper, aluminum, iron, zinc, cadmium, cobalt, and magnesium exceeded the National Recommended Water Quality Criteria (NRWQC). They also found concentrations of copper exceeding the NRWQC in Schoolhouse Brook downstream of the Site (Holmes et al. 2002).

Further preliminary evaluations of surface water and mine wastes from the Site were conducted by USGS between 1998 and 2002, prior to the RI-associated investigations. The USGS research primarily focused on mine wastes (i.e., waste ore, tailing, and slag) and their effects on site surface water. As part of these early investigations, the USGS evaluated bulk geochemistry, mineralogy, distribution of trace elements, and reactivity of waste materials. Based on these early investigations, the USGS concluded that the mine waste at the Ely Mine is a combination of host rock and discarded ore, some of which has undergone various stages of metallurgical processing, including roasting, milling, and smelting. The USGS confirmed that the mine waste

[1] All pH data presented in this report are in standard reporting units.

tends to be acid generating from the presence of sulfides (i.e., jarosite and efflorescent sulfate salts). The dominant trace TAL metals leached from the mine waste are copper, cadmium, cobalt, nickel, and zinc. All of these metals were found to leach from waste materials at concentrations that may adversely impact soils and streams and have a deleterious effect on the environment. The USGS also concluded that the mine waste at the Ely Mine is geochemically similar to the historic mine waste at the nearby Elizabeth Mine, which is located approximately 10 miles southeast of the Site. The results of this sampling have been incorporated into the Phase 1A RI data set consistent with the project Quality Assurance Project Plan (QAPP) (URS 2004).

The ATSDR completed a Public Health Assessment for the Site in 2008 (ATSDR 2008). This report concluded that surface water and sediment downstream of the Site do not pose a public health hazard. The Site contains physical hazards (i.e., mine openings) that pose a risk to trespassers, and onsite surface water could cause eye and skin irritation or skin damage due to low pH. The ATSDR recommended the following:

- Post "No Trespassing" signs at the entrance to the property;
- Post warnings near vertical shafts and other potential hazards;
- Sample offsite areas to evaluate soil contamination from former smelter emissions[2];
- Sample private wells along Schoolhouse Brook downstream of the Site;
- Place a deed restriction on the property to prevent exposure to metals in mine waste, surface water, and groundwater; and,
- Consider priority remediation of the unoxidized flotation tailing.

[2] Although Phase 1A planning activities considered evaluations of potential smelter emission impacts, these activities remain under evaluation by EPA.

During implementation of the Phase 1A RI, EPA, with support from the USGS, has been performing the aquatic portion of the Baseline Ecological Risk Assessment (BERA) for the Site. The draft aquatic BERA was issued in August 2008 and is currently undergoing review by the project stakeholders (TechLaw 2008).

Section **TWO**

This Section of the Report describes the Site and Study Area investigations conducted as part of the RI. Investigations included:

- A site reconnaissance and sample location survey (Section 2.1)
- Surface and subsurface soil sampling and lithological identification (Section 2.2.1)
- Surface water sampling (Section 2.2.2)
- Sediment sampling (Section 2.2.3)
- Groundwater sampling (Section 2.2.4)
- Residential well sampling (Section 2.2.5)
- Terrestrial habitat assessments (Section 2.2.6)

The sampling program at the Site was designed to evaluate risks to human health, safety, and the environment (including ecological receptors) in support of site closure under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Sampling rationale, field procedures, and analytical methods for the majority of these investigations are provided in the Remedial Investigation/Feasibility Study (RI/FS) Workplan (URS 2006a), Field Sampling Plan (FSP) (URS 2006b), and QAPP. However, as noted in the following sections, additional surface water and sediment samples were collected and analyzed by other entities (i.e., USGS, EPA) and used in this Phase 1A RI for site characterization purposes at the direction of EPA.

This RI is being performed in multiple phases. Detailed investigations of aquatic biota and the evaluation of resulting impacts have been led by EPA and the findings will be presented separately. Additionally, detailed investigations of the Underground Workings of the mine are being performed by EPA contractors, and the methods and findings of those investigations also will be documented separately.

2.1 SITE RECONNAISSANCE AND SAMPLE LOCATION SURVEY

URS performed a site reconnaissance to locate, identify, and assess mine-related features. The site reconnaissance included a review of historic site documentation, interviews with individuals having site knowledge, and field observations of the Site and surrounding area. The initial reconnaissance was performed during the week of May 6 and 7, 2004. Additional reconnaissance activities were performed between October 16 and 18, 2006. Areas included in the reconnaissance were: (1) identified source areas from earlier investigations; (2) areas of identified mine infrastructure and mine activities; and (3) surrounding areas.

The site reconnaissance identified mine-related features that have the potential for environmental impact. The majority of these features were identified based on their potential to generate ARD or AMD. The majority of the mine infrastructure is located within the upper reaches of the Ely Brook Watershed. Potential sources of ARD or AMD in this area include the Roast Bed Complex, Smelter Area, Smoke Flue, Upper and Midslope Waste Piles, and Underground Workings. These features are identified on Figure 2-1.

As part of the field reconnaissance, proposed sample locations were field-identified using labeled pin flags, recorded on field maps, and verified using Global Positioning System field measurements. Once sampling was complete, all monitoring wells were surveyed using conventional survey techniques. Elevations are reported in the North American Datum 1983 coordinate system, and horizontal locations are reported in the Vermont State Plane coordinate system. The location and frequency of samples and the selection of analytical methods were based on defined historical activities and on observations made and conditions encountered during the reconnaissance. All reconnaissance activities, and the majority of the site characterization activities, were performed as part of the initial Phase 1A RI.

2.2 SAMPLING METHODS

The following sections describe sampling methods for surface and subsurface soil, surface water, sediment, groundwater, and terrestrial habitat.

2.2.1 Soil

For ease of presentation, the soil sampling methods have been separated into surface soil and subsurface soil. Table 2-1 summarizes RI soil sampling locations, target features, and analyses performed. Sample locations are depicted on Figure 2-2 and Figure 2-3. Field sample data sheets are included in Appendix A.

2.2.1.1 Surface Soil

The primary objective of the surface soil investigation was to provide information regarding the nature and distribution of mine-related materials in surface and near-surface soil (i.e., 0 to 2 feet below ground surface [bgs]) that may impact human and/or ecological receptors and to determine the acid-generation potential of the mine wastes present at the Site. Specific soil sampling locations were selected based on access, physical conditions, and visual evidence of the historical activities or features. URS also prepared a surface soil sampling strategy designed to identify impacts resulting from historical smelting operations. At the direction of EPA, these sampling activities were not implemented as part of the Phase 1A investigations and the strategy remains under review.

Surficial soil samples were typically collected from the upper 1 foot of waste material, although some samples were collected up to 2 feet bgs (i.e., samples collected from soil borings and test pits by URS, and samples collected by USGS). In vegetated areas bordering the mine and waste material, samples were collected at two depth intervals; the organic layer, if present, and the material below the organic layer to a depth of 12 inches bgs. The surface soil background samples were collected outside of the Schoolhouse Brook watershed in order to minimize likelihood of impact by mining-related activities. These samples were collected in accordance with the FSP using either a pre-cleaned stainless steel spoon, pre-cleaned shovel, or a pre-cleaned stainless steel hand auger.

For composite surficial samples, representative material from each component station and depth interval was placed in either a pre-cleaned stainless steel mixing bowl or a dedicated 1-gallon

Ziploc®-type bag and homogenized. A portion of the homogenized sample was then collected and submitted for analysis.

2.2.1.2 Subsurface Soil

Subsurface soils were collected from boreholes advanced with hollow stem augers (HSAs) using a pre-cleaned split-spoon, or as field grab samples of disturbed soils from test pit excavations. The locations of subsurface soil samples and target features are shown on Figure 2-4. Soil material representative of the entire sampling interval was collected and submitted for analysis. The FSP Section 5.4.2 contains a detailed discussion on the HSA drilling method used to complete the borings.

2.2.1.3 Analytical Parameters for Soils

Surficial and subsurface soils were analyzed for one or more of the following parameters as described in Section 5.2 of the FSP:

- TAL metals (i.e., aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, selenium, strontium, silver, sodium, thallium, vanadium, and zinc)[3];
- synthetic precipitation leaching procedure (SPLP) metals;
- acid base accounting (ABA);
- paste pH; and
- paste conductivity.

[3] Although arsenic and selenium are not chemically defined as metals, they are included on the laboratory TAL metals analyte list. Therefore, for the purposes of the Phase 1A RI, these two elements are included in the TAL metals discussion.

Samples collected by URS for laboratory analyses were placed on ice in a cooler and logged on a chain-of-custody form following collection for shipment to the appropriate laboratory for analysis.

2.2.2 Surface Water

Surface water at the Ely Mine was characterized to determine the nature and extent of potential mine-related impacts to surface water quality.

As part of the RI investigations, surface water samples were collected during multiple monitoring events from locations within Ely Brook, Schoolhouse Brook, the East Branch of the Ompompanoosuc River (EBOR), and from the Beaver Ponds (i.e., the former reservoir area north of the roast beds, as shown on Figure 2-1). The original sample identifications associated with these sample collection events were standardized in 2008 as part of the USGS compilation of Study Area surface water data. For clarity in reviewing earlier information provided in the workplans, sample data sheets, and laboratory analytical reports, a cross-reference table presenting the original and revised sample identifications is provided in Appendix A. For consistency in reporting, this Phase 1A RI uses the modified sample identifications used by the USGS.

During certain targeted events, and for targeted locations, discharge rates from mine features and channels were monitored to allow for quantification of mass loading rates. Surface water samples collected during the initial RI monitoring events include 26 locations within the Ely Brook watershed, 9 locations from Schoolhouse Brook, and 2 locations within the EBOR.

All surface water samples collected by URS were collected from the interval just below the water surface to the midpoint of the water column using either a pre-cleaned hand-held sample or a dedicated sample container, as described in the FSP. Samples were analyzed for total and dissolved TAL metals, alkalinity, carbonate, bicarbonate, hydroxide, chloride, sulfide, sulfate, hardness, total acidity, nitrate nitrogen, total suspended solids, total dissolved solids, and cyanide. Samples collected by URS for laboratory analyses were placed on ice in a cooler and logged on a chain-of-custody form following collection for shipment to the appropriate laboratory for analysis. Table 2-2 summarizes RI surface water sampling locations, target features, and analyses performed. Sampling locations are depicted on Figure 2-5. Field sample data sheets are included in Appendix A.

Additional surface water samples were collected and analyzed by others entities (i.e., USGS and EPA) and used in this Phase 1A RI for site characterization purposes at the direction of EPA. These data were collected and analyzed following procedures that may vary somewhat from those outlined in the RI/FS workplans. Sample collection and analytical methods for these data may be found in the documents prepared by each agency.

2.2.3 Sediment

Sediment samples collected by URS were generally from the upper 4 inches (i.e., surface sediment). Composite samples were collected from a minimum of three locations at each of the sampling stations in primary drainage courses and from discrete locations from designated seeps, using the methods described in the FSP. These sediment samples were analyzed for TAL metals, cyanide ABA, and cation exchange capacity.

Samples collected by URS for laboratory analyses were placed on ice in a cooler and logged on a chain-of-custody form following collection for shipment to the appropriate laboratory for analysis. Table 2-3 summarizes RI sediment sampling locations, targeted source areas, and analyses performed. Sampling locations are depicted on Figure 2-6. Field sample data sheets are included in Appendix A.

As with surface water, sediment samples were collected and analyzed by other entities (i.e., USGS and EPA) and used in this Phase 1A RI for site characterization purposes at the direction of EPA. These data were collected and analyzed following procedures that may vary somewhat from those outlined in the RI/FS workplans. Sample collection and analytical methods for these data may be found in the documents prepared by each agency.

2.2.4 Groundwater

Groundwater samples were collected to assess groundwater quality and influence from mine features, historical mining operations, and infrastructure. Groundwater monitoring wells were installed in areas proximal to the Underground Workings, Flotation Mill and waste ore areas, Roast Bed Complex, Smelter Area, and Smoke Flue as part of the Phase 1A investigations. Background wells were also installed to characterize groundwater from the surrounding areas. These groundwater monitoring points include shallow overburden and surficial mine wastes, deep overburden (i.e., glacial till), and bedrock wells. Monitoring wells were used to evaluate hydrology and hydraulic conditions, as well as to evaluate water quality. Groundwater sampling points installed at the Site between 2006 and 2007 are summarized on Table 2-4. Locations are depicted on Figure 2-7. Field sample data sheets are included in Appendix A.

2.2.4.1 Drilling and Installing Monitoring Wells and Test Borings

Monitoring well installation was conducted using the methods described in the FSP and in general accordance with USACE's guidance entitled *Monitoring Well Design Installation, and Documentation at Hazardous, Toxic, and Radioactive Waste Sites* (USACE 1998) and with the American Society for Testing and Materials (ASTM) D5092 and D5521. Monitoring well, piezometer, and test boring overburden drilling was implemented using HSAs and case and wash drilling techniques. The drilling method was selected based upon access considerations, drilling conditions, and anticipated boring depth. Bedrock drilling methods included wireline core and air rotary techniques. Drilling methodology is discussed in detail in Sections 5.4 and 5.5 of the FSP (URS 2006b)

A 6-inch thick, 3-foot diameter gravel pad and 5-foot-long protective steel casing that extended approximately 3 feet below grade were installed at each monitoring well where above-ground well completions were installed. At MW-15A, due to the shallow depth to groundwater encountered during well installation, a flush-mount well completion was installed at the ground surface. The flush-mount casing was set at grade within the 6-inch thick, 3-foot diameter gravel pad. Boring logs for monitoring wells installed during the RI are compiled in Appendix B.

Shallow overburden monitoring wells were installed across the water table to obtain shallow overburden water quality data and hydraulic characteristics. Deep overburden monitoring wells were installed in overburden materials immediately overlying the bedrock surface (i.e., in glacial till) in order to provide water quality and hydraulic characteristics for this groundwater flow zone. At locations where bedrock borings had not previously been installed, rock coring was advanced 5 to 10 feet into bedrock to verify the rock surface. Upon bedrock confirmation, the core hole was backfilled with bentonite pellets or chips prior to constructing the monitoring well.

Bedrock monitoring wells were installed within the upper 50 feet of bedrock upon confirmation of a water-bearing zone using visual evidence (i.e., weathered fractures) and subsequent yield testing with a packer assembly. In general, bedrock monitoring wells were screened only in those zones that yielded at least 500 milliliters per minute of groundwater.

2.2.4.2 Monitoring Well Development

Well development occurred following the completion of monitoring well installation activities and prior to aquifer testing and/or initiation of groundwater sampling. Development activities were initiated at least 48 hours after the grout had set at each well. Well development methods included mechanical surging, bailing, and over-pumping. These methods generally followed the criteria provided in both the USACE guidance document (USACE 1998) and in ASTM D5521. Development of each monitoring well continued until the purged groundwater became visibly free of drilling fluids and cuttings, at least three well volumes of water had been removed, and field parameters (i.e., temperature, pH, and specific conductance) had stabilized (i.e., the variance in measurements was generally less than 5 percent).

2.2.4.3 Groundwater Sampling

Groundwater samples were collected from the monitoring wells during the RI using either submersible (i.e., Grundfos® or similar) or peristaltic pumps. Submersible pumps were decontaminated in accordance with the procedures outlined in the FSP prior to deployment into each well. Dedicated, disposable down-hole tubing was used for each well and then discarded, eliminating the potential for cross-contamination. Groundwater sampling conducted with submersible and peristaltic pumps generally followed EPA low stress sampling guidelines, as specified in the FSP. Field parameters (i.e., pH, temperature, specific conductance, dissolved oxygen, and oxidation-reduction [redox] potential) were measured using a flow-through cell. Groundwater samples were collected directly from the pump discharge into laboratory-supplied, pre-cleaned, pre-preserved (as necessary) sample containers. Soluble TAL metal samples were collected into a dedicated, disposable, pre-cleaned 0.45-micrometer vacuum filtration unit and decanted into the pre-cleaned laboratory container after filtration. Analytical samples were shipped to the contracted laboratory on ice under chain of custody protocol, as specified in the FSP.

2.2.4.4 Water Level Measurements

Water level measurements from site monitoring wells were collected on a monthly basis between December 2006 and June 2008. These water level measurements were used to evaluate variations in groundwater elevations and flow directions during the monitoring period.

2.2.5 Residential Well Sampling

At the direction of EPA, one residential water supply well was sampled as part of the Phase 1A RI to determine drinking water quality influences from mine features and former mine operations, to identify human health issues, and to compare water chemistry with State and Federal drinking water standards. The residential sampling was conducted in accordance with procedures outlined in the FSP and was similar to groundwater sampling procedures described in Section 2.2.4.3. At the residence, the sample point was located as close to the well as possible and before any treatment systems. Aerators, strainers, and hose attachments were removed prior to sampling, and the well and associated plumbing were purged at a high flow rate for a minimum of five minutes to evacuate the associated holding tank and piping.

2.2.6 Habitat Assessment

As part of the fall 2004 field investigation program, an extensive characterization of terrestrial habitat at the Site and the surrounding areas was conducted. Wetland and aquatic habitat were described qualitatively. The objective of the habitat characterization was to:

- describe the various terrestrial covertypes present at the Site and surrounding areas;
- identify potential wetland areas located at the Site and surrounding areas; and
- identify potential wildlife receptors likely to utilize terrestrial and aquatic habitats at the Site and surrounding areas.

Where appropriate, terrestrial and wetland covertypes were related to Vermont Natural Community types identified in Thompson and Sorenson (2000) and recognized by the Vermont Agency for Natural Resources (VTANR).

The habitat assessment was performed primarily within the Ely Brook watershed, extending from the top of Dwight Hill to Ely Brook's juncture with the Schoolhouse Brook immediately south of South Vershire Road (Figure 2-1).

Section **THREE**

Section 3 describes site features, meteorology, soil types, surface water hydrology, geology, hydrogeology, and ecology associated with the Site and Study Area.

3.1 SITE FEATURES

The Site encompasses approximately 350 acres situated along the south slope of Dwight Hill, as shown on Figure 2-1. The site topography along the sloping hillside is irregular and moderately steep, extending from the peak of Dwight Hill at approximately 1,600 feet above MSL to Schoolhouse Brook and South Vershire Road at approximately 940 feet above MSL. The historic mine area is located within the Ely Brook Watershed, whose seeps and drainages flow into Ely Brook. Ely Brook flows south through the former mine infrastructure area and discharges into Schoolhouse Brook (Figure 3-1). Schoolhouse Brook flows generally west to east and borders the south end of the Site.

Numerous mine features such as the former roast beds, intact and collapsed adits, shaft entrances, reservoirs, drainage trenches, a smoke flue and smaller mine openings are scattered throughout the site area. There are currently no buildings standing that were associated with historic mine operations; however, several building and equipment foundations remain. These include the foundations for the Main Shaft Hoist House, the Westinghouse Hoist House, smelter buildings and furnaces, and the World War I-era Flotation Mill (Figure 3-2).

3.1.1 Upper Waste Piles

PAL identified five primary dump piles in the Upper Waste Piles area (i.e., Dump Piles 4, 6, 7, 8 and 9). Dump Pile 4 is a 0.8-acre steep, open, barren, circular area located in the west-central portion of the dump pile area (Figure 3-3). This area consists of a steep, funnel-like eroded gully with some scrub tree growth, flanked by higher, bare, sloped ridges consisting of lumps of oxidized ore and orange soil. The conical contours of the original pile, deposited by ore cobbing prior to 1861, were altered when the pile itself was subsequently mined and transported to the Elizabeth Mine as ore for re-milling in 1949 and 1950 (PAL 2005).

Dump Piles 6, 7, 8, and 9 are located in an approximately 3.7-acre area at the center of the Site, south of the 1861 Pollard Adit area and north of the Burleigh Shaft area. The area is ringed by woods and consists of barren heaps of oxidized ore and orange soil, with some acid-tolerant scrub pine and birch trees. Dump Piles 6 (0.9 acre) and 7 (0.7 acre) consist essentially of a surface veneer left from dump material removal; these piles reflect the irregular terrain and have an average slope that conforms closely to the underlying topography of the hillside. At Dump Piles 8 (1.4 acres) and 9 (0.7 acre), the steep, truncated conical topography of the original piles has been retained. The remains of a truck loading ramp built of birch logs and timber are located at the western edge of Dump Pile 8. On the northern side of the waste ore dump spur, near where it ends at the southeast corner of Dump Pile 8, there is a low stone retaining wall and a strong rusty stain in the orange soil caused by seeping water. This location may correspond with Adit II (also known as Pollard Adit B), which was driven 19 feet into the rock by Thomas Pollard in the 1850s. Dump Piles 6 and 7 do not contain notable features (PAL 2005).

3.1.2 Midslope Waste Piles

The Midslope Waste Piles contain several mine-related features, including the Beaver Pond complex (formerly a water retention feature supporting mine operations), the Roast Bed Complex, the Flotation Mill area and Adit 3 cap rock pile area, and the Ely Brook channel, which bounds the western edge of this area. Each of these sub-areas is discussed in the following sections and depicted on Figure 3-2.

3.1.2.1 Beaver Ponds

The Beaver Ponds are situated on the eastern side of the visible waste features of the Midslope Waste Piles, and drain across the area into Ely Brook through the Ely Brook Tributary (EBT) designated as EBT2 (Figure 3-3). A small spring-fed reservoir was formed in a natural depression by the construction of an earth and rubble dam dating to the late 1800s. Through the reworking of the earth and rubble dam, beavers have created a series of impoundments along this drainage way that extends as far as the main east-west logging road bisecting the area. This series of impoundments along the east branch of Ely Brook is referred to as the Beaver Pond Area; this area was extensively investigated as part of the RI.

3.1.2.2 Roast Beds

The Roast Bed Complex is located in the center of the Site, north of the Smelter Area, south of the Flotation Mill, and east of the site access road (Figure 3-2). This complex is approximately 985 feet long, 200 feet wide, and covers 3.3 acres adjacent to the site access road. The western edge of the Roast Bed Complex is bounded by an approximately 600-foot-long, fieldstone retaining wall. There is an approximately 50-foot-long breach in the wall located 330 feet from the wall's northern end. The Ely Brook Tributary EBT2 originates from uplands east of the Roast Bed Complex and traverses through the Complex at this breach location. The fieldstone wall begins at grade level at its northern end and rises to a height of roughly 12 feet at its southern extent. The plateau to the east of this wall contains a 1.5-acre flat, generally treeless area of fine yellow-orange soil with areas of deep vermilion-red wastes characteristic of sulfide ore roast bed remains. An excavation in bedrock along the tree line at the eastern edge of the Roast Beds Complex corresponds with a shaft indicated on the 1943 USGS site geologic map. This shaft is not noted in any of the historical accounts and may have been a large prospect pit (PAL 2005). A trail extending north from the Roast Bed Complex may be a spur track off of the main ore tramline (PAL 2005).

3.1.2.3 Flotation Mill and Adit 3 Cap Rock Pile

The northern portion of the Midslope Waste Piles includes the former Flotation Mill and the cap rock waste pile associated with Adit 3. Mining remnants in this area are the concrete foundations and surficial remains from the Flotation Mill, an area of eroded tailing (including both oxidized and some limited anoxic tailing), and an extensive cap rock pile separating the mill area from the Beaver Ponds. The cap rock pile, believed to be associated with Adit 3 due to its location, contains cobble and boulder-sized schist generally observed to be low in ore-content.

3.1.2.4 Ely Brook Channel

The Ely Brook Channel traverses the Midslope Waste Pile area along its western edge, and consists of primarily a waste ore-lined erosional feature. The presence of waste ore and possibly tailing within the channel bed and channel banks extends along the length of Ely Brook to the confluence with Schoolhouse Brook. These channel sediments are included as part of the defined Midslope Waste Pile area.

A former dam constructed of earth and rubble measuring approximately 150 feet long, 10 feet wide, and 2.5 feet high was located on the upper reach of Ely Brook, upstream of the EBT3 tributary. No standing water is ponded behind the dam, however, the area behind the dam is marshy. The feature does not appear on any of the historic maps or in any known historic photographs. In their 2005 report, PAL speculated that the dam may have been constructed to collect water from a spring identified in the vicinity of the dam and/or to control water flow for agricultural, domestic or mining purposes.

Another dam, located on the upstream end of the EBT2 tributary of Ely Brook, consists of an earth and rubble berm measuring approximately 300 feet long and 16 feet wide, with approximately 3 feet of freeboard on the upstream side. The dam created a small reservoir in a natural valley. The dam and the surrounding area have been reworked by beavers that have breached the dam in several locations, creating a series of smaller ponds to the west. This area is referred to as the Beaver Pond area. Historical photographs show a pumphouse located on the north side of the reservoir. In their 2005 report, PAL concludes that the dam was likely built between 1882 and 1899 to provide a source of water rather than a source of power.

3.1.3 Smelter Area

The Smelter Area includes approximately 11.3 acres located in the southeastern part of the Site (see Figure 3-2). The Smelter Area is bounded by Schoolhouse Brook to the south, a mine access road to the east, and by a discontinuous high fieldstone retaining wall to the north. The former smelter buildings were located almost entirely on the northern side of South Vershire Road, which cuts through the east end of the original building footprint.

A prominent feature of this area is an approximately 600-foot-long, flat, barren, graded area of yellow earth and slag, with fragments of brick, slate, timber, and other demolition debris. The most visible portion of the slagheap is a long narrow escarpment located between South Vershire Road and Schoolhouse Brook. The slag is a glassy to metallic, purplish brown waste material with sharp edges, and hemispherical slag pot skulls are clearly visible in the downslope face of the slag pile. South Vershire Road is built through or over the top of the slagheap, and in situ slag deposits extend to the south and west of the smelter building foundation area, which is on the north side of South Vershire Road (PAL 2005). The area south of South Vershire Road and west of the visible slagheap contains slag fill. Slag has also eroded from the banks of Schoolhouse Brook and washed downstream to the east.

The Smelter Area contains other historic features including earthen ore tram line embankments and stone retaining walls, flat stone smelting furnace bases, linear berms of graded earth, constructed drainage features, wood posts, sections of intact brick flooring, and other industrial remains. Remnants from the Westinghouse-era operations (late 19th and early 20th century) include a smelting furnace base, brick and concrete machinery pads, a brick-lined underground channel, and piles of refractory material. The east end of the smelter building where the Westinghouse-era steel- and wood-frame buildings once stood contains a dense cluster of industrial features that correspond to the 1902 Westinghouse smelting plant drawing (PAL 2005).

3.1.4 Smoke Flue

In 1877, the Vermont Copper Mining Company constructed a stone slab Smoke Flue that extended from the north end of the smelter to an adjacent hilltop (see Figure 3-2). This structure was constructed to carry sulfurous fumes away from the furnaces and roasting ovens. According to historical records, there was an 80-foot-high lead-lined wood stack located at the top of the flue. Metal stays and metal pins are present on the hill top, which is adjacent to a former mine or timber haul road (PAL 2005).

3.1.5 Underground Workings and Subsurface Access Points

The Underground Workings (or Workings) bisect the northern portion of the Site and extend from the Main Shaft on the upper slope of the hillside toward the north-northeast, plunging at an angle of approximately 25 degrees. At the northernmost extent, the depth of the Workings is projected to be at or below sea level. There are no identified ventilation features or access points along the extent of the Workings.

Subsurface access points, described in this section, consist of the Main Shaft Area, Shaft No. 4, Burleigh Shaft, Adit No. 3 (the Deep Adit), and other subsurface access points.

The Main Shaft Area

The Main Shaft area, also known as the Tyson Shaft, is located in a wooded area in the northern portion of the Site, at the southern end of the Underground Workings (see Figure 3-2). The Main Shaft area includes the main mine entrance itself, the hoist house foundation, a secondary mine entrance, and a ventilation shaft. The shaft entrance is an approximately 10-foot-high, 30-foot-wide, oval hole in the schistose rock that descends underground at roughly a 25-degree angle into the mine, which reportedly mirrors the ore body to the extent its location is known (PAL 2005).

A separate mine entrance is located immediately west of the Main Shaft hoist house foundation. This steeply inclined shaft descends into an isolated area of the ore deposit known historically as the Back Stopes and reportedly connects with the west edge of the main shaft below ground surface. A ventilation shaft and/or access point for the Back Stopes is located 85 feet northwest of the hoist house foundation and consists of a rectangular dry-laid stone pit (PAL 2005).

Shaft No. 4 Area

The Shaft No. 4 area is a wooded 0.2-acre area at the west edge of the Site, east of the access road and west of the large dump piles clearing (see Figure 3-2). The mouth of the shaft, which plunged a short distance to the northeast, reportedly was located at the uphill, north edge of this area but has collapsed and is not visible (PAL 2005). A fan of barren development rock extends south from the shaft for approximately 100 feet.

The Burleigh Shaft

The Burleigh Shaft is located in a wooded area 30 feet west of the trace of the ore tram, and north of the Flotation Mill, approximately 420 feet south of the 1861 Pollard Adit (see Figure 3-2). The shaft mouth is located in an approximately 7-foot by 10-foot bowl-shaped depression and the inclined shaft reportedly descends from the surface in an easterly direction at an approximate 15-degree angle (PAL 2005). The shaft mouth is framed by an approximately 3-foot-wide and 2-foot-high stone portal lined with dry-laid schist slabs and capped by a 5-foot-long schist slab. A gently curved retaining wall consisting of mine waste rock rubble is located above the shaft mouth.

Adit 3, The Deep Adit

Adit 3, which is also called the Deep Adit, and associated development rock are located near the center of the Site, south of the Burleigh Shaft and immediately north of the Flotation Mill (Figure 3-2). This area encompasses approximately 0.7 acres of wooded terrain. The adit mouth and approach cut are located in a gully immediately east of the tram line. The adit has collapsed and is not visible, but the approach cut is visible as a north-south oriented muddy gully with a short intact section of low schist stone retaining wall. An expanse of barren development rock extends south from the adit approach cut for approximately 330 feet, and its south end is visible from the Flotation Mill foundation.

Additional Subsurface Access Points

Earlier historical resource investigations by PAL identified the following additional subsurface access points:

- 1850s Pollard Shaft (open)
- 1861 Pollard Adit (open)
- Shaft II (1850s Pollard Shaft) (open)

- 1834 Tyson/1854 Pollard Adit (collapsed)
- 1850s Pollard Adit A (collapsed)
- 1850s Pollard Adit B (collapsed)

3.2 METEOROLOGY

The Site is located in the northeastern climatological region of Vermont. Average temperatures vary locally due to elevation, topography, and urbanization. URS maintained a meteorological monitoring station at the Site between April 2007 and March 2008. The regional monitoring station is located at the Union Village Dam, located on the West Branch of the Ompompanoosuc River (WBOR) south of the Site. During the 1-year meteorological monitoring period at the Site, a maximum temperature of 88.6°F and a minimum temperature of -20.69°F were recorded. The average daily temperature over the monitoring period was 48°F. Average monthly temperatures from the site monitoring station are presented in Table 3-1.

Table 3-1
Average Monthly Temperatures, 2007-2008

Month	Maximum Temperature (°F)	Minimum Temperature (°F)	Average Temperature (°F)
April	80.4	25.1	52.7
May	88.6	27.3	57.9
June	88.6	32.9	60.7
July	84.1	40.5	62.3
August	88.2	46.2	67.2
September	83.9	30.7	57.3
October	76.7	28.3	52.5
November	40.2	21.6	30.9
December	33.4	-9.8	11.8
February	44.4	-20.7	11.9
March	39.2	0.9	20.0

Area winds primarily consist of topological wind currents and the regionally prevailing westerlies (i.e., a northwesterly flow in the winter and a southwesterly flow in the summer). The local wind conditions are strongly influenced by the topography and as such the prevailing winds at the Site generally blow parallel to the valley (i.e., from north to south). The contrasting air brought into the region by the westerlies interacts to produce localized low-pressure storm systems that cause wide variations in precipitation from one part of the region to another. For this reason, the rainfall at the Site may be significantly different from that measured at the Union Village Dam weather station, as can be observed in the existing data records.

Precipitation is received in fairly uniform amounts throughout the year. Most of the precipitation is generated by frontal systems. During the summer, thunderstorms are responsible for the heaviest local rainfall events. During the year of meteorological monitoring at the Site, URS recorded rainfall events of up to 1.95 inches within a 24-hour period. Several significant snowfall events (i.e., greater than 4 inches) were recorded at the Union Village Dam during this period as well. A summary of meteorological monitoring data obtained from the Site and Union Village dam monitoring stations is provided in Appendix C.

3.3 SOILS

Native soils in the vicinity of the Ely Mine are of the Tunbridge-Woodstock-Buckland association, described as gently sloping to steep, somewhat excessively drained to moderately well drained, shallow to deep, moderately coarse textured to medium textured soils that formed in glacial till on hilly uplands and mountains. The central site area is flanked by Cabot very stony silty loam (identified as CdB) along the east and west streams that combine to form Ely Brook. The moderately sloping areas east and west of Ely Brook contain Tunbridge-Woodstock rock outcrop complex (identified as TrD) soils. The steep slopes and ridges of the hills to the north and east of the mine contain Tunbridge-Woodstock complex soils (identified as TwE). The land south of Schoolhouse Brook contains Buckland very stony loam (U.S. Department of Agriculture [USDA] 1978).

The Site includes large expanses of made land and disturbed soils. The colored soils and variety of waste rock are the result of mining, waste rock sorting and disposal, and copper ore roasting. The natural soils in peripheral processing areas including ore milling and smelting sites are also highly disturbed. The natural soils in worker settlement areas and associated agricultural lands have been modified to varying degrees by the historic domestic occupations. The more wooded, steeply sloping and rocky areas of the Site, where little or no industrial activities occurred, generally consist of undisturbed soil strata.

3.3.1 Naturally Occurring Soils

Soils naturally occurring at the Site are classified by the USDA Soil Conservation Service into six types:

- Buckland-Cabot-Colrain-Glover-Pomfret-Vershire soils are found along Schoolhouse Brook near South Vershire Road. These soils are found on moderate slopes (8 to 25 percent), are moderately well drained, and consist of very stony loam. These soils are typically found on hills and ridges. The parent material of these soils is coarse-loamy basal till.

- Cabot-Buckland-Colrain-Peacham soils are found within the Ely Mine study area proximal to the beaver ponds. These soils are typically found on low to moderate slopes (3 to 15 percent), are poorly drained, and consist of very stony silt loam. These soils are found on knolls, depressions, and drainageways. The parent material of these soils is coarse-loamy basal till.

- Colrain-Buckland-Pomfret-Turnbridge-Vershire-Woodstock soils are found on the steep hillsides on the north-south trending ridges bounding the Ely Brook watershed. These soils are typically found on moderate to steep slopes (25 to 50 degrees), are well drained, and consist of very stony fine sandy loam. These soils are found on hills and ridges. The parent material of these soils is coarse-loamy till

- Merrimac-Agawam-Hartland-Ninigret-Walpole-Windsor soils are found along Schoolhouse Brook adjacent to S Road. These soils are found on low angle slopes (3 to 8 percent), are somewhat excessively well drained, and consist of fine sandy loam. These soils are typically found on stream terraces in and adjacent to Schoolhouse Brook. The parent material of these soils is sandy and gravelly glaciofluvial deposits.

- Turnbridge-Woodstock-Glover-Vershire-Buckland-Cabot-Colrain-Pomfret soils are found on the hill and ridges bounding the Ely Brook watershed. These soils are typically found on moderate slopes (8 to 25 percent), are well drained, and consist of very rocky fine sandy loams. These soils are typically found on hills and ridges. The parent material of these soils is coarse-loamy till.

- Turnbridge-Woodstock-Colrain-Glover-Rock Outcrop-Vershire-Pomfret soils are found on the steep hillsides on the north-south trending ridges bounding the Ely Brook watershed. These soils are found on moderate to steep slopes (25 to 50 degrees), are well drained to somewhat excessively drained, and consist of very rocky fine sandy loams. These soils are typically found on hills and ridges. The parent material of these soils is coarse-loamy till.

3.3.2 Man-Made and Disturbed Soils

The Site also contains large expanses of man-made land and disturbed soils. The current surficial materials at the Site are remnants of the roasting process and mining operation and include waste ore piles of differing degrees of weathering/processing. In addition to the dumping of mine wastes, human activities have reworked and disturbed native soils across the Site.

3.4 SURFACE WATER HYDROLOGY

Surface water hydrology is discussed in the following sections, arranged by primary drainage channels.

3.4.1 Ely Brook

Ely Brook drains the Site and subsequently flows into Schoolhouse Brook, which flows east and ultimately discharges into the EBOR south of West Fairlee. Ely Brook appears as an unnamed brook on local maps. Ely Brook rises from two points, one on the west side of the valley at approximately 1,250 feet above MSL, and the other at a small dammed pond (referred to herein as Beaver Pond Number 1) on the east side of the valley at approximately 1,120 feet above MSL (Figure 3-1). These streams join just below the Flotation Mill and flow south under South Vershire Road and into Schoolhouse Brook at an elevation of approximately 970 feet above

MSL (Figure 3-1). Schoolhouse Brook flows southeast and converges with the EBOR approximately 1.25 miles south of the Ely Mine in the village of West Fairlee (Figure 3-4).

The Ely Brook Watershed encompasses approximately 275 acres and has an overall vertical drop of approximately 280 feet. Ely Brook is a 4th order stream and is likely fed by springs, ponds, and drainage from mine features and is observed to be a gaining stream. The Ely Brook Channel is generally steep and rocky with minimal sediment deposition upstream of the confluence of EBT2, which drains the Upper and Midslope Waste Piles and the Beaver Ponds. The channel has a low gradient downstream of the confluence of EBT2 and significant sediment deposition occurs in the portion of Ely Brook that is adjacent to the Midslope Waste Piles area.

A flow monitoring V-notch weir was installed on lower Ely Brook during the period preceding the RI. As part of the RI/FS Workplan, the weir was restored and monitoring equipment refurbished to allow for flow monitoring data collection, as possible. The weir monitoring period was between 2006 and 2007, although ongoing sedimentation of the weir as well as icing and overtopping of the structure during storm flows, limited the data usability. A monthly summary of the flow data collected for the period from May through October 2007 is provided below.

Table 3-2
Summary of 2007 Ely Brook Flow Data

Month and Year	Average Flow (cfs)	Minimum Flow (cfs)	Maximum Flow (cfs)
May 2007	0.31	0.09	8.24
June 2007	0.46	0.16	4.01
July 2007	0.20	0.09	9.74
August 2007	0.10	0.00	7.55
September 2007	0.02	0.00	0.56
October 2007	0.21	0.08	0.75

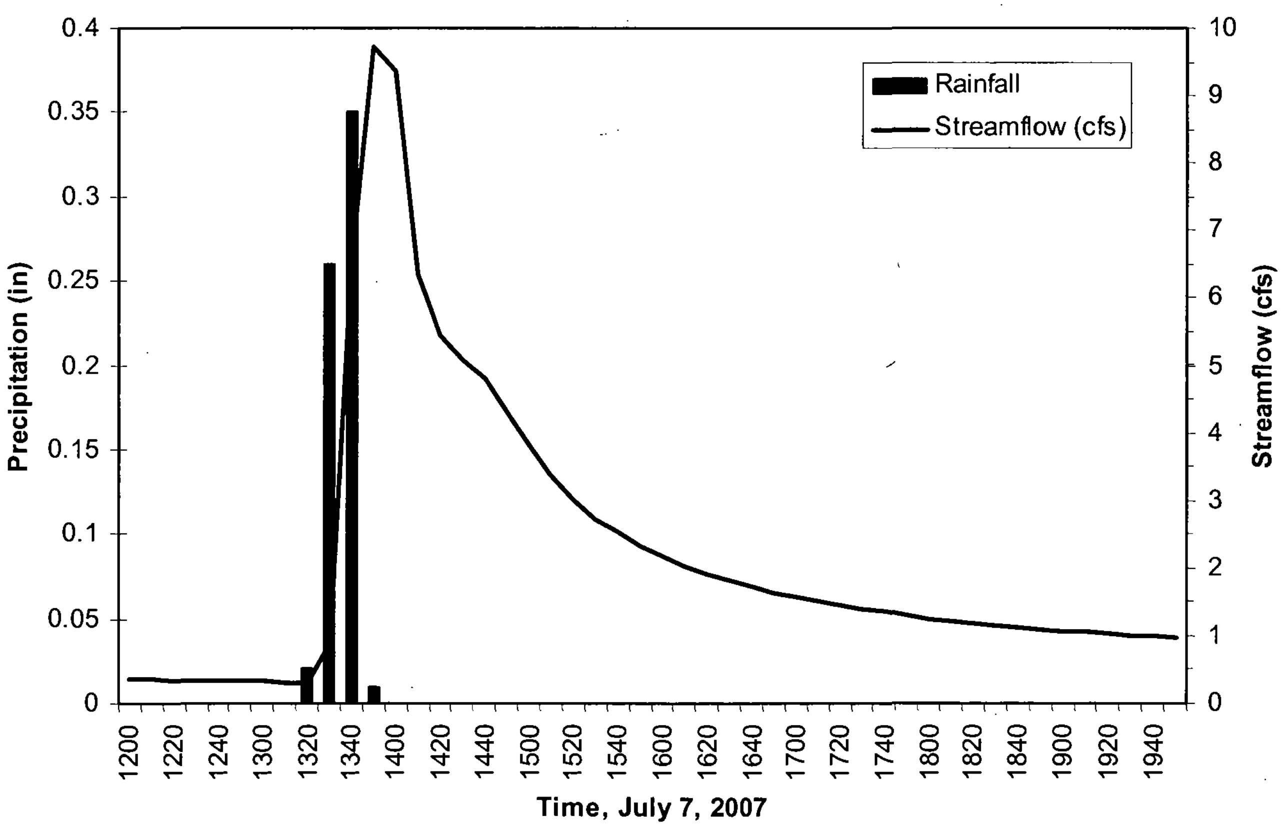
Note: flows recorded as cubic feet per second (cfs).

The summer and early fall of 2007 was a dry period, during which time there was often no flow measured at the weir. This was corroborated by field observations.

During one discrete precipitation event in July 2007, 0.64 inches of rain fell within a 40-minute period. The response in Ely Brook, illustrated in Figure 3-5, was an increase from a baseflow rate of 0.35 cfs to a recorded peak flow of 9.36 cfs within 50 minutes of the initial rainfall, and within 20 minutes of the peak rainfall intensity. Near-baseflow conditions of approximately 1.5-times the pre-storm flowrate were restored within approximately 6 hours of the rainfall event. This event, mirrored by other less well-defined precipitation events observed in the data record as well as conditions observed onsite during implementation of the RI, highlights the flashy response of Ely Brook to significant precipitation events, likely resulting from the steeply sloped and poorly vegetated site area.

Figure 3-5

Ely Brook Flow Response Hydrograph



It should be noted that the high flow rates recorded at the weir should be considered as estimated values due to the likelihood of weir overtopping during these events. Months where low temperatures resulted in freezing conditions are not included in this flow summary due to their effects on weir operability and recording.

3.4.2 Schoolhouse Brook

Ely Brook drains into Schoolhouse Brook, which originates west of the Site south of Vershire Center. The Schoolhouse Brook watershed comprises approximately 6,239 acres. Schoolhouse Brook is a tributary of the EBOR, which is the major watershed in the area. Schoolhouse Brook meets the EBOR approximately 1.7 miles east of the Site in the village of West Fairlee, Vermont. Measured flowrates in Schoolhouse Brook during the RI ranged from 2 cfs upgradient of Ely Brook to 5.2 cfs downstream near the EBOR confluence.

Estimated discharge statistics were calculated for Schoolhouse Brook using the methods described in Flynn (2003). The USGS gauging station on the East Orange Branch located in East Orange, Vermont, which is approximately 12 miles north of the Site, is the nearest comparable river basin with current streamflow discharge data and for which streamflow statistics have been calculated. Data from the East Orange Branch gauging station were used to calculate the estimated statistics for Schoolhouse Brook, and the calculations are included in Appendix D. Statistical measures used to illustrate the flow characteristics included average monthly discharge, peak discharge, and flow duration. Selected statistics are summarized in Table 3-3. Flow measurements obtained from Schoolhouse Brook during the Phase 1A investigations were generally consistent with expected conditions, based on the estimated discharge statistics.

Table 3-3
Estimated Discharge Statistics
Schoolhouse Brook

Description	Discharge at Ely Brook (cfs)	Discharge at Mouth of Schoolhouse Brook (cfs)
Average Monthly Discharge		
January	7.4	12.0
February	6.2	10.1
March	11.4	18.5
April	33.6	54.5
May	22.2	35.9
June	9.4	15.2
July	5.2	8.5
August	3.9	6.3
September	3.6	5.9
October	6.7	10.9
November	9.4	15.2
December	9.4	15.2
Average Annual Discharge		
1997	12.6	20.4
1998	11.9	19.3
1999	9.7	15.7
2000	11.3	18.4
2001	6.8	11.0
2002	8.1	13.2
2003	8.2	13.3
2004	12.2	19.7
2005	10.1	16.4
2006	16.5	26.7
2007	12.9	20.9

3.4.3 East Branch of the Ompompanoosuc River

Regionally, the Site is located within the 136-square-mile drainage basin of the 23-mile-long Ompompanoosuc River system. The river system consists of the EBOR and WBOR, and downstream of their confluence, the Ompompanoosuc River. The EBOR originates in the northwest corner of Vershire and flows east and south to the southern edge of Thetford. Tributaries to the WBOR originate from Hawkins Mountain (elevation 2,363 feet) in southwest Vershire and Brocklebank Hill (elevation 2,111 feet) in northeast Tunbridge. The tributaries meet in northwest Strafford. The WBOR then flows southeast through Strafford and meets the EBOR to form the Ompompanoosuc River just upstream of the Union Village Dam in Thetford. The river then flows southeast to its confluence with the Connecticut River in Norwich, Vermont.

3.5 GEOLOGY

Site geology was characterized through subsurface investigations as well as through the geological information gathered from regional sources including technical papers and publications by the Vermont Geological Survey, the USDA, and the USGS.

3.5.1 Overburden Geology

Orange County was most recently glaciated during the Wisconsin Glacial Episode of the Pleistocene epoch, which ended between 13,000 and 10,000 years ago. Glacial erosion on ridges was typically minimal during this event; however scouring action of ice deepened and widened river valleys, which received outwash as glaciofluvial, and glaciolacustrine deposits. Glacial till is distributed in a layer of varying thickness over the bedrock across the region, and the Ompompanoosuc River valley includes glaciofluvial features such as kames and kame terraces, and glaciolacustrine littoral and lake-bottom deposits (Hammarstrom et al. 2001).

Undisturbed surficial deposits at the Ely Mine Site consist primarily of glacial till overlain by glacial outwash and thin overlying quaternary period alluvial deposits. As a result of historic site activities, substantial portions of the surficial deposits across the Site have been disturbed and contain waste material from mining operations, including slag, waste rock, and flotation tailing. Geologic cross-sections depicting the Site are provided as Figure 3-6 and 3-7.

3.5.2 Bedrock Geology

Orange County is located in the northern portion of the Southern Vermont Piedmont Division of the New England Upland physiographic zone. The county is characterized by low, north-south trending glaciated ridges and stream-dissected valleys with the greatest topographic relief occurring on the western boundary at the east flank of the Green Mountains. The eastern half of the county contains lower, rolling hills. Elevation varies from 3,166 feet on Butterfield Mountain in Orange, to approximately 400 feet at the Connecticut River, which forms the eastern boundary of the county.

Ely Mine is the central mine in the 20-mile-long, Orange County, Vermont, copper belt that includes the Elizabeth Mine in Strafford and the Pike Hill mines in Corinth (Figure 3-8). The metallic sulfide mineral deposits of the copper belt are located in the Paleozoic stratigraphic units of the Connecticut Valley Trough that stretches from western Massachusetts to the Gaspe Peninsula in Quebec, Canada. The bedrock underlying Orange County consists of Silurian and early Devonian metasediments with interspersed metavolcanics and igneous intrusives (Howard 1969). These rocks were subjected to at least three stages of intense folding and metamorphism during the early Devonian Acadian orogeny. Rock units typically dip steeply to the east, and become progressively younger from west to east. The Ely Mine ore body is hosted by the Gile Mountain Formation, which consists largely of metamorphosed schistose-grade pelite and graywacke originating from seafloor sediments (Howard 1969 and Hammarstrom et al. 2001).

The Vermont copper belt ore deposits are examples of Appalachian sulfides. These ore deposits consist of iron sulfide in the form of pyrite or pyrrhotite, often mixed with lesser quantities of copper, usually in the form of chalcopyrite, and sometimes zinc (sphalerite), lead, and trace amounts of other, sometimes precious, metals. The ore of the Ely Mine consists mostly of pyrrhotite (iron sulfide) with the copper in chalcopyrite (copper sulfide), and traces of zinc and silver. The Appalachian sulfide ore bodies are generally understood to have been deposited on the sea floor as thick sulfide ore beds from hydrothermal vents that precipitated metals. These metals leached from undersea magma by hot circulating seawater. The sulfide beds were eventually buried by sediments and incorporated into new continental crust in accretionary prisms where ocean crust was being subducted. The sedimentary and volcanic rocks were then included and metamorphically altered in the folded mountain ranges, uplifted, and eroded, subsequently exposing them in their current position and configuration.

Appalachian sulfide deposits stretch from Alabama to New Brunswick; however ore deposits of this type are found throughout the world (Hammarstrom et al. 2001). The sea floor hydrothermal metallic sulfide ore deposits have been further classified into subgroups according to their original depositional environment. Geologists consider the Ely Mine and other Orange County copper deposits to be examples of what is called a Besshi-type massive sulfide deposit, which occur at rifting (spreading) continental plate margins at oceanic ridge crests or back arc marine basins, as described (Hammarstrom et al. 2001).

Appalachian sulfide ore bodies are typically stratiform and stratabound, that is they conform to and are bound by their host rock layers, which were deposited at the same time. During the tectonic processes that emplaced them in their current location and orientation, they were subjected to intense deformation and remobilization. The ore bodies that survived this activity are typically pod-like, tabular in shape, steeply dipping, and often swell and pinch or form overlapping lenses (Hammarstrom et al. 2001). They are generally massive and fairly sharply bound by the schistose host rock.

The shape and orientation of the Ely Mine ore body within its host rock was important to the historical development of the mine and its landscape. Located in the crest and limb of a fold, the ore body trends northeast, is elongate and plunging. The deposit consists of several discontinuous lensoid, tabular sheets of massive sulfide arranged in an echelon or overlapping fashion. Measuring 3,380-feet-long along its strike and dipping at an angle of 25 degrees over 1,700 feet, the sulfide ore varies in width from 3 to 7 feet (Hammarstrom et al. 2001). At the northernmost extent, the depth of the Workings is projected to be between 20 and 50 feet below sea level. Mid-nineteenth-century attempts to locate the main ore body and to determine its underground trend resulted in the excavation of the numerous shafts, inclines, and adits across the southern slope of Dwight Hill. The most extensive portion of the Underground Workings extends toward the north-northeast along the strike of the orebody and plunges at an approximately 25-degree angle. The primary access point to the Workings is the Main Shaft, located north of the Upper Waste Piles.

3.6 HYDROGEOLOGY

Site hydrogeology was characterized based upon information from subsurface investigations including drilling in overburden soils, coring in bedrock, and collecting measurements and samples associated with both materials; in-situ hydraulic conductivity testing and packer testing; and from multiple rounds of groundwater level measurements. Monitoring wells installed to facilitate hydrogeologic characterization are referenced as shallow wells (designated as A), intermediate depth wells (designated as B), or deep wells (designated as C) depending upon the geologic unit and the vertical placement of the well screen with respect to the water table. Shallow monitoring wells were generally installed with a screen situated across or just below the water table; intermediate depth monitoring wells were generally screened within the glacial till (with the exception of MW-10B, which is screened in the shallow zone); and deep wells were screened in bedrock, as discussed in Section 2.2.4.1.

3.6.1 Hydraulic Properties of Geologic Materials

The fundamental hydraulic property of geologic materials that affects groundwater flow is hydraulic conductivity, which is a measure of a material's ability to transmit a particular fluid (e.g., groundwater). Results of hydraulic conductivity testing of the major geologic strata (i.e., overburden, glacial till, and fractured bedrock) at the Site are summarized in Table 3-4. Supporting data and calculations are presented in Appendix E. These data indicate the presence of three significant groundwater flow systems at the Site capable of transmitting appreciable amounts of water; however, only the upper and lower zones are present across the majority of the Site. A shallow groundwater flow system is present within the shallow overburden alluvial deposits and mine waste deposits overlying glacial till or bedrock. The geometric mean of hydraulic conductivities measured in monitoring wells screened in shallow overburden deposits is 4.5 x 10^{-4} centimeters per second (cm/sec). The deeper bedrock flow system present within the shallow, fractured bedrock exhibits a geometric mean hydraulic conductivity of 3.8 x 10^{-4} cm/sec.

Based on the stratigraphic data collected from soil borings, the shallow overburden and bedrock flow systems are separated in some areas by the presence of a saturated zone in the glacial till material. This intermediate-depth groundwater flow system is present in some areas within the discontinuous glacial till deposits overlying bedrock. Based on the hydraulic conductivity testing conducted in three monitoring wells screened in the glacial till unit, this intermediate groundwater flow system exhibits a geometric mean hydraulic conductivity of 1.2 x 10^{-4} cm/sec; however, where present in appreciable thickness in the lower portions of the Site adjacent to Schoolhouse Brook, this unit included less permeable zones that exhibited no groundwater yield during drilling activities. The glacial till unit appears to be capable of transmitting an appreciable amount of water only within discrete depth zones in the vicinity of the Smelter Area, and in the area of MW-05B located near the base of the Upper Waste Piles (Figure 2-7). In these discontinuous areas, groundwater flow zones were limited to discrete depths within the glacial till, based on the soil boring data.

3.6.2 Groundwater Occurrence and Flow

Groundwater at the Site originates as precipitation that infiltrates soils and mine wastes and flows downward through the vadose zone to the water table; as leakage from stream beds that traverse the Study Area; and as lateral inflow from adjacent uplands. Site groundwater may also originate from the mine pool located beneath and adjacent to the Upper Waste Pile area. Based on analyses performed for the Elizabeth Mine, which is situated in a similar hydrogeologic setting on Copperas Hill approximately 7.5 miles south of the Site, the groundwater recharge for the Study Area is estimated to range from 4.7 to 7.1 inches per year.

Upon reaching the water table, groundwater moves downward in upland areas to deeper groundwater systems and horizontally in the direction of decreasing hydraulic head to areas of groundwater discharge. Groundwater naturally discharges to portions of Ely Brook and Schoolhouse Brook, as well as to the Beaver Ponds located downgradient of the eastern portion of the Upper Waste Piles.

Based on a review of site geology, groundwater measurements, and hydraulic properties (i.e., hydraulic conductivity data), two groundwater flow systems have been identified at the Site. These flow systems include: a shallow overburden groundwater flow system, which is present within mine waste and alluvial deposits over the glacial till or bedrock; and a deep groundwater flow system within fractured bedrock. There is also an intermediate flow system that is discontinuous across the Site, but significant in the southern, lower elevation areas of the Site, including the Smelter Area.

3.6.2.1 Shallow Overburden Groundwater Flow System

Groundwater in the shallow overburden flow system is present under unconfined conditions, meaning that the water table (i.e., phreatic surface) serves as the upper boundary of the flow system and the bottom of the flow system is constrained by lower permeability glacial till and bedrock. At the Site, the shallow overburden groundwater flow system is limited in lateral extent by areas of bedrock outcrops or glacial till and areas where the shallow overburden thickness is limited. As defined by site borings, depth to water in the shallow overburden flow system ranged from approximately ground surface at MW-15A to 15 feet bgs at location MW-01A (see Figure 2-7).

Groundwater in this shallow overburden system flows in a southerly direction following the alignment of Ely Brook. The average hydraulic gradient is approximately 0.062 (dimensionless). Equipotential contours for the shallow overburden groundwater system, depicted on Figure 3-9, indicate that shallow overburden groundwater converges toward Ely Brook and the Beaver Ponds, as well as toward Schoolhouse Brook at the southern-most extent of the Site.

Shallow overburden groundwater flow contours do not exhibit significant seasonal fluctuations. At several monitoring well cluster locations, including MW-02, MW-04, MW-05, MW-06, MW-09, and MW-11, the observed groundwater hydraulic gradients suggest that shallow overburden groundwater is discharging downward into the underlying hydrologic groundwater flow system. Groundwater hydraulic gradients observed at MW-01 and MW-07 suggest that groundwater is discharging upwards from the underlying hydrologic groundwater flow system into the shallow overburden groundwater flow system.

3.6.2.2 Intermediate Groundwater Flow System

Where present, the glacial till unit is interpreted to have a slightly lower hydraulic conductivity than the overburden and bedrock stratigraphic units. The glacial till unit is discontinuous across the Study Area and it is therefore unlikely to function as a significant water-bearing unit across the Site. Where present with significant depth (i.e., adjacent to Schoolhouse Brook at MW-02), high density and apparently low permeable zones are present within the glacial till based on drilling logs and material samples collected. However, at the locations tested, the hydraulic conductance of the glacial till was similar to the overlying soils and wastes.

Equipotential contours for the glacial till groundwater system are depicted on Figure 3-10. Similar to groundwater flow in the shallow overburden flow system, groundwater in the glacial till converges from surrounding, topographically higher elevations towards Ely Brook and Schoolhouse Brook. Groundwater flow within the glacial till unit then follows a southerly flow path along the alignment of Ely Brook towards Schoolhouse Brook, with an average hydraulic gradient of 0.059.

Glacial till groundwater flow contours do not exhibit significant seasonal fluctuation. At several monitoring well cluster locations, including MW-01, MW-02, and MW-010, the observed groundwater hydraulic gradients suggest that groundwater is discharged from the underlying bedrock hydrologic groundwater flow system to the glacial till groundwater flow system. Groundwater hydraulic gradients observed at MW-02 and MW-05 suggest that groundwater is discharged from the overlying shallow overburden hydrologic groundwater flow system downward into the glacial till groundwater flow system. Groundwater elevation data collected from site monitoring wells from December 2006 through June 2008 are presented in Table 3-5.

3.6.2.3 Deep Groundwater Flow System

Groundwater is present within shallow fractured bedrock across the Site and Study Area. Bedrock groundwater is present under confined conditions in some locations, as evidenced by flowing artesian conditions observed in bedrock monitoring well MW-10C and through upward vertical hydraulic gradients observed in monitoring well clusters MW-01 and MW-07, and in the upward gradient observed at monitoring well MW-12C in relation to the adjacent beaver pond. In the remaining groundwater monitoring wells (i.e., MW-02, MW-04, MW-05, MW-06, MW-09, and MW-11), downward vertical hydraulic gradients were observed.

As shown on Figure 3-11, bedrock groundwater converges from the surrounding, topographically higher elevations towards Ely Brook and then follows the alignment of Ely Brook flowing southerly toward Schoolhouse Brook. Equipotential contours for bedrock groundwater show flow parallel to the alignment of Ely Brook towards the Schoolhouse Brook, under an average hydraulic gradient of 0.061. In the vicinity of the Beaver Ponds, groundwater gradients indicate the potential for bedrock groundwater to discharge to the surface water of the ponds, consistent with the historic spring-fed characterization of these features.

Bedrock groundwater flow contours do not exhibit significant seasonal fluctuations. At several monitoring well cluster locations, including MW-01, MW-02, MW-07, and MW-010, the observed groundwater hydraulic gradients suggest that groundwater is discharged from the underlying bedrock hydrologic groundwater flow system to the overlying groundwater flow system. Groundwater hydraulic gradients observed at MW-04, MW-05, MW-06, MW-09, and MW-11 indicate that groundwater is discharged downward from the overlying hydrologic groundwater flow system to the bedrock groundwater flow system.

Although not the focus of this Phase 1A investigation, the Underground Workings, along with the connecting adits and shafts, also effect bedrock groundwater at the Site by providing an interconnecting flow path between bedrock fractures, providing equalizing head conditions across zones of bedrock fractures, and providing anthropogenic discharge points to overburden zones and to the ground surface. The Underground Workings also likely contribute additional direct-contact sources of ore and potentially mine wastes to groundwater. The Underground Workings and the contained mine pool are the focus of the Phase 2 investigation activities at the Site.

3.7 CONCEPTUAL HYDROGEOLOGIC MODEL

This section summarizes preceding sections to describe a conceptual hydrogeological model. A conceptual hydrogeologic model presents the interpreted movement of groundwater throughout the Site. As previously discussed, the Site is located within the Ely Brook and a small portion of the Schoolhouse Brook watersheds. Ely Brook receives drainage from the Upper Waste Piles and from the Beaver Pond area, and traverses across the Midslope Waste Piles. The Smelter Area drainage discharges to Schoolhouse Brook immediately downstream of the confluence with Ely Brook.

The total acreage of the Ely Brook watershed is approximately 275 acres, of which the Site features occupy the central portion, as shown on Figure 3-1. In crossing the Site, Ely Brook is observed to be primarily a gaining channel, and other than during extreme low flow conditions, baseflow originating in the background, upstream portions of the watershed is transmitted into and through the site area. Recharge to the groundwater system generally occurs in topographically elevated areas. Groundwater flows downward in recharge areas to areas of lower hydraulic potential. In contrast, groundwater discharges in topographically lower areas that are associated with surface water drainage features such as streams and rivers. Groundwater flow in discharge areas is upward and groundwater is typically encountered near the ground surface.

The local groundwater flow regime underlying Ely Brook is comprised of two primary flow systems (shallow and deep) that are generally continuous and capable of yielding appreciable quantities of water. The shallow overburden groundwater flow system is comprised of limited saturated thicknesses of waste ore within the Upper and Midslope Waste Pile areas and fill and undisturbed soils intermittently distributed across the entire flowpath. The deep groundwater flow system resides in fractured bedrock. These flow systems are separated in some areas by an intermediate flow system comprised of saturated glacial till. Due to its low permeability in certain depth zones observed in the Smelter Area located lower in the valley, the glacial till has the potential to behave as an aquitard, limiting the rate of groundwater movement between the shallow and deep flow systems due to low bulk transmissivity and poor well yield (Freeze and Cherry 1979). However, in the vicinity of the Upslope and Midslope Waste Piles, the glacial till has been found to be not extensive and, where present, is of limited depth and exhibits hydraulic conductivity characteristics more similar to the overlying soils and wastes. Therefore, in these areas the glacial till, where present, is not characterized as an aquitard. The distribution of these flow systems is depicted spatially in cross-sections provided on Figure 3-6 and Figure 3-7.

Groundwater equipotential contour maps developed for the shallow, intermediate, and deep groundwater systems define flow towards and along the alignment of Ely Brook, and within the Smelter Area toward Schoolhouse Brook. Based upon downward hydraulic gradients observed across most well clusters within the Upper and Midslope Waste Pile areas, and upward gradients observed in the lower portion of the Site at the Smelter Area (including periodic artesian flow observed at monitoring well MW-010C just upslope from the Smelter Area), groundwater is interpreted to flow downward within the upslope recharge areas, supplying water to the underlying water-bearing zones. Moving downslope away from the recharge areas, groundwater is interpreted to flow upward into the overlying shallow overburden and intermediate (glacial till) groundwater systems adjacent to Schoolhouse Brook. Based on the site conditions observed, a per-foot groundwater discharge rate to Schoolhouse Brook from Smelter Area groundwater is estimated to be approximately 1.5 cubic feet per day per foot of length (Appendix F).

The Underground Workings of the Ely Mine contain an extensive mine pool, and are accessed at ground surface by a network of interconnected adits and shafts. The Underground Workings are interpreted to affect groundwater flow in areas adjacent to the Workings. The Underground Workings are to be the focus of subsequent investigations during later phases of this RI.

3.8 ECOLOGY

The ecology of the Ely Brook watershed was characterized as part of the Phase 1A RI and summarized in the April 4, 2005 Habitat Characterization Report prepared by URS for the USACE (URS 2005). URS ecologists conducted an extensive characterization of terrestrial habitat at the Site and surrounding areas; wetlands and aquatic habitats were characterized qualitatively. A characterization of the aquatic habitat as well as the associated ecological receptors and predators will be presented in a separate study report being prepared by the EPA project team.

Terrestrial Covertypes

Four major terrestrial covertypes and two variant covertypes were identified within the Ely Brook watershed. The Northern Hardwood Forest is the predominate covertype in the study area, providing the matrix for all other communities. The Northern Hardwood Forest is described as a variable community that is generally dominated by American beech (*Fagus grandifolia*), yellow birch (*Betula alleghaniensis*), and sugar maple (*Acer saccharum*); red maple is also a major component of the community (Thompson and Sorenson 2000). The canopy within the Northern Hardwood Forest covertype is predominately comprised of these species, although relative abundances of these species vary in some locations. Other common canopy species include northern red oak (*Quercas rubra*), white birch (*Betula alba*), and gray birch (*Betula populifolia*). In general, the predominance of oak in the canopy increases with elevation. Common understory species of the Northern Hardwood Forest include striped maple (*Acer pensylvanicm*), fern species, trailing ground pine (*Lycopodium digitatum*) and princess pine (*Lycopodium obscurum*), and saplings of the dominant canopy species. The two variants of the Northern Hardwood Forest covertype observed within the Ely Mine Study Area include a narrow band of poplar dominated Northern Hardwood Forest present to the west of Ely Brook; and on the north face of the northwest-southeast trending ridge in the northern portion of the Study Area, a Northern Hardwood Forest with American beech and eastern hop hornbeam (*Ostrya virginiana*) replacing the white and gray birch commonly observed elsewhere.

The Red Spruce Northern Hardwood Forest is found in the lower elevations in the Ely Brook valley. This covertype is related to the Northern Hardwood Forest community, but contains a greater abundance of softwood species including red spruce (*Picea rubens*), eastern hemlock (*Tsuga Canadensis*), and balsam fir (*Abies balsamea*) (Thompson and Sorenson 2000). In the Study Area, the Red Spruce Northern Hardwood Forest covertype is associated with the riparian corridors of Ely and Schoolhouse Brooks; it is also predominant at the bottom of the valley outside of the riparian corridor.

In portions the Study Area, vegetation is sparse or dominated by pioneering or early successional species, indicating prior disturbance of the landscape. Disturbance of terrestrial areas within the Study Area is primarily associated with mine waste deposition and mining operations. The terrestrial habitat assessment identified areas where these mine wastes came to be located, disturbing naturally-occurring habitats. Dump piles of tailings and development rock were placed on the southern face of the northwest-southeast trending ridge and near Ely Brook at the bottom of the valley. At the southern edge of the Site, a Smelter Area and slag pile are situated on either side of South Vershire Road. All told, waste material impacts habitat on approximately 16.8 acres of the property. Areas disturbed by mining operations are generally characterized by sparsely vegetated, reddish-brown wasterock tailings and slag material. Species occurring in mine waste areas include birches, particularly gray birch, white pine (*Pinus strobus*), red spruce, and aspen species. Growth of these species in the mine waste areas is generally stunted.

An upland meadow community exists in the southwest portion of the Study Area. This area is characterized by pioneering of early successional species including goldenrod (*Solidago spp.*) and blackberry (*Rubus spp.*); scattered apple trees (*Malus sylvestris*) and poplars were also observed in the area.

Ecological Receptors

The Northern Hardwood and Red Spruce Northern Hardwood Forests likely provide the greatest habitat value for ecological receptors within the Study Area. The Red Spruce Northern Hardwood Forest is often surrounded by Northern Hardwood Forest, so it is probable that similar receptors utilize both covertypes (Thompson and Sorenson 2000). The forests provide an abundance of seeds and nuts to support granivorous birds including grosbeaks, finches, ruffed grouse and sparrows and herbivorous mammals including squirrels, chipmunks, voles, mice, and porcupine. Large herbivores potentially occurring in the forests include white-tailed deer and moose.

The development of a thick mat of leaf litter material on the forest floor likely supports a diverse community of litter invertebrates. This litter invertebrate community provides food to insectivorous birds including robins, thrushes, and woodcock; other insectivores include shrews, moles, snakes, and frogs. Top predators in the forest covertypes likely include red fox, coyote, bobcat, fishers, owls, and hawks. Black bear are large omnivorous mammals that also have been reported in forests in this area.

Wetland and aquatic habitats located within the forest matrix likely support amphibians and aquatic-foraging birds and mammals. Wetlands and aquatic habitats likely provide habitat for salamanders and frogs. Schoolhouse Brook likely provides a forage base of fish for piscivores such as belted kingfisher (*Ceryle alcyon*) and mink (*Mustela vison*).

Disturbed/transitional areas, particularly those containing waste ore or mine tailing, provide less habitat value to wildlife than forested habitats. Sparse and stunted vegetation on the mine waste areas provide limited cover and forage for wildlife. Wildlife observed in the mine-disturbed areas included passerine birds and tracks of moose (*Alces alces*) and white-tailed deer (*Odocoileus virginiana*) observed in the floodplain of Ely Brook. For the most part, these receptors do not appear to be utilizing mine-disturbed areas for cover or foraging, but rather for movement to and from adjacent forested habitats.

The presence of bat populations in the Underground Workings area has been confirmed in previous surveys at Ely Mine. These investigations indicate that the mine is considered a historic hibernaculum for Indiana bat (*Myotis sodalis*) and that there is a consistent record of state-threatened Eastern small-footed bat (*Myotis leibii*) using Ely Mine since 1937 (Scott Darling, VTANR Personal Communication). In addition to these species, the following species of bats have been documented in the Workings: big brown bat (*Eptesicus fuscus*), little brown bat

(*Myotis lucifugus*), northern long-eared bat (*Myotis septentrionalis*), and eastern pipistrelle (*Pipistrellus subflavus*).

The upland meadow covertype provides limited habitat value relative to the adjacent forested habitats. No wildlife was observed in the upland meadow during the field survey. However, this area likely provides limited foraging, nesting, and cover resources to small mammals and passerine birds. White-tailed deer, raptors (red-tailed hawk), and possibly black bear may potentially utilize this habitat for foraging, but likely seek cover in more densely vegetated habitats.

Section FOUR

The presence of the ore body and the anthropogenic effects of historical mining activities at the Ely Mine have resulted in a halo effect where metal concentrations are enriched in the areas surrounding the mine work areas. As a result, the typical ecological and human health screening criteria generally employed at CERCLA sites are not generally useful to fully delineate the nature and extent of contamination at this Site because they cannot distinguish between levels of TAL metals or other site constituents that may be of concern and levels that are merely elevated above regional background concentrations. To resolve this issue, the Phase 1A RI presents a preliminary screening of the nature and extent of contamination in soil and sediment at this Site based on site-specific criteria established for the Elizabeth Mine Superfund site, and documented in the 2006 Record of Decision (EPA 2006b). The criteria were developed based upon the Human Health Risk Assessment and the BERA completed for the Elizabeth Mine in 2006. The site-specific delineation criteria for ecological receptors were established for soil based on the Lowest Observed Adverse Effect Level (LOAEL) and on the Lowest Observed Effect Concentration. Sediment criteria were developed using the LOAEL and Probable Effects Concentrations, as well as the effects range median from Long et al., (1995) for silver and the severe effects level from Persaud et al., (1993) for manganese. The site-specific delineation criterion for human health was established for lead, the only metal for which a human health risk was identified for Elizabeth Mine site soils. Since maximum concentrations at the Site are comparable or less than those observed at Elizabeth Mine, no further site-specific human health criteria were defined. If subsequent evaluations identify site-specific criteria that are different than those developed for the Elizabeth Mine Site, then the extent of soil and sediment impacts will require re-delineation using the updated criteria.

The surface water and groundwater criteria used are based on State and Federal regulatory criteria including the NRWQC (EPA 2006a) and the Vermont Water Quality Criteria (Vermont Water Resources Board 2000).

Evaluations presented in this Report are based on the comparison of data from the Study Area to those site-specific delineation criteria. Mine-related impacts to environmental media at the Site and within the downstream Study Area were assessed by evaluating validated data generated during investigations completed by URS during the period between 2004 and 2007, supplemented by data collected by ADL for USACE during 2000 and 2001, data collected by USGS between 2000 and 2007, and data collected by CRREL during 2002. The scope of the Phase 1A RI did not include a comprehensive background evaluation; however, background sample data were collected for each media and are presented in the following sections.

Complete analytical data for each media and data validation memoranda are included in Appendix G. The following tables present the data for exceedances of criteria, by media: Table 4-1, surface soil; Table 4-2, SPLP data; Table 4-3, subsurface soil; Table 4-4, surface water; Table 4-5, sediment; and Table 4-6 groundwater and residential drinking water. Sample locations associated with each media are depicted on Figures 2-2 through 2-7. The following sections present findings from the field assessments performed as part of the RI.

4.1 SOIL

This section of the Report presents the investigation results for surface and subsurface soil performed across the Site, as well as in background areas.

4.1.1 Surface Soil

Surface soil samples are those samples corresponding to soil depth intervals between ground surface and 2 feet below grade. The RI sampling program included 364 soil samples collected from 177 locations across the Study Area (see Figure 2-2 and Figure 2-3). Data on exceedances of soil criteria for surface soil samples are presented on Table 4-1. A complete analytical summary is included in Appendix G. The following sections present the nature and extent of mining-related impacts for the surficial soils at the Site.

Surficial soil samples were collected from background areas and from non-background site areas. Non-background sample locations are divided into three categories based on vegetation type: source areas, transition zone, and native forest. The source areas do not contain any substantial vegetation or organic matter and are characterized as exposed waste ore, slag, or tailing. The transition zone is generally comprised of a surficial layer of organic litter of varying thickness underlain by mine wastes. The thickness of the soil organic layer increases with increasing distance from the source areas. The increase in soïl organic matter corresponds with an increase in the density and diversity of vegetation. The native forest is characterized by a thick layer of organic matter that supports diverse vegetation. The native forest zone contains a developed layer of organic litter underlain by a natural mineral substrate. The extent of the source areas, transitional vegetation zones, and native forest boundary is shown on Figure 4-1

Source area surficial soil samples were typically collected from the upper 1 foot of waste material. Samples were collected at two depth intervals in the transition zone and native forest locations: (1) from the organic layer, if present, where there is ecological exposure (i.e., where plants root and soil invertebrates live); and, (2) from the sub-litter zone, which includes the material below the organic layer to a depth of 12 inches.

The type of vegetative cover present across the Site appears to be a reliable marker for the presence or absence of impacts to surface soil in all source areas except for the Smelter Area. In the Upper and Midslope Waste Piles a lack of vegetation or the presence of transition vegetation is an indicator that the near-surface soils are impacted by mine waste. However, in and around the Smelter Area vegetation is not an adequate indicator of impacts to surficial soil.

4.1.1.1 Background

URS collected 16 surficial soil samples from 15 background locations in a regional reference area defined by the following criteria: (1) similar geology and soil types as found onsite; and (2) areas not influenced by mining activities or other anthropogenic sources of metals other than regional atmospheric deposition. Background sampling locations are depicted on Figure 2-2 and analytical data are presented on Table 4-1. With the exception of manganese detected at 7,800 milligrams per kilograms (mg/kg) and 5,200 mg/kg at locations BK-08B and BK-08C, respectively, no TAL metals were detected above their respective criteria. Manganese was not detected above its criterion in site surficial soil samples; therefore, these exceedances in the background sample locations are likely related to differences in regional soils and/or geological conditions.

4.1.1.2 Upper Waste Piles

Geochemical testing of the wastes within the Upper Waste Piles indicate that that oxidative weathering of exposed, pyrrhotite-rich ore contributes metals and acidity to groundwater and surface waters located within and downgradient of the feature. Water interacts with remnants of the primary ores and secondary minerals that form by weathering and assimilates metals and acidity. The majority of this moisture discharges through the waste and into surface water and groundwater as ARD. Following precipitation events, the residual moisture evaporates and soluble mineral salts are left behind, temporarily sequestering metals and acidity. Upon the next precipitation event, this acidity and metal content is rapidly dissolved and released with runoff/infiltration and carried to receiving waters (e.g., Ely Brook). The wastes in this area are acid generating and exhibit low acid neutralization potentials indicative of ARD source material. The SPLP testing results indicate that the wastes can leach significant concentrations of aluminum, cadmium, copper, iron, nickel, and zinc in relation to either surface water or groundwater criteria. The waste subgrade materials, especially the glacial till, was found to be non-acid generating. The SPLP analytical data are provided on Table 4-2, and complete analytical data (including ABA) are tabulated in Appendix G.

Of the 82 surface soil samples collected in the Upper Waste Piles, 61 samples exceeded the soil criteria for one or more TAL metals; 81 percent of the sample locations contained at least one exceedance. Since copper and selenium exceeded their respective soil criteria most frequently, these metals were selected as mine waste marker compounds. The areal extent of copper and selenium impacts in surficial soil is depicted on Figures 4-2 and 4-3, respectively.

Source area samples contained the highest concentrations of mining-related TAL metals in surface soils within the Upper Waste Piles. Copper exceeded the 625 mg/kg criterion in 24 of the 25 source area samples, with concentrations ranging from 510 to 4,700 mg/kg. Selenium exceeded the 4.37 mg/kg criterion in all source area samples analyzed with concentrations ranging from 30 to 170 mg/kg. Cadmium, thallium, vanadium, and zinc were also observed above their respective criteria in source area samples in the Upper Waste Piles.

Transition zone samples typically contained slightly lower TAL metals concentrations as compared to those observed in the source areas. Additionally, TAL metals exceeding criteria in the transition zone samples were limited to copper and selenium, with the exception of one sample that contained an exceedance of thallium. In the transition zone samples from the Upper Waste Piles, copper concentrations ranged from 64 to 3,700 mg/kg, and selenium concentrations ranged from 3 to 76 mg/kg.

Eight native forest samples were collected from the Upper Waste Piles, and no exceedances of TAL metals were identified. Maximum cadmium and copper concentrations were elevated compared to those observed in background samples (i.e., 2.2 versus 0.52 mg/kg and 130 versus 45 mg/kg, respectively); however, neither of these constituents exceeded their respective soil criteria in the native forest samples.

Of the samples discussed above, multiple sample locations were oriented along 12 transects extending outward from the Upper Waste Piles. The sample locations along the transects spanned from the source area through the transition zone and into the native forest. In general, TAL metals concentrations decreased with increasing distance from the source area. The transects corroborate the findings of the discrete zone sampling. Both show that surficial soil impacts appear to be limited to areas where source material (i.e., waste ore) is exposed or present in the near surface environment, and the immediately adjacent areas. The vegetation appears to be a reliable marker for the presence or absence of impacts to the surface soil. Specifically, a lack of vegetation (as is observed on the waste piles) or the presence of transition vegetation is an indicator that the near-surface soils are impacted by mine waste. Transition vegetation in this area includes bacterial soil crusts, mosses, lichens, rhododendrons, blueberries, birches, spruces, firs, larches, hemlocks, and pines.

4.1.1.3 Midslope Waste Piles

Similar to the geochemical testing of the Upper Waste Piles, the wastes within the Midslope

Waste Piles are acid generating and exhibit low acid neutralization potentials indicative of ARD source material. The SPLP testing results indicate that the wastes can leach significant concentrations of aluminum, cadmium, copper, iron, nickel, and zinc in relation to either surface water or groundwater criteria. The waste subgrade materials were found to be generally non acid-generating. The SPLP analytical data are provided on Table 4-2, and complete analytical data (including ABA) are tabulated in Appendix G.

Of the 113 surficial soil samples collected from 62 locations within Midslope Waste Piles, 89 exceeded the soil criteria for one or more TAL metals; 85 percent of the sample locations contained at least one exceedance. Since copper and selenium exceeded their respective soil criteria most frequently, these TAL metals were selected as mine waste marker compounds. The areal extent of copper and selenium impacts in surface soils is depicted on Figures 4-4 and 4-5, respectively.

Source area samples contained the highest concentrations of mining-related metals in surface soils within the Midslope Waste Piles. Copper exceeded the 625 mg/kg criterion in 23 of the 37 source area samples collected, with concentrations ranging from 89 to 4,900 mg/kg. Selenium exceeded the 4.37 mg/kg criterion in 16 of the 37 source area samples analyzed, with concentrations ranging from 5.5 to 86 mg/kg. Additionally, thallium exceeded the 4.98 mg/kg criterion in 9 of the 37 source area samples analyzed, with concentrations ranging from 2.9 to 9.6 mg/kg.

Transition zone samples typically contained TAL metals concentrations comparable to those observed in the source areas. The TAL metals exceeding criteria in the transition zone samples were limited to copper and selenium, with the exception of one sample that contained an exceedance of thallium. There was variability between the sub-litter samples and the samples collected from organic material, although there was no clear trend of higher concentrations in either sample stratum. Copper concentrations ranged from 56 to 3,500 mg/kg, selenium concentrations ranged from 1.8 to 74 mg/kg, and thallium concentrations ranged from 1.3 to 14 mg/kg in the 42 transition zone samples collected in the Midslope Waste Piles.

Six of the 18 samples collected in the native forest zone of the Midslope Waste Piles exhibited exceedances of one or more TAL metals. Copper concentrations ranged from 23 to 1,500 mg/kg, selenium concentrations ranged from 1.4 to 35 mg/kg, and thallium concentrations ranged from 1.1 to 5 mg/kg. There were no other constituents detected in excess of standards.

Of the samples discussed above, multiple locations were oriented along 13 transects. The sample locations along the transects spanned from the source area through the transition zone and into the native forest. In general, TAL metals concentrations decreased with increasing distance from the source area. These transects corroborate the findings of the discrete zone sampling. Both show that soil impacts appear to be limited to areas where source material (i.e., waste ore) is exposed or present in the near surface environment.

4.1.1.4 Smelter Area

The source material wastes within the Smelter Area generate metals and acidity in a manner similar to the Upslope and Midslope Waste Piles described previously, however, the ABA data identified more significant acid neutralization potential for much of the waste fill samples and lower acid-generation potentias were also observed. More extensive testing of the slag by the USGS indicates that the slag produces less significant impacts than do non-smelted waste ore material which are also present within this area (Piatak et al. 2003). These data are supported by SPLP data collected by URS during the RI. The SPLP testing results indicate that the wastes can leach elevated concentrations of cadmium, copper, iron, and zinc in relation to either surface water or groundwater criteria. The SPLP analytical data are provided on Table 4-2, and complete analytical data (including ABA) are tabulated in Appendix G.

Investigations of soils in the Smelter Area included the collection of 75 surficial soil samples from 41 locations within the defined area. Of the 75 samples collected, 51 exceeded the soil criteria for one or more TAL metals, and 78 percent of the sample locations contained at least one exceedance. Since copper and selenium exceeded their respective soil criteria most frequently, these metals were selected as mine waste marker compounds. The areal extent of copper and selenium impacts in surface soils are depicted on Figures 4-6 and 4-7, respectively.

Source area samples contained the highest concentrations of mining-related metals in surface soil samples collected within the Smelter Area. Copper exceeded the 625 mg/kg criterion in all 10 of the source area samples collected, with concentrations ranging from 850 to 3,800 mg/kg. Selenium exceeded the 4.37 mg/kg criterion in 9 of the 10 source area samples analyzed, with concentrations ranging from 1.9 to 72 mg/kg. Additionally, thallium exceeded the 4.98 mg/kg criterion in 4 of the 40 source area samples analyzed, with concentrations ranging from 0.65 to 6.9 mg/kg.

Transition zone samples typically contained comparable TAL metals concentrations as compared to those observed in the source areas, with the exception of selenium, which was detected at higher concentrations in the transition zone. There was variability between the sub-litter samples and the samples collected from organic material, and there was no clear concentration trend in either sample medium. Copper concentrations ranged from 7.5 to 2,900 mg/kg, selenium concentrations ranged from 0.88 to 35 mg/kg, and thallium concentrations ranged from 0.84 to 7.5 mg/kg in the 26 transition zone samples collected in the Smelter Area. In addition to copper, selenium, and thallium, one sample contained lead at 1,700 mg/kg, which is above the 400 mg/kg soil criterion.

One of the eight samples (i.e., NF-03) collected in the native forest zone of the Smelter Area exceeded the soil criteria for cadmium (3.6 mg/kg), copper (2,000 mg/kg), selenium (9.9 mg/kg), and vanadium (400 mg/kg). This sample is located uphill from the smelter foundations.

Of the samples described above, multiple locations were oriented along eight transects. The sample locations along the transects spanned from the source area through the transition zone and into the native forest. In general, TAL metals concentrations decreased with increasing distance from the source area with the exception of TR-02, where the transect appears to have encountered waste material outside of the defined source area. These transects corroborate the findings of the discrete zone sampling in the Smelter Area. Both show that source material is present throughout the Smelter Area and that in this portion of the Site, vegetation is not a reliable marker for the presence or absence of waste material.

4.1.1.5 Smoke Flue

Of the 13 samples collected from 6 surface soil locations within the Smoke Flue Area, 3 exceeded the soil criteria for one or more TAL metals, and 33 percent of the sample locations contained at least one exceedance. The Smoke Flue results differ from the other mine waste area results in that the TAL metals exceeding criteria were lead and selenium. Lead concentrations ranged from 6 to 680 mg/kg, and selenium concentrations in the ranged from 2.6 to 58 mg/kg. Metal detections and exceedances for surface soil samples in the Smoke Flue Area are depicted on Figure 4-8.

4.1.2 Subsurface Soil

Of 35 subsurface soil samples collected from 23 soil boring and test pit locations in the Upper Waste Piles, the Midslope Waste Piles, and the Smelter Area, 23 samples exceeded soil criteria for one or more TAL metal and 83 percent of the sample locations contained at least one exceedance of a soil criterion. For the purposes of the Phase 1A RI, subsurface soils are those where the sampling depth interval was greater than 2 feet bgs. No subsurface soils were sampled in the vicinity of the Smoke Flue. Since copper and selenium exceeded their respective soil criteria most frequently, these metals were selected as mine waste marker compounds for subsurface soil samples.

In addition to TAL metals analysis, soil samples from some locations were analyzed for ABA. In general, the waste ore and tailing are acid generating, based on the negative Acid Neutralizing Potential (ANP) and positive Acid Generating Potential detected in the waste ore and tailing samples. With a few exceptions, the soil samples collected from undisturbed glacial till exhibit positive ANP, indicative of materials that are not acid producing.

Subsurface soil data are summarized in Table 4-3 and the subsurface soil locations are depicted on Figure 2-4.

4.1.2.1 Upper Waste Piles

Subsurface soil samples were collected in the Upper Waste Piles from soil borings SB-04, SB-05, SB-06, SB-07, and SB-08 and from test pits TP-08, TP-09, TP-10, and TP-11. Subsurface soil sample depths in the Upper Waste Piles range from approximately 2 feet to 30 feet bgs, with samples collected from several locations from depths below the waste in native soil or glacial till.

For samples collected from within the mine waste materials, TAL metals concentrations exceeding soil criteria for copper, selenium, and occasionally thallium were detected at eight of the nine subsurface soil sample locations in the Upper Waste Piles. Copper exceeded the 625 mg/kg criterion at 6 of the 9 subsurface sample locations, with concentrations ranging from an estimated 260 mg/kg in the sample collected from 16 to 18 feet bgs in SB-05 to an estimated 6,000 mg/kg in the sample collected from 6 to 12 feet bgs in SB-07. Concentrations of selenium exceeded the 4.37 mg/kg criterion at 8 of the 9 subsurface soil sample locations, with a range of 38 mg/kg in the 0 to 6 feet bgs sample from SB-08 to non-detect in the 16 to 18 feet bgs sample from SB-05. Thallium exceeded the 4.98 mg/kg criterion at 4 of the 9 subsurface soil sample locations with concentrations ranging from 23 mg/kg in the 4 to 6 feet bgs sample from TP-11 to 0.93U (non-detect) in the 27 to 30 feet bgs sample from SB-07. Laboratory detection limits for thallium were above the soil criteria for several subsurface soil samples including SB-04 (8-10.6 feet bgs), SB-05 (8-12 feet bgs), SB-06 (2-4 feet bgs), SB-07, 6-12 feet bgs), and SB-08 (0-6 feet bgs). Subsurface soil detections with the exceedances bracketed are depicted on Figure 4-9.

Locations where samples were collected from beneath the waste included SB-05 (16-18 feet bgs), SB-06 (2-4 feet bgs), SB-07 (22-24 feet and 27-30 feet bgs), SB-08 (6-10 feet bgs), TP-9 (3-4 feet bgs), TP-10 (7-9 feet bgs) and TP-11 (4-6 feet bgs). Of these samples, SB-05, SB-06, SB-07, and SB-08 were collected from the dense glacial till; the remainder of these samples were collected from native soils. Of these native soil (i.e., non-waste) samples, exceedances of standards were limited to copper, selenium, and thallium in TP-09 and TP-11, and selenium and thallium in TP-10.

Based on these analytical results, the dense glacial till underlying the waste ore at the Upper Waste Piles does not contain impacts from the waste ore. Impact to shallow overburden soils beneath the wastes were observed at TP-09 and TP-11, likely due to the disturbance to the soil during mining activities or impact from the overlying wastes.

4.1.2.2 Midslope Waste Piles

Subsurface soil samples were collected from the Midslope Waste Piles from soil borings SB-01, SB-02, and SB-03; test pits TP-04A, TP-06, and TP-07A; and from one hand dug sample collected from 02Ely8A-B-C. The Midslope Waste Piles include milled tailing and waste ore. Soil borings SB-01, SB-02, and SB-03 were advanced through the Roast Bed Area, while test pits TP-04A, TP-06, and TP-07A were advanced through the tailing. Soil borings and test pits were advanced through the waste ore into the underlying materials. Subsurface soil sample depths in the Midslope Waste Piles ranged from 2 to 10 feet bgs at 5 of the 7 subsurface soil sample locations. Concentrations of one or more of the following TAL metals exceeded soil criteria: cadmium, cobalt, copper, selenium, thallium, and zinc.

Concentrations of cadmium in subsurface soil analyzed for TAL metals from the Midslope Waste Piles range from 45 mg/kg at TP-07A to an estimated 0.2 mg/kg at SB-01. Cobalt concentrations in soil collected from the Midslope Waste Piles range from 1,500 mg/kg in TP-07A to and estimated 5.6 mg/kg in TP-06. Copper concentrations in the Midslope Waste Piles ranged from 36,000 mg/kg in the sample collected from 2 to 3 feet bgs at TP-04A to an estimated 210 mg/kg in the sample collected from 6 to 10 feet bgs at SB-02. Selenium concentrations in samples collected from the Midslope Waste Piles range from an estimated 92 mg/kg to a non-detect concentration of 0.94U mg/kg. The concentrations of thallium in samples collected from the Midslope Waste Piles range from 20 mg/kg to a non-detect concentration of 0.92U mg/kg. Concentrations of zinc in samples collected from the Midslope Waste Piles range from 5,700 mg/kg at TP-07A to 32 mg/kg at SB-01. Subsurface soil results with exceedances denoted are depicted on Figure 4-9.

The test pits TP-4A, TP-06, and TP-07A were advanced in the Midslope Waste Piles. Concentrations of cadmium, copper, selenium, thallium, and zinc were detected above their respective criteria in the sample from TP-04A, in the subsurface waste ore. Concentrations of copper, selenium, and thallium were detected above their respective criteria in the subsurface waste ore sample from TP-06. The subsurface tailing collected from TP-07A contained concentrations of cadmium, cobalt, copper, nickel, selenium, thallium, and zinc above soil criteria.

Soil borings SB-01, SB-02, and SB-03 were advanced in the Roast Bed Area. At these locations, the samples were collected from the underlying medium dense native glacial till. In the sample collected from 4.5 to 8 feet bgs, the concentration of copper in sample SB-03 was the only constituent detected above its soil criteria. This result indicates that till in this area was impacted either by mining activities or by the overlying mine waste.

4.1.2.3 Smelter Area

A total of 8 subsurface soil samples were collected from the Smelter Area at 7 sample locations. One or more TAL metals were detected at concentrations greater than the soil criteria at four of the seven sample locations. The TAL metals observed exceeding their respective soil criteria in the Smelter Area include copper, selenium, and thallium. Subsurface soil results and exceedances are depicted on Figure 4-9.

Shallow overburden material observed in the Smelter Area includes mixtures of slag; sand, brick, and cobble fill; and waste ore. Concentrations of copper, selenium, and thallium were identified at concentrations above the corresponding soil criteria in TP-01, TP-02B, and TP-03B. The concentration of copper detected in the sample collected from TP-106 was detected above the corresponding soil criterion.

The subsurface soil data collected from the Smelter Area indicate that some TAL metal impacts (i.e., copper, selenium, and thallium) are present below grade in the mine waste and in materials in this area. Copper detected above its criterion in test pit TP-03A was associated with alluvium materials that included no observed mine waste or slag.

4.2 SURFACE WATER

A total of 373 samples were collected from 112 locations across the Study Area to evaluate impacts to surface water resulting from site activities and site conditions. Surface water sample locations are depicted on Figure 2-5, exceedances of surface water criteria are presented on Table 4-5, and complete analytical data are included in Appendix G. Surface water samples were analyzed for conventional water quality parameters, TAL metals, and inorganic compounds, and field parameters were measured. The following sections present the nature and extent of mining-related impacts to surface water, arranged by flow system. Dissolved-phase concentrations are presented, except where otherwise noted.

4.2.1 Regional Background

Several regional background samples were collected from an unnamed tributary of the EBOR and from an unnamed tributary of Schoolhouse Brook. The pH values measured in the regional background surface water samples ranged from 6.4 to 8.1. Of the six samples collected from these background locations, four samples contained exceedances of surface water criteria. The exceedances were for total concentrations of aluminum and alkalinity in three samples and dissolved concentrations of aluminum in one sample. The surface water criterion for aluminum is 87 micrograms per liter (μg/L); the aluminum concentrations observed in these samples ranged from 35 to 160 μg/L. One sample exceeded the surface water criterion for alkalinity.

4.2.2 Ely Brook

A total of 191 surface water samples were collected from the Ely Brook watershed from defined areas, including the Background Area, Upper Ely Brook, Beaver Pond Area, Upper Waste Pile drainages, Midslope Waste Pile drainages, and Lower Ely Brook. Of these, a total of 169 samples, or 88 percent, contained concentrations of total and/or dissolved TAL metals exceeding surface water criteria. Surface water data are provided on Table 4-4. Surface water results with exceedances bracketed for two selected comprehensive monitoring events are depicted on Figure 4-10 and Figure 4-11. The monitoring events depicted on these figures were comprehensive sampling events which included the majority of the Study Area and source areas. The spatial representations allow for an evaluation of the surface water quality associated with each of the identified source areas, as well as the resulting downgradient concentration distribution patterns for all compounds detected.

4.2.2.1 Background

One background surface water sample was collected from Ely Brook upstream of the mine drainages and north of the Upper Waste Piles. The background sample, EB-1430M, contained total-phase concentrations of aluminum at 240 µg/L and iron at 2,000 µg/L; both values are greater than their respective surface water criteria of 87 µg/L and 1,000 µg/L. Total alkalinity (28,000 µg/L) exceeded its surface water criterion of 20,000 µg/L. The pH value measured in the background surface water sample was 7.7.

4.2.2.2 Upper Ely Brook

The Upper Ely Brook area contains several distinct drainages that converge in the vicinity of the Upper and the Midslope Waste Piles. This area contains ponds, streams, seeps, and other drainages that were sampled to determine the contributions of different source areas to the surface water impacts on the Site. The analytical results from the surface water samples collected from the Upper Waste Pile drainages, the Midslope Waste drainages, and the Beaver Pond drainages are discussed in the following sections.

4.2.2.3 Upper Waste Pile Drainages

A total of 31 surface water samples were collected from the Upper Waste Pile Drainages. Of the 31 samples collected, 27 samples contained exceedances of surface water criteria for either the total or dissolved phase. In these samples, total TAL metals exceeding surface water criteria include aluminum (25 samples), copper (23 samples), zinc (21 samples), cadmium (20 samples), iron (12 samples), selenium (3 samples), nickel (3 samples) and lead (1 sample). In addition to the TAL metals detected above surface water criteria, alkalinity exceeded its surface water criterion in two samples. Dissolved TAL metals exceeding surface water criteria include these same constituents at similar frequencies. Surface water sample locations in the Upper Waste Pile Drainages are depicted on Figure 2-5. Surface water data is provided on Table 4.3. The distribution of surface water quality exceedances for a selected comprehensive monitoring event is depicted on Figure 4-10.

Metals exceedances were observed throughout the seepage channels and pH values ranged from 2.8 to 4.3. However, the highest concentrations of total TAL metals observed in these drainages were observed in the groundwater seepage points at the base of the Upper Waste Piles.

Low concentrations of TAL metals and near-neutral pH conditions (6.4 to 7.2) were observed in the samples collected from the western Ely Brook channel upstream of the confluence of the seepage channels designated EBT4 and EBT3. Metals exceedances were observed in the Ely Brook channel downstream of the confluence of the seepage channels and pH conditions were acidic. These data suggest that the seeps are significant contributors to ARD impacts to Ely Brook and that ARD does not enter Ely Brook in large quantities upstream of the confluence of the seep drainage EBT4. The uppermost tributary to Ely Brook from the waste piles, designated EBT4, conveys channelized surface water from the impacted seeps on the west side of the Upper Waste Piles. The concentrations of TAL metals observed in EBT4-25M are comparable to the concentrations of TAL metals observed at the seep origins (EM-SEEP-12 and EM-SEEP19) suggesting that no significant attenuation occurs between the seeps at the base of the waste piles and the EBT4-25M sampling location located just upstream of the Ely Brook confluence.

Metals observed in EB-770M, located on Ely Brook immediately downstream of the EBT4 tributary confluence, are consistently lower than those observed at EBT4-25M, suggesting that the ARD-impacted surface water from the EBT4 tributary is being attenuated by the surface water in Ely Brook. The pH values measured at the EBT4-25M sample location ranged from 4.4

to 4.6, while the pH measured at EB-770M ranged from 6.3 to 6.7. The pH values measured at these locations indicate that the more acidic surface water present in the tributary is being buffered by the more alkaline water of Ely Brook.

4.2.2.4 Midslope Waste Pile Drainages

In the Midslope Waste Pile Drainages, a total of 77 surface water samples were collected and 73 had exceedances of surface water criteria. Total TAL metals exceeding surface water criteria include aluminum (64 samples), copper (73 samples), zinc (59 samples), cadmium (55 samples), iron (52 samples), mercury (four samples), and nickel (two samples). Dissolved TAL metals exceeding surface water criteria included the same constituents at similar frequencies, as well as lead (one sample), selenium (one sample), and thallium (one sample). The pH values measured in the Midslope Waste Pile Drainages surface water sample locations ranged from 3.0 to 7.0. Surface water sample locations in the Midslope Waste Pile Drainages are depicted on Figure 2-5. A summary of Midslope Waste Pile Drainages surface water analytical results is shown on Table 4-4. The distribution of surface water quality exceedances for a selected comprehensive monitoring event is depicted on Figure 4-10.

As was observed in the Upper Waste Piles area, high TAL metals concentrations in the Midslope Waste Piles were observed in the groundwater seepage at the base of the piles. Many of the highest concentrations of total TAL metals were observed in the samples collected from the tributaries to Ely Brook downstream of the seepage areas. Several samples collected along tributaries EBT2 and EBT3 and along Ely Brook within this channel reach contained concentrations of TAL metals exceeding surface water criteria. The surface water samples collected from tributary EBT2 contain among the highest concentrations of aluminum, copper, zinc, and cadmium observed in the Midslope Waste Pile area. The tributary EBT2 provides drainage for several seeps originating from the Upper Waste Piles, including EM-SEEP8 as well as drainage for the Beaver Ponds and Adit 3. The range of pH measured in tributary EBT2 was 3.6 to 5.5. Based on the concentrations of TAL metals observed in surface water samples in the EBT2 locations upgradient of the bulk of the Midslope Waste Piles (i.e., EBT2-245M, EBT2-255M, and EBT2-265M), it appears that ARD impacts are already present in EBT2 surface water prior to reaching the Midslope Waste Piles. Similarly, high concentrations of TAL metals observed in EBT3-180M suggest that surface water quality in EBT3 is also impacted by ARD prior to reaching the Midslope Waste Piles.

Concentrations of TAL metals and the pH values observed in Ely Brook upstream of sample location EB-560M and the confluence of the EBT2 and EBT3 tributaries suggest that ARD impacts observed upstream (in samples collected from the EBT4 tributary) have been diluted before reaching the Midslope Waste Piles The pH values observed in Ely Brook at EB-560M and EB-600M ranged from 6.4 to 7.0. Following the convergence of the EBT2 and EBT3 tributaries with Ely Brook, the pH values observed in Ely Brook ranged from 4.0 to 4.3. The pH values and the high concentrations of TAL metals observed in the samples collected from EB-530M, EB-515M, EB-465M, EB-440M, and EB-405M, which are located downstream of the confluence of the tributaries EBT2 and EBT3 and the main body of the Midslope Waste Piles, indicate that the tributaries and seeps in the Midslope Waste Piles are significant contributors of ARD to Ely Brook.

4.2.2.5 Beaver Pond Complex and Drainages

A total of 32 surface water samples were collected from the Beaver Ponds and drainages. Of these 32 samples, 20 contained exceedances of surface water criteria for total TAL metals including iron (5 samples), aluminum (4 samples), copper (4 samples), and zinc (1 sample). Dissolved TAL metals exceeding surface water criteria in the samples from the Beaver Ponds and drainages include copper in 12 samples, zinc in 3 samples, and silver in 1 sample. Total alkalinity exceeded its surface water criterion in four samples, and dissolved alkalinity exceeded its criterion in three samples. The pH values measured in the surface water samples from the Beaver Pond Complex and drainages ranged from 4.3 to 7.8. Surface water sample locations in the Beaver Pond Complex and drainages are depicted on Figure 2-5, and a summary of analytical results appears in Table 4-4. The distribution of surface water quality exceedances for a selected comprehensive monitoring event is depicted on Figure 4-10.

The highest concentrations of total TAL metals and the maximum total concentrations of aluminum, copper, and zinc were observed in EM-POND5, which is the lowest downstream pond in the series of Beaver Ponds located northeast of the Midslope Waste Piles. The surface water in EM-POND5 originates from the upstream beaver ponds, Adit 3 drainage, and local groundwater contributions. In general, the ponds become increasingly acidic from upstream to downstream (east to west) with a pH range of 4.3 to 7.8.

In general, the lowest concentrations of total TAL metals were observed in the upstream ponds and in the upstream portions of the EBT2 tributary (i.e., EBT2-383M). Based on the distribution of TAL metals in the ponds, it appears that the ARD impacts increase progressively in the direction of flow most notably through surface water impacts emanating from the Upper Waste Piles and from Adit 3.

Concentrations of total aluminum and copper in EBT2-265M, located downgradient of the Beaver Ponds and upstream of the Midslope Waste Piles, have ranged from 32 μg/L to 5,400 μg/L and 16 μg/L to 1,660 μg/L, respectively. The concentration variability observed in these and other TAL metals suggest that flow conditions due to drought, rain events, spring run-off or other variables may be very influential in the dilution of ARD impacts to the downstream EBT2 tributary.

4.2.2.6 Lower Ely Brook

A total of 50 surface water samples were collected from 5 locations along Lower Ely Brook. Of the 50 samples collected, 48 samples contained exceedances of surface water criteria. Total TAL metals exceeding surface water criteria in Lower Ely Brook samples include copper (47 samples), aluminum (46 samples), iron (46 samples), zinc (45 samples), cadmium (44 samples), and mercury (2 samples). Total alkalinity exceeded its criterion in one sample. Dissolved TAL metals exceeding surface water criteria in Lower Ely Brook samples include the same six analytes. The pH values measured at the Lower Ely Brook surface water sample locations ranged from 3.2 to 4.5. Surface water sample locations in Lower Ely Brook are depicted on Figure 2-5. A summary of Lower Ely Brook surface water analytical results are shown on Table

4-4. The distribution of surface water quality exceedances for a selected comprehensive monitoring event is depicted on Figure 4-10.

The concentrations of TAL metals and the pH observed in surface water samples collected from Lower Ely Brook show ARD impacts are present at all sample locations along the Lower Ely Brook. No dilution or attenuation of ARD impacts appears to be occurring as the surface water flows downstream within Ely Brook.

4.2.3 Schoolhouse Brook

A total of 103 surface water samples were collected from several areas within Schoolhouse Brook. As shown on Figure 2-5, samples were distributed within the following three areas: the Background Area, the Smelter Area, and Lower Schoolhouse Brook.

4.2.3.1 Background

Eighteen background surface water samples were collected from the upstream reach of Schoolhouse Brook west of the Site, in a location upstream of the confluence of Ely Brook. Of the 18 background samples collected, 10 samples contained TAL metals exceeding their surface water criteria, including aluminum (6 samples), iron (1 sample), and zinc (1 sample). There were no exceedances of criteria in the associated dissolved phase samples. In addition, total alkalinity exceeded its surface water criterion in four samples. The pH values measured in the background surface water samples collected from Schoolhouse Brook ranged from 7.4 to 8.2. Surface water sample locations in the Schoolhouse Brook Background Area are depicted on Figure 2-5, and the analytical results (exceedances only) for these samples are shown on Table 4-4. The distribution of surface water quality exceedances for a selected comprehensive monitoring event is depicted on Figure 4-10.

The maximum concentrations of aluminum and iron were detected in samples collected in the spring of 2002. It is URS' understanding that these samples were collected under turbid storm flow conditions.

4.2.3.2 Smelter Area

A total of 23 surface water samples were collected from Schoolhouse Brook in the Smelter Area. Of the 23 samples, 19 samples contained concentrations of constituents that exceeded surface water criteria. These constituents included: aluminum (19 samples), copper (19 samples), mercury (4 samples), iron (3 samples), selenium (2 samples), cadmium (1 sample), and zinc (1 sample) for total phase analysis. Additionally, alkalinity exceeded the surface water criteria in 10 samples. Concentrations of dissolved TAL metals exceeding surface water criteria include copper, aluminum, and mercury at similar frequencies. The pH values measured in the surface water samples collected from the Smelter Area on Schoolhouse Brook ranged from 7.4 to 8.0. Surface water sample locations in the Smelter Area on Schoolhouse Brook are depicted on Figure 2-5, and the analytical results (exceedances only) for these samples are shown on Table 4-4. The distribution of surface water quality exceedances for a selected comprehensive monitoring event is depicted on Figure 4-10.

Based on the total concentrations of TAL metals and the pH values observed in the Smelter Area on Schoolhouse Brook, the greatest ARD impacts are generally found immediately downstream of the confluence of Ely Brook with Schoolhouse Brook. The pH values and concentrations of total TAL metals suggest that a degree of pH buffering and attenuation of ARD impacts are occurring as surface water from Ely Brook mixes with Schoolhouse Brook.

4.2.3.3 Lower Schoolhouse Brook

A total of 62 surface water samples were collected from the Lower Schoolhouse Brook, downstream of the Smelter Area. Of the 62 samples collected, 57 samples included exceedances of surface water criteria. Total TAL metals exceeding surface water criteria in Lower Schoolhouse Brook samples include: copper (55 samples), aluminum (52 samples), iron (4 samples), lead (1 sample), and mercury (1 sample). Total alkalinity exceeded its surface water criterion in nine samples. Dissolved TAL metals exceeding surface water criteria in Lower Schoolhouse Brook samples include copper, aluminum, and mercury at lesser frequencies. The pH values measured in the surface water samples collected from the Lower Schoolhouse Brook ranged from 6.6 to 8.3. Surface water sample locations on Lower Schoolhouse Brook are depicted on Figure 2-5; the analytical results (exceedances only) are shown on Table 4-4. The distribution of surface water quality exceedances for a selected comprehensive monitoring event is depicted on Figure 4-10.

Maximum concentrations of copper, aluminum, and iron were detected at SB-2940M, which is located in the upstream portion of Lower Schoolhouse Brook. The maximum concentrations of lead and mercury, which exceeded the criteria, were detected at SB-20M and SB-35M, respectively, near the mouth of Schoolhouse Brook. No other exceedances of lead and/or mercury were observed in Lower Schoolhouse Brook.

The concentrations of total TAL metals and the pH values observed in Lower Schoolhouse Brook indicate that ARD impacts are more significant in the upstream reaches of the brook, and that dilution and pH buffering of ARD are occurring as surface water flows downstream.

4.2.4 East Branch of the Ompompanoosuc River

A total of 73 surface water samples were collected from several areas on the EBOR, including the Background Area and the Lower EBOR.

4.2.4.1 Background

Thirteen background surface water samples were collected from the EBOR in locations upstream of the confluence of Schoolhouse Brook. Of the 13 background samples, 6 samples exceeded surface water criterion for total-phase aluminum. In addition, total alkalinity exceeded its surface water criterion in one sample. There were no other exceedances. The pH values measured in the background surface water samples collected from the EBOR range from 8.0 to 8.1. Surface water sample locations from the EBOR Background locations are depicted on Figure 2-5. A summary of surface water analytical results from the Background EBOR samples are shown on Table 4-4. The distribution of surface water quality exceedances for a selected comprehensive monitoring event is depicted on Figure 4-10.

The elevated concentrations of total aluminum observed in samples collected within the background reach of the EBOR are possibly due to turbid conditions at the time of sampling. There is no corresponding turbidy data associated with the samples exhibiting aluminum exceedances. However, the only sample for which turbidity levels were monitored indicated a field-measured turbidity level of 1.3 NTU and no total-phase aluminum exceedance. Additionally, samples analyzed for dissolved metals did not contain aluminum above the criterion.

4.2.4.2 Lower East Branch of the Ompompanoosuc River

A total of 60 surface water samples were collected from the Lower EBOR downstream of the confluence with Schoolhouse Brook. Of the 60 samples collected, 51 samples contained exceedances of surface water criteria. Total TAL metals exceeded surface water criteria for the following TAL metals; aluminum (46 samples), copper (35 samples), mercury (3 samples), selenium (1 sample), and zinc (1 sample). Alkalinity exceeded the surface water criterion in four samples. Dissolved TAL metals exceeded surface water criteria for copper, mercury, aluminum, and thallium. The pH values measured in the surface water samples collected from the Lower EBOR ranged from 7.0 to 8.2. Surface water sample locations on the Lower EBOR are depicted on Figure 2-5, and a summary of the exceedances of surface water criteria are shown on Table 4-4. The distribution of surface water quality exceedances for a selected comprehensive monitoring event is depicted on Figure 4-10.

The concentrations of TAL metals and pH values observed at sample locations along the Lower Ely Brook suggest that ARD impacts carried down Schoolhouse Brook are further diluted and buffered upon discharge to the EBOR. The higher concentrations of total TAL metals than dissolved metals in the surface water samples are attributable to turbid sampling conditions.

4.3 SEDIMENT

A total of 170 samples were collected from 73 locations within 11 sediment sample areas identified at the Site. Sample locations are depicted on Figure 2-6. Exceedances of sediment criteria are presented on Figure 4-12 and Table 4-5. A complete summary of analytical data is included in Appendix G. The following sections present the nature and extent of mining-related sediment impacts at the Site.

4.3.1 Background

Several regional background sediment samples were collected from an unnamed tributary of the EBOR and from an unnamed tributary of Schoolhouse Brook. Of the 14 samples collected from these background locations, 2 samples contained manganese concentrations that exceeded the 1,100 mg/kg criterion. Concentrations of manganese in background sediment samples ranged from an estimated 2,200 mg/kg at ORT-1190M to an estimated 220 mg/kg at SBT1-6M.

4.3.2 Ely Brook

A total of 95 sediment samples were collected from several areas within the Ely Brook watershed. Sediment samples were co-located with surface water samples in the Background Area, the Upper Waste Pile drainages, the Beaver Ponds and drainages, the Midslope Waste Pile drainages, and Lower Ely Brook. Of the 95 sediment samples collected within the Ely Brook Watershed, a total of 85 samples (89 percent) contained TAL metals exceeding sediment criteria. Sediment results are discussed by watershed area in the following sections.

4.3.2.1 Background

Three background sediment samples were collected from locations on Ely Brook situated upstream of the Ely Mine source areas; one of these sample contained an exceedance of manganese. The manganese detected in these background sediment samples ranged from an estimated 1,800 mg/kg at EB-1430M to an estimated 420 mg/kg at EB-1430M.

4.3.2.2 Upper Waste Pile Drainages

A total of 28 sediment samples were collected from the Upper Waste Pile drainages to determine mine impacts to sediments within these drainages. Of the 28 samples collected in this area, TAL metals in 23 samples exceeded sediment criteria and the TAL metals included copper (23 samples), selenium (12 samples), manganese (2 samples), and silver (2 samples). Exceedances of sediment criteria are presented on Figure 4-12.

The minimum concentrations of TAL metals were generally observed in the samples collected from the western Ely Brook channel (i.e., EB-1080M, EB-1030M, and EB-815M), whereas high concentrations in sediments were identified in the seep channels located below the waste pile. However, manganese is observed at increasing concentrations at locations further downstream of the source area while concentrations adjacent to the source material in the seeps do not typically contain elevated manganese concentrations. This is evidenced by the maximum manganese concentration in the Upper Waste Pile drainage area being observed at EB-770M (2,200 mg/kg), located in the main channel of Ely Brook, while the minimum concentration (57 mg/kg) was observed at EM-SEEP18, located at the base of the Upper Waste Piles. This distribution is likely the result of manganese dissolution from surface water, which is driven by oxidation-reduction and pH conditions.

4.3.2.3 Midslope Waste Pile Drainages

A total of 40 sediment samples were collected from the Midslope Waste Pile drainages. All of the sediment samples collected from this area contained exceedances of sediment criteria, as follows: copper (40 samples), selenium (35 samples), silver (11 samples), lead (1 sample), and manganese (1 sample). Exceedances of sediment criteria are presented on Figure 4-12.

Generally, copper and selenium concentrations were highest in the main channel of Ely Brook, downstream of the drainages from the Midslope Waste Piles where waste ore constituents are a large component of the in-channel sediments. Sediment samples collected in the Ely Brook tributaries, which are channeled in waste, also had exceedances of copper, selenium, and silver; however, the accumulation of waste ore and the pH phase dissolution occurring in the main channel of Ely Brook likely results in higher concentrations in the main channel as compared to the tributary drainages.

Lead also exceeded its criterion at EB-600M, located upstream of the confluence of EBT2. However, lead did not exceed its criterion upstream of this location in either EB-610M or in the Upper Waste Pile drainages area or in other locations. The source of lead in site sediments may be anthropogenic and related to either onsite construction (i.e., the Ely Mine Village) or former processes and operations (i.e., lead-lined chimneys and process equipment).

4.3.2.4 Beaver Ponds and Drainages

Of the eight sediment samples collected from the Beaver Ponds and associated drainages., five samples contained exceedances of sediment criteria including copper (three samples), manganese (three samples), nickel (three samples), chromium (one sample), and zinc (one sample). Exceedances of sediment criteria are presented on Figure 4-12.

Maximum concentrations of TAL metals were observed in the samples collected from the Beaver Ponds, specifically in samples collected from Pond 2, Pond 3, Pond 4, and Pond 5. Concentrations were generally much less than the maximum concentrations observed in the adjacent Upper Waste Pile drainages (i.e., 380 mg/kg of copper in Pond 4 versus 3,000 mg/kg of copper at SED-53C). This variability is likely due to the presence of waste containing high TAL metals concentrations in the Upper Waste Pile drainage channels, while the sediment in the Beaver Ponds contains TAL metals introduced by dissolution from surface water and/or groundwater. Minimum concentrations of TAL metals (below the criteria) were observed in samples collected from Pond 1 as well as in samples collected at EBT2-430M, located at the outflow of Pond 1. These data suggest that the sediment in Pond 1 has not been adversely affected by mining-related activities and that mining-related impacts enter the Beaver Ponds downstream of the Pond 1 outflow.

4.3.2.5 Lower Ely Brook

Each of the 16 sediment samples collected from the Lower Ely Brook contained exceedances of sediment criteria, including copper (16 samples), selenium (16 samples), silver (5 samples), manganese (2 samples), and zinc (1 sample). Exceedances of sediment criteria are presented on Figure 4-12.

Maximum concentrations of copper, manganese, and selenium occurred at sample location EB-90M, which is located behind the weir and upstream of South Vershire Road. Maximum concentrations of silver and zinc occurred at locations EB-90M and EB-30M, respectively. The distribution of maximum constituent concentrations suggests that waste material has been incorporated into Lower Ely Brook sediments and has collected behind the weir at EB-90M. The increased silver and zinc concentrations in sediment at EB-30M are likely related to the waste material and slag used as underlayment for South Vershire Road as well as runoff from the Smelter Area containing waste material that is deposited into the sediments at this location.

4.3.3 Schoolhouse Brook

Of the 41 sediment samples collected from several areas within the Schoolhouse Brook watershed, including the Background Area, Smelter Area, and Lower Schoolhouse Brook, a total of 31 samples (76 percent) contained concentrations of TAL metals exceeding sediment criteria. Exceedances of sediment criteria are presented on Figure 4-12.

4.3.3.1 Background

Seven background sediment samples were collected from locations on Schoolhouse Brook upstream of the confluence of the Ely Brook with Schoolhouse Brook. None of these samples contained exceedances of sediment criteria.

4.3.3.2 Smelter Area

Of the 12 sediment samples collected from the Smelter Area within Schoolhouse Brook, downstream of the confluence with Ely Brook, 11 samples contained exceedances of sediment criteria, including copper (11 samples), manganese (1 sample), and selenium (1 sample). Exceedances of sediment criteria are presented on Figure 4-12.

The maximum concentration of TAL metals in the Smelter Area was at SB-3260M, which is situated immediately downstream of the confluence of Ely Brook. Location SB-3260M contained the maximum copper concentration (1,390 mg/kg) as well as exceedances of manganese (1,120 mg/kg) and selenium (9.8 mg/kg). The minimum concentrations of TAL metals in the Smelter Area were generally observed at location SB-3250M, located downstream of the slag piles and SB-3125M, located approximately midway between the confluence of Ely Brook and the downstream end of the slag piles. Lower levels of TAL metals in sediment along the Smelter Area reach of Schoolhouse Brook indicate that the slag piles and mine wastes from the Smelter Area are apparently not contributing appreciable TAL metals to sediments in this reach of Schoolhouse Brook. This suggests that most mining-related TAL metals from Ely Brook are generally deposited in sediments within approximately 100 feet of the confluence of Ely Brook and Schoolhouse Brook. Copper concentrations exceed the sediment criterion throughout the Smelter Area reach of Schoolhouse Brook; however, the copper concentration is reduced by approximately 50 percent between SB-3125M, located near the mid-point of the Smelter Area, and SB-3020M, located at the downgradient end of the Smelter Area (300 mg/kg versus 150 mg/kg).

4.3.3.3 Lower Schoolhouse Brook

Of the 22 sediment samples collected from Lower Schoolhouse Brook, concentrations of copper exceeding the criterion were detected in 20 samples. Exceedances of sediment criteria are presented on Figure 4-12.

The maximum copper concentration (540 mg/kg) was observed at SB-20M, which is located near the mouth of Schoolhouse Brook. This area has a low gradient and is generally a depositional area characterized by fine-grained sediment. The minimum copper concentration (44 mg/kg) was observed at SB-2920M, which is located upstream of Unnamed Stream Number 2 and downstream of Miller Pond Road, respectively. The distribution of copper in sediment in Lower Schoolhouse Brook, along with the riverbed conditions, suggests that sediment is scoured from upper reaches (including the Smelter Area) and deposited in the depositional area downstream (including the reach between Route 113 and the mouth of Schoolhouse Brook).

4.3.4 East Branch of the Ompompanoosuc River

Of the 20 sediment samples collected from the EBOR, including from the Background Area and the Lower EBOR below the confluence with Schoolhouse Brook a total of 4 samples contained TAL metals exceeding sediment criteria.

4.3.4.1 Background

Seven background sediment samples were collected from locations on the EBOR upstream of the confluence of the Schoolhouse Brook with the EBOR. No exceedances of the TAL metals criteria were detected in the seven sediment samples collected.

4.3.4.2 Lower East Branch of the Ompompanoosuc River

Of the 13 sediment samples collected from the Lower EBOR, TAL metals in 4 samples exceeded sediment criteria. The TAL metals exceeding sediment criteria were copper (three samples) and manganese (one sample). Exceedances of sediment criteria are presented on Figure 4-12.

Copper exceeded its criterion at OR-8350M (153 mg/kg) and OR-23630M (220 mg/kg and 260 mg/kg in floodplain deposited sediments). These concentrations are generally less than those in Lower Schoolhouse Brook sediment, and indicate that copper-containing sediment from Schoolhouse Brook has been deposited as far downstream as the Thetford town line. The minimum detected copper concentration in the Lower EBOR was also observed at OR-23630M (10 mg/kg in floodplain deposited sediments). The range in copper concentrations in floodplain sediments suggests that during periods of high flows, copper-containing sediments are transported to depositional areas in the Lower EBOR. When river levels recede, the sediments remain within the high-water area but are no longer under water.

4.4 GROUNDWATER

Groundwater samples were collected from monitoring wells installed in the Upper Waste Piles, Midslope Waste Piles, Smoke Flue and Smelter Area to characterize site groundwater. Monitoring wells were screened in shallow overburden, glacial till, and bedrock units. Groundwater samples were also collected from two USBM bore holes installed during earlier ore investigations, possibly in the 1940s. Results from the groundwater samples collected at the USBM groundwater monitoring points are included with the results from bedrock monitoring wells, and are designated as BOM-1 and BOM-3, consistent with their depictions on historical maps.

Groundwater sampling events were conducted on December 11, 12, and 13, 2006; June 12 and 13, 2007; and, November 5, 6, and 7, 2007. Samples were collected in accordance with the FSP. Groundwater samples were analyzed for total and dissolved TAL metals, conventional water quality parameters, and field parameters using the methods described in Section 2.2.4.3.

4.4.1 Shallow Overburden Groundwater

Groundwater samples were collected from the 13 monitoring wells installed in shallow overburden during the RI to assess overburden groundwater quality in the Upper Waste Piles, Midslope Waste Piles, Smoke Flue, and Smelter Area.

4.4.1.1 Indicator Parameters

Indicator parameters, including dissolved oxygen, pH, redox potential, conductivity, temperature, and turbidity are summarized in Table 4-6. Because ARD increases the concentration of TAL metals as well as certain anions in water, specific conductance and pH can be used as indicators of groundwater quality impacts related to ARD. Dissolved oxygen concentrations and redox conditions also are indicators of metal phases and potential mobility. Indicator parameters are compiled in Table 4-6.

In general, the lowest pH and highest conductivity observed on the Site were samples from shallow overburden monitoring wells screened in mine wastes or located hydrologically downgradient of mine wastes. The low pH and elevated conductivity detected in shallow overburden wells correlate to ARD impacts in shallow overburden groundwater. As expected, shallow groundwater generally was found to have elevated dissolved oxygen and positive redox potentials consistent with relatively young waters originating from surface precipitation and recent infiltration.

4.4.1.2 Metals and Inorganic Constituents

Table 4-6 summarizes total TAL metals exceeding criteria in samples from overburden wells that were collected at the Site. Figure 4-13 depicts the distribution of TAL metals exceeding criteria in these groundwater samples.

The following were exceedances of groundwater criteria in samples collected from overburden:

Background Area

- MW-7A – none

Upper Waste Piles

- MW-06A – none
- MW-09A – cadmium, copper, manganese, and nickel

Midslope Waste Piles

- MW-04A – cadmium, copper, manganese, and nickel
- MW-05A – cadmium, chromium, copper, manganese, molybdenum, and nickel
- MW-08A – cadmium, copper, manganese, and nickel
- MW-13A – manganese
- MW-14A - none
- MW-15A – manganese
- MW-16A – none

Smelter Area

- MW-01A – copper and manganese
- MW-02A – cadmium, copper, and manganese
- MW-10B – manganese and nickel
- MW-11A - manganese

The data indicate that shallow groundwater impacts are associated with each of the waste areas, however impacts are limited in areas downslope from the western edge of the Upper Waste Piles (i.e., MW-6A) and significant ARD impacts do not extend laterally across Ely Brook from the Midslope Waste Piles (i.e., MW-15A and MW-16A). Overburden groundwater from the Smelter Area which is discharging into Schoolhouse Brook is also impacted and is contributing metals to the surface water along this adjacent stream reach.

4.4.1.3 Conventional Water Quality Parameters and Cyanide

Conventional water quality parameters and cyanide in shallow overburden groundwater samples collected at the Site are summarized in Table 4-6. In general, shallow overburden groundwater samples collected from monitoring wells installed in waste material showed elevated acidity and sulfate. As expected, based on the groundwater geochemistry, sulfide was not detected in shallow overburden groundwater samples collected at the Site.

4.4.2 Glacial Till Groundwater

Groundwater samples were collected from three monitoring wells screened in glacial till during the RI to assess materials contained in the Upper Waste Piles, Smoke Flue, and Smelter Area. Monitoring well MW-05B is located hydrologically downgradient of the Upper Waste Piles and MW-01B and MW-02B are located in the Smelter Area. In general and where encountered, glacial till at the Site is characterized by gray silty fine to coarse sand with fine to coarse schist gravel and cobbles. Where present, the thickness of glacial till ranged from a thin veneer overlying bedrock in some portions of the Site to approximately 53 feet in the area of MW-02.

4.4.2.1 Indicator Parameters

Indicator parameters for groundwater from the glacial till are summarized in Table 4-6. The range of pH values for groundwater from monitoring wells screened in glacial till was 5.8 in MW-01B to 8.3 in MW-01B and MW-02B. The range of conductivity values for groundwater from monitoring wells screened in glacial till was 426 microseimens per centimeter (µS/cm) in MW-02B to 932 µS/cm in MW-05B. The more alkaline pH values observed in the glacial till may be reflective of the increased pH and buffering capacity of the till media. In general, the pH values measured in groundwater monitoring wells screened in glacial till are close to neutral ranging to slightly alkaline.

4.4.2.2 Metals and Inorganic Constituents

Table 4-6 summarizes total TAL metals exceeding criteria in samples from wells in the glacial till that were collected at the Site. Figure 4-14 depicts the distribution of TAL metals exceeding criteria in the glacial till groundwater.

The following were exceedances of groundwater criteria in samples collected from glacial till monitoring wells:

Midslope Waste Piles

- MW-5B – manganese

Smelter Area

- MW-1B – none
- MW-2B – chromium, copper, lead, manganese, nickel, and thallium

The groundwater sample collected from MW-02B immediately following installation and development in December 2006 contained chromium, copper, lead, manganese, nickel, and thallium above criteria. Subsequent sampling events conducted in June 2007 and November 2007 did not identify any TAL metals above groundwater criteria. The elevated TAL metals in MW-02B during December 2006 are likely related to the entrainment of sediment in the sample resulting from well installation and incomplete well development. The turbidity of the sample collected from MW-02B in December 2006 was greater than 1,000 Nephelometric Turbidity Units (NTUs). The substantially decreased concentrations of TAL metals in MW-02B in the next two sampling events correspond with decreased turbidity levels.

Groundwater data from the Site indicate that impacts to glacial till groundwater are mostly confined to wells immediately downgradient of mine waste.

4.4.2.3 Conventional Water Quality Parameters and Cyanide

Conventional water quality parameters and cyanide in glacial till groundwater samples collected at the Site are summarized in Table 4-6. In general, glacial till groundwater samples contained alkalinity as bicarbonate and elevated sulfate where waste ore and slag overlie the till. Acidity was not detected in till groundwater samples.

4.4.3 Bedrock Groundwater

Groundwater samples were collected from the 11 monitoring wells screened in bedrock to assess the impacts to bedrock groundwater quality in the vicinity of each of the designated site areas.

Monitoring wells MW-05C, MW-06C, MW-09C, and MW-12C are located hydrologically downgradient of the Upper Waste Piles; MW-03C and MW-04C are located hydrologically downgradient of the Midslope Waste Piles; MW-010C is located in the Smoke Flue Area; and MW-01C, MW-02C, and MW-11C are located in the Smelter Area. Monitoring well MW-07C is in a location considered to be representative of site background conditions. Two USBM bedrock coreholes were also sampled during the RI; these are located in areas associated with the Underground Workings (BOM-01) and with the Upper Waste Piles (BOM-03).

Glacial till and overburden groundwater appear to discharge to bedrock groundwater in the vicinity of the Upper Waste Piles, based on groundwater levels collected from the MW-05, MW-06, and MW-09 well clusters. The downward hydraulic gradients observed at these locations indicate that ARD could potentially be a source of impacts to bedrock groundwater in the area adjacent to the Upper Waste Piles. The downward hydraulic gradient observed at the MW-04 well cluster indicates that overburden impacts could potentially be a source of impacts to bedrock groundwater in the Midslope Waste Area. Bedrock groundwater at MW-010C located near the base of the Smoke Flue discharges is artesian, and periodically during the year has been observed to be a flowing artesian well. This observation indicates that in this area, groundwater is discharging to the overlying overburden or glacial till strata. The MW-11 well cluster is located in the Smelter Area, downslope from MW-010C. At this location, there is a slight downward hydraulic gradient, with overburden groundwater discharging to bedrock. At the MW-01 and MW-02 well clusters located in the Smelter Area, there appears to be upward hydraulic gradients, with bedrock groundwater discharging to the overlying glacial till unit.

4.4.3.1 Indicator Parameters

Indicator parameters for groundwater samples collected from bedrock units are summarized in Table 4-6. The pH values for bedrock groundwater ranged from 5.9 (in MW-12C) to 9.4 (in MW-03C). In general, pH values observed in bedrock groundwater are slightly alkaline to alkaline. The less alkaline pH observed in groundwater in MW-12C may be the result of impacts from adjacent waste areas. Monitoring well MW-12C is a shallow bedrock monitoring well located adjacent to the lower Beaver Ponds, and downgradient of the Upper Waste Pile area and

Adit 3. The water is oxidized and contains dissolved oxygen levels consistent with recent atmospheric exposure.

The conductivity for bedrock groundwater ranges from 61 μSs/cm (in MW-07C) to 994 μS/cm (in MW-05C).

4.4.3.2 Metals and Inorganic Constituents

Table 4-6 summarizes total TAL metals exceeding criteria in bedrock groundwater samples collected at the Site. Figure 4-15 depicts the distribution of TAL metals exceeding in the bedrock groundwater system.

The exceedances of groundwater criteria in samples collected from bedrock monitoring wells are summarized by area, as follows:

Background Area

- MW-07C – none

Upper Waste Piles

- MW-05C – manganese
- MW-09C – molybdenum
- MW-12C – copper and manganese
- BOM-3 - beryllium, cadmium, chromium, copper, lead, manganese, nickel, and thallium.

Midslope Waste Piles

- MW-03C – none
- MW-04C – manganese

Smoke Flue

- MW-010C – molybdenum

Smelter Area

- MW-01C - none
- MW-02C – lead
- MW-11C - none

Underground Workings/Mine Pool

- BOM-1 - manganese

The BOM-03 sample had high turbidity levels, likely the result of the condition of the casing at the time of sampling, and possibly indicative of a poor seal of the casing at the bedrock surface. However, the metal exceedances were present in both the dissolved and total phases, indicating that the impacts are unlikely to be solely the result of entrained solids. The elevated concentration of lead identified in MW-02C during the December 2006 event is likely due to the entrainment of sediment in the sample, as reflected in the turbidity of the sample (greater than 1,000 NTU). Turbidity levels were lower and there were no exceedances of lead or other constituents during two subsequent rounds of sampling at this location.

These data indicate that in the upslope areas, where downward hydraulic gradients between overburden and bedrock groundwater exists, there are only limited impacts to bedrock groundwater quality and those are primarily in the vicinity of the Beaver Ponds and the Upper Waste Piles. In downslope locations, where upward gradients predominate between the bedrock and overlying strata (i.e., from within the Smelter and Smoke Flue Areas), there are only marginal observed impacts to bedrock groundwater, indicating that along the flowpath from the upslope source areas, any groundwater impacts are attenuated. It should be noted that for groundwater present within the Giles Mountain Formation, manganese is commonly observed at elevated concentrations compared to background levels.

4.4.3.3 Conventional Water Quality Parameters and Cyanide

Conventional water quality parameters and cyanide in bedrock groundwater samples collected at the Site are summarized in Table 4-6. Sulfate is a dominant anion in bedrock groundwater, with concentrations ranging from 5,400 μg/L (MW-07C) to 420,000 μg/L (MW-06C).

4.4.4 Residential Drinking Water

A residential supply well was sampled on December 5, 2007 to assess potential impacts to water supplies related to the mine and mine-related activities, as described in Section 2.2.4.5.

4.4.4.1 Indicator Parameters

Field water quality parameters including pH, conductivity, dissolved oxygen, redox potential, and temperature were measured during the sampling event. These data are summarized in Table 4-6.

4.4.4.2 Metals and Inorganic Constituents

The residential sample collected at RES-01 (location shown on Figure 2-3) was analyzed for TAL metals (total and dissolved) during the December 2007 sampling event. One duplicate sample was collected during this sampling event. The data from the December 2007 event are compiled in Table 4-7.

Concentrations of all total and dissolved TAL metals in the samples collected from RES-01 were below the groundwater criteria.

4.4.4.3 Conventional Water Quality Parameters and Cyanide

Table 4-7 summarizes conventional water quality parameters and cyanide in water samples collected from the residential well. Alkalinity was present as bicarbonate. There was no acidity detected in the residential well.

Section FIVE

The conceptual site model for the Ely Mine Site is described in the following sections.

5.1 GENERAL MINING FEATURES AND SOURCE AREAS

The Site encompasses the central and lower portion of the 250-acre Ely Brook watershed along the south slope of Dwight Hill. The Underground Workings bisect the northern portion of the Site and extend from the Main Shaft on the upper slope of the hillside toward the north-northeast, plunging at an angle of approximately 25 degrees. At the northernmost extent, the depth of the Workings is projected to be at or below sea level, which is approximately 1,200 feet below local ground surface. There are no identified ventilation features or access points associated with the Underground Workings.

Downslope from the mine adits and shafts are located disturbed and partially reworked piles of mine wastes, including waste ore, cap rock, and processed wastes. The wastes are made up of roast beds, tailing, and smelter slag. The waste ore piles are generally underlain by a thin veneer of glacial till or were placed directly on bedrock. Portions of the slag piles located south of South Vershire Road are underlain by more than 50 feet of glacial till. Till thicknesses generally decrease with increasing elevation and also decrease laterally across the Ely Brook Valley with increasing elevation. Locally, the glacial till is overlain by alluvial deposits and/or waste ore or slag. The bedrock underlying the Site is the Gile Mountain Formation, which consists largely of metamorphosed schistose-grade pelite and greywacke, originating from seafloor sediments.

The local groundwater flow regime is comprised of three interrelated flow systems (shallow, intermediate, and deep). The shallow and deep flow systems are capable of yielding appreciable quantities of water in some areas. The intermediate flow system is not a viable water source due to the discontinuity and low permeability of the unit across the Site. The shallow overburden groundwater flow system is comprised of saturated portions of waste ore, fill, slag, and alluvial soils. The deep groundwater flow system resides in fractured bedrock. Both of these flow systems are separated by an intermediate flow system comprised of saturated glacial till. Due to its generally low permeability, the glacial till behaves as an aquitard, limiting the rate of groundwater movement between the shallow and deep flow systems. Groundwater equipotential contour maps developed for the shallow, intermediate, and deep groundwater systems indicate flow down-valley toward Schoolhouse Brook (Figures 3-9 through 3-11). Based upon upward hydraulic gradients, groundwater flowing away from the recharge areas upslope is interpreted to flow upward into the overlying intermediate (glacial till) and shallow overburden groundwater systems before discharging to surface waters within the watershed.

The primary recharge area for the groundwater systems at the Site is interpreted to occur north and west of the Upper Waste Piles, near the headwaters of Ely Brook. Bedrock groundwater is also recharged by runoff and precipitation originating from more northern areas that are intercepted by the Underground Workings. Groundwater is interpreted to flow downward from these recharge areas toward the lower lying groundwater discharge areas along Ely Brook. This results in ARD from the waste piles entering the bedrock groundwater system via groundwater recharge. The interaction between these flow systems and the mine pool have not been fully evaluated, and are to be included as part of subsequent Phase 1B investigations, as noted in Section 5.4.

5.2 CONDITIONS AND TRANSPORT CHARACTERISTICS OF SOURCE AREAS

5.2.1 Upper Waste Piles

The Upper Waste Piles encompass approximately 6.5 acres of waste ore material. Topography in this area is steeply sloped and six adits and shafts lie within the limits of the waste deposits. Three shafts are situated north of the waste piles along the Main Shaft Access Road. The locations of the adits and shafts are depicted on Figure 3-2.

The Upper Waste Piles are highly eroded, with an extensive network of gullies and erosion rills transporting waste ore material downslope into seepage channels, the Midslope Waste Piles area, and eventually into Ely Brook. Surface water data collected during the RI identifies groundwater seepage from the Upper Waste Piles as a major source of TAL metals and acidity to Ely Brook.

Several key factors contribute to the significance of the Upper Waste Piles as a source of TAL metals and ARD including:

- Steep topography and limited thickness of wastes, which promotes ready access to atmospheric oxygen;
- Base metal-rich character of the wastes;
- Cobble-sized sulfidic waste on the surface, which provides a supply of exposed sulfides for reaction;
- Unsaturated condition of the waste piles and the distribution of material grain sizes, which transfer moisture and allow for oxygen entry, thereby advancing the ARD-generating processes throughout the thickness of the waste piles; and
- Engineering of the landscape, which resulted in a terraced surface that maximizes infiltration into the waste mass.

The waste ore piles of the Upper Waste Piles area are generally underlain by a thinly distributed glacial till layer, which in turn is underlain by bedrock. In some areas, the glacial till is anticipated to be absent and the waste ore is likely to be in direct contact with the bedrock. Analytical data indicate that the acid generation potential of the glacial till is negligible and that the till is a source of alkalinity, although elevated TAL metals concentrations (i.e., copper, iron, and zinc) have been observed in this unit and indicate that ARD has migrated into the till from proximal surficial wastes in some areas.

Analytical results indicate that the waste materials in the Upper Waste Piles generate acidity and the waste ore is a source of base metals and inorganic constituents including aluminum, antimony, cadmium, copper, iron, nickel, selenium, thallium, zinc, and sulfate. Leaching tests following SPLP methods indicate that leachates contained dissolved TAL metals (including antimony, aluminum, cadmium, copper, and nickel) within the range of surface water and groundwater chemistry observed in these media, both in and downgradient of the Upper Waste Piles.

The vegetation appears to be a reliable marker for the presence or absence of impacts to the surface soil in all areas except for the Smelter Area. Specifically, a lack of vegetation (as is observed on the waste piles) or the presence of transition vegetation is an indicator that the near-surface soils are impacted by mine waste.

Mobilized metals and inorganic constituents are transported through and away from the Upper Waste Piles by surface water flow, entrained sediment transport, and/or infiltration to groundwater. Solid-phase inorganics and acid-sulfide minerals are also transported downslope by erosion processes resulting from the over-steepened surface slopes and an extending waste footprint at ground surface.

5.2.2 Midslope Waste Area

The Midslope Waste Piles encompass approximately 12.2 acres of waste ore material. Topography in this area is less steep than that observed in the Upper Waste Piles area; however, the topography slopes downward to Ely Brook. The Roast Beds border the Midslope Waste Piles to the east and the former railroad trestle bisects the Roast Beds and extends northward to the Upper Waste Piles. The Beaver Ponds are located in the northeastern portion of the Midslope Waste Piles.

The Midslope Waste Piles are moderately sloped toward Ely Brook, with channelized flow transporting waste ore material from the Upper and Midslope Waste Piles into Ely Brook. The flat area adjacent to the Beaver Pond access road serves as a depositional area for eroded waste material.

The vegetation appears to be a reliable marker for the presence or absence of impacts to the surface soil in all areas except for the Smelter Area. Specifically, a lack of vegetation (as is observed on the waste piles) or the presence of transition vegetation is an indicator that the near-surface soils are impacted by mine waste.

The waste material of the Midslope Waste Piles area is generally underlain by a thinly distributed glacial till layer, which in turn is underlain by bedrock. In some areas, the glacial till is absent (MW-03C), and it is inferred that waste ore may be in direct contact with bedrock.

Leaching tests following SPLP methods indicate that leachates from Midslope Waste Pile samples contained elevated concentrations of dissolved aluminum, cadmium, copper, nickel, and selenium. Analytical data collected indicate that the Upper Waste Piles are a significant source of ARD to Ely Brook and that the ARD does not attenuate as it is transported across the Midslope Waste Piles. Additional impacts also result from drainage contributions from the Midslope Waste Piles.

Mobilized metals and inorganic constituents are transported through and away from the Midslope Waste Piles by surface water flow, entrained sediment transport, and/or infiltration to and subsequent transport by groundwater. Solid-phase inorganics and acid-sulfide minerals are also transported downslope by erosion processes within the tributary channels and the slopes along the edge of the site access road.

5.2.3 Smelter Area

The Smelter Area encompasses approximately 6.4 acres in the vicinity of the former smelter site and the adjacent slag piles. Topography in this area is relatively flat across the area with the face of the slag piles sloping steeply downward to Schoolhouse Brook. The smelter waste and slag piles include slag and waste ore and are generally underlain by glacial till, which at the MW-02 location was found to be more than 50 feet thick and included dense to very dense sequences at depth. The glacial till is underlain by bedrock. Smelter waste appears to support vegetation more readily than waste in the Upper and Midslope Waste Piles; therefore, the vegetation is a less reliable indicator of mining-related impacts.

Mobilized metals and inorganic constituents are transported through and away from the Smelter Area by surface water flow, entrained sediment transport, and/or infiltration to and subsequent transport by groundwater. Solid-phase inorganics and acid-sulfide minerals are also transported from the slag piles by erosion processes.

Leaching tests following SPLP methods indicate that smelter waste leachates contained copper in excess of groundwater criteria, and the SPLP leachate from the slag contained antimony and copper above groundwater criteria. The waste material (including the slag) likely has resulted in groundwater impacts within the Smelter Area which discharge to Schoolhouse Brook.

5.3 FATE AND TRANSPORT OF MINE-RELATED IMPACTS

The following sections present a discussion of the fate and transport of mine-related impacts at the Site.

5.3.1 Groundwater Transport and Extent of Impacts

Groundwater quality impacts from the source areas have been identified, and groundwater originating from the source areas is interpreted to flow toward, and ultimately discharge into, Schoolhouse Brook.

Groundwater impacts from the Upper and Midslope Waste Piles have been identified in wells screened in waste material (i.e., MW-05A, MW-09A) and in one rock corehole adjacent to the Underground Workings and hydraulically downgradient of the Upper Waste Piles area (i.e., BOM-03). In general, impacted groundwater has the following properties:

- pH within the range of 4.0 to 7.1;
- redox potential between 46.1 millivolts (mV) and 418.6 mV;
- specific conductance between 111 μS /cm and 710 μS/cm;
- dissolved oxygen concentration between 1.8 mg/L and 10.3 mg/L;
- sulfate concentrations between 20,000 μg/L and 510,000 μg/L;
- non-detectable sulfide concentrations; and
- metals concentrations exceeding groundwater criteria for total-phase constituents including cadmium, chromium, copper, and nickel.

Based on groundwater flow directions and gradients observed at the Site, groundwater quality impacts originate through ARD processes and sulfate salt dissolution within the surface waste ore in the Upper and Midslope Waste Piles areas. The ARD infiltrates through the waste ore and into the underlying saturated zone. The ARD impacts in groundwater are manifested as low pH, high sulfate concentrations, and high base metal concentrations, as noted previously.

Groundwater impacts in the slag piles appear to be limited to the wells screened in the saturated zone at the base of the slag piles. Elevated cadmium and copper were noted in these wells, along with reduced pH (2.6 to 5.8) and elevated sulfate concentrations (170,000 μg/L to 280,000 μg/L). The groundwater in the underlying till shows elevated sulfate (160,000 μg/L to 230,000 μg/L); however, no exceedances of base metals were observed in the till groundwater samples collected in 2007. Exceedances of chromium, copper, lead, manganese, nickel, and thallium were observed in total phase samples at MW-02B during December 2006 and are likely due to sample turbidity resulting from incomplete well development.

5.3.2 Surface Water Transport and Extent of Impacts

As noted in Section 4.2, surface water samples collected from the seeps at the base of the Upper Waste piles contained elevated aluminum, cadmium, copper, iron, nickel, selenium, and zinc. The Ely Brook tributaries (i.e., EBT4, EBT3, and EBT2) transport ARD impacts from the Upper and Midslope Waste Piles into Ely Brook. The water quality in the tributaries is characterized by low pH and elevated TAL metals. Tributary EBT4, which emanates from the western side of the Upper Waste Piles, also has elevated sulfate concentrations (ranging from 100,000 μg/L to 290,000 μg/L).

The ARD impacts in the tributaries are diluted and buffered by the more alkaline water in Ely Brook, thereby reducing the copper concentrations by a factor of 7 (309 μg/L versus 2,290 μg/L in May 2007) and reducing sulfate concentrations by a factor of 5 (20,000 μg/L versus 100,000 μg/L in May 2007).

Acid rock drainage and exceedances of copper, aluminum, iron, zinc, and cadmium are present throughout Ely Brook downstream of the confluence of EBT4. The highest concentrations of base metals (i.e., cadmium, copper, and zinc) were detected in Ely Brook immediately upstream of its mouth, while the highest concentrations of aluminum and iron were observed upstream of South Vershire Road behind the flow monitoring weir.

Impacts to Schoolhouse Brook due to ARD are most prevalent near the confluence with Ely Brook. The highest concentration of sulfate (30,000 µg/L) and the lowest pH (7.4) were observed at SB-2940M and SB-3255M, respectively, located downstream of the mouth of Ely Brook. Sulfate concentrations decreased and pH increased with distance downstream from the mouth of Ely Brook. The pH downstream of Ely Brook and the Smelter Area was approximately 8, which indicates that significant buffering occurs in Schoolhouse Brook. Data collected during the RI suggest that total TAL metals concentrations are elevated in Schoolhouse Brook during high flow events, in part due to suspended solids.

Surface water loading data collected during the RI indicate that the overall contribution of copper to Schoolhouse Brook from Ely Brook is on the order of 3.6 pounds per day (lbs/day). Table 5-1 presents surface water loading data for the Site from the May 2007 sampling event that correspond to the analytical results depicted on Figure 4-10. Complete mass loading calculations are provided in Appendix H.

Table 5-1
Surface Water Loading Rates
Ely Brook

Parameter	Loading Rate, Dissolved-Phase (lbs/day) and pH					
	Upper Waste Piles (West)	Upper Waste Piles (Middle)	Adit # 3	Midslope Waste Piles	Roast Beds	Lower Ely Brook
	EM-SEEP18	EM-SEEP17	EM-SEEP16	EBT2-7M	EBT1-10M	EB-30M
Flow Rate (gpm)	29.82	22.09	23.56	282.73	17.67	235.61
pH	2.81	3.81	3.42	3.58	6.52	4.52
Sulfate (total)	715.85	193.54	186.65	984.16	2.12	274.32
Aluminum	9.31	4.51	7.07	16.29	0.28	7.07
Cadmium	0.004	0.002	0.003	0.0078	0.0002	0.001
Copper	1.82	3.03	0.02	7.64	0.00	3.59
Iron	0.23	0.40	0.02	11.54	0.01	4.81
Selenium	0.001	0.001	0.00	0.003	0.001	0.002
Zinc	0.21	0.41	0.00	1.09	0.00	0.49

These data indicate that the highest discrete load entering Ely Brook is observed at EBT2-7M, which is at the downstream end of EBT2 where the channels draining the Upper and Midslope Waste Piles flow across the eroded mine waste in the northern portion of the Midslope Waste Piles. The groundwater seep on the west side of the Upper Waste Piles (EM-SEEP18) contributes the greatest amount of base metals and sulfate to EBT2. The loading data indicate that there is some attenuation of copper and aluminum occurring between the Upper Waste Piles and EBT2-7M. The load of sulfate, iron, and zinc increases between the Upper Waste Piles and EBT2-7M.

Surface water loading data collected during the same monitoring event were used to evaluate the loading condition within Schoolhouse Brook downgradient of the Ely Brook confluence. Table 5-2 presents surface water loading data for Schoolhouse Brook from the May 2007 sampling event coincident to the analytical results depicted on Figure 4-10. Complete mass loading calculations are provided in Appendix H.

Table 5-2
Surface Water Loading Rates
Schoolhouse Brook

	Loading Rate, Dissolved-Phase (lbs/day) and pH				
	Background	Ely Brook Confluence	Midpoint of Smelter Area	Downstream extent of Smelter Area	EBOR Confluence
Parameter	SB-3510M	SB-3250M	SB-3125M	SB-3020M	SB-20M
Flow Rate (gpm)	2,787.77				
pH	8.2	7.71	7.85	7.95	8.21
Sulfate (total)	401.55	336.6	339.97	416.89	401.55
Aluminum	3.01	2.06	2.00	2.22	3.01
Cadmium	0.017	0.003	0.003	0.012	0.017
Copper	0.74	1.10	0.88	0.79	0.74
Iron	1.14	2.62	0.86	0.51	1.14
Selenium	0.017	0.006	0.004	0.007	0.017
Zinc	0.35	0.93	0.36	0.37	0.35

These data indicate that the metal load entering from Ely Brook is partially attenuated near the confluence area, which is consistent with increasing sediment concentrations observed in this area, as well as visual observations of precipitates downstream of the Ely Brook confluence. Groundwater seepage to Schoolhouse Brook from the Smelter Area is not well defined, and is likely masked by the geochemical attenuation occurring in this same reach resulting from the Ely Brook impacts. However, there is a measurable increase in aluminum and selenium loads between the midpoint of the Smelter Area and the downstream edge of the area that may be attributed to groundwater discharges from the Smelter Area.

Using conservative groundwater discharge estimates, approximately 0.2 lbs/day of copper are introduced to Schoolhouse Brook from Smelter Area groundwater discharges (Appendix H). It is inferred from these data and analyses that these groundwater contributions could adversely impact Schoolhouse Brook surface water and/or sediment quality. Due to the measured and estimated streamflow rates for Schoolhouse Brook through the Smelter Area (refer to Section 3.4.2), it is anticipated that surface water impacts would likely not be directly measurable due to dilution. However, the resultant loading to sediment may be detectable.

Further downstream, as concentrations remain elevated for some site constituents throughout Schoolhouse Brook, the load of key site constituents (i.e., copper and zinc) remains elevated to the EBOR, indicating that attenuation of the overall metal load within the lower reach of Schoolhouse Brook is minimal for the spring conditions observed. The increase in loading rates for iron and aluminum between the site source areas and the mouth of Schoolhouse Brook is attributed to additional downstream sources of these inorganics.

5.3.3 Sediment Transport and Extent of Impacts

As discussed in Section 4.3, sediment samples collected in Ely Brook and Schoolhouse Brook are impacted by ARD. Metals consistently detected above sediment quality criteria included copper, selenium, manganese, silver, and zinc. The origin of these metals is through one or more of the following mechanisms:

- The metals are part of the mineralogy of waste ore that has been chemically weathered to sediment-sized particles, and these particles have been transported by runoff or stream flow and then deposited along the channels of the drainageways.
- The metals have co-precipitated with metal hydroxides.
- Metals have sorbed from surface water onto metal oxyhydroxide coatings in the sediment.

Sediment quality data collected during the RI indicate that base metal concentrations exceed their criteria with increasing frequency and magnitude in and downstream of the source areas. Manganese concentrations in sediment increase with increasing distance downstream of the source areas. Copper and selenium concentrations were highest in areas where Ely Brook and its tributaries are channeled through waste materials.

Sediment data collected from Schoolhouse Brook and the EBOR indicate that sediment quality is adversely impacted throughout Schoolhouse Brook, and there has been one exceedance of a site constituent in the EBOR at location OR-8350M (formerly LOC-45), situated just above the confluence with the WBOR (Figure 4-12). The morphology of Schoolhouse Brook indicates that much of the channel is high energy and high gradient and prone to frequent sediment scouring events annually, both in response to high spring and fall flow rates, as well as in response to significant individual storm events. The high flow energy of Schoolhouse Brook acts to re-distribute impacted sediment from the Site downgradient into areas where further geochemical attenuation of surface water impacts are not likely to occur (as evidenced by the loading data presented above). Sediment from the Ely Brook confluence area is transported to and through downstream depositional areas in Schoolhouse Brook.

5.4 AREAS OF PHASE 1B INVESTIGATIONS

The Phase IA investigations specifically did not include the following RI components:

1. Characterization of the Underground Workings and related groundwater;
2. Characterization of the interaction between the mine pool contained within Underground Workings and site hydrology;
3. Characterization of residential groundwater supply wells in the vicinity of the Site.

Based on current EPA direction, these characterization activities will be performed as part of the Phase 1B RI. Additionally, based on direction to be provided by EPA risk assessors and managers, characterization of regional soil impacts related to the former smelting operations may also be performed as part of the Phase 1B activities.

Section SIX

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Section **SEVEN**

ABA	Acid Base Accounting
ADL	Arthur D. Little, Inc.
AGP	Acid Generation Potential
AMD	Acid Mine Drainage
ANP	Acid Neutralization Potential
ARD	Acid Rock Drainage
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
bgs	below ground surface
BERA	Baseline Ecological Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation and Liablility Act
cfs	cubic feet per second
cm/sec	centimeters per Second
CRREL	Cold Region Research and Engineering Laboratory
EBOR	East Branch Ompompanoosuc River
EPA	United States Environmental Protection Agency
EBT	Ely Brook Tributary
^{o}F	Degrees Farenheit
FS	Feasibility Study
FSP	Field Sampling Plan
HSAs	Hollow Stem Augers
lbs/day	pounds per day
LOAEL	Lowest Observed Adverse Effect Level
mg/kg	Milligrams per Kilogram
MSL	Mean Sea Level

NRWQC	National Recommended Water Quality Criteria
NTU	Nephelometric Turbidity Unit
PAL	Public Archaeology Laboratory
QAPP	Quality Assurance Project Plan
RI	Remedial Investigation
SPLP	Synthetic Precipitation Leaching Procedure
TAL	Target Analyte List
µg/L	Micrograms per Liter
µS/cm	Microseimens per centimeter
URS	URS Corporation
USACE	U.S. Army Corps of Engineers
USBM	U.S. Bureau of Mines
USDA	United States Department of Agriculture
USGS	U.S. Geological Survey
VTANR	Vermont Agency of Natural Resources
VTDEC	Vermont Department of Environmental Conservation
WBOR	West Branch of the Ompompanoosuc River

Tables

TABLES

Table 2-1
Summary of RI Soil Sample Locations, Source Areas and Analyses Performed
Remedial Investigation
Ely Mine
Vershire, Vermont

Sample Location	Sample ID	Source Area	Sample Date	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Sample Type	Acid Base Accounting	Conventional Soil Chemistry	Metals	Oxides	SPLP Conventional Soil Chemistry	SPLP Metals	SPLP TAL Metals	TAL Metals
00JH34	00JH34	Smelter Area	10/16/2000	0	0	Field Sample	X	X	X	X				X
00JH34	00JH34 (DIW)	Smelter Area	10/16/2000	0	0	Field Sample					X	X	X	
00JH34	00JH34 (ESP)	Smelter Area	10/16/2000	0	0	Field Sample					X	X	X	
00JH38	00JH38	Smelter Area	10/16/2000	0	0	Field Sample	X	X	X	X				X
00JH38	00JH38 (DIW)	Smelter Area	10/16/2000	0	0	Field Sample					X	X	X	
00JH38	00JH38 (ESP)	Smelter Area	10/16/2000	0	0	Field Sample					X	X	X	
01JH31A	01JH31A	Upper Waste Rock Piles	11/10/2001	0	0	Field Sample	X	X	X	X				X
01JH31A	01JH31A (DIW)	Upper Waste Rock Piles	11/10/2001	0	0	Field Sample					X	X	X	
01JH31A	01JH31A (ESP)	Upper Waste Rock Piles	11/10/2001	0	0	Field Sample					X	X	X	
01JH31B	01JH31B	Upper Waste Rock Piles	11/10/2001	0	0	Field Sample	X	X	X	X				X
01JH31B	01JH31B (DIW)	Upper Waste Rock Piles	11/10/2001	0	0	Field Sample					X	X	X	
01JH31B	01JH31B (ESP)	Upper Waste Rock Piles	11/10/2001	0	0	Field Sample					X	X	X	
01JH34A-B	01JH34	Smelter Area	11/10/2001	0	0	Composite	X	X	X	X				X
01JH34A-B	01JH34 (ESP)	Smelter Area	11/10/2001	0	0	Composite					X	X	X	
01JH34A-B	01JH34 (DIW)	Smelter Area	11/10/2001	0	0	Field Sample					X	X	X	
01JH37	01JH37 CORE	Smelter Area	11/10/2001	0	0	Field Sample	X	X	X					X
01JH37	01JH37 RIND	Smelter Area	11/10/2001	0	0	Field Sample	X	X	X					X
02ELY10A-B	02Ely 10A	Midslope Waste Rock Piles	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY10A-B	02Ely 10B	Midslope Waste Rock Piles	10/08/2002	0.82	0.82	Composite		X	X		X	X	X	X
02ELY11	02Ely 11	Smelter Area	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY12	02Ely 12	Smelter Area	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY12	02Ely 12 DUP	Smelter Area	10/08/2002	0	0	Field Duplicate		X	X		X	X	X	X
02ELY13	02Ely 13	Smoke Flue	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY1A	02Ely 1A	Upper Waste Rock Piles	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY1A	02Ely 1B	Upper Waste Rock Piles	10/08/2002	0.82	0.82	Composite		X	X		X	X	X	X
02ELY2A-B	02Ely 2A	Upper Waste Rock Piles	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY2A-B	02Ely 2A DUP	Upper Waste Rock Piles	10/08/2002	0	0	Field Duplicate		X	X		X	X	X	X
02ELY2A-B	02Ely 2B	Upper Waste Rock Piles	10/08/2002	0.82	0.82	Composite		X	X		X	X	X	X
02ELY3	02Ely 3	Upper Waste Rock Piles	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY4A-B	02Ely 4A	Upper Waste Rock Piles	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY4A-B	02Ely 4B	Upper Waste Rock Piles	10/08/2002	0.82	0.82	Composite		X	X		X	X	X	X
02ELY5A-B	02Ely 5A	Upper Waste Rock Piles	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY5A-B	02Ely 5B	Upper Waste Rock Piles	10/08/2002	0.82	0.82	Composite		X	X		X	X	X	X
02ELY6A-B	02Ely 6A	Upper Waste Rock Piles	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY6A-B	02Ely 6B	Upper Waste Rock Piles	10/08/2002	0.82	0.82	Composite		X	X		X	X	X	X
02ELY6A-B	02Ely 6B DUP	Upper Waste Rock Piles	10/08/2002	0.82	0.82	Field Duplicate		X	X		X	X	X	X
02ELY7A-B	02Ely 7A	Midslope Waste Rock Piles	10/08/2002	0	0	Composite		X	X		X	X	X	X
02ELY7A-B	02Ely 9A (Dup of 02Ely07A	Midslope Waste Rock Piles	10/08/2002	0	0	Field Duplicate		X	X		X	X	X	X
02ELY7A-B	02Ely 7B	Midslope Waste Rock Piles	10/08/2002	0.82	0.82	Composite		X	X		X	X	X	X
02ELY7A-B	02Ely 9B (Dup of 02Ely07B	Midslope Waste Rock Piles	10/08/2002	0.82	0.82	Field Duplicate		X	X		X	X	X	X
02ELY8A-B-C	02Ely 8A	Midslope Waste Rock Piles	10/08/2002	0	0	Field Sample		X	X		X	X	X	X
02ELY8A-B-C	02Ely 8B	Midslope Waste Rock Piles	10/08/2002	1.15	1.57	Field Sample		X	X		X	X	X	X
02ELY8A-B-C	02Ely 8C	Midslope Waste Rock Piles	10/08/2002	2.33	2.99	Field Sample		X	X		X	X	X	X
BK-07A	ELY-SS-BK-07A (0-3)	Background	10/16/2007	0	0.25	Field Sample								X
BK-07B	ELY-SS-BK-07B (0-3)	Background	10/16/2007	0	0.25	Field Sample								X
BK-07C	ELY-SS-BK-07C (0-4)	Background	10/16/2007	0	0.33	Field Sample								X
BK-08A	ELY-SS-BK-08A (0-10)	Background	10/16/2007	0	0.83	Field Sample								X
BK-08B	ELY-SS-BK-08B (0-7)	Background	10/16/2007	0	0.58	Field Sample								X
BK-08C	ELY-SS-BK-08C (0-12)	Background	10/16/2007	0	1	Field Sample								X
BK-10A	ELY-SS-BK-10A (0-6)	Background	10/16/2007	0	0.5	Field Sample								X
BK-10B	ELY-SS-BK-10B (0-1)	Background	10/16/2007	0	0.08	Field Sample								X
BK-10C	ELY-SS-BK-10C (0-6) DUP	Background	10/16/2007	0	0.5	Field Duplicate								X
BK-10C	ELY-SS-BK-10C (0-6)	Background	10/16/2007	0	0.5	Field Sample								X
BK-14A	ELY-SS-BK-14A (0-1)	Background	10/16/2007	0	0.08	Field Sample								X
BK-14B	ELY-SS-BK-14B (0-8)	Background	10/16/2007	0	0.67	Field Sample								X
BK-14C	ELY-SS-BK-14C (0-1)	Background	10/16/2007	0	0.08	Field Sample								X
BK-15A	ELY-SS-BK-15A (0-2)	Background	10/16/2007	0	0.17	Field Sample								X
BK-15B	ELY-SS-BK-15B (0-0.5)	Background	10/16/2007	0	0.04	Field Sample								X
BK-15C	ELY-SS-BK-15C (0-2.5)	Background	10/16/2007	0	0.21	Field Sample								X

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Vershire, Vermont

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ELY00JH22	Ely00JH22	Midslope Waste Rock Piles	06/27/2000	0	0	Composite		X	X					X
ELY00JH24	Ely00JH24	Midslope Waste Rock Piles	06/27/2000	0	0	Composite		X	X					X
ELY00JH24	Ely00JH24 DUP	Midslope Waste Rock Piles	06/27/2000	0	0	Field Duplicate		X	X					X
ES-4 OCHRE	ES-4	Upper Waste Rock Piles	10/08/2002	0	0	Field Sample		X	X		X	X	X	X
NF-01	ELY-SS-NF-01 (0-2)	Smelter Area	10/16/2007	0	0.17	Field Sample								X
NF-01	ELY-SS-NF-01 (2-7)	Smelter Area	10/16/2007	0.17	0.58	Field Sample								X
NF-02	ELY-SS-NF-02 (0-8)	Smelter Area	10/16/2007	0	0.67	Field Sample								X
NF-03	ELY-SS-NF-03 (0-4)	Smelter Area	10/16/2007	0	0.33	Field Sample								X
NF-03	ELY-SS-NF-03 (4-12)	Smelter Area	10/16/2007	0.33	1	Field Sample								X
NF-04	ELY-SS-NF-04 (0-4) DUP	Smoke Flue	10/16/2007	0	0.33	Field Duplicate								X
NF-04	ELY-SS-NF-04 (0-4)	Smoke Flue	10/16/2007	0	0.33	Field Sample								X
NF-04	ELY-SS-NF-04 (4-10) DUP	Smoke Flue	10/16/2007	0.33	0.83	Field Duplicate								X
NF-04	ELY-SS-NF-04 (4-10)	Smoke Flue	10/16/2007	0.33	0.83	Field Sample								X
NF-05	ELY-SS-NF-05 (0-3)	Midslope Waste Rock Piles	10/16/2007	0	0.25	Field Sample								X
NF-05	ELY-SS-NF-05 (3-11)	Midslope Waste Rock Piles	10/16/2007	0.25	0.92	Field Sample								X
NF-06	ELY-SS-NF-06 (0-3)	Midslope Waste Rock Piles	10/16/2007	0	0.25	Field Sample								X
NF-06	ELY-SS-NF-06 (3-12)	Midslope Waste Rock Piles	10/16/2007	0.25	1	Field Sample								X
NF-07	ELY-SS-NF-07 (0-2)	Midslope Waste Rock Piles	10/17/2007	0	0.17	Field Sample								X
NF-07	ELY-SS-NF-07 (2-8)	Midslope Waste Rock Piles	10/17/2007	0.17	0.67	Field Sample								X
NF-08	ELY-SS-NF-08 (0-2)	Midslope Waste Rock Piles	10/16/2007	0	0.17	Field Sample								X
NF-08	ELY-SS-NF-08 (2-11)	Midslope Waste Rock Piles	10/16/2007	0.17	0.92	Field Sample								X
NF-09	ELY-SS-NF-09 (0-1.5)	Midslope Waste Rock Piles	10/17/2007	0	0.13	Field Sample								X
NF-09	ELY-SS-NF-09 (1.5-12)	Midslope Waste Rock Piles	10/17/2007	0.13	1	Field Sample								X
NF-10	ELY-SS-NF-10 (0-4)	Midslope Waste Rock Piles	10/16/2007	0	0.33	Field Sample								X
NF-10	ELY-SS-NF-10 (4-12)	Midslope Waste Rock Piles	10/16/2007	0.33	1	Field Sample								X
NF-11	ELY-SS-NF-11 (0-3)	Midslope Waste Rock Piles	10/16/2007	0	0.25	Field Sample								X
NF-11	ELY-SS-NF-11 (3-9)	Midslope Waste Rock Piles	10/16/2007	0.25	0.75	Field Sample								X
NF-12	ELY-SS-NF-12 (0-2)	Midslope Waste Rock Piles	10/19/2007	0	0.17	Field Sample								X
NF-12	ELY-SS-NF-12 (2-9)	Midslope Waste Rock Piles	10/19/2007	0.17	0.75	Field Sample								X
NF-13	ELY-SS-NF-13 (0-2.5)	Midslope Waste Rock Piles	10/19/2007	0	0.21	Field Sample								X
NF-13	ELY-SS-NF-13 (2.5-12)	Midslope Waste Rock Piles	10/19/2007	0.21	1	Field Sample								X
NF-14	ELY-SS-NF-14 (0-3)	Upper Waste Rock Piles	10/18/2007	0	0.25	Field Sample								X
NF-14	ELY-SS-NF-14 (3-12)	Upper Waste Rock Piles	10/18/2007	0.25	1	Field Sample								X
NF-15	ELY-SS-NF-15 (0-2)	Upper Waste Rock Piles	10/18/2007	0	0.17	Field Sample								X
NF-15	ELY-SS-NF-15 (2-5)	Upper Waste Rock Piles	10/18/2007	0.17	0.42	Field Sample								X
NF-16	ELY-SS-NF-16 (0-1)	Upper Waste Rock Piles	10/18/2007	0	0.08	Field Sample								X
NF-16	ELY-SS-NF-16 (1-12)	Upper Waste Rock Piles	10/18/2007	0.08	1	Field Sample								X
NF-17	ELY-SS-NF-17 (0-4)	Upper Waste Rock Piles	10/18/2007	0	0.33	Field Sample								X
NF-17	ELY-SS-NF-17 (4-10)	Upper Waste Rock Piles	10/18/2007	0.33	0.83	Field Sample								X
SA-01	ELY-SS-SA-01 (0-2)	Smelter Area	10/16/2007	0	0.17	Field Sample								X
SA-02	ELY-SS-SA-02 (0-3) DUP	Smelter Area	10/16/2007	0	0.25	Field Duplicate								X
SA-02	ELY-SS-SA-02 (0-3)	Smelter Area	10/16/2007	0	0.25	Field Sample								X
SA-03	ELY-SS-SA-03 (0-6)	Smelter Area	10/15/2007	0	0.5	Field Sample								X
SA-04	ELY-SS-SA-04 (0-6)	Smelter Area	10/15/2007	0	0.5	Field Sample								X
SA-05	ELY-SS-SA-05 (0-6)	Smelter Area	10/15/2007	0	0.5	Field Sample								X
SA-06	ELY-SS-SA-06 (0-6)	Smelter Area	10/15/2007	0	0.5	Field Sample								X
SA-07	ELY-SS-SA-07 (0-6)	Smelter Area	10/15/2007	0	0.5	Field Sample								X
SA-08	ELY-SS-SA-08 (0-6)	Smelter Area	10/15/2007	0	0.5	Field Sample								X
SA-09	ELY-SS-SA-09 (0-4)	Smelter Area	10/15/2007	0	0.33	Field Sample								X
SA-10	ELY-SS-SA-10 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X
SA-11	ELY-SS-SA-11 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X
SA-12	ELY-SS-SA-12 (0-6) DUP	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Duplicate								X
SA-12	ELY-SS-SA-12 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X
SA-13	ELY-SS-SA-13 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X
SA-14	ELY-SS-SA-14 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X
SA-15	ELY-SS-SA-15 (0-6) DUP	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Duplicate								X
SA-15	ELY-SS-SA-15 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X
SA-16	ELY-SS-SA-16 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X
SA-17	ELY-SS-SA-17 (0-6)	Midslope Waste Rock Piles	10/16/2007	0	0.5	Field Sample								X
SA-18	ELY-SS-SA-18 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X
SA-19	ELY-SS-SA-19 (0-6)	Midslope Waste Rock Piles	10/16/2007	0	0.5	Field Sample								X
SA-20	ELY-SS-SA-20 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X
SA-21	ELY-SS-SA-21 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X

Table 2-1
Summary of RI Soil Sample Locations, Source Areas and Analyses Performed
Remedial Investigation
Ely Mine
Vershire, Vermont

Sample Location	Sample ID	Source Area	Sample Date	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Sample Type	Acid Base Accounting	Conventional Soil Chemistry	Metals	Oxides	SPLP Conventional Soil Chemistry	SPLP Metals	SPLP TAL Metals	TAL Metals
SA-22	ELY-SS-SA-22 (0-6)	Midslope Waste Rock Piles	10/17/2007	0	0.5	Field Sample								X
SA-23	ELY-SS-SA-23 (0-6)	Midslope Waste Rock Piles	10/19/2007	0	0.5	Field Sample								X
SA-24	ELY-SS-SA-24 (0-6) DUP	Upper Waste Rock Piles	10/18/2007	0	0.5	Field Duplicate								X
SA-24	ELY-SS-SA-24 (0-6)	Upper Waste Rock Piles	10/18/2007	0	0.5	Field Sample								X
SA-25	ELY-SS-SA-25 (0-6)	Upper Waste Rock Piles	10/18/2007	0	0.5	Field Sample								X
SA-26	ELY-SS-SA-26 (0-6)	Upper Waste Rock Piles	10/18/2007	0	0.5	Field Sample								X
SA-27	ELY-SS-SA-27 (0-6)	Upper Waste Rock Piles	10/18/2007	0	0.5	Field Sample								X
SA-28	ELY-SS-SA-28 (0-6)	Upper Waste Rock Piles	10/18/2007	0	0.5	Field Sample								X
SA-29	ELY-SS-SA-29 (0-6)	Upper Waste Rock Piles	10/18/2007	0	0.5	Field Sample								X
SA-30	ELY-SS-SA-30 (0-6)	Upper Waste Rock Piles	10/18/2007	0	0.5	Field Sample								X
SA-31	ELY-SS-SA-31 (0-6)	Upper Waste Rock Piles	10/18/2007	0	0.5	Field Sample								X
SB-01	ELY-QC-3	Midslope Waste Rock Piles	12/05/2006	0	4	Field Duplicate							X	
SB-01	ELY-SB-1 (0-4)	Midslope Waste Rock Piles	12/05/2006	0	4	Field Sample	X						X	X
SB-01	ELY-SB-1 (4.5-5.6)	Midslope Waste Rock Piles	12/05/2006	4 5	5.6	Field Sample	X							X
SB-01 02 03	ELY-SB-1 2 3		12/07/2006	0	0	Field Sample	X							
SB-02	ELY-SB-2 (0-4)	Midslope Waste Rock Piles	12/03/2006	0	4	Field Sample	X							X
SB-02	ELY-SB-2 (6-10)	Midslope Waste Rock Piles	12/03/2006	6	10	Field Sample	X							X
SB-03	ELY-QC-1	Midslope Waste Rock Piles	12/03/2006	0	4	Field Duplicate	X							
SB-03	ELY-QC-2	Midslope Waste Rock Piles	12/03/2006	0	4	Field Duplicate								X
SB-03	ELY-SB-3 (0-4)	Midslope Waste Rock Piles	12/03/2006	0	4	Field Sample	X							X
SB-03	ELY-SB-3 (4.5-8)	Midslope Waste Rock Piles	12/03/2006	4.5	8	Field Sample	X							X
SB-04	ELY-SB-4 (8-10.6)	Upper Waste Rock Piles	12/02/2006	8	10.6	Field Sample	X							X
SB-05	ELY-SB-5 (8-12)	Upper Waste Rock Piles	11/30/2006	8	12	Field Sample	X							X
SB-05	ELY-SB-5 (16-18)	Upper Waste Rock Piles	11/30/2006	16	18	Field Sample	X							X
SB-06	ELY-SB-6 (0-2)	Upper Waste Rock Piles	12/02/2006	0	2	Field Sample	X							X
SB-06	ELY-SB-6 (2-4)	Upper Waste Rock Piles	12/02/2006	2	4	Field Sample	X							X
SB-07	ELY-SB-7 (6-12)	Upper Waste Rock Piles	12/01/2006	6	12	Field Sample	X							X
SB-07	ELY-SB-7 (22-24)	Upper Waste Rock Piles	12/01/2006	22	24	Field Sample	X							X
SB-07	ELY-SB-7 (27-30)	Upper Waste Rock Piles	12/01/2006	27	30	Field Sample	X							X
SB-07 08	ELY-SB-7 8		12/07/2006	0	0	Field Sample	X							
SB-08	ELY-SB-8 (0-6)	Upper Waste Rock Piles	12/01/2006	0	6	Field Sample	X							X
SB-08	ELY-SB-8 (6-10)	Upper Waste Rock Piles	12/01/2006	6	10	Field Sample	X							X
TP-01	ELY-TP1 (4-5)	Smelter Area	05/14/2007	4	5	Field Sample	X							X
TP-02B	ELY-TP2B (2-3)	Smelter Area	05/14/2007	2	3	Field Sample	X							X
TP-03A	ELY-TP3A (1.5-2.5)	Smelter Area	05/14/2007	1.5	2.5	Field Sample	X							X
TP-03B	ELY-TP3B (2-3)	Smelter Area	05/14/2007	2	3	Field Sample	X							X
TP-04A	ELY-TP4A (2-3)	Midslope Waste Rock Piles	05/14/2007	2	3	Field Sample	X						X	X
TP-06	ELY-TP6 (3-4)	Midslope Waste Rock Piles	05/14/2007	3	4	Field Sample	X							X
TP-07A	ELY-TP7A (4-5)	Midslope Waste Rock Piles	05/14/2007	4	5	Field Sample	X							X
TP-08	ELY-TPQS1	Upper Waste Rock Piles	05/14/2007	2	3	Field Duplicate	X						X	X
TP-08	ELY-TP8 (2-3)	Upper Waste Rock Piles	05/14/2007	2	3	Field Sample	X						X	X
TP-09	ELY-TP9 (3-4)	Upper Waste Rock Piles	05/14/2007	3	4	Field Sample	X							X
TP-10	ELY-TP10 (7-9)	Upper Waste Rock Piles	05/14/2007	7	9	Field Sample	X							X
TP-100	ELY-TP-100 (4-6)	Smelter Area	10/05/2007	4	6	Field Sample								X
TP-103	ELY-TP-103 (1-2)	Smelter Area	10/05/2007	1	2	Field Sample							X	X
TP-104	ELY-TP-104 (0-1) DUP	Smelter Area	10/05/2007	0	1	Field Duplicate	X							
TP-104	ELY-TP-104 (0-1)	Smelter Area	10/05/2007	0	1	Field Sample	X							X
TP-104	ELY-TP-104 (2-3)	Smelter Area	10/05/2007	2	3	Field Sample							X	X
TP-106	ELY-TP-106 (2-3) DUP	Smelter Area	10/05/2007	2	3	Field Duplicate							X	X
TP-106	ELY-TP-106 (2-3)	Smelter Area	10/05/2007	2	3	Field Sample							X	X
TP-108	ELY-TP-108 (1-2)	Smelter Area	10/05/2007	1	2	Field Sample	X						X	X
TP-109	ELY-TP-109 (0-1)	Smelter Area	10/05/2007	0	1	Field Sample	X						X	X
TP-11	ELY-TP11 (4-6)	Upper Waste Rock Piles	05/14/2007	4	6	Field Sample	X							X
TR-01A	ELY-SS-TR-01A (0-1)	Smelter Area	10/15/2007	0	0.08	Field Sample								X
TR-01A	ELY-SS-TR-01A (1-8)	Smelter Area	10/15/2007	0.08	0.67	Field Sample								X
TR-01B	ELY-SS-TR-01B (0-1.5)	Smelter Area	10/15/2007	0	0.13	Field Sample								X
TR-01B	ELY-SS-TR-01B (1.5-8)	Smelter Area	10/15/2007	0.13	0.67	Field Sample								X
TR-01C	ELY-SS-TR-01C (0-2)	Smelter Area	10/15/2007	0	0.17	Field Sample								X
TR-01C	ELY-SS-TR-01C (2-11)	Smelter Area	10/15/2007	0.17	0.92	Field Sample								X
TR-01D	ELY-SS-TR-01D (0-0.5)	Smelter Area	10/15/2007	0	0.04	Field Sample								X
TR-01D	ELY-SS-TR-01D (0.5-10)	Smelter Area	10/15/2007	0.04	0.83	Field Sample								X
TR-02A	ELY-SS-TR-02A (0-1.5)	Smelter Area	10/15/2007	0	0.13	Field Sample								X
TR-02A	ELY-SS-TR-02A (1.5-11)	Smelter Area	10/15/2007	0.13	0.92	Field Sample								X
TR-02B	ELY-SS-TR-02B (0-4)	Smelter Area	10/15/2007	0	0.33	Field Sample								X

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Ely Mine
Vershire, Vermont

Sample Location	Sample ID	Source Area	Sample Date	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Sample Type	Acid Base Accounting	Conventional Soil Chemistry	Metals	Oxides	SPLP Conventional Soil Chemistry	SPLP Metals	SPLP TAL Metals	TAL Metals
TR-02B	ELY-SS-TR-02B (4-11)	Smelter Area	10/15/2007	0.33	0.92	Field Sample								X
TR-02C	ELY-SS-TR-02C (0-3)	Smelter Area	10/15/2007	0	0.25	Field Sample								X
TR-02C	ELY-SS-TR-02C (3-12)	Smelter Area	10/15/2007	0.25	1	Field Sample								X
TR-02D	ELY-SS-TR-02D(0-2) DUP	Smelter Area	10/15/2007	0	0.17	Field Duplicate								X
TR-02D	ELY-SS-TR-02D (0-2)	Smelter Area	10/15/2007	0	0.17	Field Sample								X
TR-02D	ELY-SS-TR-02D (2-12) DUP	Smelter Area	10/15/2007	0.17	1	Field Duplicate								X
TR-02D	ELY-SS-TR-02D (2-12)	Smelter Area	10/15/2007	0.17	1	Field Sample								X
TR-03A	ELY-SS-TR-03A (0-0.5)	Midslope Waste Rock Piles	10/17/2007	0	0.04	Field Sample								X
TR-03A	ELY-SS-TR-03A (0.5-12)	Midslope Waste Rock Piles	10/17/2007	0.04	1	Field Sample								X
TR-03B	ELY-SS-TR-03B (0-2)	Midslope Waste Rock Piles	10/17/2007	0	0.17	Field Sample								X
TR-03B	ELY-SS-TR-03B (2-12)	Midslope Waste Rock Piles	10/17/2007	0.17	1	Field Sample								X
TR-03C	ELY-SS-TR-03C (0-3)	Midslope Waste Rock Piles	10/17/2007	0	0.25	Field Sample								X
TR-03C	ELY-SS-TR-03C (3-12)	Midslope Waste Rock Piles	10/17/2007	0.25	1	Field Sample								X
TR-04A	ELY-SS-TR-04A (0-1)	Midslope Waste Rock Piles	10/17/2007	0	0.08	Field Sample								X
TR-04A	ELY-SS-TR-04A (1-12)	Midslope Waste Rock Piles	10/17/2007	0.08	1	Field Sample								X
TR-04B	ELY-SS-TR-04B (0-1.5)	Midslope Waste Rock Piles	10/17/2007	0	0.13	Field Sample								X
TR-04B	ELY-SS-TR-04B (1.5-12)	Midslope Waste Rock Piles	10/17/2007	0.13	1	Field Sample								X
TR-04C	ELY-SS-TR-04C (0-3)	Midslope Waste Rock Piles	10/17/2007	0	0.25	Field Sample								X
TR-04C	ELY-SS-TR-04C (3-6)	Midslope Waste Rock Piles	10/17/2007	0.25	0.5	Field Sample								X
TR-05A	ELY-SS-TR-05A (0-2.5)	Midslope Waste Rock Piles	10/17/2007	0	0.21	Field Sample								X
TR-05A	ELY-SS-TR-05A (2.5-9)	Midslope Waste Rock Piles	10/17/2007	0.21	0.75	Field Sample								X
TR-05B	ELY-SS-TR-05B (0-1)	Midslope Waste Rock Piles	10/17/2007	0	0.08	Field Sample								X
TR-05B	ELY-SS-TR-05B (1-7)	Midslope Waste Rock Piles	10/17/2007	0.08	0.58	Field Sample								X
TR-05C	ELY-SS-TR-05C (0-1)	Midslope Waste Rock Piles	10/17/2007	0	0.08	Field Sample								X
TR-05C	ELY-SS-TR-05C (1-12)	Midslope Waste Rock Piles	10/17/2007	0.08	1	Field Sample								X
TR-05D	ELY-SS-TR-05D (0-3)	Midslope Waste Rock Piles	10/17/2007	0	0.25	Field Sample								X
TR-05D	ELY-SS-TR-05D (3-12)	Midslope Waste Rock Piles	10/17/2007	0.25	1	Field Sample								X
TR-06A	ELY-SS-TR-06A (0-1)	Midslope Waste Rock Piles	10/19/2007	0	0.08	Field Sample								X
TR-06A	ELY-SS-TR-06A (1-12)	Midslope Waste Rock Piles	10/19/2007	0.08	1	Field Sample								X
TR-06B	ELY-SS-TR-06B (0-3)	Midslope Waste Rock Piles	10/19/2007	0	0.25	Field Sample								X
TR-06B	ELY-SS-TR-06B (3-7)	Midslope Waste Rock Piles	10/19/2007	0.25	0.58	Field Sample								X
TR-06C	ELY-SS-TR-06C (0-3)	Midslope Waste Rock Piles	10/19/2007	0	0.25	Field Sample								X
TR-06C	ELY-SS-TR-06C (3-12)	Midslope Waste Rock Piles	10/19/2007	0.25	1	Field Sample								X
TR-07A	ELY-SS-TR-07A (0-1)	Upper Waste Rock Piles	10/18/2007	0	0.08	Field Sample								X
TR-07A	ELY-SS-TR-07A (1-8)	Upper Waste Rock Piles	10/18/2007	0.08	0.67	Field Sample								X
TR-07B	ELY-SS-TR-07B (0-2)	Upper Waste Rock Piles	10/18/2007	0	0.17	Field Sample								X
TR-07B	ELY-SS-TR-07B (2-8)	Upper Waste Rock Piles	10/18/2007	0.17	0.67	Field Sample								X
TR-07C	ELY-SS-TR-07C (0-2)	Upper Waste Rock Piles	10/18/2007	0	0.17	Field Sample								X
TR-07C	ELY-SS-TR-07C (2-12)	Upper Waste Rock Piles	10/18/2007	0.17	1	Field Sample								X
TR-07D	ELY-SS-TR-07D (0-2)	Upper Waste Rock Piles	10/18/2007	0	0.17	Field Sample								X
TR-07D	ELY-SS-TR-07D (2-9)	Upper Waste Rock Piles	10/18/2007	0.17	0.75	Field Sample								X
TR-08A	ELY-SS-TR-08A (0-0.5) DUP	Upper Waste Rock Piles	10/18/2007	0	0.04	Field Duplicate								X
TR-08A	ELY-SS-TR-08A (0-0.5)	Upper Waste Rock Piles	10/18/2007	0	0.04	Field Sample								X
TR-08A	ELY-SS-TR-08A (0.5-12)DUP	Upper Waste Rock Piles	10/18/2007	0.04	1	Field Duplicate								X
TR-08A	ELY-SS-TR-08A (0.5-12)	Upper Waste Rock Piles	10/18/2007	0.04	1	Field Sample								X
TR-08B	ELY-SS-TR-08B (0-3) DUP	Upper Waste Rock Piles	10/18/2007	0	0.25	Field Duplicate								X
TR-08B	ELY-SS-TR-08B (0-3)	Upper Waste Rock Piles	10/18/2007	0	0.25	Field Sample								X
TR-08B	ELY-SS-TR-08B (3-8) DUP	Upper Waste Rock Piles	10/18/2007	0.25	0.67	Field Duplicate								X
TR-08B	ELY-SS-TR-08B (3-8)	Upper Waste Rock Piles	10/18/2007	0.25	0.67	Field Sample								X
TR-08C	ELY-SS-TR-08C (0-5) DUP	Upper Waste Rock Piles	10/18/2007	0	0.42	Field Duplicate								X
TR-08C	ELY-SS-TR-08C (0-5)	Upper Waste Rock Piles	10/18/2007	0	0.42	Field Sample								X
TR-08C	ELY-SS-TR-08C (5-12) DUP	Upper Waste Rock Piles	10/18/2007	0.42	1	Field Duplicate								X
TR-08C	ELY-SS-TR-08C (5-12)	Upper Waste Rock Piles	10/18/2007	0.42	1	Field Sample								X
TR-08D	ELY-SS-TR-08D (0-2) DUP	Upper Waste Rock Piles	10/18/2007	0	0.17	Field Duplicate								X
TR-08D	ELY-SS-TR-08D (0-2)	Upper Waste Rock Piles	10/18/2007	0	0.17	Field Sample								X
TR-08D	ELY-SS-TR-08D (2-12) DUP	Upper Waste Rock Piles	10/18/2007	0.17	1	Field Duplicate								X
TR-08D	ELY-SS-TR-08D (2-12)	Upper Waste Rock Piles	10/18/2007	0.17	1	Field Sample								X
TR-09A	ELY-SS-TR-09A (0-2.5)	Upper Waste Rock Piles	10/18/2007	0	0.21	Field Sample								X
TR-09A	ELY-SS-TR-09A (2.5-12)	Upper Waste Rock Piles	10/18/2007	0.21	1	Field Sample								X
TR-09B	ELY-SS-TR-09B (0-2)	Upper Waste Rock Piles	10/18/2007	0	0.17	Field Sample								X
TR-09B	ELY-SS-TR-09B (2-5)	Upper Waste Rock Piles	10/18/2007	0.17	0.42	Field Sample								X
TR-09C	ELY-SS-TR-09C (0-1.5)	Upper Waste Rock Piles	10/18/2007	0	0.13	Field Sample								X
TR-09C	ELY-SS-TR-09C (1.5-8)	Upper Waste Rock Piles	10/18/2007	0.13	0.67	Field Sample								X

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Vershire, Vermont

Sample Location	Sample ID	Source Area	Sample Date	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Sample Type	Acid Base Accounting	Conventional Soil Chemistry	Metals	Oxides	SPLP Conventional Soil Chemistry	SPLP Metals	SPLP TAL Metals	TAL Metals
TR-09D	ELY-SS-TR-09D (0-3)	Upper Waste Rock Piles	10/18/2007	0	0.25	Field Sample								X
TR-09D	ELY-SS-TR-09D (3-12)	Upper Waste Rock Piles	10/18/2007	0.25	1	Field Sample								X
TZ-01	ELY-SS-TZ-01 (0-1.5)	Smelter Area	10/16/2007	0	0.13	Field Sample								X
TZ-01	ELY-SS-TZ-01 (1.5-8)	Smelter Area	10/16/2007	0.13	0.67	Field Sample								X
TZ-02	ELY-SS-TZ-02 (0-1.5)	Smelter Area	10/16/2007	0	0.13	Field Sample								X
TZ-02	ELY-SS-TZ-02 (1.5-6)	Smelter Area	10/16/2007	0.13	0.5	Field Sample								X
TZ-04	ELY-SS-TZ-04 (0-2) DUP	Smelter Area	10/16/2007	0	0.17	Field Duplicate								X
TZ-04	ELY-SS-TZ-04 (0-2)	Smelter Area	10/16/2007	0	0.17	Field Sample								X
TZ-04	ELY-SS-TZ-04 (2-6) DUP	Smelter Area	10/16/2007	0.17	0.5	Field Duplicate								X
TZ-04	ELY-SS-TZ-04 (2-6)	Smelter Area	10/16/2007	0.17	0.5	Field Sample								X
TZ-05	ELY-SS-TZ-05 (0-1)	Smelter Area	10/16/2007	0	0.08	Field Sample								X
TZ-05	ELY-SS-TZ-05 (1-8)	Smelter Area	10/16/2007	0.08	0.67	Field Sample								X
TZ-05	ELY-SS-TZ-05 (0-1)	Smelter Area	10/23/2007	0	0.08	Field Sample								X
TZ-05	ELY-SS-TZ-05 (1-8)	Smelter Area	10/23/2007	0.08	0.67	Field Sample								X
TZ-06	ELY-SS-TZ-06 (0-1)	Smelter Area	10/16/2007	0	0.08	Field Sample								X
TZ-06	ELY-SS-TZ-06 (1-12)	Smelter Area	10/16/2007	0.08	1	Field Sample								X
TZ-07	ELY-SS-TZ-07 (0-1.5)	Smelter Area	10/16/2007	0	0.13	Field Sample								X
TZ-07	ELY-SS-TZ-07 (1.5-6.5)	Smelter Area	10/16/2007	0.13	0.54	Field Sample								X
TZ-08	ELY-SS-TZ-08 (0-0.5)	Smelter Area	10/16/2007	0	0.04	Field Sample								X
TZ-08	ELY-SS-TZ-08 (0.5-10)	Smelter Area	10/16/2007	0.04	0.83	Field Sample								X
TZ-09	ELY-SS-TZ-09 (0-0.5)	Smelter Area	10/18/2007	0	0.04	Field Sample								X
TZ-09	ELY-SS-TZ-09 (0.5-12)	Smelter Area	10/18/2007	0.04	1	Field Sample								X
TZ-10	ELY-SS-TZ-10 (0-1)	Smelter Area	10/15/2007	0	0.08	Field Sample								X
TZ-10	ELY-SS-TZ-10 (1-10)	Smelter Area	10/15/2007	0.08	0.83	Field Sample								X
TZ-11	ELY-SS-TZ-11 (0-1)	Smelter Area	10/15/2007	0	0.08	Field Sample								X
TZ-11	ELY-SS-TZ-11 (1-5.5)	Smelter Area	10/15/2007	0.08	0.46	Field Sample								X
TZ-12	ELY-SS-TZ-12 (0-3)	Smelter Area	10/18/2007	0	0.25	Field Sample								X
TZ-12	ELY-SS-TZ-12 (3-8)	Smelter Area	10/18/2007	0.25	0.67	Field Sample								X
TZ-13	ELY-SS-TZ-13 (0-4)	Midslope Waste Rock Piles	10/17/2007	0	0.33	Field Sample								X
TZ-13	ELY-SS-TZ-13 (4-12)	Midslope Waste Rock Piles	10/17/2007	0.33	1	Field Sample								X
TZ-14	ELY-SS-TZ-14 (0-4)	Midslope Waste Rock Piles	10/17/2007	0	0.33	Field Sample								X
TZ-14	ELY-SS-TZ-14 (4-12)	Midslope Waste Rock Piles	10/17/2007	0.33	1	Field Sample								X
TZ-15	ELY-SS-TZ-15 (0-3.5)	Midslope Waste Rock Piles	10/17/2007	0	0.29	Field Sample								X
TZ-15	ELY-SS-TZ-15 (3.5-12)	Midslope Waste Rock Piles	10/17/2007	0.29	1	Field Sample								X
TZ-16	ELY-SS-TZ-16 (0-4)	Midslope Waste Rock Piles	10/17/2007	0	0.33	Field Sample								X
TZ-16	ELY-SS-TZ-16 (4-12)	Midslope Waste Rock Piles	10/17/2007	0.33	1	Field Sample								X
TZ-17	ELY-SS-TZ-17 (0-0.5)	Midslope Waste Rock Piles	10/17/2007	0	0.04	Field Sample								X
TZ-17	ELY-SS-TZ-17 (0.5-12)	Midslope Waste Rock Piles	10/17/2007	0.04	1	Field Sample								X
TZ-18	ELY-SS-TZ-18 (0-.5)	Midslope Waste Rock Piles	10/17/2007	0	0.04	Field Sample								X
TZ-18	ELY-SS-TZ-18 (.5-12)	Midslope Waste Rock Piles	10/17/2007	0.04	1	Field Sample								X
TZ-19	ELY-SS-TZ-19 (0-.5)	Midslope Waste Rock Piles	10/17/2007	0	0.04	Field Sample								X
TZ-19	ELY-SS-TZ-19 (.5-12)	Midslope Waste Rock Piles	10/17/2007	0.04	1	Field Sample								X
TZ-20	ELY-SS-TZ-20 (0-1)	Midslope Waste Rock Piles	10/17/2007	0	0.08	Field Sample								X
TZ-20	ELY-SS-TZ-20 (1-12)	Midslope Waste Rock Piles	10/17/2007	0.08	1	Field Sample								X
TZ-21	ELY-SS-TZ-21 (0-5)	Midslope Waste Rock Piles	10/17/2007	0	0.42	Field Sample								X
TZ-21	ELY-SS-TZ-21 (5-12)	Midslope Waste Rock Piles	10/17/2007	0.42	1	Field Sample								X
TZ-22	ELY-SS-TZ-22 (0-2)	Midslope Waste Rock Piles	10/17/2007	0	0.17	Field Sample								X
TZ-22	ELY-SS-TZ-22 (2-10)	Midslope Waste Rock Piles	10/17/2007	0.17	0.83	Field Sample								X
TZ-23	ELY-SS-TZ-23 (0-2.5)	Midslope Waste Rock Piles	10/17/2007	0	0.21	Field Sample								X
TZ-23	ELY-SS-TZ-23 (2.5-12)	Midslope Waste Rock Piles	10/17/2007	0.21	1	Field Sample								X
TZ-24	ELY-SS-TZ-24 (0-1)	Midslope Waste Rock Piles	10/17/2007	0	0.08	Field Sample								X
TZ-24	ELY-SS-TZ-24 (1-12)	Midslope Waste Rock Piles	10/17/2007	0.08	1	Field Sample								X
TZ-25	ELY-SS-TZ-25 (0-3)	Midslope Waste Rock Piles	10/17/2007	0	0.25	Field Sample								X
TZ-25	ELY-SS-TZ-25 (3-11)	Midslope Waste Rock Piles	10/17/2007	0.25	0.92	Field Sample								X
TZ-26	ELY-SS-TZ-26 (0-1.5)	Midslope Waste Rock Piles	10/17/2007	0	0.13	Field Sample								X
TZ-26	ELY-SS-TZ-26 (1.5-12)	Midslope Waste Rock Piles	10/17/2007	0.13	1	Field Sample								X
TZ-27	ELY-SS-TZ-27 (0-2.5)	Midslope Waste Rock Piles	10/16/2007	0	0.21	Field Sample								X
TZ-27	ELY-SS-TZ-27 (2.5-8)	Midslope Waste Rock Piles	10/16/2007	0.21	0.67	Field Sample								X
TZ-28	ELY-SS-TZ-28 (0-0.5)	Midslope Waste Rock Piles	10/19/2007	0	0.04	Field Sample								X
TZ-28	ELY-SS-TZ-28 (0.5-9)	Midslope Waste Rock Piles	10/19/2007	0.04	0.75	Field Sample								X
TZ-29	ELY-SS-TZ-29 (0-1)	Midslope Waste Rock Piles	10/19/2007	0	0.08	Field Sample								X
TZ-29	ELY-SS-TZ-29 (1-9)	Midslope Waste Rock Piles	10/19/2007	0.08	0.75	Field Sample								X
TZ-30	ELY-SS-TZ-30 (0-0.5)	Midslope Waste Rock Piles	10/19/2007	0	0.04	Field Sample								X
TZ-30	ELY-SS-TZ-30 (0.5-12)	Midslope Waste Rock Piles	10/19/2007	0.04	1	Field Sample								X

Table 2-1
Summary of RI Soil Sample Locations, Source Areas and Analyses Performed
Remedial Investigation
Ely Mine
Vershire, Vermont

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Sample Location	Sample ID	Source Area	Sample Date	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Sample Type	Acid Base Accounting	Conventional Soil Chemistry	Metals	Oxides	SPLP Conventional Soil Chemistry	SPLP Metals	SPLP TAL Metals	TAL Metals
TZ-31	ELY-SS-TZ-31 (0-3)	Midslope Waste Rock Piles	10/19/2007	0	0.25	Field Sample								X
TZ-31	ELY-SS-TZ-31 (3-9)	Midslope Waste Rock Piles	10/19/2007	0.25	0.75	Field Sample								X
TZ-32	ELY-SS-TZ-32 (0-2)	Midslope Waste Rock Piles	10/19/2007	0	0.17	Field Sample								X
TZ-32	ELY-SS-TZ-32 (2-9)	Midslope Waste Rock Piles	10/19/2007	0.17	0.75	Field Sample								X
TZ-33	ELY-SS-TZ-33 (0-2)	Midslope Waste Rock Piles	10/18/2007	0	0.17	Field Sample								X
TZ-33	ELY-SS-TZ-33 (2-12)	Midslope Waste Rock Piles	10/18/2007	0.17	1	Field Sample								X
TZ-34	ELY-SS-TZ-34 (0-2.5)	Upper Waste Rock Piles	10/18/2007	0	0.21	Field Sample								X
TZ-34	ELY-SS-TZ-34 (2.5-8)	Upper Waste Rock Piles	10/18/2007	0.21	0.67	Field Sample								X
TZ-35	ELY-SS-TZ-35 (0-2)	Upper Waste Rock Piles	10/18/2007	0	0.17	Field Sample								X
TZ-35	ELY-SS-TZ-35 (2-9)	Upper Waste Rock Piles	10/18/2007	0.17	0.75	Field Sample								X
TZ-36	ELY-SS-TZ-36 (0-1.5)	Upper Waste Rock Piles	10/18/2007	0	0.13	Field Sample								X
TZ-36	ELY-SS-TZ-36 (1.5-9)	Upper Waste Rock Piles	10/18/2007	0.13	0.75	Field Sample								X
TZ-37	ELY-SS-TZ-37 (0-2)	Upper Waste Rock Piles	10/18/2007	0	0.17	Field Sample								X
TZ-37	ELY-SS-TZ-37 (2-12)	Upper Waste Rock Piles	10/18/2007	0.17	1	Field Sample								X
TZ-38	ELY-SS-TZ-38 (0-0.5)	Upper Waste Rock Piles	10/18/2007	0	0.04	Field Sample								X
TZ-38	ELY-SS-TZ-38 (0.5-7)	Upper Waste Rock Piles	10/18/2007	0.04	0.58	Field Sample								X
TZ-39	ELY-SS-TZ-39 (0-3)	Upper Waste Rock Piles	10/18/2007	0	0.25	Field Sample								X
TZ-39	ELY-SS-TZ-39 (3-8)	Upper Waste Rock Piles	10/18/2007	0.25	0.67	Field Sample								X
TZ-40	ELY-SS-TZ-40 (0-2)	Upper Waste Rock Piles	10/18/2007	0	0.17	Field Sample								X
TZ-40	ELY-SS-TZ-40 (2-10)	Upper Waste Rock Piles	10/18/2007	0.17	0.83	Field Sample								X
TZ-41	ELY-SS-TZ-41 (0-1.5)	Upper Waste Rock Piles	10/18/2007	0	0.13	Field Sample								X
TZ-41	ELY-SS-TZ-41 (1.5-11)	Upper Waste Rock Piles	10/18/2007	0.13	0.92	Field Sample								X
TZ-42	ELY-SS-TZ-42 (0-2)	Smoke Flue	10/17/2007	0	0.17	Field Sample								X
TZ-42	ELY-SS-TZ-42 (2-12)	Smoke Flue	10/17/2007	0.17	1	Field Sample								X
TZ-43	ELY-SS-TZ-43 (0-2.5)	Smoke Flue	10/17/2007	0	0.21	Field Sample								X
TZ-43	ELY-SS-TZ-43 (2.5-11)	Smoke Flue	10/17/2007	0.21	0.92	Field Sample								X
TZ-44	ELY-SS-TZ-44 (0-3)	Smoke Flue	10/17/2007	0	0.25	Field Sample								X
TZ-44	ELY-SS-TZ-44 (3-12)	Smoke Flue	10/17/2007	0.25	1	Field Sample								X
TZ-45	ELY-SS-TZ-45 (0-2)	Smoke Flue	10/17/2007	0	0.17	Field Sample								X
TZ-45	ELY-SS-TZ-45 (2-12)	Smoke Flue	10/17/2007	0.17	1	Field Sample								X

Table 2-2
Summary of RI Surface Water Sample Locations, Source Areas and Analyses Performed
Remedial Investigation
Ely Mine
Vershire, Vermont

Usgs Site Number	Sample Location	Source Area	Sample Date	Sample Type	Conventional Water Chemistry	Conventional Water Chemistry (Dissolved)	Field Parameters	Metals	Metals (Dissolved)	TAL Metals	TAL Metals (Dissolved)
EB-1030M	SW-18	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	Field Sample	X	X	X			X	X
EB-1080M	EB-1	Ely Brook - Upper Waste Rock Pile Drainages	04/02/2002	Field Sample	X	X		X	X	X	X
EB-1080M	EB-1	Ely Brook - Upper Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
EB-1080M	EB-1	Ely Brook - Upper Waste Rock Pile Drainages	05/21/2002	Field Sample	X	X		X	X	X	X
EB-1080M	EB-1	Ely Brook - Upper Waste Rock Pile Drainages	06/20/2002	Field Sample	X	X		X	X	X	X
EB-1080M	EB-1	Ely Brook - Upper Waste Rock Pile Drainages	07/24/2002	Field Sample	X	X		X	X	X	X
EB-1080M	SW-EB-1A	Ely Brook - Upper Waste Rock Pile Drainages	08/23/2006	Field Sample	X	X	X	X	X	X	X
EB-1430M	SW-20	Background - Ely Brook	11/03/2004	Field Sample	X	X	X			X	X
EB-15M	EB-6	Ely Brook - Lower Ely Brook	03/28/2002	Field Sample	X	X		X	X	X	X
EB-15M	EB-6	Ely Brook - Lower Ely Brook	03/31/2002	Field Sample	X	X		X	X	X	X
EB-15M	EB-6	Ely Brook - Lower Ely Brook	04/02/2002	Field Sample	X		X	X		X	
EB-15M	EB-6	Ely Brook - Lower Ely Brook	04/03/2002	Field Sample	X		X	X		X	
EB-15M	EB-6	Ely Brook - Lower Ely Brook	04/10/2002	Field Sample	X	X		X	X	X	X
EB-15M	EB-6	Ely Brook - Lower Ely Brook	05/21/2002	Field Sample	X	X		X	X	X	X
EB-15M	EB-6	Ely Brook - Lower Ely Brook	06/20/2002	Field Sample	X	X		X	X	X	X
EB-15M	EB-6	Ely Brook - Lower Ely Brook	07/24/2002	Field Sample	X	X		X	X	X	X
EB-15M	EB-6	Ely Brook - Lower Ely Brook	08/20/2002	Field Sample	X	X		X	X	X	X
EB-15M	EB-6	Ely Brook - Lower Ely Brook	09/19/2002	Field Sample	X	X		X	X	X	X
EB-210M	SW-10	Ely Brook - Lower Ely Brook	11/03/2004	Field Sample	X	X	X			X	X
EB-30M	SW-09	Ely Brook - Lower Ely Brook	11/03/2004	Field Sample	X	X	X			X	X
EB-30M	SW-09	Ely Brook - Lower Ely Brook	05/02/2007	Field Sample	X	X	X			X	X
EB-30M	SW-09	Ely Brook - Lower Ely Brook	05/02/2007	Field Duplicate	X	X				X	X
EB-325M	SW-39	Ely Brook - Lower Ely Brook	05/02/2007	Field Sample	X	X	X			X	X
EB-405M	SW-33	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	Field Sample	X	X	X			X	X
EB-405M	SW-33	Ely Brook - Midslope Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EB-440M	LOC-59	Ely Brook - Midslope Waste Rock Pile Drainages	05/03/2001	Field Sample						X	
EB-440M	SW-11	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	Field Sample	X	X	X			X	X
EB-465M	EB-5	Ely Brook - Midslope Waste Rock Pile Drainages	04/02/2002	Field Sample	X	X		X	X	X	X
EB-465M	EB-5	Ely Brook - Midslope Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
EB-465M	EB-5	Ely Brook - Midslope Waste Rock Pile Drainages	05/21/2002	Field Sample	X	X		X	X	X	X
EB-465M	EB-5	Ely Brook - Midslope Waste Rock Pile Drainages	06/20/2002	Field Sample	X	X		X	X	X	X
EB-465M	EB-5	Ely Brook - Midslope Waste Rock Pile Drainages	06/20/2002	Field Duplicate	X	X		X	X	X	X
EB-465M	EB-5	Ely Brook - Midslope Waste Rock Pile Drainages	07/24/2002	Field Sample	X	X		X	X	X	X
EB-465M	EB-5	Ely Brook - Midslope Waste Rock Pile Drainages	08/20/2002	Field Sample	X	X		X	X	X	X
EB-465M	EB-5	Ely Brook - Midslope Waste Rock Pile Drainages	09/19/2002	Field Sample	X	X		X	X	X	X
EB-515M	EB5	Ely Brook - Midslope Waste Rock Pile Drainages	10/05/2005	Field Sample						X	X
EB-515M	EB5	Ely Brook - Midslope Waste Rock Pile Drainages	05/22/2006	Field Sample						X	X
EB-530M	SW-12	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	Field Sample	X	X	X			X	X
EB-530M	SW-12	Ely Brook - Midslope Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EB-560M	SW-13	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	Field Sample	X	X	X			X	X
EB-560M	SW-13	Ely Brook - Midslope Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EB-600M	SW-EB-3A	Ely Brook - Midslope Waste Rock Pile Drainages	08/23/2006	Field Sample	X	X	X	X	X	X	X
EB-610M	LOC-57	Ely Brook - Midslope Waste Rock Pile Drainages	05/03/2001	Field Sample						X	
EB-770M	SW-EB-2A	Ely Brook - Upper Waste Rock Pile Drainages	08/23/2006	Field Sample	X	X	X	X	X	X	X
EB-770M	SW-40	Ely Brook - Upper Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EB-815M	SW-17	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	Field Sample	X	X	X			X	X
EB-815M	SW-17	Ely Brook - Upper Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EB-90M	LOC-49	Ely Brook - Lower Ely Brook	05/03/2001	Field Sample						X	
EB-90M	LOC-49	Ely Brook - Lower Ely Brook	05/03/2001	Field Duplicate						X	
EB-90M	LOC-49	Ely Brook - Lower Ely Brook	09/05/2001	Field Sample	X					X	X
EB-90M	EB7	Ely Brook - Lower Ely Brook	10/05/2005	Field Sample						X	X
EB-90M	EB7	Ely Brook - Lower Ely Brook	10/05/2005	Field Duplicate						X	X
EB-90M	EB7	Ely Brook - Lower Ely Brook	05/22/2006	Field Sample						X	X
EB-90M	EB7	Ely Brook - Lower Ely Brook	05/22/2006	Field Duplicate						X	X
EB-90M	EB7	Ely Brook - Lower Ely Brook	06/19/2006	Field Sample	X		X	X		X	X
EB-90M	EB7	Ely Brook - Lower Ely Brook	06/23/2006	Field Sample				X		X	
EB-90M	SW-EB-4A	Ely Brook - Lower Ely Brook	08/23/2006	Field Sample	X	X	X	X	X	X	X
EB-90M	EB7	Ely Brook - Lower Ely Brook	04/11/2007	Field Sample						X	X

Table 2-2
Summary of RI Surface Water Sample Locations, Source Areas and Analyses Performed
Remedial Investigation
Ely Mine
Vershire, Vermont

Usgs Site Number	Sample Location	Source Area	Sample Date	Sample Type	Conventional Water Chemistry	Conventional Water Chemistry (Dissolved)	Field Parameters	Metals	Metals (Dissolved)	TAL Metals	TAL Metals (Dissolved)
EBT1-105M	EB-7	Ely Brook - Midslope Waste Rock Pile Drainages	04/08/2002	Field Sample	X	X		X	X	X	X
EBT1-105M	EB-7	Ely Brook - Midslope Waste Rock Pile Drainages	04/08/2002	Field Duplicate	X	X		X	X	X	X
EBT1-105M	EB-7	Ely Brook - Midslope Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
EBT1-10M	SW-34	Ely Brook - Midslope Waste Rock Pile Drainages	11/02/2004	Field Sample	X	X	X			X	X
EBT1-10M	SW-34	Ely Brook - Midslope Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EBT1-110M	SW-36	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	Field Sample	X	X	X			X	X
EBT1-32M	EB6	Ely Brook - Midslope Waste Rock Pile Drainages	10/05/2005	Field Sample						X	X
EBT1-32M	EB6	Ely Brook - Midslope Waste Rock Pile Drainages	05/22/2006	Field Sample						X	X
EBT2-120M	EB4	Ely Brook - Midslope Waste Rock Pile Drainages	10/05/2005	Field Sample						X	X
EBT2-120M	EB4	Ely Brook - Midslope Waste Rock Pile Drainages	05/22/2006	Field Sample						X	X
EBT2-185M	SW-37	Ely Brook - Midslope Waste Rock Pile Drainages	11/02/2004	Field Sample	X	X	X			X	X
EBT2-23M	SW-31	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	Field Sample	X	X	X			X	X
EBT2-245M	EBT2-245M	Ely Brook - Midslope Waste Rock Pile Drainages	06/19/2006	Field Sample	X		X	X		X	X
EBT2-245M	EBT2-245M	Ely Brook - Midslope Waste Rock Pile Drainages	06/23/2006	Field Sample				X		X	
EBT2-255M	SW-41	Ely Brook - Midslope Waste Rock Pile Drainages	05/03/2007	Field Sample	X	X	X			X	X
EBT2-265M	EB-2	Ely Brook - Midslope Waste Rock Pile Drainages	04/02/2002	Field Sample	X	X		X	X	X	X
EBT2-265M	EB-2	Ely Brook - Midslope Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
EBT2-265M	EB-2	Ely Brook - Midslope Waste Rock Pile Drainages	05/21/2002	Field Sample	X	X		X	X	X	X
EBT2-315M	SW-16	Beaver Pond Complex	11/03/2004	Field Sample	X	X	X			X	X
EBT2-383M	EB-2A	Beaver Pond Complex	05/21/2002	Field Sample	X	X		X	X	X	X
EBT2-383M	EB-2A	Beaver Pond Complex	06/20/2002	Field Sample	X	X		X	X	X	X
EBT2-383M	EB-2A	Beaver Pond Complex	07/24/2002	Field Sample	X	X		X	X	X	X
EBT2-383M	EB-2A	Beaver Pond Complex	08/20/2002	Field Sample	X	X		X	X	X	X
EBT2-383M	EB-2A	Beaver Pond Complex	09/19/2002	Field Sample	X	X		X	X	X	X
EBT2-430M	SW-21	Beaver Pond Complex	11/03/2004	Field Sample	X	X	X			X	X
EBT2-430M	SW-21	Beaver Pond Complex	11/03/2004	Field Duplicate	X	X				X	X
EBT2-55M	EB3	Ely Brook - Midslope Waste Rock Pile Drainages	10/05/2005	Field Sample						X	X
EBT2-55M	EB3	Ely Brook - Midslope Waste Rock Pile Drainages	05/22/2006	Field Sample						X	X
EBT2-58M	SW-14	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	Field Sample	X	X	X			X	X
EBT2-58M	SW-14	Ely Brook - Midslope Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EBT2-67M	LOC-58	Ely Brook - Midslope Waste Rock Pile Drainages	05/03/2001	Field Sample						X	
EBT2-78M	EB-3	Ely Brook - Midslope Waste Rock Pile Drainages	04/02/2002	Field Sample	X	X		X	X	X	X
EBT2-78M	EB-3	Ely Brook - Midslope Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
EBT2-78M	EB-3	Ely Brook - Midslope Waste Rock Pile Drainages	04/11/2002	Field Duplicate	X	X		X	X	X	X
EBT2-78M	EB-3	Ely Brook - Midslope Waste Rock Pile Drainages	05/21/2002	Field Sample	X	X		X	X	X	X
EBT2-78M	EB-3	Ely Brook - Midslope Waste Rock Pile Drainages	06/20/2002	Field Sample	X	X		X	X	X	X
EBT2-78M	EB-3	Ely Brook - Midslope Waste Rock Pile Drainages	07/24/2002	Field Sample	X	X		X	X	X	X
EBT2-78M	EB-3	Ely Brook - Midslope Waste Rock Pile Drainages	09/19/2002	Field Sample	X	X		X	X	X	X
EBT2-7M	SW-32	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	Field Sample	X	X	X			X	X
EBT2-7M	SW-32	Ely Brook - Midslope Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EBT3-120M	EB2	Ely Brook - Midslope Waste Rock Pile Drainages	10/05/2005	Field Sample						X	X
EBT3-120M	EB2	Ely Brook - Midslope Waste Rock Pile Drainages	05/22/2006	Field Sample						X	X
EBT3-180M	EB1	Ely Brook - Midslope Waste Rock Pile Drainages	10/05/2005	Field Sample						X	X
EBT3-180M	EB1	Ely Brook - Midslope Waste Rock Pile Drainages	05/22/2006	Field Sample						X	X
EBT3-60M	SW-30	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	Field Sample	X	X	X			X	X
EBT3-60M	SW-30	Ely Brook - Midslope Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EBT3-84M	EB-4	Ely Brook - Midslope Waste Rock Pile Drainages	04/02/2002	Field Sample	X	X		X	X	X	X
EBT3-84M	EB-4	Ely Brook - Midslope Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
EBT3-84M	EB-4	Ely Brook - Midslope Waste Rock Pile Drainages	05/21/2002	Field Sample	X	X		X	X	X	X
EBT3-84M	EB-4	Ely Brook - Midslope Waste Rock Pile Drainages	06/20/2002	Field Sample	X	X		X	X	X	X
EBT3-84M	EB-4	Ely Brook - Midslope Waste Rock Pile Drainages	07/24/2002	Field Sample	X	X		X	X	X	X
EBT3-84M	EB-4	Ely Brook - Midslope Waste Rock Pile Drainages	08/20/2002	Field Sample	X	X		X	X	X	X
EBT3-84M	EB-4	Ely Brook - Midslope Waste Rock Pile Drainages	09/19/2002	Field Sample	X	X		X	X	X	X
EBT4-25M	SW-29	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	Field Sample	X	X	X			X	X
EBT4-25M	SW-29	Ely Brook - Upper Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EBT5-60M	SW-51	Ely Brook - Midslope Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X

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Table 2-2
Summary of RI Surface Water Sample Locations, Source Areas and Analyses Performed
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Usgs Site Number	Sample Location	Source Area	Sample Date	Sample Type	Conventional Water Chemistry	Conventional Water Chemistry (Dissolved)	Field Parameters	Metals	Metals (Dissolved)	TAL Metals	TAL Metals (Dissolved)
EM-POND1	SW-POND-1	Beaver Pond Complex	09/19/2006	Field Sample	X	X	X	X	X	X	X
EM-POND1	SW-POND-1	Beaver Pond Complex	05/02/2007	Field Sample			X				X
EM-POND1	SW-POND-1	Beaver Pond Complex	05/10/2007	Field Sample			X				X
EM-POND1	SW-POND-1	Beaver Pond Complex	05/21/2007	Field Sample			X				X
EM-POND1	SW-POND-1	Beaver Pond Complex	05/28/2007	Field Sample			X				X
EM-POND1	SW-POND-1	Beaver Pond Complex	06/04/2007	Field Sample			X				X
EM-POND1	SW-POND-1	Beaver Pond Complex	06/11/2007	Field Sample			X				X
EM-POND2	SW-POND-2	Beaver Pond Complex	09/19/2006	Field Sample	X	X	X	X	X	X	X
EM-POND3	SW-POND-3	Beaver Pond Complex	09/19/2006	Field Sample	X	X	X	X	X	X	X
EM-POND4	SW-POND-4	Beaver Pond Complex	06/19/2006	Field Sample	X		X	X		X	X
EM-POND4	SW-POND-4	Beaver Pond Complex	06/23/2006	Field Sample	X		X	X		X	X
EM-POND4	SW-POND-4	Beaver Pond Complex	09/19/2006	Field Sample	X	X	X	X	X	X	X
EM-POND4	SW-POND-4	Beaver Pond Complex	05/02/2007	Field Sample			X				X
EM-POND4	SW-POND-4	Beaver Pond Complex	05/10/2007	Field Sample			X				X
EM-POND4	SW-POND-4	Beaver Pond Complex	05/21/2007	Field Sample			X				X
EM-POND4	SW-POND-4	Beaver Pond Complex	05/28/2007	Field Sample			X				X
EM-POND4	SW-POND-4	Beaver Pond Complex	06/04/2007	Field Sample			X				X
EM-POND4	SW-POND-4	Beaver Pond Complex	06/11/2007	Field Sample			X				X
EM-POND5	SW-POND-5	Beaver Pond Complex	09/19/2006	Field Sample	X	X	X	X	X	X	X
EM-POND5	SW-POND-5	Beaver Pond Complex	05/02/2007	Field Sample			X				X
EM-POND5	SW-POND-5	Beaver Pond Complex	05/10/2007	Field Sample			X				X
EM-POND5	SW-POND-5	Beaver Pond Complex	05/21/2007	Field Sample			X				X
EM-POND6	SW-POND-6	Ely Brook - Midslope Waste Rock Pile Drainages	09/19/2006	Field Sample	X	X	X	X	X	X	X
EM-SEEP1	ES-1	Ely Brook - Upper Waste Rock Pile Drainages	04/04/2002	Field Sample	X	X		X	X	X	X
EM-SEEP1	ES-1	Ely Brook - Upper Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
EM-SEEP10	ES-10	Ely Brook - Midslope Waste Rock Pile Drainages	04/08/2002	Field Sample	X	X		X	X	X	X
EM-SEEP10	ES-10	Ely Brook - Midslope Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
EM-SEEP11	ES-11	Ely Brook - Midslope Waste Rock Pile Drainages	04/08/2002	Field Sample	X	X		X	X	X	X
EM-SEEP12	ES-12	Ely Brook - Upper Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
EM-SEEP13	SW-35	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	Field Sample	X	X	X			X	X
EM-SEEP14	SW-42	Ely Brook - Upper Waste Rock Pile Drainages	05/03/2007	Field Sample	X	X	X			X	X
EM-SEEP15	SW-43	Ely Brook - Upper Waste Rock Pile Drainages	05/03/2007	Field Sample	X	X	X			X	X
EM-SEEP16	SW-45	Ely Brook - Upper Waste Rock Pile Drainages	05/03/2007	Field Sample	X	X	X			X	X
EM-SEEP17	SW-46	Ely Brook - Upper Waste Rock Pile Drainages	05/03/2007	Field Sample	X	X	X			X	X
EM-SEEP18	SW-47	Ely Brook - Upper Waste Rock Pile Drainages	05/03/2007	Field Sample	X	X	X			X	X
EM-SEEP19	SW-48	Ely Brook - Upper Waste Rock Pile Drainages	05/03/2007	Field Sample	X	X	X			X	X
EM-SEEP2	ES-2	Ely Brook - Upper Waste Rock Pile Drainages	04/04/2002	Field Sample	X	X		X	X	X	X
EM-SEEP2	ES-2	Ely Brook - Upper Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
EM-SEEP20	SW-49	Ely Brook - Upper Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EM-SEEP21	SW-52	Ely Brook - Midslope Waste Rock Pile Drainages	05/02/2007	Field Sample	X	X	X			X	X
EM-SEEP3	ES-3	Ely Brook - Upper Waste Rock Pile Drainages	04/04/2002	Field Sample	X	X		X	X	X	X
EM-SEEP4	ES-4	Ely Brook - Upper Waste Rock Pile Drainages	04/04/2002	Field Sample	X	X		X	X	X	X
EM-SEEP5	ES-5	Ely Brook - Upper Waste Rock Pile Drainages	04/04/2002	Field Sample	X	X		X	X	X	X
EM-SEEP6	ES-6	Ely Brook - Upper Waste Rock Pile Drainages	04/08/2002	Field Sample	X	X		X	X	X	X
EM-SEEP7	ES-7	Ely Brook - Upper Waste Rock Pile Drainages	04/08/2002	Field Sample	X	X		X	X	X	X
EM-SEEP8	ES-8	Ely Brook - Upper Waste Rock Pile Drainages	04/08/2002	Field Sample	X	X		X	X	X	X
EM-SEEP9	ES-9	Ely Brook - Midslope Waste Rock Pile Drainages	04/08/2002	Field Sample	X	X		X	X	X	X
EM-SEEP9	ES-9	Ely Brook - Midslope Waste Rock Pile Drainages	04/11/2002	Field Sample	X	X		X	X	X	X
OR-11800M	OM14	EBOR - Lower EBOR	04/09/2007	Field Sample						X	X
OR-11850M	LOC-35	EBOR - Lower EBOR	05/08/2000	Field Sample	X					X	X
OR-11850M	LOC-35	EBOR - Lower EBOR	07/19/2000	Field Sample	X					X	X
OR-11850M	LOC-35	EBOR - Lower EBOR	05/01/2001	Field Sample						X	
OR-11850M	LOC-35	EBOR - Lower EBOR	09/05/2001	Field Sample	X					X	X
OR-15000M	OR-3	EBOR - Lower EBOR	03/31/2002	Field Sample	X	X		X	X	X	X
OR-15000M	OR-3	EBOR - Lower EBOR	04/10/2002	Field Sample	X	X		X	X	X	X
OR-15000M	OR-3	EBOR - Lower EBOR	05/21/2002	Field Sample	X	X		X	X	X	X
OR-15000M	OR-3	EBOR - Lower EBOR	06/20/2002	Field Sample	X	X		X	X	X	X
OR-15000M	OR-3	EBOR - Lower EBOR	07/24/2002	Field Sample	X	X		X	X	X	X
OR-15000M	OR-3	EBOR - Lower EBOR	08/20/2002	Field Sample	X	X		X	X	X	X
OR-15000M	OR-3	EBOR - Lower EBOR	09/19/2002	Field Sample	X	X		X	X	X	X

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Usgs Site Number	Sample Location	Source Area	Sample Date	Sample Type	Conventional Water Chemistry	Conventional Water Chemistry (Dissolved)	Field Parameters	Metals	Metals (Dissolved)	TAL Metals	TAL Metals (Dissolved)
OR-15200M	LOC-56	EBOR - Lower EBOR	05/03/2001	Field Sample						X	
OR-15200M	LOC-56	EBOR - Lower EBOR	09/10/2001	Field Sample	X					X	X
OR-17400M	LOC-55	EBOR - Lower EBOR	09/10/2001	Field Sample	X					X	X
OR-19150M	LOC-54	EBOR - Lower EBOR	05/03/2001	Field Sample						X	
OR-19150M	LOC-54	EBOR - Lower EBOR	09/10/2001	Field Sample	X					X	X
OR-19560M	OM13	EBOR - Lower EBOR	04/09/2007	Field Sample						X	X
OR-22390M	OM12	EBOR - Lower EBOR	04/09/2007	Field Sample						X	X
OR-22450M	OR-2	EBOR - Lower EBOR	03/29/2002	Field Sample	X	X		X	X	X	X
OR-22450M	OR-2	EBOR - Lower EBOR	03/31/2002	Field Sample	X	X		X	X	X	X
OR-22450M	OR-2	EBOR - Lower EBOR	04/02/2002	Field Sample	X		X	X		X	
OR-22450M	OR-2	EBOR - Lower EBOR	04/03/2002	Field Sample	X		X	X		X	
OR-22450M	OR-2	EBOR - Lower EBOR	04/10/2002	Field Sample	X	X		X	X	X	X
OR-22450M	OR-2	EBOR - Lower EBOR	05/21/2002	Field Sample	X	X		X		X	
OR-22450M	OR-2	EBOR - Lower EBOR	06/20/2002	Field Sample	X	X		X	X	X	X
OR-22450M	OR-2	EBOR - Lower EBOR	07/24/2002	Field Sample	X	X		X	X	X	X
OR-22450M	OR-2	EBOR - Lower EBOR	08/20/2002	Field Sample	X	X		X	X	X	X
OR-22450M	OR-2	EBOR - Lower EBOR	09/19/2002	Field Sample	X	X		X	X	X	X
OR-23200M	SW-OR-3A	EBOR - Lower EBOR	08/21/2006	Field Sample	X	X	X	X	X	X	X
OR-23630M	SW-28	EBOR - Lower EBOR	11/04/2004	Field Sample	X	X	X			X	X
OR-23630M	SW-OR-2A	EBOR - Lower EBOR	08/21/2006	Field Sample	X	X	X	X	X	X	X
OR-23650M	SW-26	Background - EBOR	11/04/2004	Field Sample	X	X	X			X	X
OR-24050M	SW-OR-1A	Background - EBOR	08/21/2006	Field Sample	X	X	X	X	X	X	X
OR-24150M	OR-1	Background - EBOR	03/29/2002	Field Sample	X	X		X	X	X	X
OR-24150M	OR-1	Background - EBOR	03/31/2002	Field Sample	X	X		X	X	X	X
OR-24150M	OR-1	Background - EBOR	04/10/2002	Field Sample	X	X		X	X	X	X
OR-24150M	OR-1	Background - EBOR	05/21/2002	Field Sample	X	X		X	X	X	X
OR-24150M	OR-1	Background - EBOR	06/20/2002	Field Sample	X	X		X	X	X	X
OR-24150M	OR-1	Background - EBOR	07/24/2002	Field Sample	X	X		X	X	X	X
OR-24150M	OR-1	Background - EBOR	08/20/2002	Field Sample	X	X		X	X	X	X
OR-24150M	OR-1	Background - EBOR	09/19/2002	Field Sample	X	X		X	X	X	X
OR-24500M	LOC-53	Background - EBOR	05/03/2001	Field Sample						X	
OR-24500M	LOC-53	Background - EBOR	09/10/2001	Field Sample	X					X	X
OR-8350M	LOC-45	EBOR - Lower EBOR	07/06/2000	Field Sample	X					X	
OR-8350M	LOC-45	EBOR - Lower EBOR	09/20/2000	Field Sample	X					X	X
OR-8350M	LOC-45	EBOR - Lower EBOR	05/02/2001	Field Sample						X	
OR-8350M	LOC-45	EBOR - Lower EBOR	05/02/2001	Field Duplicate						X	
OR-8350M	LOC-45	EBOR - Lower EBOR	09/05/2001	Field Sample	X					X	X
ORT-1080M	SW-24	Background	11/02/2004	Field Sample	X	X	X			X	X
ORT-1150M	SW-23	Background	11/02/2004	Field Sample	X	X	X			X	X
ORT-1190M	SW-22	Background	11/02/2004	Field Sample	X	X	X			X	X
SB-1140M	LOC-52	Schoolhouse Brook - Lower Schoolhouse Brook	05/03/2001	Field Sample						X	
SB-1140M	LOC-52	Schoolhouse Brook - Lower Schoolhouse Brook	09/10/2001	Field Sample	X					X	X
SB-1360M	SW-01	Schoolhouse Brook - Lower Schoolhouse Brook	11/03/2004	Field Sample	X	X	X			X	X
SB-1360M	SW-01	Schoolhouse Brook - Lower Schoolhouse Brook	11/03/2004	Field Duplicate	X	X				X	X
SB-1360M	SW-SB-4A	Schoolhouse Brook - Lower Schoolhouse Brook	08/23/2006	Field Sample	X	X	X	X	X	X	X
SB-140M	SW-SB-5A	Schoolhouse Brook - Lower Schoolhouse Brook	08/21/2006	Field Sample	X	X	X	X	X	X	X
SB-20M	SW-27	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	Field Sample	X	X	X			X	X
SB-20M	SB-20M	Schoolhouse Brook - Lower Schoolhouse Brook	06/19/2006	Field Sample	X		X	X		X	X
SB-20M	SB-20M	Schoolhouse Brook - Lower Schoolhouse Brook	06/23/2006	Field Sample	X		X	X		X	X
SB-2400M	SW-SB-3A	Schoolhouse Brook - Lower Schoolhouse Brook	08/22/2006	Field Sample	X	X	X	X	X	X	X
SB-2860M	SB-2860M	Schoolhouse Brook - Lower Schoolhouse Brook	06/19/2006	Field Sample	X		X	X		X	X
SB-2860M	SB-2860M	Schoolhouse Brook - Lower Schoolhouse Brook	06/23/2006	Field Sample	X		X	X		X	X
SB-2900M	SW-02	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	Field Sample	X	X	X			X	X
SB-2920M	SW-03	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	Field Sample	X	X	X			X	X

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Usgs Site Number	Sample Location	Source Area	Sample Date	Sample Type	Conventional Water Chemistry	Conventional Water Chemistry (Dissolved)	Field Parameters	Metals	Metals (Dissolved)	TAL Metals	TAL Metals (Dissolved)
SB-2940M	SB-2	Schoolhouse Brook - Lower Schoolhouse Brook	03/28/2002	Field Sample	X	X		X	X	X	X
SB-2940M	SB-2	Schoolhouse Brook - Lower Schoolhouse Brook	03/31/2002	Field Sample	X	X		X	X	X	X
SB-2940M	SB-2	Schoolhouse Brook - Lower Schoolhouse Brook	04/02/2002	Field Sample	X		X	X		X	
SB-2940M	SB-2	Schoolhouse Brook - Lower Schoolhouse Brook	04/03/2002	Field Sample	X		X	X		X	
SB-2940M	SB-2	Schoolhouse Brook - Lower Schoolhouse Brook	04/10/2002	Field Sample	X	X		X	X	X	X
SB-2940M	SB-2	Schoolhouse Brook - Lower Schoolhouse Brook	05/21/2002	Field Sample	X	X		X	X	X	X
SB-2940M	SB-2	Schoolhouse Brook - Lower Schoolhouse Brook	06/20/2002	Field Sample	X	X		X	X	X	X
SB-2940M	SB-2	Schoolhouse Brook - Lower Schoolhouse Brook	07/24/2002	Field Sample	X	X		X	X	X	X
SB-2940M	SB-2	Schoolhouse Brook - Lower Schoolhouse Brook	08/20/2002	Field Sample	X	X		X	X	X	X
SB-2940M	SB-2	Schoolhouse Brook - Lower Schoolhouse Brook	09/19/2002	Field Sample	X	X		X	X	X	X
SB-2960M	LOC-51	Schoolhouse Brook - Lower Schoolhouse Brook	05/03/2001	Field Sample						X	
SB-2960M	LOC-51	Schoolhouse Brook - Lower Schoolhouse Brook	09/10/2001	Field Sample	X					X	X
SB-3020M	SW-04	Schoolhouse Brook - Smelter Area	11/04/2004	Field Sample	X	X	X			X	X
SB-3020M	SW-04	Schoolhouse Brook - Smelter Area	05/02/2007	Field Sample	X	X	X			X	X
SB-3020M	SW-04	Schoolhouse Brook - Smelter Area	05/02/2007	Field Duplicate	X	X				X	X
SB-3100M	SB9	Schoolhouse Brook - Smelter Area	10/05/2005	Field Sample						X	X
SB-3100M	SB9	Schoolhouse Brook - Smelter Area	05/22/2006	Field Sample						X	X
SB-3100M	SB9	Schoolhouse Brook - Smelter Area	06/19/2006	Field Sample	X		X	X		X	X
SB-3100M	SB9	Schoolhouse Brook - Smelter Area	06/23/2006	Field Sample	X		X	X		X	X
SB-3100M	SB9	Schoolhouse Brook - Smelter Area	04/11/2007	Field Sample						X	X
SB-3125M	SW-05	Schoolhouse Brook - Smelter Area	11/04/2004	Field Sample	X	X	X			X	X
SB-3125M	SW-SB-2A	Schoolhouse Brook - Smelter Area	08/22/2006	Field Sample	X	X	X	X	X	X	X
SB-3125M	SW-SB-2A	Schoolhouse Brook - Smelter Area	08/22/2006	Field Duplicate	X	X	X	X	X	X	X
SB-3245M	SB-3245M	Schoolhouse Brook - Smelter Area	06/19/2006	Field Sample	X		X	X		X	X
SB-3245M	SB-3245M	Schoolhouse Brook - Smelter Area	06/23/2006	Field Sample	X		X	X		X	X
SB-3250M	SW-06	Schoolhouse Brook - Smelter Area	11/04/2004	Field Sample	X	X	X			X	X
SB-3250M	SW-06	Schoolhouse Brook - Smelter Area	05/02/2007	Field Sample	X	X	X			X	X
SB-3255M	SB8	Schoolhouse Brook - Smelter Area	10/05/2005	Field Sample						X	X
SB-3255M	SB8	Schoolhouse Brook - Smelter Area	05/22/2006	Field Sample						X	X
SB-3255M	SB8	Schoolhouse Brook - Smelter Area	04/11/2007	Field Sample						X	X
SB-3255M	SB8	Schoolhouse Brook - Smelter Area	04/11/2007	Field Duplicate						X	X
SB-3290M	SB-1	Background - Schoolhouse Brook	03/28/2002	Field Sample	X	X		X	X	X	X
SB-3290M	SB-1	Background - Schoolhouse Brook	03/31/2002	Field Sample	X	X		X	X	X	X
SB-3290M	SB-1	Background - Schoolhouse Brook	04/10/2002	Field Sample	X	X		X	X	X	X
SB-3290M	SB-1	Background - Schoolhouse Brook	05/21/2002	Field Sample	X	X		X	X	X	X
SB-3290M	SB-1	Background - Schoolhouse Brook	06/20/2002	Field Sample	X	X		X	X	X	X
SB-3290M	SB-1	Background - Schoolhouse Brook	07/24/2002	Field Sample	X	X		X	X	X	X
SB-3290M	SB-1	Background - Schoolhouse Brook	08/20/2002	Field Sample	X	X		X	X	X	X
SB-3290M	SB-1	Background - Schoolhouse Brook	09/19/2002	Field Sample	X	X		X	X	X	X
SB-3290M	SW-38	Background - Schoolhouse Brook	05/03/2007	Field Sample	X	X	X			X	X
SB-3300M	LOC-48	Background - Schoolhouse Brook	05/03/2001	Field Sample						X	
SB-3300M	LOC-48	Background - Schoolhouse Brook	09/05/2001	Field Sample	X					X	X
SB-3510M	SW-07	Background - Schoolhouse Brook	11/04/2004	Field Sample	X	X	X			X	X
SB-35M	SB11	Schoolhouse Brook - Lower Schoolhouse Brook	04/11/2007	Field Sample						X	X
SB-3670M	SB-3670M	Background - Schoolhouse Brook	06/19/2006	Field Sample	X		X	X		X	X
SB-3670M	SB-3670M	Background - Schoolhouse Brook	06/23/2006	Field Sample	X		X	X		X	X
SB-3670M	SW-SB-1A	Background - Schoolhouse Brook	08/22/2006	Field Sample	X	X	X	X	X	X	X
SB-540M	SB-3	Schoolhouse Brook - Lower Schoolhouse Brook	03/29/2002	Field Sample	X	X		X	X	X	X
SB-540M	SB-3	Schoolhouse Brook - Lower Schoolhouse Brook	03/31/2002	Field Sample	X	X		X	X	X	X
SB-540M	SB-3	Schoolhouse Brook - Lower Schoolhouse Brook	04/10/2002	Field Sample	X	X		X	X	X	X
SB-540M	SB-3	Schoolhouse Brook - Lower Schoolhouse Brook	05/21/2002	Field Sample	X	X		X	X	X	X
SB-540M	SB-3	Schoolhouse Brook - Lower Schoolhouse Brook	06/20/2002	Field Sample	X	X		X	X	X	X
SB-540M	SB-3	Schoolhouse Brook - Lower Schoolhouse Brook	07/24/2002	Field Sample	X	X		X	X	X	X
SB-540M	SB-3	Schoolhouse Brook - Lower Schoolhouse Brook	08/20/2002	Field Sample	X	X		X	X	X	X
SB-540M	SB-3	Schoolhouse Brook - Lower Schoolhouse Brook	08/20/2002	Field Duplicate	X	X		X	X	X	X
SB-540M	SB-3	Schoolhouse Brook - Lower Schoolhouse Brook	09/19/2002	Field Sample	X	X		X	X	X	X
SBT1-57M	LOC-50	Background	05/03/2001	Field Sample						X	
SBT1-57M	LOC-50	Background	09/10/2001	Field Sample	X					X	X
SBT1-6M	SW-25	Background	11/04/2004	Field Sample	X	X	X			X	X

Table 2-3
Summary of RI Sediment Sample Locations, Source Areas and Analyses Performed
Remedial Investigation
Ely Mine
Vershire, Vermont

Sample Location	Sample ID	Source Area	Sample Date	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Sample Type	AVS/SEM	Cation Exchange Capacity	Conventional Sediment Chemistry	Grain Size	Metals	TAL Metals
EB-1030M	SED-18A	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample		X				X
EB-1030M	SED-18C	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample	X	X				X
EB-1030M	SED-18D	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample		X				X
EB-1030M	SED-18E	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample		X				X
EB-1080M	EB-1080M	Ely Brook - Upper Waste Rock Pile Drainages	06/20/2006	0	0	Field Sample						X
EB-1080M	SED-EB-1B	Ely Brook - Upper Waste Rock Pile Drainages	08/23/2006	0	0.5	Field Sample	X		X	X	X	X
EB-1430M	SED-20A	Background - Ely Brook	11/03/2004	0	0.25	Field Sample		X				X
EB-1430M	SED-20C	Background - Ely Brook	11/03/2004	0	0.25	Field Sample	X	X				X
EB-1430M	SED-20D	Background - Ely Brook	11/03/2004	0	0.25	Field Sample		X				X
EB-190M	EB-190M	Ely Brook - Lower Ely Brook	06/20/2006	0	0	Field Sample						X
EB-20M	SED-EB	Ely Brook - Lower Ely Brook	08/23/2006	0	0.5	Field Sample			X		X	X
EB-210M	SED-10A	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Sample		X				X
EB-210M	SED-10B	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Sample		X				X
EB-210M	SED-10C	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Sample	X	X				X
EB-210M	SED-10D	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Sample		X				X
EB-210M	SED-10E	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Sample		X				X
EB-30M	SED-09C	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Duplicate	X	X				X
EB-30M	SED-09A	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Sample		X				X
EB-30M	SED-09B	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Sample		X				X
EB-30M	SED-09C	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Sample	X	X				X
EB-30M	SED-09D	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Sample		X				X
EB-30M	SED-09E	Ely Brook - Lower Ely Brook	11/03/2004	0	0.25	Field Sample		X				X
EB-405M	SED-33C	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Duplicate		X				X
EB-405M	SED-33A	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Sample		X				X
EB-405M	SED-33C	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Sample	X	X				X
EB-405M	SED-33D	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Sample		X				X
EB-405M	SED-33E	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Sample		X				X
EB-440M	SED-11A	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Sample		X				X
EB-440M	SED-11C	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Sample	X	X				X
EB-440M	SED-11D	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Sample		X				X
EB-440M	SED-11E	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Sample		X				X
EB-515M	EB-515M	Ely Brook - Midslope Waste Rock Pile Drainages	06/20/2006	0	0	Field Sample						X
EB-530M	SED-12A	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EB-530M	SED-12C	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample	X	X				X
EB-530M	SED-12D	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EB-530M	SED-12E	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EB-560M	SED-13A	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EB-560M	SED-13C	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample	X	X				X
EB-600M	SED-EB-3B	Ely Brook - Midslope Waste Rock Pile Drainages	08/23/2006	0	0.5	Field Sample	X		X	X	X	X
EB-770M	SED-EB-2B	Ely Brook - Upper Waste Rock Pile Drainages	08/23/2006	0	0.5	Field Duplicate			X		X	X
EB-770M	SED-EB-2B	Ely Brook - Upper Waste Rock Pile Drainages	08/23/2006	0	0.5	Field Sample	X		X	X	X	X
EB-770M	SED-40C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
EB-815M	SED-17C	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Duplicate		X				X
EB-815M	SED-17C	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample	X	X				X
EB-815M	SED-17C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
EB-865M	EB-865M	Ely Brook - Upper Waste Rock Pile Drainages	06/20/2006	0	0	Field Sample						X
EB-90M	SED-EB-4B	Ely Brook - Lower Ely Brook	08/23/2006	0	0.5	Field Duplicate			X		X	X
EB-90M	SED-EB-4B	Ely Brook - Lower Ely Brook	08/23/2006	0	0.5	Field Sample	X		X	X	X	X
EBT1-10M	SED-34A	Ely Brook - Midslope Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample		X				X
EBT1-10M	SED-34C	Ely Brook - Midslope Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample	X	X				X
EBT1-10M	SED-34D	Ely Brook - Midslope Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample		X				X
EBT1-110M	SED-36C	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Duplicate		X				X
EBT1-110M	SED-36C	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Sample	X	X				X
EBT2-185M	SED-37C	Ely Brook - Midslope Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample	X	X				X
EBT2-23M	SED-31A	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EBT2-23M	SED-31B	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EBT2-23M	SED-31C	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample	X	X				X
EBT2-23M	SED-31D	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EBT2-315M	SED-16C	Beaver Pond Complex	11/03/2004	0	0.25	Field Sample	X	X				X

Table 2-3
Summary of RI Sediment Sample Locations, Source Areas and Analyses Performed
Remedial Investigation
Ely Mine
Vershire, Vermont

Sample Location	Sample ID	Source Area	Sample Date	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Sample Type	AVS/SEM	Cation Exchange Capacity	Conventional Sediment Chemistry	Grain Size	Metals	TAL Metals
EBT2-430M	SED-21C	Beaver Pond Complex	11/03/2004	0	0.25	Field Duplicate		X				X
EBT2-430M	SED-21C	Beaver Pond Complex	11/03/2004	0	0.25	Field Sample	X	X				X
EBT2-58M	SED-14A	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EBT2-58M	SED-14C	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample	X	X				X
EBT2-58M	SED-14D	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EBT2-7M	SED-32A	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EBT2-7M	SED-32C	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample	X	X				X
EBT2-7M	SED-32D	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EBT3-60M	SED-30A	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EBT3-60M	SED-30B	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EBT3-60M	SED-30C	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample	X	X				X
EBT3-60M	SED-30D	Ely Brook - Midslope Waste Rock Pile Drainages	11/01/2004	0	0.25	Field Sample		X				X
EBT4-25M	SED-29C	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Duplicate		X				X
EBT4-25M	SED-29A	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample		X				X
EBT4-25M	SED-29C	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample	X	X				X
EBT4-25M	SED-29D	Ely Brook - Upper Waste Rock Pile Drainages	11/02/2004	0	0.25	Field Sample		X				X
EM-POND1	SED-POND-1	Beaver Pond Complex	09/19/2006	0	0.5	Field Sample			X		X	X
EM-POND2	SED-POND-2	Beaver Pond Complex	09/19/2006	0	0.5	Field Sample			X		X	X
EM-POND3	SED-POND-3	Beaver Pond Complex	09/19/2006	0	0.5	Field Sample			X		X	X
EM-POND4	SED-POND-4	Beaver Pond Complex	09/19/2006	0	0.5	Field Sample			X		X	X
EM-POND5	SED-POND-5	Beaver Pond Complex	09/19/2006	0	0.5	Field Sample			X		X	X
EM-POND6	SED-POND-6	Ely Brook - Midslope Waste Rock Pile Drainages	09/19/2006	0	0.5	Field Sample			X		X	X
EM-SEEP13	SED-35C	Ely Brook - Midslope Waste Rock Pile Drainages	11/03/2004	0	0.25	Field Sample	X	X				X
EM-SEEP14	SED-42C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
EM-SEEP16	SED-45C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
EM-SEEP17	SED-46C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
EM-SEEP18	SED-47C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
EM-SEEP19	SED-48C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
OR-11850M	LOC-35	EBOR - Lower EBOR	07/19/2000	0	0	Field Sample	X		X	X		X
OR-15200M	LOC-56	EBOR - Lower EBOR	09/10/2001	0	0	Field Sample						X
OR-20200M	OR-20200M	EBOR - Lower EBOR	06/21/2006	0	0	Field Sample						X
OR-22320M	OR-22320M	EBOR - Lower EBOR	06/21/2006	0	0	Field Sample						X
OR-23200M	OR-23200M	EBOR - Lower EBOR	06/21/2006	0	0	Field Sample						X
OR-23200M	SED-OR-3B	EBOR - Lower EBOR	08/22/2006	0	0.5	Field Sample	X		X	X	X	X
OR-23630M	SED-28A	EBOR - Lower EBOR	11/04/2004	0	0.25	Field Sample		X				X
OR-23630M	SED-28B	EBOR - Lower EBOR	11/04/2004	0	0.25	Field Sample		X				X
OR-23630M	SED-28C	EBOR - Lower EBOR	11/04/2004	0	0.25	Field Sample	X	X				X
OR-23630M	SED-28D	EBOR - Lower EBOR	11/04/2004	0	0.25	Field Sample		X				X
OR-23630M	SED-28E	EBOR - Lower EBOR	11/04/2004	0	0.25	Field Sample		X				X
OR-23650M	SED-26A	Background - EBOR	11/04/2004	0	0.25	Field Sample		X				X
OR-23650M	SED-26B	Background - EBOR	11/04/2004	0	0.25	Field Sample		X				X
OR-23650M	SED-26C	Background - EBOR	11/04/2004	0	0.25	Field Sample	X	X				X
OR-23650M	SED-26D	Background - EBOR	11/04/2004	0	0.25	Field Sample		X				X
OR-24050M	OR-24050M	Background - EBOR	06/21/2006	0	0	Field Sample						X
OR-24050M	SED-OR-1B	Background - EBOR	08/22/2006	0	0.5	Field Sample	X		X	X	X	X
OR-24500M	LOC-53	Background - EBOR	09/10/2001	0	0	Field Sample						X
OR-8350M	LOC-45	EBOR - Lower EBOR	10/02/2000	0	0	Field Sample	X					X
OR-8350M	LOC-45	EBOR - Lower EBOR	09/05/2001	0	0	Field Sample						X
ORT-1080M	SED-24A	Background	11/02/2004	0	0.25	Field Sample		X				X
ORT-1080M	SED-24C	Background	11/02/2004	0	0.25	Field Sample	X	X				X
ORT-1080M	SED-24D	Background	11/02/2004	0	0.25	Field Sample		X				X
ORT-1150M	SED-23A	Background	11/02/2004	0	0.25	Field Sample		X				X
ORT-1150M	SED-23C	Background	11/02/2004	0	0.25	Field Sample	X	X				X
ORT-1150M	SED-23D	Background	11/02/2004	0	0.25	Field Sample		X				X
ORT-1190M	SED-22A	Background	11/02/2004	0	0.25	Field Sample		X				X
ORT-1190M	SED-22C	Background	11/02/2004	0	0.25	Field Sample	X	X				X
ORT-1190M	SED-22D	Background	11/02/2004	0	0.25	Field Sample		X				X
SB-1140M	LOC-52	Schoolhouse Brook - Lower Schoolhouse Brook	09/10/2001	0	0	Field Sample						X
SB-1360M	SED-01A	Schoolhouse Brook - Lower Schoolhouse Brook	11/03/2004	0	0.25	Field Sample		X				X
SB-1360M	SED-01C	Schoolhouse Brook - Lower Schoolhouse Brook	11/03/2004	0	0.25	Field Sample	X	X				X
SB-1360M	SED-01D	Schoolhouse Brook - Lower Schoolhouse Brook	11/03/2004	0	0.25	Field Sample		X				X
SB-1360M	SED-SB-4B	Schoolhouse Brook - Lower Schoolhouse Brook	08/23/2006	0	0.5	Field Sample	X		X	X	X	X

Table 2-3
Summary of RI Sediment Sample Locations, Source Areas and Analyses Performed
Remedial Investigation
Ely Mine
Vershire, Vermont

Sample Location	Sample ID	Source Area	Sample Date	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Sample Type	AVS/SEM	Cation Exchange Capacity	Conventional Sediment Chemistry	Grain Size	Metals	TAL Metals
SB-140M	SB-140M	Schoolhouse Brook - Lower Schoolhouse Brook	06/20/2006	0	0	Field Sample						X
SB-140M	SED-SB-5B	Schoolhouse Brook - Lower Schoolhouse Brook	08/22/2006	0	0.5	Field Duplicate	X		X	X	X	X
SB-140M	SED-SB-5B	Schoolhouse Brook - Lower Schoolhouse Brook	08/22/2006	0	0.5	Field Sample	X		X	X	X	X
SB-20M	SED-27C	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Duplicate		X				X
SB-20M	SED-27A	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample		X				X
SB-20M	SED-27B	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample		X				X
SB-20M	SED-27C	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample	X	X				X
SB-20M	SED-27D	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample		X				X
SB-2400M	SB-2400M	Schoolhouse Brook - Lower Schoolhouse Brook	06/20/2006	0	0	Field Sample						X
SB-2400M	SED-SB-3B	Schoolhouse Brook - Lower Schoolhouse Brook	08/22/2006	0	0.5	Field Sample	X		X	X	X	X
SB-2900M	SED-02A	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample		X				X
SB-2900M	SED-02C	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample	X	X				X
SB-2900M	SED-02D	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample		X				X
SB-2900M	SED-02E	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample		X				X
SB-2920M	SED-03A	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample		X				X
SB-2920M	SED-03C	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample	X	X				X
SB-2920M	SED-03D	Schoolhouse Brook - Lower Schoolhouse Brook	11/04/2004	0	0.25	Field Sample		X				X
SB-3020M	SED-04A	Schoolhouse Brook - Smelter Area	11/04/2004	0	0.25	Field Sample		X				X
SB-3020M	SED-04C	Schoolhouse Brook - Smelter Area	11/04/2004	0	0.25	Field Sample	X	X				X
SB-3020M	SED-04D	Schoolhouse Brook - Smelter Area	11/04/2004	0	0.25	Field Sample		X				X
SB-3020M	SED-04E	Schoolhouse Brook - Smelter Area	11/04/2004	0	0.25	Field Sample		X				X
SB-3125M	SED-05A	Schoolhouse Brook - Smelter Area	11/04/2004	0	0.25	Field Sample		X				X
SB-3125M	SED-05C	Schoolhouse Brook - Smelter Area	11/04/2004	0	0.25	Field Sample	X	X				X
SB-3125M	SED-05D	Schoolhouse Brook - Smelter Area	11/04/2004	0	0.25	Field Sample		X				X
SB-3125M	SB-3125M	Schoolhouse Brook - Smelter Area	06/20/2006	0	0	Field Sample						X
SB-3250M	SED-06A	Schoolhouse Brook - Smelter Area	11/04/2004	0	0.25	Field Sample		X				X
SB-3250M	SED-06C	Schoolhouse Brook - Smelter Area	11/04/2004	0	0.25	Field Sample	X	X				X
SB-3250M	SED-06D	Schoolhouse Brook - Smelter Area	11/04/2004	0	0.25	Field Sample		X				X
SB-3260M	SED-SB	Schoolhouse Brook - Smelter Area	08/23/2006	0	0.5	Field Sample			X		X	X
SB-3300M	LOC-48	Background - Schoolhouse Brook	09/10/2001	0	0	Field Sample						X
SB-3510M	SED-07C	Background - Schoolhouse Brook	11/04/2004	0	0.25	Field Duplicate	X	X				X
SB-3510M	SED-07A	Background - Schoolhouse Brook	11/04/2004	0	0.25	Field Sample		X				X
SB-3510M	SED-07B	Background - Schoolhouse Brook	11/04/2004	0	0.25	Field Sample		X				X
SB-3510M	SED-07C	Background - Schoolhouse Brook	11/04/2004	0	0.25	Field Sample	X	X				X
SB-3670M	SB-3670M	Background - Schoolhouse Brook	06/20/2006	0	0	Field Sample						X
SB-3670M	SED-SB-1B	Background - Schoolhouse Brook	08/22/2006	0	0.5	Field Sample	X		X	X	X	X
SBT1-6M	SED-25C	Background	11/04/2004	0	0.25	Field Duplicate		X				X
SBT1-6M	SED-25A	Background	11/04/2004	0	0.25	Field Sample		X				X
SBT1-6M	SED-25B	Background	11/04/2004	0	0.25	Field Sample		X				X
SBT1-6M	SED-25C	Background	11/04/2004	0	0.25	Field Sample	X	X				X
SBT1-6M	SED-25D	Background	11/04/2004	0	0.25	Field Sample		X				X
SED-51C	SED-51C	Ely Brook - Midslope Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
SED-53C	SED-53C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
SED-54C	SED-54C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
SED-55C	SED-55C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Duplicate			X			X
SED-55C	SED-55C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
SED-56C	SED-56C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X
SED-57C	SED-57C	Ely Brook - Upper Waste Rock Pile Drainages	10/23/2007	0	0.25	Field Sample			X			X

Table 2-4
Summary of RI Groundwater Sample Locations
Remedial Investigation
Ely Mine
Vershire, Vermont

Target Features	Well Name	Target Zone	Date Installed
Underground Mine Workings (and associated waste ore piles)	MW-05A MW-06A	Shallow Overburden	Fall 2006
	MW-09A MW-13A		Fall 2007
	MW-05B	Glacial Till	Fall 2006
	MW-05C MW-06C	Bedrock	Fall 2006
	MW-09C		Fall 2007
	BOM-01 BOM-03		Pre-RI
Deep Adit (and associated waste ore and tailing piles)	MW-08A	Shallow Overburden	Fall 2006
	MW-12C	Bedrock	Fall 2007
Flotation Mill and Roast Beds Areas (waste ore)	MW-04A MW-14A	Shallow Overburden	Fall 2006
	MW-15A MW-16A		Fall 2007
	MW-03C MW-04C	Bedrock	Fall 2006
Smoke Flue	MW-10B	Shallow Overburden	Fall 2007
	MW-10C	Bedrock	Fall 2007
Smelter Area (area includes smelter waste and slag)	MW-01A MW-02A	Shallow Overburden	Fall 2006
	MW-11A		Fall 2007
	MW-01B MW-02B	Glacial Till	Fall 2006
	MW-01C MW-02C	Bedrock	Fall 2006
	MW-11C		Fall 2007
Background (upgradient locations)	MW-07A	Shallow Overburden	Fall 2006
	MW-07C	Bedrock	Fall 2006

Table 3-4
Summary of Hydraulic Conductivity Estimates
Remedial Investigation
Ely Mine
Vershire, Vermont

DRAFT

Stratigraphic Unit	Location	HYDRAULIC CONDUCTIVITY			
		(ft/sec)	(ft/min)	(ft/day)	(cm/sec)
Overburden	MW-02A	2.00E-03	1.20E-01	1.73E+02	6.10E-02
	MW-04A	2.82E-05	1.69E-03	2.44E+00	8.60E-04
	MW-06A	1.17E-05	7.04E-04	1.01E+00	3.58E-04
	MW-07A	4.27E-05	2.56E-03	3.69E+00	1.30E-03
	MW-08A	5.39E-05	3.23E-03	4.66E+00	1.64E-03
	MW-09A	6.87E-06	4.12E-04	3.01E-01	2.09E-04
	MW-10B	8.32E-06	4.99E-04	7.19E-01	2.54E-04
	MW-11A	1.31E-05	7.84E-04	1.13E+00	3.98E-04
	MW-13A	1.11E-05	6.66E-04	9.59E-01	3.38E-04
	MW-14A	1.46E-05	8.77E-04	1.26E+00	4.45E-04
	MW-15A	7.92E-06	4.75E-04	6.84E-01	2.42E-04
	MW-16A	1.77E-05	1.06E-03	1.53E+00	5.39E-04
	Average Overburden	*1.92E-05*	*1.15E-03*	*1.57E+00*	*5.84E-04*
Glacial Till	MW-01B	1.55E-05	9.33E-04	1.34E+00	4.74E-04
	MW-02B	1.16E-06	6.96E-05	1.00E-01	3.54E-05
	MW-05B	9.83E-07	5.90E-05	8.49E-02	3.00E-05
	Average Glacial Till	*2.88E-06*	*1.73E-04*	*2.49E-01*	*8.79E-05*
Bedrock	MW-01C	2.13E-05	1.28E-03	1.23E+00	6.49E-04
	MW-02C	5.27E-06	3.16E-04	4.55E-01	1.61E-04
	MW-03C	6.51E-05	3.91E-03	5.63E+00	1.99E-03
	MW-04C	6.17E-06	3.70E-04	5.33E-01	1.88E-04
	MW-05C	2.41E-05	1.45E-03	2.09E+00	7.36E-04
	MW-06C	7.03E-06	4.22E-04	6.08E-01	2.14E-04
	MW-07C	2.51E-05	1.51E-03	2.17E+00	7.65E-04
	MW-09C	4.25E-07	2.55E-05	3.67E-02	1.29E-05
	MW-11C	1.90E-06	1.14E-04	1.64E-01	5.78E-05
	MW-12C	2.43E-05	1.46E-03	2.10E+00	7.42E-04
	Average Bedrock	*1.06E-05*	*6.37E-04*	*8.81E-01*	*3.24E-04*

Notes:
(ft/sec) = feet per second
(ft/min) = feet per minutes
(ft/day) = feet per day
(cm/sec) = centimeters per second
HV = Hvorslev method
BR = Bouwer and Rice method
* = Results for MW-02A should be considered estimated values based on rapid aquifer response during field test

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Table 3-5
Groundwater Elevation Data
Ely Mine
Vershire, Vermont

WELL/PIEZO. NUMBER	SCREENED INTERVAL (ft bgs)	GROUND SURFACE ELEVATION (ft msl)	SCREENED INTERVAL (ft msl)	REFERENCE ELEVATION (ft msl)	13-Dec-06		10-Jan-07		5-Feb-07		6-Mar-07	
					DTW (feet)	WSE (ft msl)	DTW (feet)	WSE (ft msl)	DTW (feet)	WSE (ft msl)	DTW (feet)	WSE (ft msl)
MW-01A	7 to 17	967.20	960.2 to 950.2	969.02	17.54	951.48	17.46	951.56	17.60	951.42	17.97	951.05
MW-01B	26 to 36	966.80	940.8 to 930.8	968.90	17.37	951.53	17.15	951.75	17.50	951.40	17.96	950.94
MW-01C	47.3 to 55.3	966.90	919.6 to 911.6	968.48	12.08	956.40	11.80	956.68	12.39	956.09	12.91	955.57
MW-02A	6 to 16	976.60	970.6 to 960.6	978.54	11.95	966.59	11.74	966.80	13.12	965.42	14.85	963.69
MW-02B	22 to 32	976.70	954.7 to 944.7	978.65	13.98	964.67	14.14	964.51	15.40	963.25	16.17	962.48
MW-02C	80.5 to 90.5	976.50	896.0 to 886.0	979.05	12.35	966.69	11.93	967.12	13.10	965.95	13.87	965.18
MW-03C	29.5 to 39.5	1016.30	986.8 to 976.8	1018.10	22.03	996.07	21.57	996.53	23.29	994.81	24.80	993.30
MW-04A	3 to 9	1030.90	1027.9 to 1021.9	1033.29	4.55	1028.74	3.57	1029.72	5.81	1027.48	7.22	1026.07
MW-04C	20 to 40	1030.50	1010.5 to 990.5	1033.05	6.60	1026.45	5.71	1027.34	7.30	1025.75	7.93	1025.12
MW-05A	4 to 14	1138.10	1134.1 to 1124.1	1140.50	12.66	1127.84	11.77	1128.73	13.44	1127.06	14.18	1126.32
MW-05B	15.5 to 25.5	1138.10	1122.6 to 1112.6	1141.39	12.88	1128.51	11.84	1129.55	13.48	1127.91	14.27	1127.12
MW-05C	66 to 76	1138.10	1072.1 to 1062.1	1141.07	15.02	1126.05	14.65	1126.42	15.50	1125.57	15.94	1125.13
MW-06A	3 to 13	1159.70	1156.7 to 1146.7	1162.19	6.36	1155.83	5.88	1156.31	7.36	1154.83	7.48	1154.71
MW-06C	19 to 29	1159.70	1140.7 to 1130.7	1162.98	10.80	1152.18	10.41	1152.57	11.90	1151.08	12.04	1150.94
MW-07A	3 to 13	1334.30	1331.3 to 1321.3	1336.95	3.12	1333.83	2.59	1334.36	NM	--	NM	--
MW-07C	20.5 to 30.5	1334.30	1313.8 to 1303.8	1336.87	2.45	1334.42	NM	--	NM	--	NM	--
MW-08A	4 to 12	1083.50	1079.5 to 1071.5	1085.51	5.09	1080.42	4.56	1080.95	5.51	1080.00	5.56	1079.95
MW-09A	3 to 6	1164.11	1161.1 to 1158.1	1165.84	--	--	--	--	--	--	--	--
MW-09C	54.5 to 64.5	1164.43	1109.9 to 1099.9	1166.02	--	--	--	--	--	--	--	--
MW-10B	3.5 to 8.5	996.94	993.4 to 988.4	999.30	--	--	--	--	--	--	--	--
MW-10C	30 to 40	996.76	966.8 to 956.8	998.74	--	--	--	--	--	--	--	--
MW-11A	3 to 10	978.71	975.7 to 968.7	980.50	--	--	--	--	--	--	--	--
MW-11C	20 to 30	978.58	958.6 to 948.6	980.71	--	--	--	--	--	--	--	--
MW-12C	9.5 to 17.5	1095.16	1085.7 to 1077.7	1097.16	--	--	--	--	--	--	--	--
MW-13A	3 to 9	1110.55	1107.6 to 1101.6	1112.25	--	--	--	--	--	--	--	--
MW-14A	4 to 9	983.00	979.0 to 974.0	984.13	--	--	--	--	--	--	--	--
MW-15A	2.5 to 7	1000.98	998.5 to 994.0	1000.84	--	--	--	--	--	--	--	--
MW-16A	3 to 9.5	986.56	983.6 to 977.1	988.09	--	--	--	--	--	--	--	--

Notes:

DTW = Depth to water, measured in feet below reference elevation

WSE = Groundwater surface elevation

NM = DTW not measured due to ice

(ft bgs) = Feet below ground surface

(ft msl) = Feet above mean sea level

-- = Not calculated

* = Water level not measured due to water in road box above PVC

= Well is artesian

Table 3-5
Groundwater Elevation Data
Ely Mine
Vershire, Vermont

WELL/PIEZO. NUMBER	SCREENED INTERVAL (ft bgs)	GROUND SURFACE ELEVATION (ft msl)	SCREENED INTERVAL (ft msl)	REFERENCE ELEVATION (ft msl)	9-Apr-07		16-May-07		12-Jun-07		17-Jul-07	
					DTW (feet)	WSE (ft msl)	DTW (feet)	WSE (ft msl)	DTW (feet)	WSE (ft msl)	DTW (feet)	WSE (ft msl)
MW-01A	7 to 17	967.20	960.2 to 950.2	969.02	17.50	951.52	17.53	951.49	17.55	951.47	16.71	952.31
MW-01B	26 to 36	966.80	940.8 to 930.8	968.90	17.15	951.75	17.38	951.52	17.82	951.08	17.84	951.06
MW-01C	47.3 to 55.3	966.90	919.6 to 911.6	968.48	11.94	956.54	12.17	956.31	12.49	955.99	12.82	955.66
MW-02A	6 to 16	976.60	970.6 to 960.6	978.54	11.89	966.65	12.37	966.17	13.41	965.13	14.50	964.04
MW-02B	22 to 32	976.70	954.7 to 944.7	978.65	14.57	964.08	15.00	963.65	15.58	963.07	16.00	962.65
MW-02C	80.5 to 90.5	976.50	896.0 to 886.0	979.05	12.04	967.01	12.64	966.41	13.12	965.93	13.57	965.48
MW-03C	29.5 to 39.5	1016.30	986.8 to 976.8	1018.10	21.95	996.15	22.55	995.55	23.12	994.98	24.46	993.64
MW-04A	3 to 9	1030.90	1027.9 to 1021.9	1033.29	3.71	1029.58	5.31	1027.98	5.66	1027.63	6.55	1026.74
MW-04C	20 to 40	1030.50	1010.5 to 990.5	1033.05	5.93	1027.12	6.91	1026.14	7.14	1025.91	7.52	1025.53
MW-05A	4 to 14	1138.10	1134.1 to 1124.1	1140.50	11.85	1128.65	13.07	1127.43	13.48	1127.02	13.71	1126.79
MW-05B	15.5 to 25.5	1138.10	1122.6 to 1112.6	1141.39	11.92	1129.47	13.15	1128.24	13.65	1127.74	13.91	1127.48
MW-05C	66 to 76	1138.10	1072.1 to 1062.1	1141.07	14.87	1126.20	15.34	1125.73	15.70	1125.37	15.82	1125.25
MW-06A	3 to 13	1159.70	1156.7 to 1146.7	1162.19	5.76	1156.43	7.08	1155.11	7.15	1155.04	7.68	1154.51
MW-06C	19 to 29	1159.70	1140.7 to 1130.7	1162.98	10.65	1152.33	11.57	1151.41	11.90	1151.08	12.31	1150.67
MW-07A	3 to 13	1334.30	1331.3 to 1321.3	1336.95	2.82	1334.13	4.80	1332.15	5.28	1331.67	6.91	1330.04
MW-07C	20.5 to 30.5	1334.30	1313.8 to 1303.8	1336.87	1.96	1334.91	3.88	1332.99	4.19	1332.68	9.01	1327.86
MW-08A	4 to 12	1083.50	1079.5 to 1071.5	1085.51	5.12	1080.39	5.18	1080.33	5.12	1080.39	5.27	1080.24
MW-09A	3 to 6	1164.11	1161.1 to 1158.1	1165.84	--	--	--	--	--	--	--	--
MW-09C	54.5 to 64.5	1164.43	1109.9 to 1099.9	1166.02	--	--	--	--	--	--	--	--
MW-10B	3.5 to 8.5	996.94	993.4 to 988.4	999.30	--	--	--	--	--	--	--	--
MW-10C	30 to 40	996.76	966.8 to 956.8	998.74	--	--	--	--	--	--	--	--
MW-11A	3 to 10	978.71	975.7 to 968.7	980.50	--	--	--	--	--	--	--	--
MW-11C	20 to 30	978.58	958.6 to 948.6	980.71	--	--	--	--	--	--	--	--
MW-12C	9.5 to 17.5	1095.16	1085.7 to 1077.7	1097.16	--	--	--	--	--	--	--	--
MW-13A	3 to 9	1110.55	1107.6 to 1101.6	1112.25	--	--	--	--	--	--	--	--
MW-14A	4 to 9	983.00	979.0 to 974.0	984.13	--	--	--	--	--	--	--	--
MW-15A	2.5 to 7	1000.98	998.5 to 994.0	1000.84	--	--	--	--	--	--	--	--
MW-16A	3 to 9.5	986.56	983.6 to 977.1	988.09	--	--	--	--	--	--	--	--

Notes:

DTW = Depth to water, measured in feet below reference elevation

WSE = Groundwater surface elevation

NM = DTW not measured due to ice

(ft bgs) = Feet below ground surface

(ft msl) = Feet above mean sea level

-- = Not calculated

* = Water level not measured due to water in road box above PVC

⧅ = Well is artesian

Table 3-5
Groundwater Elevation Data
Ely Mine
Vershire, Vermont

WELL/PIEZO. NUMBER	SCREENED INTERVAL (ft bgs)	GROUND SURFACE ELEVATION (ft msl)	SCREENED INTERVAL (ft msl)	REFERENCE ELEVATION (ft msl)	17-Aug-07		19-Sep-07		18-Dec-07		22-Jan-08	
					DTW (feet)	WSE (ft msl)	DTW (feet)	WSE (ft msl)	DTW (feet)	WSE (ft msl)	DTW (feet)	WSE (ft msl)
MW-01A	7 to 17	967.20	960.2 to 950.2	969.02	18.52	950.50	18.73	950.29	17.54	951.48	17.50	951.52
MW-01B	26 to 36	966.80	940.8 to 930.8	968.90	18.31	950.59	18.60	950.30	17.54	951.36	17.28	951.62
MW-01C	47.3 to 55.3	966.90	919.6 to 911.6	968.48	13.26	955.22	13.52	954.96	12.47	956.01	12.08	956.40
MW-02A	6 to 16	976.60	970.6 to 960.6	978.54	14.91	963.63	15.51	963.03	13.33	965.21	12.65	965.89
MW-02B	22 to 32	976.70	954.7 to 944.7	978.65	16.30	962.35	16.44	962.21	15.58	963.07	14.83	963.82
MW-02C	80.5 to 90.5	976.50	896.0 to 886.0	979.05	14.08	964.97	14.32	964.73	12.96	966.09	12.37	966.68
MW-03C	29.5 to 39.5	1016.30	986.8 to 976.8	1018.10	26.19	991.91	27.08	991.02	22.78	995.32	22.17	995.93
MW-04A	3 to 9	1030.90	1027.9 to 1021.9	1033.29	7.17	1026.12	7.54	1025.75	5.30	1027.99	4.47	1028.82
MW-04C	20 to 40	1030.50	1010.5 to 990.5	1033.05	8.04	1025.01	8.31	1024.74	7.02	1026.03	6.50	1026.55
MW-05A	4 to 14	1138.10	1134.1 to 1124.1	1140.50	14.15	1126.35	14.63	1125.87	13.40	1127.10	12.31	1128.19
MW-05B	15.5 to 25.5	1138.10	1122.6 to 1112.6	1141.39	14.35	1127.04	14.80	1126.59	13.58	1127.81	12.56	1128.83
MW-05C	66 to 76	1138.10	1072.1 to 1062.1	1141.07	16.09	1124.98	16.27	1124.80	15.50	1125.57	14.91	1126.16
MW-06A	3 to 13	1159.70	1156.7 to 1146.7	1162.19	8.72	1153.47	8.33	1153.86	6.99	1155.20	6.21	1155.98
MW-06C	19 to 29	1159.70	1140.7 to 1130.7	1162.98	13.12	1149.86	12.91	1150.07	11.42	1151.56	10.75	1152.23
MW-07A	3 to 13	1334.30	1331.3 to 1321.3	1336.95	8.22	1328.73	8.83	1328.12	4.13	1332.82	3.00	1333.95
MW-07C	20.5 to 30.5	1334.30	1313.8 to 1303.8	1336.87	7.32	1329.55	8.30	1328.57	3.25	1333.62	NM	--
MW-08A	4 to 12	1083.50	1079.5 to 1071.5	1085.51	5.29	1080.22	5.39	1080.12	5.40	1080.11	5.31	1080.20
MW-09A	3 to 6	1164.11	1161.1 to 1158.1	1165.84	--	--	--	--	4.16	1161.68	3.81	1162.03
MW-09C	54.5 to 64.5	1164.43	1109.9 to 1099.9	1166.02	--	--	--	--	17.67	1148.35	16.06	1149.96
MW-10B	3.5 to 8.5	996.94	993.4 to 988.4	999.30	--	--	--	--	3.29	996.01	NM	--
MW-10C	30 to 40	996.76	966.8 to 956.8	998.74	--	--	--	--	0	998.74	NM	--
MW-11A	3 to 10	978.71	975.7 to 968.7	980.50	--	--	--	--	5.36	975.14	3.38	977.12
MW-11C	20 to 30	978.58	958.6 to 948.6	980.71	--	--	--	--	4.41	976.3	4.7	976.01
MW-12C	9.5 to 17.5	1095.16	1085.7 to 1077.7	1097.16	--	--	--	--	7.23	1089.93	6.98	1090.18
MW-13A	3 to 9	1110.55	1107.6 to 1101.6	1112.25	--	--	--	--	4.12	1108.13	3.34	1108.91
MW-14A	4 to 9	983.00	979.0 to 974.0	984.13	--	--	--	--	2.36	981.77	2.07	982.06
MW-15A	2.5 to 7	1000.98	998.5 to 994.0	1000.84	--	--	--	--	0.21	1000.63	*	--
MW-16A	3 to 9.5	986.56	983.6 to 977.1	988.09	--	--	--	--	3.55	984.54	3.44	984.65

Notes:

DTW = Depth to water, measured in feet below reference elevation

WSE = Groundwater surface elevation

NM = DTW not measured due to ice

(ft bgs) = Feet below ground surface

(ft msl) = Feet above mean sea level

-- = Not calculated

* = Water level not measured due to water in road box above PVC

[artesian symbol] = Well is artesian

Table 3-5
Groundwater Elevation Data
Ely Mine
Vershire, Vermont

WELL/PIEZO. NUMBER	SCREENED INTERVAL (ft bgs)	GROUND SURFACE ELEVATION (ft msl)	SCREENED INTERVAL (ft msl)	REFERENCE ELEVATION (ft msl)	19-Feb-08 DTW (feet)	19-Feb-08 WSE (ft msl)	10-Mar-08 DTW (feet)	10-Mar-08 WSE (ft msl)	15-Apr-08 DTW (feet)	15-Apr-08 WSE (ft msl)	19-May-08 DTW (feet)	19-May-08 WSE (ft msl)
MW-01A	7 to 17	967.20	960.2 to 950.2	969.02	17.50	951.52	17.40	951.62	17.23	951.79	17.51	951.51
MW-01B	26 to 36	966.80	940.8 to 930.8	968.90	17.32	951.58	17.12	951.78	16.82	952.08	17.53	951.37
MW-01C	47.3 to 55.3	966.90	919.6 to 911.6	968.48	12.19	956.29	11.93	956.55	11.33	957.15	12.34	956.14
MW-02A	6 to 16	976.60	970.6 to 960.6	978.54	13.42	965.12	11.96	966.58	9.97	968.57	11.91	966.63
MW-02B	22 to 32	976.70	954.7 to 944.7	978.65	15.09	963.56	14.28	964.37	13.03	965.62	14.40	964.25
MW-02C	80.5 to 90.5	976.50	896.0 to 886.0	979.05	12.51	966.54	11.86	967.19	10.86	968.19	12.41	966.64
MW-03C	29.5 to 39.5	1016.30	986.8 to 976.8	1018.10	22.29	995.81	21.49	996.61	20.08	998.02	22.58	995.52
MW-04A	3 to 9	1030.90	1027.9 to 1021.9	1033.29	4.04	1029.25	3.29	1030.00	2.78	1030.51	5.11	1028.18
MW-04C	20 to 40	1030.50	1010.5 to 990.5	1033.05	6.22	1026.83	5.56	1027.49	4.71	1028.34	6.87	1026.18
MW-05A	4 to 14	1138.10	1134.1 to 1124.1	1140.50	13.22	1127.28	12.51	1127.99	9.78	1130.72	13.01	1127.49
MW-05B	15.5 to 25.5	1138.10	1122.6 to 1112.6	1141.39	13.38	1128.01	12.61	1128.78	10.07	1131.32	13.23	1128.16
MW-05C	66 to 76	1138.10	1072.1 to 1062.1	1141.07	15.05	1126.02	14.57	1126.50	13.85	1127.22	15.49	1125.58
MW-06A	3 to 13	1159.70	1156.7 to 1146.7	1162.19	5.01	1157.18	4.84	1157.35	4.64	1157.55	7.25	1154.94
MW-06C	19 to 29	1159.70	1140.7 to 1130.7	1162.98	10.39	1152.59	10.08	1152.90	9.80	1153.18	11.62	1151.36
MW-07A	3 to 13	1334.30	1331.3 to 1321.3	1336.95	2.95	1334.00	2.67	1334.28	2.60	1334.35	4.81	1332.14
MW-07C	20.5 to 30.5	1334.30	1313.8 to 1303.8	1336.87	NM	--	NM	--	1.16	1335.71	3.97	1332.90
MW-08A	4 to 12	1083.50	1079.5 to 1071.5	1085.51	5.04	1080.47	4.47	1081.04	3.35	1082.16	5.15	1080.36
MW-09A	3 to 6	1164.11	1161.1 to 1158.1	1165.84	3.51	1162.33	3.33	1162.51	2.79	1163.05	3.75	1162.09
MW-09C	54.5 to 64.5	1164.43	1109.9 to 1099.9	1166.02	16.05	1149.97	15.36	1150.66	14.72	1151.3	16.82	1149.2
MW-10B	3.5 to 8.5	996.94	993.4 to 988.4	999.30	2.82	996.48	2.59	996.71	2.3	997	3.4	995.9
MW-10C	30 to 40	996.76	966.8 to 956.8	998.74	NM	--	NM	--	NM	--	0	~~998.74~~
MW-11A	3 to 10	978.71	975.7 to 968.7	980.50	2.71	977.79	2.17	978.33	2.07	978.43	4.27	976.23
MW-11C	20 to 30	978.58	958.6 to 948.6	980.71	4.36	976.35	3.7	977.01	3.37	977.34	5.19	975.52
MW-12C	9.5 to 17.5	1095.16	1085.7 to 1077.7	1097.16	6.59	1090.57	6.42	1090.74	6.29	1090.87	7.15	1090.01
MW-13A	3 to 9	1110.55	1107.6 to 1101.6	1112.25	2.88	1109.37	2.55	1109.7	2.4	1109.85	4.42	1107.83
MW-14A	4 to 9	983.00	979.0 to 974.0	984.13	1.88	982.25	1.78	982.35	1.64	982.49	2.28	981.85
MW-15A	2.5 to 7	1000.98	998.5 to 994.0	1000.84	*	--	*	--	0.05	1000.79	0.04	1000.8
MW-16A	3 to 9.5	986.56	983.6 to 977.1	988.09	3.2	984.89	3.02	985.07	2.58	985.51	3.69	984.4

Notes:

DTW = Depth to water, measured in feet below reference elevation

WSE = Groundwater surface elevation

NM = DTW not measured due to ice

(ft bgs) = Feet below ground surface

(ft msl) = Feet above mean sea level

-- = Not calculated

* = Water level not measured due to water in road box above PVC

⧅ = Well is artesian

Table 4-1
Exceedances in Surficial Soil
Remedial Investigation
Ely Mine
Vershire, Vermont

Sample Location	Sample Type	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Constituent Soil Criteria Units	Cadmium 3.28 mg/kg	Cobalt 945 mg/kg	Copper 625 mg/kg	Lead 400 mg/kg	Manganese 3326 mg/kg	Nickel 370 mg/kg	Selenium 4.37 mg/kg	Thallium 4.98 mg/kg	Vanadium 361 mg/kg	Zinc 545 mg/kg
Background														
BK-08B	Field Sample	0	0.58	10/16/2007	--	--	--	--	7800 J	--	--	--	--	--
BK-08C	Field Sample	0	1	10/16/2007	--	--	--	--	5200 J	--	--	--	--	--
Midslope Waste Piles														
02ELY10A-B	Composite	0	0	10/8/2002	--	--	2040	--	--	--	--	--	--	--
02ELY10A-B	Composite	0.82	0.82	10/8/2002	--	--	1630	--	--	--	--	--	--	--
02ELY7A-B	Composite	0	0	10/8/2002	--	--	7020	--	--	--	--	--	--	--
02ELY7A-B	Field Duplicate	0	0	10/8/2002	--	--	6940	--	--	--	--	--	--	--
02ELY7A-B	Composite	0.82	0.82	10/8/2002	--	--	6540	--	--	--	--	--	--	--
02ELY7A-B	Field Duplicate	0.82	0.82	10/8/2002	--	--	5580	--	--	--	--	--	--	--
02ELY8A-B-C	Field Sample	0	0	10/8/2002	--	--	2240	--	--	--	--	--	--	--
02ELY8A-B-C	Field Sample	1.15	1.57	10/8/2002	--	--	1510	--	--	--	--	--	--	--
ELY00JH22	Composite	0	0	6/27/2000	--	--	5100	--	--	--	--	--	--	--
ELY00JH24	Composite	0	0	6/27/2000	--	--	2400	--	--	--	--	--	--	--
ELY00JH24	Field Duplicate	0	0	6/27/2000	--	--	2320	--	--	--	--	--	--	--
NF-05	Field Sample	0	0.25	10/16/2007	--	--	1500 J	--	--	--	5.6	--	--	--
NF-05	Field Sample	0.25	0.92	10/16/2007	--	--	1400 J	--	--	--	--	--	--	--
NF-09	Field Sample	0	0.13	10/17/2007	--	--	--	--	--	--	35	5 J	--	--
NF-09	Field Sample	0.13	1	10/17/2007	--	--	--	--	--	--	4.5	--	--	--
NF-13	Field Sample	0	0.21	10/19/2007	--	--	--	--	--	--	8.3	--	--	--
NF-13	Field Sample	0.21	1	10/19/2007	--	--	--	--	--	--	17	--	--	--
SA-10	Field Sample	0	0.5	10/17/2007	--	--	4900 J	--	--	--	31	8.6 J	--	--
SA-11	Field Sample	0	0.5	10/17/2007	--	--	1700 J	--	--	--	35	9.6 J	--	--
SA-12	Field Duplicate	0	0.5	10/17/2007	--	--	1000 J	--	--	--	19	--	--	--
SA-12	Field Sample	0	0.5	10/17/2007	--	--	--	--	--	--	10	--	--	--
SA-13	Field Sample	0	0.5	10/17/2007	--	--	--	--	--	--	11	--	--	--
SA-14	Field Sample	0	0.5	10/17/2007	--	--	2200	--	--	--	44	6.9 J	--	--
SA-15	Field Duplicate	0	0.5	10/17/2007	--	--	--	--	--	--	5.5	5.4 J	--	--
SA-15	Field Sample	0	0.5	10/17/2007	--	--	--	--	--	--	8.5	5.8 J	--	--
SA-16	Field Sample	0	0.5	10/17/2007	--	--	3300	--	--	--	84	8.7 J	--	--
SA-17	Field Sample	0	0.5	10/16/2007	--	--	1600 J	--	--	--	31	7.5 J	--	--
SA-18	Field Sample	0	0.5	10/17/2007	--	--	1300	--	--	--	44	--	--	--
SA-19	Field Sample	0	0.5	10/16/2007	--	--	1400 J	--	--	--	37	7.8 J	--	--
SA-20	Field Sample	0	0.5	10/17/2007	--	--	3200	--	--	--	86	5 J	--	--
SA-21	Field Sample	0	0.5	10/17/2007	--	--	2800	--	--	--	52	--	--	--
SA-22	Field Sample	0	0.5	10/17/2007	--	--	--	--	--	--	40	--	--	--
SA-23	Field Sample	0	0.5	10/19/2007	--	--	670	--	--	--	26	--	--	--
TR-03A	Field Sample	0	0.04	10/17/2007	--	--	750 J	--	--	--	37	10 J	--	--
TR-03A	Field Sample	0.04	1	10/17/2007	--	--	3400 J	--	--	--	45	9.9 J	--	--
TR-03B	Field Sample	0	0.17	10/17/2007	--	--	1600 J	--	--	--	19	6.4 J	--	--
TR-03B	Field Sample	0.17	1	10/17/2007	--	--	2900 J	--	--	--	62	13 J	--	--
TR-03C	Field Sample	0	0.25	10/17/2007	--	--	--	--	--	--	4.6	--	--	--
TR-04A	Field Sample	0	0.08	10/17/2007	--	--	1700	--	--	--	58	--	--	--
TR-04A	Field Sample	0.08	1	10/17/2007	8.5	--	23000	--	--	--	48	--	--	860
TR-04C	Field Sample	0	0.25	10/17/2007	--	--	--	--	--	--	78	--	--	--
TR-04C	Field Sample	0.25	0.5	10/17/2007	--	--	1300	--	--	--	25	--	--	--
TR-05A	Field Sample	0	0.21	10/17/2007	--	--	750	--	--	--	15	--	--	--
TR-05A	Field Sample	0.21	0.75	10/17/2007	--	--	690	--	--	--	47	--	--	--
TR-05B	Field Sample	0	0.08	10/17/2007	--	--	770	--	--	--	12	--	--	--
TR-05B	Field Sample	0.08	0.58	10/17/2007	--	--	730	--	--	--	9.4	--	--	--
TR-05C	Field Sample	0	0.08	10/17/2007	--	--	--	--	--	--	5.3	--	--	--
TR-05D	Field Sample	0	0.25	10/17/2007	--	--	940	--	--	--	16	--	--	--
TR-05D	Field Sample	0.25	1	10/17/2007	--	--	1300	--	--	--	18	--	--	--
TR-06A	Field Sample	0	0.08	10/19/2007	--	--	650	--	--	--	25	--	--	--
TR-06A	Field Sample	0.08	1	10/19/2007	--	--	--	--	--	--	83	--	--	--
TR-06B	Field Sample	0	0.25	10/19/2007	--	--	--	--	--	--	12	--	--	--
TR-06B	Field Sample	0.25	0.58	10/19/2007	--	--	1200	--	--	--	17	--	--	--
TR-06C	Field Sample	0	0.25	10/19/2007	--	--	1100	--	--	--	11	--	--	--
TR-06C	Field Sample	0.25	1	10/19/2007	--	--	730	--	--	--	15	--	--	--
TZ-13	Field Sample	0	0.33	10/17/2007	--	--	760	--	--	--	7.1	--	--	--
TZ-13	Field Sample	0.33	1	10/17/2007	--	--	640 J	--	--	--	7.2	--	--	--
TZ-14	Field Sample	0	0.33	10/17/2007	--	--	980 J	--	--	--	34	7.6 J	--	--
TZ-14	Field Sample	0.33	1	10/17/2007	--	--	1200 J	--	--	--	55	13 J	--	--
TZ-15	Field Sample	0	0.29	10/17/2007	--	--	--	--	--	--	7.1	--	--	--
TZ-15	Field Sample	0.29	1	10/17/2007	--	--	--	--	--	--	8.1	--	--	--
TZ-16	Field Sample	0	0.33	10/17/2007	--	--	1200 J	--	--	--	7.8	--	--	--
TZ-16	Field Sample	0.33	1	10/17/2007	--	--	1800 J	--	--	--	31	11 J	--	--
TZ-17	Field Sample	0.04	1	10/17/2007	--	--	--	--	--	--	6.4	--	--	--
TZ-18	Field Sample	0	0.04	10/17/2007	--	--	--	--	--	--	7.1	--	--	--
TZ-19	Field Sample	0	0.04	10/17/2007	--	--	--	--	--	--	19	--	--	--
TZ-19	Field Sample	0.04	1	10/17/2007	--	--	--	--	--	--	28	--	--	--
TZ-20	Field Sample	0	0.08	10/17/2007	--	--	1100 J	--	--	--	39	14 J	--	--
TZ-20	Field Sample	0.08	1	10/17/2007	--	--	--	--	--	--	24	8.1 J	--	--
TZ-21	Field Sample	0	0.42	10/17/2007	--	--	960 J	--	--	--	12	--	--	--
TZ-22	Field Sample	0	0.17	10/17/2007	--	--	1600	--	--	--	26	--	--	--
TZ-22	Field Sample	0.17	0.83	10/17/2007	--	--	2200	--	--	--	29	--	--	--
TZ-24	Field Sample	0	0.08	10/17/2007	--	--	1600	--	--	--	74	8.5 J	--	--
TZ-24	Field Sample	0.08	1	10/17/2007	--	--	--	--	--	--	18	8.5 J	--	--
TZ-25	Field Sample	0	0.25	10/17/2007	--	--	1000	--	--	--	27	5.6 J	--	--
TZ-25	Field Sample	0.25	0.92	10/17/2007	--	--	1800	--	--	--	35	7.7 J	--	--

Table 4-1
Exceedances in Surficial Soil
Remedial Investigation
Ely Mine
Vershire, Vermont

DRAFT

Sample Location	Sample Type	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Constituent Soil Criteria Units	Cadmium 3.28 mg/kg	Cobalt 945 mg/kg	Copper 625 mg/kg	Lead 400 mg/kg	Manganese 3326 mg/kg	Nickel 370 mg/kg	Selenium 4.37 mg/kg	Thallium 4.98 mg/kg	Vanadium 361 mg/kg	Zinc 545 mg/kg
TZ-26	Field Sample	0	0.13	10/17/2007	--	--	3500	--	--	--	13	--	--	--
TZ-26	Field Sample	0.13	1	10/17/2007	--	--	860	--	--	--	34	5.3	--	--
TZ-27	Field Sample	0	0.21	10/16/2007	--	--	680 J	--	--	--	13	--	--	--
TZ-28	Field Sample	0	0.04	10/19/2007	--	--	1700	--	--	--	7.8	--	--	--
TZ-28	Field Sample	0.04	0.75	10/19/2007	--	--	--	--	--	--	5.9	--	--	--
TZ-29	Field Sample	0	0.08	10/19/2007	--	--	--	--	--	--	32	--	--	--
TZ-29	Field Sample	0.08	0.75	10/19/2007	--	--	740	--	--	--	44	--	--	--
TZ-30	Field Sample	0	0.04	10/19/2007	--	--	1100	--	--	--	11	--	--	--
TZ-30	Field Sample	0.04	1	10/19/2007	--	--	1300	--	--	--	13	--	--	--
TZ-32	Field Sample	0	0.17	10/19/2007	--	--	--	--	--	--	4.7 J	--	--	--
TZ-32	Field Sample	0.17	0.75	10/19/2007	--	--	640	--	--	--	--	--	--	--
TZ-33	Field Sample	0	0.17	10/18/2007	--	--	--	--	--	--	9.2	--	--	--
TZ-33	Field Sample	0.17	1	10/18/2007	--	--	700	--	--	--	25	--	--	--
Smelter Area														
00JH34	Field Sample	0	0	10/16/2000	10	--	8010	--	--	--	10	--	--	7500
00JH38	Field Sample	0	0	10/16/2000	10	--	6340	--	--	--	8.8	--	--	6160
01JH34A-B	Composite	0	0	11/10/2001	10	--	6800	--	--	--	5.8	--	--	6070
01JH37	Field Sample	0	0	11/10/2001	10	--	14000	--	--	--	--	--	--	8200
02ELY11	Composite	0	0	10/8/2002	--	--	2780	--	--	--	--	--	--	--
02ELY12	Composite	0	0	10/8/2002	--	--	6880	--	--	--	--	--	--	3440
02ELY12	Field Duplicate	0	0	10/8/2002	--	--	6750	--	--	--	--	--	--	3360
NF-03	Field Sample	0.33	1	10/16/2007	3.6	--	2000	--	--	--	9.9	--	400 J	--
SA-01	Field Sample	0	0.17	10/16/2007	--	--	1700 J	--	--	--	13 J	--	--	--
SA-02	Field Duplicate	0	0.25	10/16/2007	3.8 J	--	3300 J	--	--	--	48 J	--	--	--
SA-02	Field Sample	0	0.25	10/16/2007	4.8	--	3100 J	--	--	--	52 J	--	--	560 J
SA-03	Field Sample	0	0.5	10/15/2007	--	--	850	--	--	--	--	--	--	--
SA-04	Field Sample	0	0.5	10/15/2007	--	--	3800	--	--	--	15	--	--	--
SA-05	Field Sample	0	0.5	10/15/2007	--	--	2500	--	--	--	44	6.9 J	--	--
SA-06	Field Sample	0	0.5	10/15/2007	--	--	1700	--	--	--	72	5.9 J	--	--
SA-07	Field Sample	0	0.5	10/15/2007	--	--	1100 J	--	--	--	25	6.4 J	--	--
SA-08	Field Sample	0	0.5	10/15/2007	--	--	3000 J	--	--	--	28	--	--	--
SA-09	Field Sample	0	0.33	10/15/2007	--	--	1600	--	--	--	22	5.3 J	--	730
TP-103	Field Sample	1	2	10/5/2007	--	--	2700	--	--	--	33	--	--	790
TP-104	Field Sample	0	1	10/5/2007	--	--	1600	--	--	--	9	--	--	560
TP-108	Field Sample	1	2	10/5/2007	--	--	2000	--	--	--	78	--	--	--
TP-109	Field Sample	0	1	10/5/2007	--	--	1500	--	--	--	41	16 J	--	--
TR-01A	Field Sample	0	0.08	10/15/2007	--	--	930 J	--	--	--	--	--	--	--
TR-01A	Field Sample	0.08	0.67	10/15/2007	--	--	1700 J	--	--	--	--	--	--	--
TR-02A	Field Sample	0.13	0.92	10/15/2007	--	--	1500 J	--	--	--	11	--	--	--
TR-02B	Field Sample	0	0.33	10/15/2007	--	--	670 J	--	--	--	6.6	--	--	--
TR-02B	Field Sample	0.33	0.92	10/15/2007	--	--	1900 J	--	--	--	38	--	--	--
TR-02D	Field Duplicate	0	0.17	10/15/2007	--	--	1200 J	--	--	--	18	--	--	--
TR-02D	Field Sample	0	0.17	10/15/2007	--	--	690 J	--	--	--	9.3	--	--	--
TR-02D	Field Duplicate	0.17	1	10/15/2007	--	--	2800 J	--	--	--	11	--	--	1500
TR-02D	Field Sample	0.17	1	10/15/2007	--	--	2100 J	--	--	--	9.4	--	--	1000
TZ-01	Field Sample	0	0.13	10/16/2007	--	--	--	--	--	--	6.7 J	--	--	--
TZ-01	Field Sample	0.13	0.67	10/16/2007	--	--	920 J	--	--	--	--	--	--	--
TZ-02	Field Sample	0	0.13	10/16/2007	--	--	2300 J	--	--	--	27 J	--	--	--
TZ-02	Field Sample	0.13	0.5	10/16/2007	--	--	2900 J	--	--	--	35 J	7.5 J	--	--
TZ-04	Field Sample	0	0.17	10/16/2007	--	--	780 J	--	--	--	4.7 J	--	--	--
TZ-04	Field Duplicate	0.17	0.5	10/16/2007	--	--	740 J	--	--	--	--	--	--	--
TZ-04	Field Sample	0.17	0.5	10/16/2007	--	--	2500 J	--	--	--	4.9 J	--	--	--
TZ-05	Field Sample	0	0.08	10/16/2007	--	--	710	--	--	--	--	--	--	--
TZ-05	Field Sample	0	0.08	10/23/2007	--	--	990	--	--	--	5.5	--	--	--
TZ-05	Field Sample	0.08	0.67	10/16/2007	--	--	1700	--	--	--	--	--	--	--
TZ-05	Field Sample	0.08	0.67	10/23/2007	--	--	1500	--	--	--	4.4	--	--	--
TZ-06	Field Sample	0	0.08	10/16/2007	--	--	2000	--	--	--	19	--	--	--
TZ-06	Field Sample	0.08	1	10/16/2007	--	--	1500	--	--	--	12	--	--	--
TZ-10	Field Sample	0.08	0.83	10/15/2007	--	--	810	--	--	--	--	--	--	--
TZ-11	Field Sample	0.08	0.46	10/15/2007	--	--	1400	--	--	--	8.3	--	--	550
TZ-12	Field Sample	0	0.25	10/18/2007	--	--	--	1700 J	--	--	6	--	--	--
TZ-12	Field Sample	0.25	0.67	10/18/2007	--	--	640	--	--	--	9.1	--	--	--

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Exceedances in Surficial Soil
Remedial Investigation
Ely Mine
Vershire, Vermont

Sample Location	Sample Type	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Constituent Soil Criteria Units	Cadmium 3.28 mg/kg	Cobalt 945 mg/kg	Copper 625 mg/kg	Lead 400 mg/kg	Manganese 3326 mg/kg	Nickel 370 mg/kg	Selenium 4.37 mg/kg	Thallium 4.98 mg/kg	Vanadium 361 mg/kg	Zinc 545 mg/kg
Smoke Flue														
TZ-42	Field Sample	0	0.17	10/17/2007	--	--	--	--	--	--	4.8	--	--	--
TZ-44	Field Sample	0	0.25	10/17/2007	--	--	--	620 J	--	--	14	--	--	--
TZ-44	Field Sample	0.25	1	10/17/2007	--	--	--	680 J	--	--	58	--	--	--
Upper Waste Piles														
01JH31A	Field Sample	0	0	11/10/2001	8	--	10100	--	--	--	24	--	--	2580
01JH31B	Field Sample	0	0	11/10/2001	6	--	12000	--	--	--	19	--	1430	780
02ELY1A	Composite	0	0	10/8/2002	--	--	3680	--	--	--	--	--	--	--
02ELY1A	Composite	0.82	0.82	10/8/2002	--	--	1620	--	--	--	--	--	--	--
02ELY2A-B	Composite	0	0	10/8/2002	--	--	2320	--	--	--	--	--	--	--
02ELY2A-B	Field Duplicate	0	0	10/8/2002	--	--	2630	--	--	--	--	--	--	--
02ELY2A-B	Composite	0.82	0.82	10/8/2002	--	--	1240	--	--	--	--	--	--	--
02ELY3	Composite	0	0	10/8/2002	--	--	5660	--	--	--	--	--	--	--
02ELY4A-B	Composite	0	0	10/8/2002	--	--	2050	--	--	--	--	--	--	--
02ELY4A-B	Composite	0.82	0.82	10/8/2002	--	--	1530	--	--	--	--	--	--	--
02ELY5A-B	Composite	0	0	10/8/2002	--	--	3250	--	--	--	--	--	--	--
02ELY5A-B	Composite	0.82	0.82	10/8/2002	--	--	1440	--	--	--	--	--	--	--
02ELY6A-B	Composite	0	0	10/8/2002	--	--	4220	--	--	--	--	--	--	--
02ELY6A-B	Composite	0.82	0.82	10/8/2002	--	--	2560	--	--	--	--	--	--	--
02ELY6A-B	Field Duplicate	0.82	0.82	10/8/2002	--	--	2830	--	--	--	--	--	--	--
ES-4 OCHRE	Field Sample	0	0	10/8/2002	--	--	2640	--	--	--	--	--	--	--
SA-24	Field Duplicate	0	0.5	10/18/2007	--	--	1900 J	--	--	--	38	--	--	--
SA-24	Field Sample	0	0.5	10/18/2007	--	--	4700 J	--	--	--	44	--	--	--
SA-25	Field Sample	0	0.5	10/18/2007	--	--	2600 J	--	--	--	54 J	--	--	--
SA-26	Field Sample	0	0.5	10/18/2007	--	--	2200 J	--	--	--	67	--	--	--
SA-27	Field Sample	0	0.5	10/18/2007	--	--	1400 J	--	--	--	49	--	--	--
SA-28	Field Sample	0	0.5	10/18/2007	--	--	1100	--	--	--	48	--	--	--
SA-29	Field Sample	0	0.5	10/18/2007	--	--	1900 J	--	--	--	55 J	--	--	--
SA-30	Field Sample	0	0.5	10/18/2007	--	--	--	--	--	--	30	--	--	--
SA-31	Field Sample	0	0.5	10/18/2007	--	--	2100	--	--	--	170	--	--	--
SB-06	Field Sample	0	2	12/2/2006	--	--	1700 J	--	--	--	25	--	--	--
TR-07A	Field Sample	0	0.08	10/18/2007	--	--	--	--	--	--	11	--	--	--
TR-07A	Field Sample	0.08	0.67	10/18/2007	--	--	--	--	--	--	21	--	--	--
TR-07B	Field Sample	0	0.17	10/18/2007	--	--	630 J	--	--	--	14	--	--	--
TR-08A	Field Duplicate	0	0.04	10/18/2007	--	--	880 J	--	--	--	33 J	5.2 J	--	--
TR-08A	Field Sample	0	0.04	10/18/2007	--	--	950	--	--	--	28	--	--	--
TR-08A	Field Duplicate	0.04	1	10/18/2007	--	--	1400 J	--	--	--	38 J	7.2 J	--	--
TR-08A	Field Sample	0.04	1	10/18/2007	--	--	4000 J	--	--	--	42 J	6.9 J	--	--
TR-08B	Field Duplicate	0	0.25	10/18/2007	--	--	--	--	--	--	13 J	--	--	--
TR-08B	Field Sample	0	0.25	10/18/2007	--	--	1400 J	--	--	--	44 J	10 J	--	--
TR-08B	Field Duplicate	0.25	0.67	10/18/2007	--	--	2600 J	--	--	--	67 J	--	--	--
TR-08B	Field Sample	0.25	0.67	10/18/2007	--	--	1400 J	--	--	--	37 J	7 J	--	--
TR-08C	Field Duplicate	0	0.42	10/18/2007	--	--	930 J	--	--	--	24 J	--	--	--
TR-08C	Field Sample	0	0.42	10/18/2007	--	--	1600 J	--	--	--	22 J	--	--	--
TR-08C	Field Duplicate	0.42	1	10/18/2007	--	--	--	--	--	--	40 J	--	--	--
TR-08C	Field Sample	0.42	1	10/18/2007	--	--	--	--	--	--	33 J	--	--	--
TR-08D	Field Duplicate	0 17	1	10/18/2007	--	--	650 J	--	--	--	--	--	--	--
TR-09A	Field Sample	0	0.21	10/18/2007	--	--	790 J	--	--	--	6.4	--	--	--
TR-09A	Field Sample	0.21	1	10/18/2007	--	--	1100 J	--	--	--	6.6	--	--	--
TR-09B	Field Sample	0	0.17	10/18/2007	--	--	1000	--	--	--	--	--	--	--
TR-09C	Field Sample	0	0.13	10/18/2007	--	--	820	--	--	--	27	--	--	--
TR-09C	Field Sample	0.13	0.67	10/18/2007	--	--	920	--	--	--	36	--	--	--
TR-09D	Field Sample	0	0.25	10/18/2007	--	--	--	--	--	--	5.2	--	--	--
TR-09D	Field Sample	0.25	1	10/18/2007	--	--	810	--	--	--	63	--	--	--
TZ-35	Field Sample	0	0.17	10/18/2007	--	--	840	--	--	--	15	--	--	--
TZ-35	Field Sample	0.17	0.75	10/18/2007	--	--	940	--	--	--	9.6	--	--	--
TZ-36	Field Sample	0	0.13	10/18/2007	--	--	690 J	--	--	--	21	--	--	--
TZ-36	Field Sample	0.13	0.75	10/18/2007	--	--	--	--	--	--	7.7	--	--	--
TZ-37	Field Sample	0	0.17	10/18/2007	--	--	--	--	--	--	25 J	--	--	--
TZ-37	Field Sample	0.17	1	10/18/2007	--	--	--	--	--	--	66	--	--	--
TZ-38	Field Sample	0	0.04	10/18/2007	--	--	3700	--	--	--	15	--	--	--
TZ-38	Field Sample	0.04	0.58	10/18/2007	--	--	1400	--	--	--	28	--	--	--
TZ-39	Field Sample	0	0.25	10/18/2007	--	--	--	--	--	--	20 J	--	--	--
TZ-39	Field Sample	0.25	0.67	10/18/2007	--	--	1500 J	--	--	--	76 J	6.8 J	--	--
TZ-41	Field Sample	0	0.13	10/18/2007	--	--	1000 J	--	--	--	26	--	--	--
TZ-41	Field Sample	0.13	0.92	10/18/2007	--	--	--	--	--	--	11	--	--	--

Notes:
J = Estimated concentration
(mg/kg) = Milligrams per kilogram
(ft bgs) = Feet below ground surface
-- = Constituent not detected above soil crtieria
Soil criteria developed during Elizabeth Mine Remedial Investigation
Values shown are the maximum detected concentration at each sample location for constituents that exceed soil criteria
Surficial soil samples are those where the Bottom of Sample Interval is less than, or equal to, 2 ft bgs
Subsurface soil samples are those where the Bottom of Sample Interval is greater than 2 ft bgs

Table 4-2
Soil SPLP Data
Remedial Investigation
Ely Mine
Vershire, Vermont

LOCATION	SAMPLE ID	SAMPLE DEPTH (ft bgs)	Constituent	Alkalinity (as CaCO3)	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
			Units	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
			Groundwater Criteria	NE	NE	6.0	10.	2000.	4.0	NE	NE	5.0	NE
			Surface Water Criteria	20000.	87.	14.	NE	2000.	4.	NE	NE	1.13	NE
Midslope Waste Piles													
02ELY10A-B	02Ely 10A	0-0	10/08/02	NA	[140]	0.03 U	0.9 U	4.5	0.05 U	0.04 U	5. U	0.18	550
02ELY10A-B	02Ely 10B	0.82-0.82	10/08/02	NA	[190]	0.03 U	0.9 U	0.67	0.05 U	0.04 U	5. U	0.2	1900
02ELY7A-B	02Ely 7A	0-0	10/08/02	NA	[4600]	0.03 U	0.9 U	1.3	0.077	0.04 U	5. U	[9.4]	1400
02ELY7A-B	02Ely 9A (Dup of 02Ely07A	0-0	10/08/02	NA	[13200]	0.03 U	0.9 U	0.26	0.26	0.04 U	5. U	[10.]	2200
02ELY7A-B	02Ely 7B	0.82-0.82	10/08/02	NA	[9700]	0.03 U	0.5 U	2.6	0.26	0.04 U	5. U	[14.]	4600
02ELY7A-B	02Ely 9B (Dup of 02Ely07B	0.82-0.82	10/08/02	NA	[9000]	0.03 U	0.5 U	3.7	0.19	0.04 U	5. U	[17.]	4200
02ELY8A-B-C	02Ely 8A	0-0	10/08/02	NA	[2200]	0.03	0.9 U	0.098	0.085	0.04 U	5. U	[5.]	2000
02ELY8A-B-C	02Ely 8B	1.15-1.57	10/08/02	NA	[3800]	0.03 U	0.9 U	24.	0.099	0.04 U	5. U	[9.8]	2200
02ELY8A-B-C	02Ely 8C	2.33-2.99	10/08/02	NA	[24700]	0.09	0.6	10.	0.57	0.04 U	5. U	[1280.]	1300
SB-01	ELY-SB-1 (0-4)	0-4	12/05/06	NA	[220]	NA	NA	7.4 J	NA	NA	NA	5 U	NA
SB-01	ELY-QC-3	0-4	12/05/06	NA	[190]	NA	NA	4.8 J	NA	NA	NA	5 U	NA
TP-04A	ELY-TP4A (2-3)	2-3	05/14/07	NA	[210]	NA	NA	38	NA	NA	NA	1.1 J	NA
Smelter Area													
00JH34	00JH34 (DIW)	0-0	10/16/00	1970	12.	[9.4]	0.3	5.7	0.05 U	0.03 U	66.	[1.8]	1300
00JH34	00JH34 (ESP)	0-0	10/16/00	1290	22.	1.6	0.2 U	7.1	0.06	0.03 U	58.	[1.8]	1300
00JH38	00JH38 (DIW)	0-0	10/16/00	290	31.	1.4	0.2	2.	0.05 U	0.03 U	43.	1.	210
00JH38	00JH38 (ESP)	0-0	10/16/00	NA	46	1.	0.3	3.1	0.05 U	0.03 U	34.	1.1	210
01JH34A-B	01JH34 (DIW)	0-0	11/10/01	1220	9.7	0.03 U	0.2 U	4.	0.05 U	0.03 U	44.	0.86	450
01JH34A-B	01JH34 (ESP)	0-0	11/10/01	280	29.	2.3	0.2 U	4.6	0.05 U	0.03 U	32.	0.82	430
02ELY11	02Ely 11	0-0	10/08/02	NA	[410]	0.03 U	0.9 U	4.3	0.05 U	0.04 U	5. U	0.66	1800
02ELY12	02Ely 12	0-0	10/08/02	NA	11	0.03	0.9 U	16.	0.05 U	0.04 U	5. U	0.49	3400
02ELY12	02Ely 12 DUP	0-0	10/08/02	NA	10	0.06	0.9 U	14.	0.05 U	0.04 U	5. U	0.48	3000
TP-103	ELY-TP-103 (1-2)	1-2	10/05/07	NA	[1400]	NA	NA	65	NA	NA	NA	5 U	NA
TP-104	ELY-TP-104 (2-3)	2-3	10/05/07	NA	[100]	NA	NA	85	NA	NA	NA	[3] J	NA
TP-106	ELY-TP-106 (2-3)	2-3	10/05/07	NA	[200]	NA	NA	43	NA	NA	NA	5 U	NA
TP-106	ELY-TP-106 (2-3) DUP	2-3	10/05/07	NA	[170]	NA	NA	57	NA	NA	NA	5 U	NA
TP-108	ELY-TP-108 (1-2)	1-2	10/05/07	NA	[120]	NA	NA	16	NA	NA	NA	5 U	NA
TP-109	ELY-TP-109 (0-1)	0-1	10/05/07	NA	54 J	NA	NA	13	NA	NA	NA	5 U	NA
Smoke Flue													
02ELY13	02Ely 13	0-0	10/08/02	NA	[470]	0.07	0.9 U	14.	0.05 U	0.04 U	5. U	0.15	120
Upper Waste Piles													
01JH31A	01JH31A (DIW)	0-0	11/10/01	NA	[1100]	0.06	0.5	6.3	0.08	0.03 U	50.	[3.2]	17000
01JH31A	01JH31A (ESP)	0-0	11/10/01	NA	[1300]	0.04	0.2	6.4	0.2	0.03 U	41.	[3.8]	19000
01JH31B	01JH31B (DIW)	0-0	11/10/01	NA	[4200]	0.06	0.4	0.1	0.07	0.03 U	55.	[10.]	16000
01JH31B	01JH31B (ESP)	0-0	11/10/01	NA	[4800]	0.04	0.2	0.2	0.05	0.03 U	51.	[12.]	18000
02ELY1A	02Ely 1A	0-0	10/08/02	NA	[5100]	0.03 U	0.9 U	0.52	0.05	0.04 U	5. U	[6.2]	1800
02ELY1A	02Ely 1B	0.82-0.82	10/08/02	NA	[3900]	0.03 U	0.9 U	0.86	0.12	0.04 U	5. U	[5.5]	10200
02ELY2A-B	02Ely 2A	0-0	10/08/02	NA	[6300]	0.03 U	0.9 U	0.08	0.12	0.04 U	5. U	[8.5]	4800
02ELY2A-B	02Ely 2A DUP	0-0	10/08/02	NA	[7400]	0.03 U	0.9 U	0.069	0.14	0.04 U	5. U	[9.2]	5400
02ELY2A-B	02Ely 2B	0.82-0.82	10/08/02	NA	[4900]	0.03 U	0.9 U	0.85	0.21	0.04 U	5. U	[8.3]	11600
02ELY3	02Ely 3	0-0	10/08/02	NA	[13200]	0.03 U	0.9 U	0.21	0.18	0.04 U	5. U	[24.]	10200
02ELY4A-B	02Ely 4A	0-0	10/08/02	NA	[700]	0.03 U	0.9 U	0.82	0.05 U	0.04 U	5. U	0.52	1900
02ELY4A-B	02Ely 4B	0.82-0.82	10/08/02	NA	[3900]	0.03 U	0.9 U	0.17	0.1	0.04 U	5. U	[7.4]	6300
02ELY5A-B	02Ely 5A	0-0	10/08/02	NA	[6800]	0.03 U	0.9 U	0.092	0.054	0.04 U	5. U	[10.]	2200
02ELY5A-B	02Ely 5B	0.82-0.82	10/08/02	NA	[3400]	0.03 U	0.9 U	4.2	0.14	0.04 U	5. U	[8.5]	15200
02ELY6A-B	02Ely 6A	0-0	10/08/02	NA	[8400]	0.03 U	0.9 U	0.12	0.2	0.04 U	5. U	[17.]	6400
02ELY6A-B	02Ely 6B	0.82-0.82	10/08/02	NA	[2000]	0.03 U	0.9 U	0.33	0.2	0.04 U	5. U	[9.4]	30500
02ELY6A-B	02Ely 6B DUP	0.82-0.82	10/08/02	NA	[2000]	0.03 U	0.9 U	0.35	0.14	0.04 U	5. U	[10.]	27000
ES-4_OCHRE	ES-4	0-0	10/08/02	NA	[420]	0.03 U	0.9 U	0.52	0.05 U	0.04 U	5. U	[5.]	200
TP-08	ELY-TP8 (2-3)	2-3	05/14/07	NA	[150]	NA	NA	36	NA	NA	NA	5 U	NA
TP-08	ELY-TPQS1	2-3	05/14/07	NA	[130]	NA	NA	25	NA	NA	NA	5 U	NA

Notes:
NA = Not analyzed for this constituent
NE = Not established
(µg/l) = Micrograms per liter
(SU) = Standard Units
(µS/cm) = Microsiemens per centimeter
(ft bgs) = Fee below ground surface
U = Constituent not detected at listed detection limit
J = Estimated concentration
UJ = Constituent not detected at estimated detection limit
Groundwater and Surface Water criteria developed during Elizabeth Mine
Remedial Investigation
[ ] = Denotes exceedance of criteria

Table 4-2
Soil SPLP Data
Remedial Investigation
Ely Mine
Vershire, Vermont

LOCATION	SAMPLE ID	SAMPLE DEPTH (ft bgs)	Constituent / Units / Groundwater Criteria / Surface Water Criteria	Cerium (µg/l) NE / NE	Cesium (µg/l) NE / NE	Chloride (µg/l) NE / 230000.	Chromium (µg/l) 100. / 207.	Cobalt (µg/l) NE / NE	Copper (µg/l) 1300. / 11.8	Dysprosium (µg/l) NE / NE	Erbium (µg/l) NE / NE	Europium (µg/l) NE / NE	Gadolinium (µg/l) NE / NE	Gallium (µg/l) NE / NE	Germanium (µg/l) NE / NE
Midslope Waste Piles															
02ELY10A-B	02Ely 10A	0-0	10/08/02	0.26	0.26	100 U	1. U	0.96	[591.]	0.009	0.0053	0.005	0.015	0.02 U	0.02 U
02ELY10A-B	02Ely 10B	0.82-0.82	10/08/02	0.35	0.68	100 U	1. U	1.7	[727.]	0.021	0.011	0.0073	0.03	0.02 U	0.02 U
02ELY7A-B	02Ely 7A	0-0	10/08/02	7.4	2.1	300	5.6	107.	[5090.]	0.85	0.34	0.21	1.	0.076	0.02 U
02ELY7A-B	02Ely 9A (Dup of 02Ely07A	0-0	10/08/02	18.	1.4	400	6.5	229.	[6120.]	2.3	1.	0.55	2.8	0.02 U	0.02 U
02ELY7A-B	02Ely 7B	0.82-0.82	10/08/02	38.	2.9	500	15.	941.	[17300.]	2.8	1.1	0.84	3.8	0.14	0.02 U
02ELY7A-B	02Ely 9B (Dup of 02Ely07B	0.82-0.82	10/08/02	40.	3.6	400	18.	792.	[14500.]	3.	1.2	0.89	4.1	0.065	0.02 U
02ELY8A-B-C	02Ely 8A	0-0	10/08/02	3.8	3.5	200	3.2	35.	[2660.]	0.35	0.18	0.09	0.39	0.02 U	0.033
02ELY8A-B-C	02Ely 8B	1.15-1.57	10/08/02	5.5	2.3	200	3.7	248.	[15500.]	0.54	0.23	0.14	0.62	0.02 U	0.02 U
02ELY8A-B-C	02Ely 8C	2.33-2.99	10/08/02	9.6	13.	600	34.	16300.	[149000.]	2.	0.86	0.61	2.7	0.038	0.15
SB-01	ELY-SB-1 (0-4)	0-4	12/05/06	NA	NA	NA	NA	20 U	[100]	NA	NA	NA	NA	NA	NA
SB-01	ELY-QC-3	0-4	12/05/06	NA	NA	NA	NA	20 U	[95]	NA	NA	NA	NA	NA	NA
TP-04A	ELY-TP4A (2-3)	2-3	05/14/07	NA	NA	NA	NA	872	[55600]	NA	NA	NA	NA	NA	NA
Smelter Area															
00JH34	00JH34 (DIW)	0-0	10/16/00	1.2	0.05	100	1. U	31.	[310.]	0.098	0.059	0.03	0.08	0.02 U	0.4
00JH34	00JH34 (ESP)	0-0	10/16/00	1.8	0.05	100	1. U	29.	[550.]	0.14	0.05	0.01	0.16	0.02 U	0.3
00JH38	00JH38 (DIW)	0-0	10/16/00	1.6	0.02	100	1. U	46.	[1600.]	0.19	0.12	0.04	0.22	0.02 U	0.4
00JH38	00JH38 (ESP)	0-0	10/16/00	2.	0.02	100	1. U	51.	[2000.]	0.23	0.11	0.02	0.22	0.02 U	0.42
01JH34A-B	01JH34 (DIW)	0-0	11/10/01	1.4	0.02	200	1. U	38.	[1100.]	0.11	0.065	0.01	0.09	0.02 U	0.4
01JH34A-B	01JH34 (ESP)	0-0	11/10/01	2.6	0.03	100	1. U	35.	[1800.]	0.18	0.13	0.03	0.23	0.02 U	0.3
02ELY11	02Ely 11	0-0	10/08/02	1.4	0.23	100 U	1. U	28.	[1980.]	0.075	0.035	0.02	0.093	0.02 U	0.02 U
02ELY12	02Ely 12	0-0	10/08/02	0.044	0.016	100 U	1. U	19.	[1110.]	0.005	0.005 U	0.005 U	0.005 U	0.02 U	0.02 U
02ELY12	02Ely 12 DUP	0-0	10/08/02	0.039	0.017	100 U	1. U	19.	[1020.]	0.005 U	0.005 U	0.005 U	0.0053	0.02 U	0.02 U
TP-103	ELY-TP-103 (1-2)	1-2	10/05/07	NA	NA	NA	NA	35	[3180]	NA	NA	NA	NA	NA	NA
TP-104	ELY-TP-104 (2-3)	2-3	10/05/07	NA	NA	NA	NA	35	[357]	NA	NA	NA	NA	NA	NA
TP-106	ELY-TP-106 (2-3)	2-3	10/05/07	NA	NA	NA	NA	8 J	[1430]	NA	NA	NA	NA	NA	NA
TP-106	ELY-TP-106 (2-3) DUP	2-3	10/05/07	NA	NA	NA	NA	7.7 J	[2020]	NA	NA	NA	NA	NA	NA
TP-108	ELY-TP-108 (1-2)	1-2	10/05/07	NA	NA	NA	NA	20 U	[370]	NA	NA	NA	NA	NA	NA
TP-109	ELY-TP-109 (0-1)	0-1	10/05/07	NA	NA	NA	NA	20 U	[146]	NA	NA	NA	NA	NA	NA
Smoke Flue															
02ELY13	02Ely 13	0-0	10/08/02	0.6	0.068	200	1. U	1.3	5.5	0.065	0.029	0.017	0.068	0.02 U	0.02 U
Upper Waste Piles															
01JH31A	01JH31A (DIW)	0-0	11/10/01	69.	0.06	200	1. U	340.	[3100.]	6.7	3.6	2.	8.	0.02 U	0.58
01JH31A	01JH31A (ESP)	0-0	11/10/01	87.	0.07	100	1. U	370.	[3900.]	8.2	4.	2.2	9.7	0.02 U	0.82
01JH31B	01JH31B (DIW)	0-0	11/10/01	34.	0.2	300	12.	640.	[20000.]	29.	13.	5.7	31.	0.1	0.94
01JH31B	01JH31B (ESP)	0-0	11/10/01	40.	0.2	400	15.	700.	[22000.]	33.	15.	6.6	36.	0.1	0.91
02ELY1A	02Ely 1A	0-0	10/08/02	12.	1.7	200	11.	63.	[3140.]	0.6	0.3	0.2	0.77	0.038	0.02 U
02ELY1A	02Ely 1B	0.82-0.82	10/08/02	26.	1.6	200	3.3	65.	[3250.]	0.97	0.46	0.28	1.2	0.02 U	0.02 U
02ELY2A-B	02Ely 2A	0-0	10/08/02	7.9	3.6	300	15.	94.	[5130.]	0.75	0.4	0.22	0.9	0.02	0.021
02ELY2A-B	02Ely 2A DUP	0-0	10/08/02	8.3	3.3	300	19.	104.	[5890.]	0.81	0.39	0.23	0.95	0.026	0.02 U
02ELY2A-B	02Ely 2B	0.82-0.82	10/08/02	20.	2.3	200	3.5	140.	[4370.]	1.	0.47	0.33	1.3	0.02 U	0.02 U
02ELY3	02Ely 3	0-0	10/08/02	11.	1.6	400	20.	194.	[10200.]	2.5	1.2	0.74	3.2	0.02 U	0.02 U
02ELY4A-B	02Ely 4A	0-0	10/08/02	1.3	0.72	100 U	1. U	20.	[1030.]	0.14	0.058	0.035	0.17	0.02 U	0.02 U
02ELY4A-B	02Ely 4B	0.82-0.82	10/08/02	12.	2.1	200	5.4	144.	[2990.]	0.79	0.39	0.24	1.1	0.02 U	0.02 U
02ELY5A-B	02Ely 5A	0-0	10/08/02	6.8	1.8	300	24.	60.	[4150.]	0.57	0.27	0.21	0.78	0.02 U	0.02 U
02ELY5A-B	02Ely 5B	0.82-0.82	10/08/02	22.	1.9	200	3.6	130.	[2880.]	1.1	0.47	0.38	1.6	0.02 U	0.02 U
02ELY6A-B	02Ely 6A	0-0	10/08/02	15.	3.4	300	11.	154.	[6580.]	1.5	0.65	0.45	2.	0.02 U	0.02 U
02ELY6A-B	02Ely 6B	0.82-0.82	10/08/02	8.8	3.6	100	2.9	93.	[5510.]	0.84	0.39	0.23	1.	0.02 U	0.02 U
02ELY6A-B	02Ely 6B DUP	0.82-0.82	10/08/02	8.4	3.3	100	3.1	91.	[5450.]	0.84	0.36	0.21	1.	0.02 U	0.02 U
ES-4_OCHRE	ES-4	0-0	10/08/02	1.7	0.32	200	1. U	5.9	[263.]	0.13	0.051	0.036	0.18	0.02 U	0.02 U
TP-08	ELY-TP8 (2-3)	2-3	05/14/07	NA	NA	NA	NA	6.7 J	[1900]	NA	NA	NA	NA	NA	NA
TP-08	ELY-TPQS1	2-3	05/14/07	NA	NA	NA	NA	5.5 J	[1890]	NA	NA	NA	NA	NA	NA

Notes:
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Groundwater and Surface Water criteria developed during Elizabeth Mine Remedial Investigation
[ ] = Denotes exceedance of criteria

Table 4-2
Soil SPLP Data
Remedial Investigation
Ely Mine
Vershire, Vermont

DRAFT

LOCATION	SAMPLE ID	SAMPLE DEPTH (ft bgs)	Constituent / Units / Groundwater Criteria / Surface Water Criteria	Gold	Holmium	Indium	Iron	Lanthanum	Lead	Lithium	Magnesium	Manganese	Molybdenum	Neodymium
			Units	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
			Groundwater Criteria	NE	NE	NE	NE	NE	15.	NE	NE	840.	40.	NE
			Surface Water Criteria	NE	NE	NE	1000.	NE	3.18	NE	NE	NE	NE	NE
Midslope Waste Piles														
02ELY10A-B	02Ely 10A	0-0	10/08/02	0.01 U	0.005 U	0.01 U	120	0.15	1.1	0.1 U	200	24.	0.045	0.097
02ELY10A-B	02Ely 10B	0.82-0.82	10/08/02	0.01 U	0.005 U	0.01 U	44	0.16	0.059	0.4	160	26.	0.039	0.18
02ELY7A-B	02Ely 7A	0-0	10/08/02	0.01 U	0.14	0.051	[4700]	3.7	0.31	5 6	2200	145.	0.02 U	4.4
02ELY7A-B	02Ely 9A (Dup of 02Ely07A	0-0	10/08/02	0.01 U	0.39	0.055	[2200]	8.9	0.23	5.8	3200	245.	0.02 U	11.
02ELY7A-B	02Ely 7B	0.82-0.82	10/08/02	0.01 U	0.48	0.19	[16400]	19.	0.054	5.4	5400	708.	0.14	21.
02ELY7A-B	02Ely 9B (Dup of 02Ely07B	0.82-0.82	10/08/02	0.01 U	0.51	0.17	[18100]	21.	0.33	6.6	5400	612.	0.12	23.
02ELY8A-B-C	02Ely 8A	0-0	10/08/02	0.01 U	0.065	0.01 U	500	1.8	0.05 U	7.2	2300	243.	0.042	1.8
02ELY8A-B-C	02Ely 8B	1.15-1.57	10/08/02	0.01 U	0.086	0.01 U	440	2.9	0.35	4.9	2900	260.	0.022	3.1
02ELY8A-B-C	02Ely 8C	2.33-2.99	10/08/02	0.01 U	0.34	0.33	[90600]	3.4	[5.9]	22.	2900	235.	0.54	11.
SB-01	ELY-SB-1 (0-4)	0-4	12/05/06	NA	NA	NA	29 J	NA	1.5 J	NA	NA	53	NA	NA
SB-01	ELY-QC-3	0-4	12/05/06	NA	NA	NA	40 J	NA	10 U	NA	NA	48	NA	NA
TP-04A	ELY-TP4A (2-3)	2-3	05/14/07	NA	NA	NA	[1400]	NA	[12]	NA	NA	21	NA	NA
Smelter Area														
00JH34	00JH34 (DIW)	0-0	10/16/00	0.01 U	0.02	0.01 U	[1800]	0.88	1.	1.6	70	44.	0.17	0.48
00JH34	00JH34 (ESP)	0-0	10/16/00	0.01 U	0.03	0.01 U	[1700]	1.2	0.5	1.5	70	42.	0.13	0.75
00JH38	00JH38 (DIW)	0-0	10/16/00	0.01 U	0.04	0.01 U	[1900]	0.76	[11.]	0.4 U	140	43.	0.14	0.7
00JH38	00JH38 (ESP)	0-0	10/16/00	0.01 U	0.04	0.01 U	[2200]	0.85	[18.]	0.4 U	150	44.	0.1	0.83
01JH34A-B	01JH34 (DIW)	0-0	11/10/01	0.01 U	0.02	0.01 U	[1100]	0.71	0.05 U	0.8	120	38.	0.21	0.6
01JH34A-B	01JH34 (ESP)	0-0	11/10/01	0.01 U	0.05	0.01 U	[1300]	1.2	0.2	1.	120	37.	0.14	0.88
02ELY11	02Ely 11	0-0	10/08/02	0.01 U	0.015	0.01 U	81	0.56	0.41	1.6	8400	112.	0.051	0.52
02ELY12	02Ely 12	0-0	10/08/02	0.01 U	0 005 U	0.01 U	6. U	0.024	0.71	0.85	240	48.	0.1	0.024
02ELY12	02Ely 12 DUP	0-0	10/08/02	0.01 U	0.005 U	0.01 U	6. U	0 022	0.58	0.73	260	62.	0.12	0.019
TP-103	ELY-TP-103 (1-2)	1-2	10/05/07	NA	NA	NA	390	NA	10 U	NA	NA	63	NA	NA
TP-104	ELY-TP-104 (2-3)	2-3	10/05/07	NA	NA	NA	26 J	NA	2.6 J	NA	NA	428	NA	NA
TP-106	ELY-TP-106 (2-3)	2-3	10/05/07	NA	NA	NA	260	NA	[5.1] J	NA	NA	111	NA	NA
TP-106	ELY-TP-106 (2-3) DUP	2-3	10/05/07	NA	NA	NA	60	NA	1.9 J	NA	NA	106	NA	NA
TP-108	ELY-TP-108 (1-2)	1-2	10/05/07	NA	NA	NA	530	NA	2.1 J	NA	NA	25	NA	NA
TP-109	ELY-TP-109 (0-1)	0-1	10/05/07	NA	NA	NA	170	NA	10 U	NA	NA	4 J	NA	NA
Smoke Flue														
02ELY13	02Ely 13	0-0	10/08/02	0.01 U	0.01	0.01 U	84	0.28	[3.8]	0.4	260	27.	0.16	0.33
Upper Waste Piles														
01JH31A	01JH31A (DIW)	0-0	11/10/01	0.01 U	1.3	0.01 U	[18000]	21.	0.05 U	2.3	1700	280.	0.43	47.
01JH31A	01JH31A (ESP)	0-0	11/10/01	0.01 U	1.5	0.01 U	[19000]	27.	0.05	2.7	2000	320.	0.38	56.
01JH31B	01JH31B (DIW)	0-0	11/10/01	0.01 U	5.	0.03	[55000]	9.2	0.05 U	2.	4900	100.	0.41	73.
01JH31B	01JH31B (ESP)	0-0	11/10/01	0.01 U	5.6	0.03	[60000]	12.	0.05 U	3.	5300	120.	0.36	86.
02ELY1A	02Ely 1A	0-0	10/08/02	0.01 U	0.11	0.039	[2500]	2.5	0.05 U	8.1	3600	179.	0.02 U	4.1
02ELY1A	02Ely 1B	0.82-0.82	10/08/02	0.01 U	0.18	0.012	500	3.3	0.05 U	8.	3300	502.	0.027	5.3
02ELY2A-B	02Ely 2A	0-0	10/08/02	0.01 U	0.15	0.022	[1100]	2.9	0.05 U	9.8	5700	267.	0.02 U	4.4
02ELY2A-B	02Ely 2A DUP	0-0	10/08/02	0.01 U	0.15	0.022	960	3.	0.05 U	11.	6600	306.	0.02 U	4.5
02ELY2A-B	02Ely 2B	0.82-0.82	10/08/02	0.01 U	0.17	0.012	650	4.4	0.05 U	10.	3800	417.	0.031	7.6
02ELY3	02Ely 3	0-0	10/08/02	0.01 U	0.45	0.012	880	1.6	0.12	20.	14900	[1110.]	0.02 U	13.
02ELY4A-B	02Ely 4A	0-0	10/08/02	0.01 U	0.025	0.01 U	110	0.48	0.05 U	2.1	1600	169.	0.02 U	0.73
02ELY4A-B	02Ely 4B	0.82-0 82	10/08/02	0.01 U	0.14	0.014	[1100]	2.5	0.05 U	9.3	3500	293.	0.053	5.4
02ELY5A-B	02Ely 5A	0-0	10/08/02	0.01 U	0.1	0.037	[1200]	2.2	0.05 U	9.8	5000	191.	0.02 U	4.2
02ELY5A-B	02Ely 5B	0.82-0.82	10/08/02	0.01 U	0.19	0.011	670	4.3	0.2	11.	3300	458.	0.06	7.9
02ELY6A-B	02Ely 6A	0-0	10/08/02	0.01 U	0.25	0.042	[1300]	4.4	0.05 U	14.	8000	407.	0.02 U	9.7
02ELY6A-B	02Ely 6B	0.82-0.82	10/08/02	0.01 U	0.15	0.01	500	2.8	0.1	14.	4200	569.	0.03	4.9
02ELY6A-B	02Ely 6B DUP	0.82-0.82	10/08/02	0.01 U	0.14	0.01	440.	2.7	0.82	14.	4100	532.	0.029	4.7
ES-4_OCHRE	ES-4	0-0	10/08/02	0.01 U	0.021	0.011	[2700]	0.68	0.16	4.	350	28.	0.02 U	1.
TP-08	ELY-TP8 (2-3)	2-3	05/14/07	NA	NA	NA	180	NA	2.2 J	NA	NA	31	NA	NA
TP-08	ELY-TPQS1	2-3	05/14/07	NA	NA	NA	260	NA	10 U	NA	NA	37	NA	NA

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Groundwater and Surface Water criteria developed during Elizabeth Mine
Remedial Investigation
[ ] = Denotes exceedance of criteria

Table 4-2
Soil SPLP Data
Remedial Investigation
Ely Mine
Vershire, Vermont

DRAFT

LOCATION	SAMPLE ID	SAMPLE DEPTH (ft bgs)	Constituent	Nickel	pH	Phosphorus	Potassium	Praseodymium	Rhenium	Rubidium	Samarium	Selenium	Silicon	Silver	SiO2
			Units	(µg/l)	(SU)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
			Groundwater Criteria	100.	NE	NE	NE	NE	NE	NE	NE	50.	NE	NE	NE
			Surface Water Criteria	158.	NE	NE	NE	NE	NE	NE	NE	5.	NE	4.06	NE
Midslope Waste Piles															
02ELY10A-B	02Ely 10A	0-0	10/08/02	0.89	NA	3.	1300	0.026	0.02 U	6.4	0.014	1.3	590	0.063	1000
02ELY10A-B	02Ely 10B	0.82-0.82	10/08/02	0.7	NA	3. U	950	0.045	0.02 U	5.9	0.039	0.99	490	0.04	840
02ELY7A-B	02Ely 7A	0-0	10/08/02	18.	NA	3. U	40.	1.1	0.048	1.6	0.99	3.3	690	0.01 U	1100
02ELY7A-B	02Ely 9A (Dup of 02Ely07A	0-0	10/08/02	36.	NA	120	20. U	2.9	0.05	0.32	2.5	3.7	440	0.01 U	650
02ELY7A-B	02Ely 7B	0.82-0.82	10/08/02	[120.]	NA	150	5. U	5.5	0.096	0.68	4.	4.6	370	0.01 U	600
02ELY7A-B	02Ely 9B (Dup of 02Ely07B	0.82-0.82	10/08/02	100.	NA	130	28.	6.1	0.081	2.3	4.3	4.7	360	0.01 U	530
02ELY8A-B-C	02Ely 8A	0-0	10/08/02	8.5	NA	3. U	54.	0.47	0.046	2.8	0.38	3.5	370	0.01 U	530
02ELY8A-B-C	02Ely 8B	1.15-1.57	10/08/02	48.	NA	3. U	71.	0.79	0.041	2.9	0.63	2.3	540	0.01 U	710
02ELY8A-B-C	02Ely 8C	2.33-2.99	10/08/02	[3460.]	NA	1000	2300	2.1	2.9	16.	2.9	[10.]	780	0.01 U	1400
SB-01	ELY-SB-1 (0-4)	0-4	12/05/06	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	1 U J	NA
SB-01	ELY-QC-3	0-4	12/05/06	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	7 U	NA
TP-04A	ELY-TP4A (2-3)	2-3	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	[14]	NA	35 U J	NA
Smelter Area															
00JH34	00JH34 (DIW)	0-0	10/16/00	8.	4.79	20. U	390	0.1	0.02 U	1.1	0.098	0.2 U	19000	0.01 U	37000
00JH34	00JH34 (ESP)	0-0	10/16/00	8.2	4.67	20. U	410	0.2	0.02 U	1.1	0.15	0.2 U	6000	0.01 U	12000
00JH38	00JH38 (DIW)	0-0	10/16/00	13.	4.86	20. U	170	0.2	0.03	0.4	0.16	0.2 U	5500	0.01 U	11000
00JH38	00JH38 (ESP)	0-0	10/16/00	13.	4.28	20. U	180	0.21	0.02	0.5	0.26	0.2 U	5500	0.01 U	11000
01JH34A-B	01JH34 (DIW)	0-0	11/10/01	9.9	5.07	20. U	260	0.1	0.02 U	0.58	0.05	0.2 U	7500	0.01 U	15000
01JH34A-B	01JH34 (ESP)	0-0	11/10/01	10.	4.73	20. U	260	0.24	0.02 U	0.6	0.21	0.2 U	4000	0.01 U	7600
02ELY11	02Ely 11	0-0	10/08/02	6.5	NA	3. U	400	0.13	0.045	3.6	0.087	2.2	800	0.027	1400
02ELY12	02Ely 12	0-0	10/08/02	3.5	NA	3.	490	0.01 U	0.02 U	1.3	0.01 U	1.6	440	0.01 U	880
02ELY12	02Ely 12 DUP	0-0	10/08/02	3.5	NA	4.	430.	0.01 U	0.02 U	1.4	0.01 U	1.3	420	0.01 U	840
TP-103	ELY-TP-103 (1-2)	1-2	10/05/07	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	7 U	NA
TP-104	ELY-TP-104 (2-3)	2-3	10/05/07	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	7 U	NA
TP-106	ELY-TP-106 (2-3)	2-3	10/05/07	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	7 U	NA
TP-106	ELY-TP-106 (2-3) DUP	2-3	10/05/07	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	7 U	NA
TP-108	ELY-TP-108 (1-2)	1-2	10/05/07	NA	NA	NA	NA	NA	NA	NA	NA	[6.1] J	NA	7 U	NA
TP-109	ELY-TP-109 (0-1)	0-1	10/05/07	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	7 U	NA
Smoke Flue															
02ELY13	02Ely 13	0-0	10/08/02	1.7	NA	43.	960	0.072	0.02 U	4.1	0.082	1.6	460	0.01 U	840
Upper Waste Piles															
01JH31A	01JH31A (DIW)	0-0	11/10/01	77.	3.86	20. U	85.	10.	0.23	0.58	10.	2.	4600	0.01 U	9400
01JH31A	01JH31A (ESP)	0-0	11/10/01	90.	3.69	20. U	120	12.	0.27	0.78	12.	3.	4000	0.01 U	8000
01JH31B	01JH31B (DIW)	0-0	11/10/01	[190.]	3.62	190	16.	11.	0.2	0.2	29.	1.	4400	0.01 U	9100
01JH31B	01JH31B (ESP)	0-0	11/10/01	[210.]	3.55	340	29.	13.	0.2	0.3	34.	1.	5400	0.01 U	12000
02ELY1A	02Ely 1A	0-0	10/08/02	13.	NA	3. U	20.	0.94	0.031	1.9	0.9	2.7	370	0.01 U	540
02ELY1A	02Ely 1B	0.82-0.82	10/08/02	32.	NA	3. U	20. U	1.2	0.045	1.4	1.2	2.2	520	0.01 U	980
02ELY2A-B	02Ely 2A	0-0	10/08/02	21.	NA	120	20. U	1.	0.056	0.74	0.97	2.6	430	0.01 U	660
02ELY2A-B	02Ely 2A DUP	0-0	10/08/02	24.	NA	130	20. U	1.1	0.055	0.63	1.	2.6	490	0.01 U	710
02ELY2A-B	02Ely 2B	0.82-0.82	10/08/02	28.	NA	100	30.	1.8	0.045	1.4	1.6	1.3	340	0.01 U	650
02ELY3	02Ely 3	0-0	10/08/02	51.	NA	230	130.	2.3	0.05	3.1	3.3	3.9	300	0.01 U	500 U
02ELY4A-B	02Ely 4A	0-0	10/08/02	4.2	NA	3. U	220	0.17	0.021	4.6	0.17	2.2	450	0.01 U	600
02ELY4A-B	02Ely 4B	0.82-0.82	10/08/02	26.	NA	3. U	51.	1.2	0.023	3.	1.1	1.7	380	0.01 U	530
02ELY5A-B	02Ely 5A	0-0	10/08/02	13.	NA	100	20. U	0.96	0.028	0.9	0.9	2.5	360	0.01 U	500
02ELY5A-B	02Ely 5B	0.82-0.82	10/08/02	26.	NA	3. U	140.	1.8	0.027	4.7	1.9	0.89	580	0.01 U	1000
02ELY6A-B	02Ely 6A	0-0	10/08/02	37.	NA	140	20. U	2.2	0.052	1.3	2.2	4.4	290	0.01 U	500 U
02ELY6A-B	02Ely 6B	0.82-0.82	10/08/02	29.	NA	110	350.	1.2	0.036	8.	1.	2.4	520	1.1	980
02ELY6A-B	02Ely 6B DUP	0.82-0.82	10/08/02	29.	NA	120	320.	1.1	0.038	7.5	0.99	2.3	490	1.1	930
ES-4 OCHRE	ES-4	0-0	10/08/02	1.7	NA	3. U	72.	0.25	0.02 U	1.3	0.22	0.2 U	740	0.01 U	1200
TP-08	ELY-TP8 (2-3)	2-3	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	7 U J	NA
TP-08	ELY-TPQS1	2-3	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	7 U J	NA

Notes:
NA = Not analyzed for this constituent
NE = Not established
(µg/l) = Micrograms per liter
(SU) = Standard Units
(µS/cm) = Microsiemens per centimeter
(ft bgs) = Fee below ground surface
U = Constituent not detected at listed detection limit
J = Estimated concentration
UJ = Constituent not detected at estimated detection limit
Groundwater and Surface Water criteria developed during Elizabeth Mine
Remedial Investigation
[ ] = Denotes exceedance of criteria

Table 4-2
Soil SPLP Data
Remedial Investigation
Ely Mine
Vershire, Vermont

LOCATION	SAMPLE ID	SAMPLE DEPTH (ft bgs)	Constituent	Sodium	Specific Conductivity	Strontium	Sulfate	Terbium	Thallium	Thorium	Thulium	Titanium	Tungsten	Uranium
			Units	(µg/l)	(µS/cm)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
			Groundwater Criteria	NE	NE	NE	NE	NE	2.0	NE	NE	NE	NE	NE
			Surface Water Criteria	NE	NE	NE	NE	NE	1.7	NE	NE	NE	NE	NE
Midslope Waste Piles														
02ELY10A-B	02Ely 10A	0-0	10/08/02	140	NA	4.2	26000	0.005 U	0.05 U	0.03 U	0.005 U	50. U	0.25	0.024
02ELY10A-B	02Ely 10B	0.82-0.82	10/08/02	210	NA	7.1	30000	0.005 U	0.05 U	0.03 U	0.005 U	50. U	0.23	0.03
02ELY7A-B	02Ely 7A	0-0	10/08/02	59	NA	3.6	150000	0.15	0.05 U	0.18	0.048	50. U	0.02 U	0.65
02ELY7A-B	02Ely 9A (Dup of 02Ely07A	0-0	10/08/02	46	NA	2.4	200000	0.41	0.05 U	0.16	0.12	50. U	0.02 U	1.2
02ELY7A-B	02Ely 7B	0 82-0.82	10/08/02	18	NA	3.7	290000	0.51	0.05 U	2.3	0.14	50. U	0.053	2.2
02ELY7A-B	02Ely 9B (Dup of 02Ely07B	0.82-0.82	10/08/02	36	NA	4.4	270000	0.56	0.05 U	2.6	0.15	50. U	0.058	2.
02ELY8A-B-C	02Ely 8A	0-0	10/08/02	170	NA	1.9	91000	0.056	0.05 U	0.03 U	0.026	50. U	0.02 U	0.17
02ELY8A-B-C	02Ely 8B	1.15-1.57	10/08/02	96	NA	2.8	93000	0.082	0.05 U	0.03 U	0.034	50. U	0.037	0.45
02ELY8A-B-C	02Ely 8C	2.33-2.99	10/08/02	68	NA	0.52	800000	0.36	0.39	3.3	0.12	50. U	0.043	70.
SB-01	ELY-SB-1 (0-4)	0-4	12/05/06	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA
SB-01	ELY-QC-3	0-4	12/05/06	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA
TP-04A	ELY-TP4A (2-3)	2-3	05/14/07	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA
Smelter Area														
00JH34	00JH34 (DIW)	0-0	10/16/00	340	26.2	7.7	8600	0.02	0.05 U	0.08 U	0.006 U	50. U	0.3 U	0.04
00JH34	00JH34 (ESP)	0-0	10/16/00	600	27.4	8.	9300	0.02	0.05 U	0.08 U	0.01	50. U	0.3 U	0.05
00JH38	00JH38 (DIW)	0-0	10/16/00	170	28.2	0.9	8800	0.03	0.05 U	0.08 U	0.02	50. U	0.3 U	0.03
00JH38	00JH38 (ESP)	0-0	10/16/00	180	32.7	1.	10000	0.03	0.05 U	0.08 U	0.02	50. U	0.3 U	0.03
01JH34A-B	01JH34 (DIW)	0-0	11/10/01	250	18.6	2.	5500	0.03	0.05 U	0.08 U	0.01	50. U	0.3 U	0.01
01JH34A-B	01JH34 (ESP)	0-0	11/10/01	230	23.7	2.1	7500	0.03	0.05 U	0.08 U	0.01	50. U	0.3 U	0.02
02ELY11	02Ely 11	0-0	10/08/02	120	NA	8.3	68000	0.012	0.05 U	0.03 U	0.005 U	50. U	0.21	0.079
02ELY12	02Ely 12	0-0	10/08/02	190	NA	15.	15000	0.005 U	0.05 U	0.03 U	0.005 U	50. U	0.02 U	0.005 U
02ELY12	02Ely 12 DUP	0-0	10/08/02	140	NA	13.	14000	0.005 U	0.05 U	0.03 U	0.005 U	50. U	0.022	0.005 U
TP-103	ELY-TP-103 (1-2)	1-2	10/05/07	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA
TP-104	ELY-TP-104 (2-3)	2-3	10/05/07	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA
TP-106	ELY-TP-106 (2-3)	2-3	10/05/07	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA
TP-106	ELY-TP-106 (2-3) DUP	2-3	10/05/07	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA
TP-108	ELY-TP-108 (1-2)	1-2	10/05/07	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA
TP-109	ELY-TP-109 (0-1)	0-1	10/05/07	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA
Smoke Flue														
02ELY13	02Ely 13	0-0	10/08/02	120	NA	1.6	1800	0.013	0.05 U	0.03 U	0.005 U	50. U	0.027	0.042
Upper Waste Piles														
01JH31A	01JH31A (DIW)	0-0	11/10/01	350	259.	5.	110000	1.2	0.05 U	0.08 U	0.52	50. U	0.3 U	0.63
01JH31A	01JH31A (ESP)	0-0	11/10/01	430	294.	6.2	130000	1.4	0.05 U	0.08 U	0.62	50. U	0.3 U	0.72
01JH31B	01JH31B (DIW)	0-0	11/10/01	70	504.	0.8	250000	5.1	0.05 U	0.1	1.7	50 U	0.3 U	1.3
01JH31B	01JH31B (ESP)	0-0	11/10/01	200	557.	1.	290000	5.7	0.05 U	0.1	2.	50. U	0.3 U	1.4
02ELY1A	02Ely 1A	0-0	10/08/02	54	NA	1.1	140000	0.1	0.05 U	0.23	0.039	50. U	0.02 U	0.53
02ELY1A	02Ely 1B	0.82-0.82	10/08/02	69	NA	2.4	140000	0.16	0.05 U	0.03 U	0.064	50. U	0.02 U	0.72
02ELY2A-B	02Ely 2A	0-0	10/08/02	52	NA	1.5	180000	0.13	0.05 U	0.16	0.056	50. U	0.02 U	0.64
02ELY2A-B	02Ely 2A DUP	0-0	10/08/02	50	NA	1.5	180000	0.13	0.05 U	0.16	0.052	50. U	0.02 U	0.67
02ELY2A-B	02Ely 2B	0.82-0.82	10/08/02	61	NA	4.2	170000	0.18	0.05 U	0.03	0.067	50. U	0.02 U	0.86
02ELY3	02Ely 3	0-0	10/08/02	23	NA	1.1	250000	0.43	0.05 U	0.12	0.16	50. U	0.02 U	1.1
02ELY4A-B	02Ely 4A	0-0	10/08/02	110	NA	1.2	49000	0.02	0.05 U	0.03 U	0.0066	50. U	0.038	0.11
02ELY4A-B	02Ely 4B	0.82-0.82	10/08/02	71	NA	0.92	120000	0 14	0.05 U	0.1	0.049	50. U	0.02 U	0.62
02ELY5A-B	02Ely 5A	0-0	10/08/02	44	NA	0.52	160000	0.094	0.05 U	0.18	0.037	50. U	0.02 U	0.31
02ELY5A-B	02Ely 5B	0.82-0.82	10/08/02	100	NA	5.	130000	0.2	0.05 U	0.09	0.065	50. U	0.02 U	1.3
02ELY6A-B	02Ely 6A	0-0	10/08/02	40	NA	0.75	180000	0.26	0.05 U	0.27	0.077	50. U	0.02 U	1.
02ELY6A-B	02Ely 6B	0.82-0.82	10/08/02	120	NA	3.3	200000	0.14	0.05 U	0.08	0.049	50. U	0.02 U	0.99
02ELY6A-B	02Ely 6B DUP	0.82-0.82	10/08/02	120	NA	3.1	190000	0.14	0.05 U	0.07	0.05	50. U	0.02 U	0.99
ES-4_OCHRE	ES-4	0-0	10/08/02	48	NA	0.5	92000	0.026	0.05 U	0.2	0.0066	50. U	0.02 U	0.1
TP-08	ELY-TP8 (2-3)	2-3	05/14/07	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA
TP-08	ELY-TPQS1	2-3	05/14/07	NA	NA	NA	NA	NA	20 U	NA	NA	NA	NA	NA

Notes:
NA = Not analyzed for this constituent
NE = Not established
(µg/l) = Micrograms per liter
(SU) = Standard Units
(µS/cm) = Microsiemens per centimeter
(ft bgs) = Fee below ground surface
U = Constituent not detected at listed detection limit
J = Estimated concentration
UJ = Constituent not detected at estimated detection limit
Groundwater and Surface Water criteria developed during Elizabeth Mine Remedial Investigation
[ ] = Denotes exceedance of criteria

Table 4-2
Soil SPLP Data
Remedial Investigation
Ely Mine
Vershire, Vermont

DRAFT

LOCATION	SAMPLE ID	SAMPLE DEPTH (ft bgs)	Constituent	Vanadium	Ytterbium	Yttrium	Zinc
			Units	(µg/l)	(µg/l)	(µg/l)	(µg/l)
			Groundwater Criteria	NE	NE	NE	NE
			Surface Water Criteria	NE	NE	NE	106.
Midslope Waste Piles							
02ELY10A-B	02Ely 10A	0-0	10/08/02	0.1 U	0.01 U	0.057	17.
02ELY10A-B	02Ely 10B	0.82-0.82	10/08/02	0.1 U	0.01 U	0.098	14.
02ELY7A-B	02Ely 7A	0-0	10/08/02	0.1 U	0.28	3.3	[798.]
02ELY7A-B	02Ely 9A (Dup of 02Ely07A	0-0	10/08/02	0.1 U	0.79	8.6	[741.]
02ELY7A-B	02Ely 7B	0.82-0.82	10/08/02	0.1 U	0.82	11.	[1200.]
02ELY7A-B	02Ely 9B (Dup of 02Ely07B	0.82-0.82	10/08/02	0.1 U	0.83	12.	[1410.]
02ELY8A-B-C	02Ely 8A	0-0	10/08/02	0.1 U	0.16	1.6	[258.]
02ELY8A-B-C	02Ely 8B	1.15-1.57	10/08/02	0.1 U	0.2	2.	[744.]
02ELY8A-B-C	02Ely 8C	2.33-2.99	10/08/02	0.1 U	0.73	6.6	[94700.]
SB-01	ELY-SB-1 (0-4)	0-4	12/05/06	10 U	NA	NA	18.4 J
SB-01	ELY-QC-3	0-4	12/05/06	10 U	NA	NA	14.6 J
TP-04A	ELY-TP4A (2-3)	2-3	05/14/07	10 U	NA	NA	84
Smelter Area							
00JH34	00JH34 (DIW)	0-0	10/16/00	0.2 U	0.04	0.67	[340.]
00JH34	00JH34 (ESP)	0-0	10/16/00	0.2 U	0.04	0.94	[350.]
00JH38	00JH38 (DIW)	0-0	10/16/00	0.2 U	0.11	1.	[190.]
00JH38	00JH38 (ESP)	0-0	10/16/00	0.2 U	0.11	1.2	[210.]
01JH34A-B	01JH34 (DIW)	0-0	11/10/01	0.2 U	0.065	0.66	[160.]
01JH34A-B	01JH34 (ESP)	0-0	11/10/01	0.2 U	0.1	1.	[160.]
02ELY11	02Ely 11	0-0	10/08/02	0.1 U	0.025	0.34	[122.]
02ELY12	02Ely 12	0-0	10/08/02	0.1 U	0.01 U	0.022	[150.]
02ELY12	02Ely 12 DUP	0-0	10/08/02	0.1 U	0.01 U	0.021	[137.]
TP-103	ELY-TP-103 (1-2)	1-2	10/05/07	10 U	NA	NA	[396]
TP-104	ELY-TP-104 (2-3)	2-3	10/05/07	10 U	NA	NA	[179]
TP-106	ELY-TP-106 (2-3)	2-3	10/05/07	10 U	NA	NA	24.2 J
TP-106	ELY-TP-106 (2-3) DUP	2-3	10/05/07	10 U	NA	NA	49.2 J
TP-108	ELY-TP-108 (1-2)	1-2	10/05/07	10 U	NA	NA	45.8 J
TP-109	ELY-TP-109 (0-1)	0-1	10/05/07	10 U	NA	NA	32.2 J
Smoke Flue							
02ELY13	02Ely 13	0-0	10/08/02	0.42	0.025	0.26	16.
Upper Waste Piles							
01JH31A	01JH31A (DIW)	0-0	11/10/01	0.2 U	3.4	31.	[460.]
01JH31A	01JH31A (ESP)	0-0	11/10/01	0.2 U	3.8	38.	[530.]
01JH31B	01JH31B (DIW)	0-0	11/10/01	45.	10.	99.	[360.]
01JH31B	01JH31B (ESP)	0-0	11/10/01	35.	12.	120.	[430.]
02ELY1A	02Ely 1A	0-0	10/08/02	0.1 U	0.26	2.4	[170.]
02ELY1A	02Ely 1B	0.82-0.82	10/08/02	0.1 U	0.4	4.1	[168.]
02ELY2A-B	02Ely 2A	0-0	10/08/02	0.1 U	0.34	3.3	[767.]
02ELY2A-B	02Ely 2A DUP	0-0	10/08/02	0.1 U	0.33	3.4	[869.]
02ELY2A-B	02Ely 2B	0.82-0.82	10/08/02	0.1 U	0.4	4.3	[322.]
02ELY3	02Ely 3	0-0	10/08/02	0.1 U	0.85	11.	[2510.]
02ELY4A-B	02Ely 4A	0-0	10/08/02	0.1 U	0.042	0.6	[110.]
02ELY4A-B	02Ely 4B	0.82-0.82	10/08/02	0.1 U	0.3	3.3	[350.]
02ELY5A-B	02Ely 5A	0-0	10/08/02	0.1 U	0.2	2.3	[894.]
02ELY5A-B	02Ely 5B	0.82-0.82	10/08/02	0.1 U	0.41	3.7	[477.]
02ELY6A-B	02Ely 6A	0-0	10/08/02	0.1 U	0.45	6.2	[1510.]
02ELY6A-B	02Ely 6B	0.82-0.82	10/08/02	0.1 U	0.28	3.5	[654.]
02ELY6A-B	02Ely 6B DUP	0.82-0.82	10/08/02	0.1 U	0.27	3.5	[627.]
ES-4_OCHRE	ES-4	0-0	10/08/02	0.1 U	0.04	0.47	23.
TP-08	ELY-TP8 (2-3)	2-3	05/14/07	10 U	NA	NA	19.7 J
TP-08	ELY-TPQS1	2-3	05/14/07	10 U	NA	NA	31.4 J

Notes:
NA = Not analyzed for this constituent
NE = Not established
(µg/l) = Micrograms per liter
(SU) = Standard Units
(µS/cm) = Microsiemens per centimeter
(ft bgs) = Fee below ground surface
U = Constituent not detected at listed detection limit
J = Estimated concentration
UJ = Constituent not detected at estimated detection limit
Groundwater and Surface Water criteria developed during Elizabeth Mine
Remedial Investigation
[ ] = Denotes exceedance of criteria

Table 4-3
Exceedances in Subsurface Soil
Remedial Investigation
Ely Mine
Vershire, Vermont

Sample Location	Sample Type	Top of Sample Interval (ft bgs)	Bottom of Sample Interval (ft bgs)	Constituent Soil Criteria Units	Cadmium 3.28 mg/kg	Cobalt 945 mg/kg	Copper 625 mg/kg	Lead 400 mg/kg	Manganese 3326 mg/kg	Nickel 370 mg/kg	Selenium 4.37 mg/kg	Thallium 4.98 mg/kg	Vanadium 361 mg/kg	Zinc 545 mg/kg
Midslope Waste Piles														
02ELY8A-B-C	Field Sample	2.33	2.99	10/8/2002	42	1040	25600	--	--	--	--	--	--	3960
SB-02	Field Sample	0	4	12/3/2006	--	--	1300 J	--	--	--	--	--	--	--
SB-03	Field Duplicate	0	4	12/3/2006	--	--	940 J	--	--	--	26	--	--	--
SB-03	Field Sample	0	4	12/3/2006	--	--	1800 J	--	--	--	34	--	--	--
SB-03	Field Sample	4.5	8	12/3/2006	--	--	880 J	--	--	--	--	--	--	--
TP-04A	Field Sample	2	3	5/14/2007	6.4	--	36000	--	--	--	92 J	16	--	730
TP-06	Field Sample	3	4	5/14/2007	--	--	3400	--	--	--	89 J	20	--	--
TP-07A	Field Sample	4	5	5/14/2007	45	1500	24000	--	--	470	63 J	20	--	5700
Smelter Area														
TP-01	Field Sample	4	5	5/14/2007	--	--	1600	--	--	--	22 J	8.5 J	--	--
TP-02B	Field Sample	2	3	5/14/2007	--	--	3400	--	--	--	79 J	15	--	--
TP-03A	Field Sample	1.5	2.5	5/14/2007	--	--	770	--	--	--	--	--	--	--
TP-03B	Field Sample	2	3	5/14/2007	--	--	1300	--	--	--	4.5 J	5.9 J	--	--
TP-106	Field Duplicate	2	3	10/5/2007	--	--	1400	--	--	--	--	--	--	--
TP-106	Field Sample	2	3	10/5/2007	--	--	1300	--	--	--	--	--	--	--
Upper Waste Piles														
SB-04	Field Sample	8	10.6	12/2/2006	--	--	1100 J	--	--	--	6.8 J	--	--	--
SB-05	Field Sample	8	12	11/30/2006	--	--	1700 J	--	--	--	6.9 J	--	--	--
SB-07	Field Sample	6	12	12/1/2006	--	--	6000 J	--	--	--	21	--	--	--
SB-08	Field Sample	0	6	12/1/2006	--	--	2200 J	--	--	--	38	--	--	--
TP-08	Field Duplicate	2	3	5/14/2007	--	--	--	--	--	--	17 J	20	--	--
TP-08	Field Sample	2	3	5/14/2007	--	--	--	--	--	--	19 J	14	--	--
TP-09	Field Sample	3	4	5/14/2007	--	--	960	--	--	--	7.1 J	10	--	--
TP-10	Field Sample	7	9	5/14/2007	--	--	--	--	--	--	5.3 J	8.8 J	--	--
TP-11	Field Sample	4	6	5/14/2007	--	--	680	--	--	--	37 J	23	--	--

Notes:
J = Estimated concentration
(mg/kg) = Milligrams per kilogram
(ft bgs) = Feet below ground surface
-- = Constituent not detected above soil crtieria
Soil criteria developed during Elizabeth Mine Remedial Investigation
Values shown are the maximum detected concentration at each sample location for constituents that exceed soil criteria
Surficial soil samples are those where the Bottom of Sample Interval is less than, or equal to, 2 ft bgs
Subsurface soil samples are those where the Bottom of Sample Interval is greater than 2 ft bgs

Table 4-4
Exceedances in Surface Water
Remedial Investigation
Ely Mine
Vershire, Vermont

			Analysis	DISSOLVED													TOTAL									
Usgs Site Number	Sample Location	Sample Type	Constituent Surface Water Criteria Units	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Chloride 230000 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Silver 4.06 µg/l	Thallium 1.7 µg/l	Zinc 106 µg/l	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Zinc 106 µg/l
Background																										
SBT1-57M	LOC-50	Field Sample	9/10/2001	--	104 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ORT-1080M	SW-24	Field Sample	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	160	--	--	--	--	--	--	--	--
ORT-1190M	SW-22	Field Sample	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	100	--	--	--	--	--	--	--	--
SBT1-57M	LOC-50	Field Sample	9/10/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	101 J	--	--	--	--	--	--	--	--
SBT1-6M	SW-25	Field Sample	11/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	70000	--	--	--	--	--	--	--	--	--
Background - EBOR																										
OR-24050M	SW-OR-1A	Field Sample	8/21/2006	88000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-23650M	SW-26	Field Sample	11/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	86000	--	--	--	--	--	--	--	--	--
OR-24050M	SW-OR-1A	Field Sample	8/21/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	161	--	--	--	--	--	--	--	--
OR-24150M	OR-1	Field Sample	3/31/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	530	--	--	--	--	--	--	--	--
OR-24150M	OR-1	Field Sample	4/10/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	710	--	--	--	--	--	--	--	--
OR-24150M	OR-1	Field Sample	7/24/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	99	--	--	--	--	--	--	--	--
OR-24500M	LOC-53	Field Sample	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	162 J	--	--	--	--	--	--	--	--
OR-24500M	LOC-53	Field Sample	9/10/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	98.5 J	--	--	--	--	--	--	--	--
Background - Ely Brook																										
EB-1430M	SW-20	Field Sample	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	28000	240	--	--	2000	--	--	--	--	--
Background - Schoolhouse Brook																										
SB-3670M	SW-SB-1A	Field Sample	8/22/2006	99000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3290M	SB-1	Field Sample	3/28/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	530	--	--	--	--	--	--	--	--
SB-3290M	SB-1	Field Sample	3/31/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1300	--	--	1300	--	--	--	--	--
SB-3290M	SB-1	Field Sample	4/10/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	840	--	--	--	--	--	--	--	--
SB-3290M	SW-38	Field Sample	5/3/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	47000	91 J	--	--	--	--	--	--	--	432.5 J
SB-3300M	LOC-48	Field Sample	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	155 J	--	--	--	--	--	--	--	--
SB-3300M	LOC-48	Field Sample	9/5/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	135 J	--	--	--	--	--	--	--	--
SB-3510M	SW-07	Field Sample	11/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	88000	--	--	--	--	--	--	--	--	--
SB-3670M	SB-3670M	Field Sample	6/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	62000	--	--	--	--	--	--	--	--	--
SB-3670M	SB-3670M	Field Sample	6/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	68000	--	--	--	--	--	--	--	--	--
Beaver Pond Complex																										
EBT2-383M	EB-2A	Field Sample	9/19/2002	--	--	--	--	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND2	SW-POND-2	Field Sample	9/19/2006	27000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND3	SW-POND-3	Field Sample	9/19/2006	31000	--	--	--	--	--	--	--	--	--	5	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND4	SW-POND-4	Field Sample	6/19/2006	--	--	--	--	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND4	SW-POND-4	Field Sample	6/23/2006	--	--	--	--	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND4	SW-POND-4	Field Sample	9/19/2006	30000	--	--	--	13.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND4	SW-POND-4	Field Sample	5/2/2007	--	--	--	--	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND4	SW-POND-4	Field Sample	5/21/2007	--	--	--	--	64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND4	SW-POND-4	Field Sample	5/28/2007	--	--	--	--	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND4	SW-POND-4	Field Sample	6/4/2007	--	--	--	--	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND5	SW-POND-5	Field Sample	9/19/2006	--	--	--	--	494	--	--	--	--	--	--	--	147	--	--	--	--	--	--	--	--	--	--
EM-POND5	SW-POND-5	Field Sample	5/2/2007	--	--	--	--	380	--	--	--	--	--	--	--	110	--	--	--	--	--	--	--	--	--	--
EM-POND5	SW-POND-5	Field Sample	5/10/2007	--	--	--	--	240	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND5	SW-POND-5	Field Sample	5/21/2007	--	--	--	--	670	--	--	--	--	--	--	--	160	--	--	--	--	--	--	--	--	--	--
EBT2-315M	SW-16	Field Sample	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	20000	--	--	--	--	--	--	--	--	--
EBT2-383M	EB-2A	Field Sample	7/24/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2000	--	--	--	--	--
EBT2-383M	EB-2A	Field Sample	8/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3300	--	--	--	--	--
EBT2-383M	EB-2A	Field Sample	9/19/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1300	--	--	--	--	--
EBT2-430M	SW-21	Field Duplicate	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	21000	350	--	--	--	--	--	--	--	--
EBT2-430M	SW-21	Field Sample	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	22000	430	--	--	--	--	--	--	--	--
EM-POND1	SW-POND-1	Field Sample	9/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	413	--	--	--	--	--	--	--	--
EM-POND2	SW-POND-2	Field Sample	9/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1240	--	--	--	--	--
EM-POND3	SW-POND-3	Field Sample	9/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1020	--	--	--	--	--
EM-POND4	SW-POND-4	Field Sample	6/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	30	--	--	--	--	--	--
EM-POND4	SW-POND-4	Field Sample	6/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	20000	--	--	32	--	--	--	--	--	--
EM-POND4	SW-POND-4	Field Sample	9/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	19.3	--	--	--	--	--	--
EM-POND5	SW-POND-5	Field Sample	9/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	531	--	595	--	--	--	--	--	150

Table 4-4
Exceedances in Surface Water
Remedial Investigation
Ely Mine
Vershire, Vermont

			Analysis	DISSOLVED													TOTAL									
Usgs Site Number	Sample Location	Sample Type	Constituent Surface Water Criteria Units	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Chloride 230000 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Silver 4.06 µg/l	Thallium 1.7 µg/l	Zinc 106 µg/l	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Zinc 106 µg/l
EBOR - Lower EBOR																										
OR-11800M	OM14	Field Sample	4/9/2007	--	--	--	--	--	--	--	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-11850M	LOC-35	Field Sample	7/19/2000	--	--	--	--	--	--	--	--	--	--	--	5 J	--	--	--	--	--	--	--	--	--	--	--
OR-11850M	LOC-35	Field Sample	9/5/2001	--	122 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-15000M	OR-3	Field Sample	3/31/2002	--	--	--	--	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-19560M	OM13	Field Sample	4/9/2007	--	--	--	--	--	--	--	0.12 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-22390M	OM12	Field Sample	4/9/2007	--	--	--	--	13.4	--	--	0.15 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-22450M	OR-2	Field Sample	3/29/2002	--	--	--	--	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-22450M	OR-2	Field Sample	3/31/2002	--	--	--	--	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-22450M	OR-2	Field Sample	4/10/2002	--	--	--	--	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-23200M	SW-OR-3A	Field Sample	8/21/2006	85000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-23630M	SW-28	Field Sample	11/4/2004	--	--	--	--	19.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-23630M	SW-OR-2A	Field Sample	8/21/2006	87000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-8350M	LOC-45	Field Sample	9/5/2001	--	90.8 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OR-11800M	OM14	Field Sample	4/9/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	149	--	--	--	--	0.12 J	--	--	--
OR-11850M	LOC-35	Field Sample	5/8/2000	--	--	--	--	--	--	--	--	--	--	--	--	--	47000	88.2 J	--	--	--	--	--	--	--	--
OR-11850M	LOC-35	Field Sample	7/19/2000	--	--	--	--	--	--	--	--	--	--	--	--	--	69000	--	--	--	--	--	--	--	--	3100
OR-11850M	LOC-35	Field Sample	5/1/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	212	--	--	--	--	--	--	--	--
OR-11850M	LOC-35	Field Sample	9/5/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.1 J	--	--	--	--	--	--	--	--
OR-15000M	OR-3	Field Sample	3/31/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	330	--	28	--	--	--	--	--	--
OR-15000M	OR-3	Field Sample	4/10/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	710	--	18	--	--	--	--	--	--
OR-15000M	OR-3	Field Sample	5/21/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	100	--	15	--	--	--	--	--	--
OR-15200M	LOC-56	Field Sample	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	242	--	--	--	--	--	--	--	--
OR-15200M	LOC-56	Field Sample	9/10/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	110 J	--	--	--	--	--	--	--	--
OR-17400M	LOC-55	Field Sample	9/10/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	124 J	--	--	--	--	--	--	--	--
OR-19150M	LOC-54	Field Sample	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	204	--	--	--	--	--	--	--	--
OR-19150M	LOC-54	Field Sample	9/10/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	122 J	--	--	--	--	--	--	--	--
OR-19560M	OM13	Field Sample	4/9/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	143	--	--	--	--	0.15 J	--	--	--
OR-22390M	OM12	Field Sample	4/9/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	112	--	19	--	--	0.2	--	5.8 J	--
OR-22450M	OR-2	Field Sample	3/29/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	180	--	60	--	--	--	--	--	--
OR-22450M	OR-2	Field Sample	3/31/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	820	--	67	--	--	--	--	--	--
OR-22450M	OR-2	Field Sample	4/2/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	280	--	48	--	--	--	--	--	--
OR-22450M	OR-2	Field Sample	4/3/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	230	--	47	--	--	--	--	--	--
OR-22450M	OR-2	Field Sample	4/10/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	710	--	21	--	--	--	--	--	--
OR-22450M	OR-2	Field Sample	5/21/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	98	--	32	--	--	--	--	--	--
OR-22450M	OR-2	Field Sample	6/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	17	--	--	--	--	--	--
OR-23200M	SW-OR-3A	Field Sample	8/21/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	130	--	15	--	--	--	--	--	--
OR-23630M	SW-28	Field Sample	11/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	77000	140	--	32.4	--	--	--	--	--	--
OR-23630M	SW-OR-2A	Field Sample	8/21/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	120	--	--	--	--	--	--	--	--
OR-8350M	LOC-45	Field Duplicate	5/2/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	304	--	12.3 J	--	--	--	--	--	--
OR-8350M	LOC-45	Field Sample	9/20/2000	--	--	--	--	--	--	--	--	--	--	--	--	--	72300	--	--	--	--	--	--	--	--	--
OR-8350M	LOC-45	Field Sample	5/2/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	379	--	13 J	--	--	--	--	--	--
OR-8350M	LOC-45	Field Sample	9/5/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.4 J	--	--	--	--	--	--	--	--

Table 4-4
Exceedances in Surface Water
Remedial Investigation
Ely Mine
Vershire, Vermont

			Analysis	DISSOLVED													TOTAL									
Usgs Site Number	Sample Location	Sample Type	Constituent Surface Water Criteria Units	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Chloride 230000 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Silver 4.06 µg/l	Thallium 1.7 µg/l	Zinc 106 µg/l	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Zinc 106 µg/l
Ely Brook - Lower Ely Brook																										
EB-15M	EB-6	Field Sample	3/28/2002	--	7600	5.9	--	3850	12000	--	--	--	--	--	--	525	--	--	--	--	--	--	--	--	--	--
EB-15M	EB-6	Field Sample	3/31/2002	--	4900	3.2	--	2860	5900	--	--	--	--	--	--	354	--	--	--	--	--	--	--	--	--	--
EB-15M	EB-6	Field Sample	4/10/2002	--	4700	2.9	--	2300	5600	--	--	--	--	--	--	337	--	--	--	--	--	--	--	--	--	--
EB-15M	EB-6	Field Sample	5/21/2002	--	5500	2.8	--	2240	4200	--	--	--	--	--	--	386	--	--	--	--	--	--	--	--	--	--
EB-15M	EB-6	Field Sample	6/20/2002	--	6500	3.3	--	2370	4600	--	--	--	--	--	--	492	--	--	--	--	--	--	--	--	--	--
EB-15M	EB-6	Field Sample	7/24/2002	--	8200	4.2	--	2220	11900	--	--	--	--	--	--	681	--	--	--	--	--	--	--	--	--	--
EB-15M	EB-6	Field Sample	9/19/2002	--	--	--	--	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EB-210M	SW-10	Field Sample	11/3/2004	--	4600	1.8	--	1360	4600	--	--	--	--	--	--	286.1	--	--	--	--	--	--	--	--	--	--
EB-30M	SW-09	Field Duplicate	5/2/2007	--	2500	1.2	--	1270	1700	--	--	--	--	--	--	166.3	--	--	--	--	--	--	--	--	--	--
EB-30M	SW-09	Field Sample	11/3/2004	--	4300	1.7	--	1271	4000	--	--	--	--	--	--	269.7	--	--	--	--	--	--	--	--	--	--
EB-30M	SW-09	Field Sample	5/2/2007	--	2500	1.2	--	1240	1700	--	--	--	--	--	--	172.2	--	--	--	--	--	--	--	--	--	--
EB-325M	SW-39	Field Sample	5/2/2007	--	2600	1.3	--	1330	1700	--	--	--	--	--	--	182.5	--	--	--	--	--	--	--	--	--	--
EB-90M	EB7	Field Duplicate	10/5/2005	--	10200 J	2.8	--	2240	12800	--	--	--	--	--	--	578	--	--	--	--	--	--	--	--	--	--
EB-90M	EB7	Field Duplicate	5/22/2006	--	2600	1.3	--	1480	1470	--	0.064 J	--	--	--	--	193 J	--	--	--	--	--	--	--	--	--	--
EB-90M	EB7	Field Sample	10/5/2005	--	10200 J	3.2	--	2240	13000	--	--	--	--	--	--	583	--	--	--	--	--	--	--	--	--	--
EB-90M	EB7	Field Sample	5/22/2006	--	2560	1.3	--	1480	1470	--	0.064 J	--	--	--	--	196 J	--	--	--	--	--	--	--	--	--	--
EB-90M	EB7	Field Sample	6/19/2006	--	3100	1.6	--	1500	2100	--	--	--	--	--	--	220	--	--	--	--	--	--	--	--	--	--
EB-90M	EB7	Field Sample	4/11/2007	--	3030	--	--	1460	2180	--	0.16	--	--	--	--	177	--	--	--	--	--	--	--	--	--	--
EB-90M	LOC-49	Field Sample	9/5/2001	--	2680	2.5 J	--	1810	1040	--	--	--	--	--	--	391	--	--	--	--	--	--	--	--	--	--
EB-90M	SW-EB-4A	Field Sample	8/23/2006	--	4790	1.99	--	1780	6370	--	--	--	--	--	--	373	--	--	--	--	--	--	--	--	--	--
EB-15M	EB-6	Field Sample	3/28/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7600	5.9	3880	12000	--	--	--	--	497
EB-15M	EB-6	Field Sample	3/31/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5400	3.2	2880	7700	--	--	--	--	349
EB-15M	EB-6	Field Sample	4/2/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5200	3.3	3020	6500	--	--	--	--	384
EB-15M	EB-6	Field Sample	4/3/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5400	4.4	3080	7100	--	--	--	--	381
EB-15M	EB-6	Field Sample	4/10/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4800	2.9	2280	5900	--	--	--	--	332
EB-15M	EB-6	Field Sample	5/21/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5700	2.8	2310	4400	--	--	--	--	393
EB-15M	EB-6	Field Sample	6/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6500	3.3	2390	4700	--	--	--	--	498
EB-15M	EB-6	Field Sample	7/24/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7900	4.3	2120	11600	--	--	--	--	649
EB-15M	EB-6	Field Sample	8/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	110	--	55	1200	--	--	--	--	--
EB-15M	EB-6	Field Sample	9/19/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	28	--	--	--	--	--	--
EB-210M	SW-10	Field Sample	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4700	1.7	1300	7600	--	--	--	--	273.6
EB-30M	SW-09	Field Duplicate	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2500	1.2	1270	1700	--	--	--	--	174
EB-30M	SW-09	Field Sample	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4500	1.6	1262	4700	--	--	--	--	265.6
EB-30M	SW-09	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2600	1.2	1260	1800	--	--	--	--	168.3
EB-325M	SW-39	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2700	1.4	1410	2400	--	--	--	--	179.4 J
EB-90M	EB7	Field Duplicate	10/5/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10100 J	3	2220	12800	--	--	--	--	607
EB-90M	EB7	Field Duplicate	5/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2870	1.2	1510	2180	--	0.093 J	--	--	199 J
EB-90M	EB7	Field Sample	10/5/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10300 J	3.1	2230	13000	--	--	--	--	581
EB-90M	EB7	Field Sample	5/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2820	1.2	1480	2160	--	--	--	--	193 J
EB-90M	EB7	Field Sample	6/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	62000	3500	1.5	1500	2600 J	--	--	--	--	190
EB-90M	EB7	Field Sample	6/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2900	1.7	1600	3100 J	--	--	--	--	210
EB-90M	EB7	Field Sample	4/11/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3570	--	1500	7980	--	0.099 J	--	--	181
EB-90M	LOC-49	Field Duplicate	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3940	2.7 J	2120	4130	--	--	--	--	312
EB-90M	LOC-49	Field Sample	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3590	2.4 J	1960	3780	--	--	--	--	285
EB-90M	LOC-49	Field Sample	9/5/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5230	2.5 J	1980	7170	--	--	--	--	391
EB-90M	SW-EB-4A	Field Sample	8/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4840	1.93	1800	6510	--	--	--	--	354

Table 4-4
Exceedances in Surface Water
Remedial Investigation
Ely Mine
Vershire, Vermont

			Analysis	DISSOLVED													TOTAL									
Usgs Site Number	Sample Location	Sample Type	Constituent Surface Water Criteria Units	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Chloride 230000 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Silver 4.06 µg/l	Thallium 1.7 µg/l	Zinc 106 µg/l	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Zinc 106 µg/l
Ely Brook - Midslope Waste Pile Drainages																										
EB-405M	SW-33	Field Sample	11/3/2004	--	4700	1.9	--	1284	5800	--	--	--	--	--	--	305.7	--	--	--	--	--	--	--	--	--	--
EB-405M	SW-33	Field Sample	5/2/2007	--	2700	1.4	--	1370	1800	--	--	--	--	--	--	188.4	--	--	--	--	--	--	--	--	--	--
EB-440M	SW-11	Field Sample	11/3/2004	--	5000	2	--	1359	6800	--	--	--	--	--	--	329.9	--	--	--	--	--	--	--	--	--	--
EB-465M	EB-5	Field Duplicate	6/20/2002	--	7300	3.5	--	2360	8900	--	--	--	--	--	--	542	--	--	--	--	--	--	--	--	--	--
EB-465M	EB-5	Field Sample	4/2/2002	--	5000	3.1	--	3080	7000	--	--	--	--	--	--	385	--	--	--	--	--	--	--	--	--	--
EB-465M	EB-5	Field Sample	4/11/2002	--	5600	3.3	--	2650	7700	--	--	--	--	--	--	405	--	--	--	--	--	--	--	--	--	--
EB-465M	EB-5	Field Sample	5/21/2002	--	6100	3.1	--	2460	5700	--	--	--	--	--	--	437	--	--	--	--	--	--	--	--	--	--
EB-465M	EB-5	Field Sample	6/20/2002	--	7800	3.5	--	2460	8900	--	--	--	--	--	--	561	--	--	--	--	--	--	--	--	--	--
EB-465M	EB-5	Field Sample	7/24/2002	--	11000	6.4	310000	2690	26400	--	--	--	--	--	--	930	--	--	--	--	--	--	--	--	--	--
EB-465M	EB-5	Field Sample	8/20/2002	--	31000	16	--	5680	74600	--	--	--	--	--	--	2630	--	--	--	--	--	--	--	--	--	--
EB-465M	EB-5	Field Sample	9/19/2002	--	34000	18	--	7540	64400	--	--	--	--	--	--	2490	--	--	--	--	--	--	--	--	--	--
EB-515M	EB5	Field Sample	10/5/2005	--	10100 J	--	--	1270	55600	--	--	--	--	--	--	652	--	--	--	--	--	--	--	--	--	--
EB-515M	EB5	Field Sample	5/22/2006	--	2440	1.7	--	1700	1820	4.5 J	0.067 J	--	--	--	--	254 J	--	--	--	--	--	--	--	--	--	--
EB-530M	SW-12	Field Sample	11/1/2004	--	4200	1.5	--	991.4	4300	--	--	--	--	--	--	269.2	--	--	--	--	--	--	--	--	--	--
EB-530M	SW-12	Field Sample	5/2/2007	--	2600	1.2	--	1270	1700	--	--	--	--	--	--	532.2	--	--	--	--	--	--	--	--	--	--
EB-560M	SW-13	Field Sample	11/1/2004	--	--	--	--	176.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EB-560M	SW-13	Field Sample	5/2/2007	--	--	--	--	107	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EB-600M	SW-EB-3A	Field Sample	8/23/2006	--	634	--	--	447	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EBT1-105M	EB-7	Field Duplicate	4/8/2002	--	--	--	--	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EBT1-105M	EB-7	Field Sample	4/8/2002	--	--	--	--	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EBT1-105M	EB-7	Field Sample	4/11/2002	--	--	--	--	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EBT1-10M	SW-34	Field Sample	11/2/2004	--	3200	1.9	--	2457	--	--	--	--	--	--	--	171	--	--	--	--	--	--	--	--	--	--
EBT1-10M	SW-34	Field Sample	5/2/2007	--	--	--	--	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EBT1-110M	SW-36	Field Sample	11/3/2004	--	--	--	--	16.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EBT1-32M	EB6	Field Sample	10/5/2005	--	3610 J	2.9	--	3490	--	--	--	--	--	--	--	255	--	--	--	--	--	--	--	--	--	--
EBT1-32M	EB6	Field Sample	5/22/2006	--	641	--	--	799	--	--	0.079 J	--	10.6 J	--	--	--	--	--	--	--	--	--	--	--	--	--
EBT2-120M	EB4	Field Sample	10/5/2005	--	--	--	--	66.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EBT2-120M	EB4	Field Sample	5/22/2006	--	368	--	--	206	--	--	0.064 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EBT2-185M	SW-37	Field Sample	11/2/2004	--	380	1.7	--	1069	--	--	--	--	--	--	--	279.8	--	--	--	--	--	--	--	--	--	--
EBT2-23M	SW-31	Field Sample	11/1/2004	--	7300	2.4	--	1652	9300	--	--	--	--	--	--	431.7	--	--	--	--	--	--	--	--	--	--
EBT2-245M	EBT2-245M	Field Sample	6/19/2006	--	410	1.7	--	1200	--	--	--	--	--	--	--	210	--	--	--	--	--	--	--	--	--	--
EBT2-255M	SW-41	Field Sample	5/3/2007	--	780	1.4	--	1070	--	--	--	--	--	--	--	203.5	--	--	--	--	--	--	--	--	--	--
EBT2-265M	EB-2	Field Sample	4/2/2002	--	3200	2.2	--	1660	--	--	--	--	--	--	--	319	--	--	--	--	--	--	--	--	--	--
EBT2-265M	EB-2	Field Sample	4/11/2002	--	740	1.3	--	792	--	--	--	--	--	--	--	199	--	--	--	--	--	--	--	--	--	--
EBT2-265M	EB-2	Field Sample	5/21/2002	--	2600	2.3	--	1710	--	--	--	--	--	--	--	348	--	--	--	--	--	--	--	--	--	--
EBT2-55M	EB3	Field Sample	10/5/2005	--	4290 J	2.8	--	1690	24100	--	--	--	--	--	--	436	--	--	--	--	--	--	--	--	--	--
EBT2-55M	EB3	Field Sample	5/22/2006	--	21300	8	--	9580	8350	--	0.096 J	--	--	--	--	1140 J	--	--	--	--	--	--	--	--	--	--
EBT2-58M	SW-14	Field Sample	11/1/2004	--	2200	2.2	--	1379	5100	--	--	--	--	--	--	347.4	--	--	--	--	--	--	--	--	--	--
EBT2-58M	SW-14	Field Sample	5/2/2007	--	1400	1.4	--	1170	2600	--	--	--	--	--	--	205.5	--	--	--	--	--	--	--	--	--	--
EBT2-78M	EB-3	Field Duplicate	4/11/2002	--	1900	2.1	--	1540	4200	--	--	--	--	--	--	287	--	--	--	--	--	--	--	--	--	--
EBT2-78M	EB-3	Field Sample	4/2/2002	--	36000	18	540000	17600	14000	--	--	--	--	--	--	2170	--	--	--	--	--	--	--	--	--	--
EBT2-78M	EB-3	Field Sample	4/11/2002	--	1900	2.1	--	1550	4200	--	--	--	--	--	--	287	--	--	--	--	--	--	--	--	--	--
EBT2-78M	EB-3	Field Sample	5/21/2002	--	3000	2.4	--	1720	2500	--	--	--	--	--	--	373	--	--	--	--	--	--	--	--	--	--
EBT2-78M	EB-3	Field Sample	6/20/2002	--	1300	1.8	--	1120	4000	--	--	--	--	--	--	310	--	--	--	--	--	--	--	--	--	--
EBT2-78M	EB-3	Field Sample	7/24/2002	--	3600	4	--	1990	6700	--	--	--	--	--	--	565	--	--	--	--	--	--	--	--	--	--
EBT2-78M	EB-3	Field Sample	9/19/2002	--	8600	11	--	9860	34000	--	--	--	--	--	--	900	--	--	--	--	--	--	--	--	--	--
EBT2-7M	SW-32	Field Sample	11/1/2004	--	8500	2.7	--	1895	10000	--	--	--	--	--	--	489.7	--	--	--	--	--	--	--	--	--	--
EBT2-7M	SW-32	Field Sample	5/2/2007	--	4800	2.3	--	2250	3400	--	--	--	--	--	--	320.8	--	--	--	--	--	--	--	--	--	--
EBT3-120M	EB2	Field Sample	10/5/2005	--	12300 J	--	--	--	65600	--	--	--	--	--	7.8 J	140	--	--	--	--	--	--	--	--	--	--
EBT3-120M	EB2	Field Sample	5/22/2006	--	22700	--	--	--	50900	--	0.098 J	--	--	--	--	234 J	--	--	--	--	--	--	--	--	--	--
EBT3-180M	EB1	Field Sample	10/5/2005	--	25900 J	10.4	--	7200	3680	--	--	--	--	--	--	1390	--	--	--	--	--	--	--	--	--	--
EBT3-180M	EB1	Field Sample	5/22/2006	--	22600	9	--	11100	6820	--	0.099 J	--	--	--	--	1260 J	--	--	--	--	--	--	--	--	--	--
EBT3-60M	SW-30	Field Sample	11/1/2004	--	21000	2	--	1565	25000	--	--	--	--	--	--	488.6	--	--	--	--	--	--	--	--	--	--
EBT3-60M	SW-30	Field Sample	5/2/2007	--	18000	6	--	7040	6700	--	--	--	--	--	--	796.1	--	--	--	--	--	--	--	--	--	--
EBT3-84M	EB-4	Field Sample	4/2/2002	--	3300	2.7	--	2370	4200	--	--	--	--	--	--	347	--	--	--	--	--	--	--	--	--	--
EBT3-84M	EB-4	Field Sample	4/11/2002	--	39000	18	570000	16700	12000	--	--	--	--	--	--	2210	--	--	--	--	--	--	--	--	--	--
EBT3-84M	EB-4	Field Sample	5/21/2002	--	39000	16	580000	15200	14200	--	--	--	--	--	--	1990	--	--	--	--	--	--	--	--	--	--
EBT3-84M	EB-4	Field Sample	6/20/2002	--	33600	12	550000	9680	16000	--	--	--	--	--	--	1580	--	--	--	--	--	--	--	--	--	--
EBT3-84M	EB-4	Field Sample	7/24/2002	--	26000	5.3	570000	3100	38900	--	--	--	--	--	--	930	--	--	--	--	--	--	--	--	--	--
EBT3-84M	EB-4	Field Sample	8/20/2002	--	24100	3	--	2940	25900	--	--	--	--	--	--	678	--	--	--	--	--	--	--	--	--	--
EBT3-84M	EB-4	Field Sample	9/19/2002	--	25000	3.1	--	3990	24300	--	--	--	--	--	--	674	--	--	--	--	--	--	--	--	--	--
EBT5-60M	SW-51	Field Sample	5/2/2007	--	--	--	--	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-POND6	SW-POND-6	Field Sample	9/19/2006	--	2200	2.28	--	1800	--	--	--	--	--	--	--	367	--	--	--	--	--	--	--	--	--	--
EM-SEEP10	ES-10	Field Sample	4/8/2002	--	32000	50	910000	23300	197000	--	--	238	--	--	--	3210	--	--	--	--	--	--	--	--	--	--
EM-SEEP10	ES-10	Field Sample	4/11/2002	--	25000	38	780000	26600	123000	--	--	201	--	--	--	2540	--	--	--	--	--	--	--	--	--	--
EM-SEEP11	ES-11	Field Sample	4/8/2002	--	--	--	--	66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EM-SEEP21	SW-52	Field Sample	5/2/2007	--	21000	--	--	--	39000	--	--	--	--	--	--	192.3	--	--	--	--	--	--	--	--	--	--
EM-SEEP9	ES-9	Field Sample	4/8/2002	--	43000	6.9	630000	341	100000	--	--	--	--	--	--	1490	--	--	--	--	--	--	--	--	--	--
EM-SEEP9	ES-9	Field Sample	4/11/2002	--	42000	6.7	640000	218	95000	--	--	--	--	--	--	1430	--	--	--	--	--	--	--	--	--	--
EB-405M	SW-33	Field Sample	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5000	1.8	1271	6700	--	--	--	--	314.8
EB-405M	SW-33	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2800	1.3	1400	2100	--	--	--	--	183.7 J
EB-440M	LOC-59	Field Sample	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4420	3 J	2380	4710	--	--	--	--	356
EB-440M	SW-11	Field Sample	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5300	1.9	1313	7900	--	--	--	--	320.5

Table 4-4
Exceedances in Surface Water
Remedial Investigation
Ely Mine
Vershire, Vermont

			Analysis	DISSOLVED													TOTAL									
Usgs Site Number	Sample Location	Sample Type	Constituent Surface Water Criteria Units	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Chloride 230000 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Silver 4.06 µg/l	Thallium 1.7 µg/l	Zinc 106 µg/l	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Zinc 106 µg/l
EB-465M	EB-5	Field Duplicate	6/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7600	3.4	2400	9200	--	--	--	--	544
EB-465M	EB-5	Field Sample	4/2/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5200	3.1	3050	7500	--	--	--	--	391
EB-465M	EB-5	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5900	3.4	2620	8200	--	--	--	--	422
EB-465M	EB-5	Field Sample	5/21/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6400	3	2500	6100	--	--	--	--	433
EB-465M	EB-5	Field Sample	6/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8000	3.6	2460	9100	--	--	--	--	562
EB-465M	EB-5	Field Sample	7/24/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	11100	6.4	2720	26500	--	--	--	--	901
EB-465M	EB-5	Field Sample	8/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	30600	16	5620	74900	--	--	--	--	2570
EB-465M	EB-5	Field Sample	9/19/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	34000	17	7490	63900	--	--	--	--	2460
EB-515M	EB5	Field Sample	10/5/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9960 J	--	1220	55800	--	--	--	--	650
EB-515M	EB5	Field Sample	5/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2860	1.5	1680	1790	--	0.086 J	--	--	246 J
EB-530M	SW-12	Field Sample	11/1/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4400	1.5	993.4	4800	--	--	--	--	261.3
EB-530M	SW-12	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4200	1.3	1370	3100	--	--	--	--	255.8 J
EB-560M	SW-13	Field Sample	11/1/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	180	--	208.9	--	--	--	--	--	--
EB-560M	SW-13	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	360	--	202	--	--	--	--	--	--
EB-600M	SW-EB-3A	Field Sample	8/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	240	--	--	--	--	--	--
EB-610M	LOC-57	Field Sample	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	17900	8.5	8070	6660	--	--	--	--	1060
EBT1-105M	EB-7	Field Duplicate	4/8/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	16	--	--	--	--	--	--
EBT1-105M	EB-7	Field Sample	4/8/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18	1200	--	--	--	--	--
EBT1-105M	EB-7	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15	--	--	--	--	--	--
EBT1-10M	SW-34	Field Sample	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3300	2	2500	--	--	--	--	--	172.5
EBT1-10M	SW-34	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	22	--	--	--	--	--	--
EBT1-110M	SW-36	Field Sample	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	89 J	--	26	1600	--	--	--	--	--
EBT1-32M	EB6	Field Sample	10/5/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3660 J	2.7	3520	--	--	--	--	--	258
EBT1-32M	EB6	Field Sample	5/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	750	--	818	--	--	0.12 J	--	--	--
EBT2-120M	EB4	Field Sample	10/5/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	69.6	--	--	--	--	--	--
EBT2-120M	EB4	Field Sample	5/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	371	--	208	--	--	--	--	--	--
EBT2-185M	SW-37	Field Sample	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	620	1.8	1122	--	--	--	--	--	290
EBT2-23M	SW-31	Field Sample	11/1/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7700	2.4	1663	10000	--	--	--	--	424
EBT2-245M	EBT2-245M	Field Sample	6/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5800	1.6	1400	--	--	--	--	--	190
EBT2-245M	EBT2-245M	Field Sample	6/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1700	1.4	1200	--	--	--	--	--	170
EBT2-255M	SW-41	Field Sample	5/3/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2000	1.3	1070	--	--	--	--	--	185.9 J
EBT2-265M	EB-2	Field Sample	4/2/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3600	2.2	1660	--	--	--	--	--	306
EBT2-265M	EB-2	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5400	1.2	949	--	--	--	--	--	196
EBT2-265M	EB-2	Field Sample	5/21/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	19	--	--	--	--	--	--
EBT2-55M	EB3	Field Sample	10/5/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4330 J	3.1	1700	24300	--	--	--	--	436
EBT2-55M	EB3	Field Sample	5/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21500	8.1	9630	8500	--	--	--	--	1150 J
EBT2-58M	SW-14	Field Sample	11/1/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3000	2.2	1406	5600	--	--	--	--	352.1
EBT2-58M	SW-14	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2300	1.4	1210	2900	--	--	--	--	207.9 J
EBT2-67M	LOC-58	Field Sample	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1960	1.9 J	1520	2110	--	--	--	--	251
EBT2-78M	EB-3	Field Duplicate	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2500	1.9	1550	4400	--	--	--	--	274
EBT2-78M	EB-3	Field Sample	4/2/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	32000	19	17600	15000	--	--	--	--	2220
EBT2-78M	EB-3	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2500	1.9	1540	4300	--	--	--	--	275
EBT2-78M	EB-3	Field Sample	5/21/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3900	2.3	1740	2700	--	--	--	--	377
EBT2-78M	EB-3	Field Sample	6/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2500	1.8	1160	4700	--	--	--	--	300
EBT2-78M	EB-3	Field Sample	7/24/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4200	5	2220	8800	--	--	--	--	628
EBT2-78M	EB-3	Field Sample	9/19/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8700	12	10000	34100	--	--	--	--	917
EBT2-7M	SW-32	Field Sample	11/1/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8900	2.6	1864	11000	--	--	--	--	475.8
EBT2-7M	SW-32	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6100	2.2	2220	4300	--	--	--	--	308.5 J
EBT3-120M	EB2	Field Sample	10/5/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12600 J	--	177	66700	--	--	--	--	149
EBT3-120M	EB2	Field Sample	5/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	22500	--	193	50400	--	0.12 J	--	--	233 J
EBT3-180M	EB1	Field Sample	10/5/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25400 J	10	7050	3680	--	--	--	--	1350
EBT3-180M	EB1	Field Sample	5/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21700	8.8	10800	6650	--	0.13 J	--	--	1220 J
EBT3-60M	SW-30	Field Sample	11/1/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	22000	2	1600	27000	--	--	--	--	481.7
EBT3-60M	SW-30	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18000	6	7200	6800	--	--	--	--	810.3 J
EBT3-84M	EB-4	Field Sample	4/2/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3600	2.4	2370	4600	--	--	--	--	338
EBT3-84M	EB-4	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	35000	18	16600	12000	--	--	--	--	2190
EBT3-84M	EB-4	Field Sample	5/21/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	39200	16	15400	14800	--	--	--	--	2050
EBT3-84M	EB-4	Field Sample	6/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	35100	13	10200	16600	--	--	--	--	1600
EBT3-84M	EB-4	Field Sample	7/24/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	27000	7.6	3160	39700	--	--	--	--	981
EBT3-84M	EB-4	Field Sample	8/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	23900	3.2	2940	25600	--	--	--	--	708
EBT3-84M	EB-4	Field Sample	9/19/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25000	5.3	3890	23800	--	--	--	--	666
EBT5-60M	SW-51	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	30	--	--	--	--	--	--
EM-POND6	SW-POND-6	Field Sample	9/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3490	2.28	1890	--	--	--	--	--	378
EM-SEEP10	ES-10	Field Sample	4/8/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	31000	52	23600	199000	--	--	245	--	3140
EM-SEEP10	ES-10	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25000	39	26200	123000	--	--	203	--	2460
EM-SEEP11	ES-11	Field Sample	4/8/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	63	--	--	--	--	--	--
EM-SEEP21	SW-52	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20000	--	164	38000	--	--	--	--	178.9 J
EM-SEEP9	ES-9	Field Sample	4/8/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	43000	8	6130	100000	--	--	--	--	1490
EM-SEEP9	ES-9	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	43000	7.8	591	97000	--	--	--	--	1450

Table 4-4
Exceedances in Surface Water
Remedial Investigation
Ely Mine
Vershire, Vermont

			Analysis	DISSOLVED													TOTAL									
Usgs Site Number	**Sample Location**	**Sample Type**	**Constituent Surface Water Criteria Units**	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Chloride 230000 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Silver 4.06 µg/l	Thallium 1.7 µg/l	Zinc 106 µg/l	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Zinc 106 µg/l
Ely Brook - Upper Waste Pile Drainages																										
EB-1080M	SW-EB-1A	Field Sample	8/23/2006	41000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EB-770M	SW-40	Field Sample	5/2/2007	--	--	--	--	218	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EB-770M	SW-EB-2A	Field Sample	8/23/2006	--	--	--	--	981	--	--	--	--	--	--	--	114	--	--	--	--	--	--	--	--	--	--
EBT4-25M	SW-29	Field Sample	11/2/2004	--	7300	3.4	--	4153	--	--	--	--	--	--	--	376.9	--	--	--	--	--	--	--	--	--	--
EBT4-25M	SW-29	Field Sample	5/2/2007	--	4000	2	--	2370	--	--	--	--	--	--	--	218.8	--	--	--	--	--	--	--	--	--	--
EM-SEEP1	ES-1	Field Sample	4/4/2002	--	101000	26	1320000	63700	10000	--	--	406	5.7	--	--	2530	--	--	--	--	--	--	--	--	--	--
EM-SEEP1	ES-1	Field Sample	4/11/2002	--	123000	29	980000	91800	17000	--	--	456	6.4	--	--	2890	--	--	--	--	--	--	--	--	--	--
EM-SEEP12	ES-12	Field Sample	4/11/2002	--	3200	2.3	--	1450	--	--	--	--	--	--	--	259	--	--	--	--	--	--	--	--	--	--
EM-SEEP14	SW-42	Field Sample	5/3/2007	--	30000	15	--	12100	--	--	--	--	--	--	--	1823	--	--	--	--	--	--	--	--	--	--
EM-SEEP15	SW-43	Field Sample	5/3/2007	--	8200	3.6	--	4410	5300	--	--	--	--	--	--	446.6	--	--	--	--	--	--	--	--	--	--
EM-SEEP16	SW-45	Field Sample	5/3/2007	--	25000	11.3	--	10700	1400	--	--	--	--	--	--	1462	--	--	--	--	--	--	--	--	--	--
EM-SEEP17	SW-46	Field Sample	5/3/2007	--	17000	6.2	--	6860	--	--	--	--	--	--	--	803.6	--	--	--	--	--	--	--	--	--	--
EM-SEEP18	SW-47	Field Sample	5/3/2007	--	26000	10.5	--	12500	23000	--	--	--	5	--	--	1199	--	--	--	--	--	--	--	--	--	--
EM-SEEP19	SW-48	Field Sample	5/3/2007	--	1800	1.2	--	1130	--	--	--	--	--	--	--	152.9	--	--	--	--	--	--	--	--	--	--
EM-SEEP2	ES-2	Field Sample	4/4/2002	--	31000	22	550000	22000	7800	--	--	161	--	--	--	2500	--	--	--	--	--	--	--	--	--	--
EM-SEEP2	ES-2	Field Sample	4/11/2002	--	28000	18	500000	18900	4800	--	--	--	--	--	--	2130	--	--	--	--	--	--	--	--	--	--
EM-SEEP20	SW-49	Field Sample	5/2/2007	--	6500	2.3	--	2970	2600	--	--	--	--	--	--	325.8	--	--	--	--	--	--	--	--	--	--
EM-SEEP3	ES-3	Field Sample	4/4/2002	--	14000	7.6	280000	8120	--	--	--	--	--	--	--	922	--	--	--	--	--	--	--	--	--	--
EM-SEEP4	ES-4	Field Sample	4/4/2002	--	12000	11	290000	10800	15000	--	--	--	--	--	--	887	--	--	--	--	--	--	--	--	--	--
EM-SEEP5	ES-5	Field Sample	4/4/2002	--	12000	11	280000	11600	17000	5	--	--	--	--	--	1040	--	--	--	--	--	--	--	--	--	--
EM-SEEP6	ES-6	Field Sample	4/8/2002	--	2800	1.7	--	2100	--	--	--	--	--	--	--	270	--	--	--	--	--	--	--	--	--	--
EM-SEEP7	ES-7	Field Sample	4/8/2002	--	8200	6.3	--	4100	--	--	--	--	--	--	--	823	--	--	--	--	--	--	--	--	--	--
EM-SEEP8	ES-8	Field Sample	4/8/2002	--	39000	23	530000	16700	1500	--	--	--	--	--	--	3160	--	--	--	--	--	--	--	--	--	--
EB-1030M	SW-18	Field Sample	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	29000	--	--	--	--	--	--	--	--	--
EB-1080M	EB-1	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	160	--	81	--	--	--	--	--	--
EB-1080M	EB-1	Field Sample	7/24/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	140	--	--	--	--	--	--	--	--
EB-770M	SW-40	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	530	--	309	--	--	--	--	--	--
EB-770M	SW-EB-2A	Field Sample	8/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1850	--	1240	--	--	--	--	--	109
EB-815M	SW-17	Field Sample	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	24000	180	--	--	--	--	--	--	--	--
EBT4-25M	SW-29	Field Sample	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7900	3.6	4173	--	--	--	--	--	504.6
EBT4-25M	SW-29	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3800	1.9	2290	--	--	--	--	--	198.6 J
EM-SEEP1	ES-1	Field Sample	4/4/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	100000	26	62400	36000	--	--	409	7.9	2610
EM-SEEP1	ES-1	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	120000	29	88500	27000	--	--	456	7.2	2980
EM-SEEP12	ES-12	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3200	2.2	1480	--	--	--	--	--	266
EM-SEEP14	SW-42	Field Sample	5/3/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	30000	14.9	12300	--	--	--	--	--	1820 J
EM-SEEP15	SW-43	Field Sample	5/3/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8200	3.4	4360	6700	--	--	--	--	431.4 J
EM-SEEP16	SW-45	Field Sample	5/3/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25000	11.7	10700	1400	--	--	--	--	1455 J
EM-SEEP17	SW-46	Field Sample	5/3/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	17000	6	6830	1000	--	--	--	--	738 J
EM-SEEP18	SW-47	Field Sample	5/3/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	26000	10	12300	23000	--	--	--	5	1134 J
EM-SEEP19	SW-48	Field Sample	5/3/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1800	1.2	1140	--	--	--	--	--	143.6 J
EM-SEEP2	ES-2	Field Sample	4/4/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	31000	22	21900	7800	--	--	164	--	2520
EM-SEEP2	ES-2	Field Sample	4/11/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	28000	18	18900	5500	--	--	--	--	2100
EM-SEEP20	SW-49	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6600	2.4	2990	3600	--	--	--	--	329.6 J
EM-SEEP3	ES-3	Field Sample	4/4/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	14000	7.5	8080	--	--	--	--	--	919
EM-SEEP4	ES-4	Field Sample	4/4/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12000	10	10600	15000	--	--	--	--	862
EM-SEEP5	ES-5	Field Sample	4/4/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	11000	11	11200	17000	5.2	--	--	--	1020
EM-SEEP6	ES-6	Field Sample	4/8/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3200	1.7	2110	--	--	--	--	--	252
EM-SEEP7	ES-7	Field Sample	4/8/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8000	6.2	4020	--	--	--	--	--	786
EM-SEEP8	ES-8	Field Sample	4/8/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	41000	23	17100	30000	--	--	--	--	3150

Table 4-4
Exceedances in Surface Water
Remedial Investigation
Ely Mine
Vershire, Vermont

			Analysis	DISSOLVED													TOTAL									
Usgs Site Number	Sample Location	Sample Type	Constituent Surface Water Criteria Units	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Chloride 230000 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Silver 4.06 µg/l	Thallium 1.7 µg/l	Zinc 106 µg/l	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Zinc 106 µg/l
Schoolhouse Brook - Lower Schoolhouse Brook																										
SB-1140M	LOC-52	Field Sample	9/10/2001	--	104 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-1360M	SW-01	Field Duplicate	11/3/2004	--	120	--	--	31.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-1360M	SW-01	Field Sample	11/3/2004	--	110	--	--	26.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-1360M	SW-SB-4A	Field Sample	8/23/2006	86000	--	--	--	21.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-140M	SW-SB-5A	Field Sample	8/21/2006	80000	108	--	--	20.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-20M	SB-20M	Field Sample	6/19/2006	--	120	--	--	49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-20M	SB-20M	Field Sample	6/23/2006	--	120	--	--	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-20M	SW-27	Field Sample	11/4/2004	--	90 J	--	--	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2400M	SW-SB-3A	Field Sample	8/22/2006	89000	130	--	--	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2860M	SB-2860M	Field Sample	6/19/2006	--	160	--	--	85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2860M	SB-2860M	Field Sample	6/23/2006	--	160	--	--	79	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2900M	SW-02	Field Sample	11/4/2004	--	97 J	--	--	32.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2920M	SW-03	Field Sample	11/4/2004	--	96 J	--	--	33.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	3/28/2002	--	--	--	--	72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	3/31/2002	--	--	--	--	78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	4/10/2002	--	100	--	--	56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	5/21/2002	--	--	--	--	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	6/20/2002	--	--	--	--	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	7/24/2002	--	130	--	--	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	8/20/2002	--	--	--	--	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	9/19/2002	--	--	--	--	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-2960M	LOC-51	Field Sample	9/10/2001	--	--	--	--	17.4 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-35M	SB11	Field Sample	4/11/2007	--	--	--	--	37.9	--	--	0.15 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	3/29/2002	--	--	--	--	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	3/31/2002	--	--	--	--	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	4/10/2002	--	--	--	--	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	5/21/2002	--	93	--	--	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	6/20/2002	--	120	--	--	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	7/24/2002	--	87	--	--	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-1140M	LOC-52	Field Sample	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	268	--	70.3	--	--	--	--	--	--
SB-1140M	LOC-52	Field Sample	9/10/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	133 J	--	--	--	--	--	--	--	--
SB-1360M	SW-01	Field Duplicate	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	72000	200	--	50.5	--	--	--	--	--	--
SB-1360M	SW-01	Field Sample	11/3/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	72000	200	--	46	--	--	--	--	--	--
SB-1360M	SW-SB-4A	Field Sample	8/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	170	--	55.2	--	--	--	--	--	--
SB-140M	SW-SB-5A	Field Sample	8/21/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	235	--	55	--	--	--	--	--	--
SB-20M	SB-20M	Field Sample	6/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	56000	160	--	56	--	--	--	--	--	--
SB-20M	SB-20M	Field Sample	6/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	61000	160	--	58	--	16	--	--	--	--
SB-20M	SW-27	Field Sample	11/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	75000	170	--	43.1	--	--	--	--	--	--
SB-2400M	SW-SB-3A	Field Sample	8/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	234	--	69	--	--	--	--	--	--
SB-2860M	SB-2860M	Field Sample	6/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	56000	240	--	110	--	--	--	--	--	--
SB-2860M	SB-2860M	Field Sample	6/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	61000	190	--	89	--	--	--	--	--	--
SB-2900M	SW-02	Field Sample	11/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	79000	230	--	67.4	--	--	--	--	--	--
SB-2920M	SW-03	Field Sample	11/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	79000	320	--	95	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	3/28/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1400	--	378	2000	--	--	--	--	--
SB-2940M	SB-2	Field Sample	3/31/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2000	--	262	2200	--	--	--	--	--
SB-2940M	SB-2	Field Sample	4/2/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	660	--	255	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	4/3/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	680	--	252	2400	--	--	--	--	--
SB-2940M	SB-2	Field Sample	4/10/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	860	--	96	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	5/21/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	640	--	185	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	6/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	410	--	162	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	7/24/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	470	--	104	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	8/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	67	--	--	--	--	--	--
SB-2940M	SB-2	Field Sample	9/19/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	--	--	--	--
SB-2960M	LOC-51	Field Sample	5/3/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	325	--	94.4	--	--	--	--	--	--
SB-2960M	LOC-51	Field Sample	9/10/2001	--	--	--	--	--	--	--	--	--	--	--	--	--	--	134 J	--	32.6	--	--	--	--	--	--
SB-35M	SB11	Field Sample	4/11/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	317	--	67.8	--	--	0.17	--	--	--
SB-540M	SB-3	Field Duplicate	8/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	3/29/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	610	--	208	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	3/31/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1200	--	169	1400	--	--	--	--	--
SB-540M	SB-3	Field Sample	4/10/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	570	--	61	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	5/21/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	--	112	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	6/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	230	--	67	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	7/24/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	160	--	27	--	--	--	--	--	--
SB-540M	SB-3	Field Sample	8/20/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12	--	--	--	--	--	--

Table 4-4
Exceedances in Surface Water
Remedial Investigation
Ely Mine
Vershire, Vermont

DRAFT

			Analysis	DISSOLVED													TOTAL									
Usgs Site Number	Sample Location	Sample Type	Constituent Surface Water Criteria Units	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Chloride 230000 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Silver 4.06 µg/l	Thallium 1.7 µg/l	Zinc 106 µg/l	Alkalinity (as CaCO3) 20000 µg/l	Aluminum 87 µg/l	Cadmium 1.13 µg/l	Copper 11.8 µg/l	Iron 1000 µg/l	Lead 3.18 µg/l	Mercury 0.012 µg/l	Nickel 158 µg/l	Selenium 5 µg/l	Zinc 106 µg/l
Schoolhouse Brook - Smelter Area																										
SB-3020M	SW-04	Field Duplicate	5/2/2007	--	89 J	--	--	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3020M	SW-04	Field Sample	11/4/2004	--	96 J	--	--	34.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3020M	SW-04	Field Sample	5/2/2007	--	140	--	--	61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3100M	SB9	Field Sample	10/5/2005	--	91.9 J	--	--	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3100M	SB9	Field Sample	5/22/2006	--	188	--	--	69.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3100M	SB9	Field Sample	6/19/2006	--	170	--	--	93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3100M	SB9	Field Sample	6/23/2006	--	170	--	--	84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3100M	SB9	Field Sample	4/11/2007	--	124	--	--	55.1	--	--	0.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3125M	SW-05	Field Sample	11/4/2004	--	100	--	--	43.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3125M	SW-SB-2A	Field Duplicate	8/22/2006	--	107	--	--	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3125M	SW-SB-2A	Field Sample	8/22/2006	89000	124	--	--	44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3245M	SB-3245M	Field Sample	6/19/2006	--	210	--	--	110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3245M	SB-3245M	Field Sample	6/23/2006	--	220	--	--	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3250M	SW-06	Field Sample	11/4/2004	--	110	--	--	58.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3250M	SW-06	Field Sample	5/2/2007	--	180	--	--	89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3255M	SB8	Field Duplicate	4/11/2007	--	--	--	--	87.4	--	--	0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3255M	SB8	Field Sample	10/5/2005	--	--	--	--	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3255M	SB8	Field Sample	5/22/2006	--	162	--	--	139	--	--	0.1 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3255M	SB8	Field Sample	4/11/2007	--	--	--	--	86.3	--	--	0.099 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB-3020M	SW-04	Field Duplicate	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	44000	240	--	74	--	--	--	--	--	--
SB-3020M	SW-04	Field Sample	11/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	80000	420	--	105.9	--	--	--	--	--	--
SB-3020M	SW-04	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	44000	240	--	77	--	--	--	--	--	--
SB-3100M	SB9	Field Sample	10/5/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	232 J	--	57.2	--	--	--	--	--	--
SB-3100M	SB9	Field Sample	5/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1490	--	112	1550	--	0.084 J	--	--	--
SB-3100M	SB9	Field Sample	6/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	57000	260	--	110	--	--	--	--	--	--
SB-3100M	SB9	Field Sample	6/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	68000	210	--	100	--	--	--	--	--	--
SB-3100M	SB9	Field Sample	4/11/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	755	--	92.5	--	--	0.13 J	--	8.5 J	--
SB-3125M	SW-05	Field Sample	11/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	80000	380	--	107.5	--	--	--	--	--	--
SB-3125M	SW-SB-2A	Field Duplicate	8/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	342	--	117	--	--	--	--	--	--
SB-3125M	SW-SB-2A	Field Sample	8/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	364	--	113	--	--	--	--	--	--
SB-3245M	SB-3245M	Field Sample	6/19/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	54000	340	--	130	--	--	--	--	--	--
SB-3245M	SB-3245M	Field Sample	6/23/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	58000	1500	1.2	1100	--	--	--	--	--	150
SB-3250M	SW-06	Field Sample	11/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	78000	430	--	119.1	--	--	--	--	--	--
SB-3250M	SW-06	Field Sample	5/2/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	42000	360	--	124	--	--	--	--	--	--
SB-3255M	SB8	Field Duplicate	4/11/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	946	--	165	1080	--	0.17	--	8.6 J	--
SB-3255M	SB8	Field Sample	10/5/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	210 J	--	44.5	--	--	--	--	--	--
SB-3255M	SB8	Field Sample	5/22/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1030	--	235	--	--	--	--	--	--
SB-3255M	SB8	Field Sample	4/11/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	942	--	163	1030	--	0.14 J	--	--	--

Notes:
J = Estimated concentration
(µg/l) = Micrograms per liter
-- = Constituent not detected above surface water crtieria
Surface water criteria developed during Elizabeth Mine Remedial Investigation
Values shown are the maximum detected concentration at each sample location for constituents that exceed surface water criteria

Table 4-5
Exceedances in Sediment
Remedial Investigation
Ely Mine
Vershire, Vermont

Usgs Site Number	Sample Location	Sample Type	Constituent Sediment Criteria Units	Chromium 111 mg/kg	Copper 149 mg/kg	Lead 128 mg/kg	Manganese 1100 mg/kg	Nickel 48.6 mg/kg	Selenium 8.6 mg/kg	Silver 3.7 mg/kg	Zinc 347 mg/kg
Background											
ORT-1190M	SED-22A	Field Sample	11/2/2004	--	--	--	2200 J	--	--	--	--
ORT-1190M	SED-22D	Field Sample	11/2/2004	--	--	--	2100 J	--	--	--	--
Background - Ely Brook											
EB-1430M	SED-20D	Field Sample	11/3/2004	--	--	--	1800 J	--	--	--	--
Beaver Pond Complex											
EBT2-315M	SED-16C	Field Sample	11/3/2004	--	400	--	--	56	--	--	--
EM-POND2	SED-POND-2	Field Sample	9/19/2006	130	--	--	--	--	--	--	--
EM-POND3	SED-POND-3	Field Sample	9/19/2006	--	--	--	3130	--	--	--	--
EM-POND4	SED-POND-4	Field Sample	9/19/2006	--	380	--	2410	61.1	--	--	--
EM-POND5	SED-POND-5	Field Sample	9/19/2006	--	3540	--	1430	56.8	--	--	507
EBOR - Lower EBOR											
OR-23200M	SED-OR-3B	Field Sample	8/22/2006	--	--	--	1120	--	--	--	--
OR-23630M	SED-28A	Field Sample	11/4/2004	--	220	--	--	--	--	--	--
OR-23630M	SED-28B	Field Sample	11/4/2004	--	260	--	--	--	--	--	--
OR-8350M	LOC-45	Field Sample	10/2/2000	--	153	--	--	--	--	--	--
Ely Brook - Lower Ely Brook											
EB-190M	EB-190M	Field Sample	6/20/2006	--	2400	--	--	--	36	--	--
EB-20M	SED-EB	Field Sample	8/23/2006	--	3700	--	--	--	35.2	--	--
EB-210M	SED-10A	Field Sample	11/3/2004	--	1600	--	--	--	34	4.6 J	--
EB-210M	SED-10B	Field Sample	11/3/2004	--	5600	--	--	--	25	--	--
EB-210M	SED-10C	Field Sample	11/3/2004	--	4000	--	--	--	21	--	--
EB-210M	SED-10D	Field Sample	11/3/2004	--	3400	--	--	--	24	--	--
EB-210M	SED-10E	Field Sample	11/3/2004	--	420	--	--	--	11	--	--
EB-30M	SED-09A	Field Sample	11/3/2004	--	1500	--	--	--	40	4 J	--
EB-30M	SED-09B	Field Sample	11/3/2004	--	5200	--	--	--	44	8.7 J	410
EB-30M	SED-09C	Field Duplicate	11/3/2004	--	3600	--	--	--	27	--	--
EB-30M	SED-09C	Field Sample	11/3/2004	--	3100	--	--	--	28	--	--
EB-30M	SED-09D	Field Sample	11/3/2004	--	2100	--	--	--	26	--	--
EB-30M	SED-09E	Field Sample	11/3/2004	--	950	--	--	--	30	13 J	--
EB-90M	SED-EB-4B	Field Duplicate	8/23/2006	--	5970	--	2080	--	31.7	--	--
EB-90M	SED-EB-4B	Field Sample	8/23/2006	--	5950	--	2200	--	71.1	17	--
Ely Brook - Midslope Waste Pile Drainages											
EB-405M	SED-33A	Field Sample	11/3/2004	--	3300	--	--	--	30	--	--
EB-405M	SED-33C	Field Duplicate	11/3/2004	--	5700	--	--	--	27	--	--
EB-405M	SED-33C	Field Sample	11/3/2004	--	6600	--	--	--	27	--	--
EB-405M	SED-33D	Field Sample	11/3/2004	--	930	--	--	--	31	--	--
EB-405M	SED-33E	Field Sample	11/3/2004	--	310	--	--	--	42	5 J	--
EB-440M	SED-11A	Field Sample	11/3/2004	--	1400	--	--	--	39	4.5 J	--
EB-440M	SED-11C	Field Sample	11/3/2004	--	3300	--	--	--	38	--	--
EB-440M	SED-11D	Field Sample	11/3/2004	--	1100	--	--	--	14	--	--
EB-440M	SED-11E	Field Sample	11/3/2004	--	710	--	--	--	39	--	--
EB-515M	EB-515M	Field Sample	6/20/2006	--	4100	--	--	--	41	--	--
EB-530M	SED-12A	Field Sample	11/1/2004	--	1100	--	--	--	17	--	--
EB-530M	SED-12C	Field Sample	11/1/2004	--	6100	--	--	--	22	--	--
EB-530M	SED-12D	Field Sample	11/1/2004	--	3600	--	--	--	32	--	--
EB-530M	SED-12E	Field Sample	11/1/2004	--	5400	--	--	--	39	--	--
EB-560M	SED-13A	Field Sample	11/1/2004	--	4000	--	--	--	11	--	--
EB-560M	SED-13C	Field Sample	11/1/2004	--	1600	--	--	--	9.2	--	--
EB-600M	SED-EB-3B	Field Sample	8/23/2006	--	2730	174	1820	--	--	--	--
EBT1-10M	SED-34A	Field Sample	11/2/2004	--	1200 J	--	--	--	34	4.8	--
EBT1-10M	SED-34C	Field Sample	11/2/2004	--	3100 J	--	--	--	19	--	--
EBT1-10M	SED-34D	Field Sample	11/2/2004	--	1200 J	--	--	--	40	5.9	--
EBT1-110M	SED-36C	Field Duplicate	11/3/2004	--	1400	--	--	--	28	5.1	--
EBT1-110M	SED-36C	Field Sample	11/3/2004	--	1500	--	--	--	37	5.6	--
EBT2-185M	SED-37C	Field Sample	11/2/2004	--	1200 J	--	--	--	--	--	--
EBT2-23M	SED-31A	Field Sample	11/1/2004	--	1500	--	--	--	35	4.1	--
EBT2-23M	SED-31B	Field Sample	11/1/2004	--	2000	--	--	--	33	--	--
EBT2-23M	SED-31C	Field Sample	11/1/2004	--	2300	--	--	--	23	--	--
EBT2-23M	SED-31D	Field Sample	11/1/2004	--	2900	--	--	--	36	--	--
EBT2-58M	SED-14A	Field Sample	11/1/2004	--	4000	--	--	--	32	3.8	--
EBT2-58M	SED-14C	Field Sample	11/1/2004	--	2800	--	--	--	38	--	--
EBT2-58M	SED-14D	Field Sample	11/1/2004	--	2700	--	--	--	40	4.3	--
EBT2-7M	SED-32A	Field Sample	11/1/2004	--	2400	--	--	--	33	--	--
EBT2-7M	SED-32C	Field Sample	11/1/2004	--	1800	--	--	--	27	--	--
EBT2-7M	SED-32D	Field Sample	11/1/2004	--	290	--	--	--	--	--	--
EBT3-60M	SED-30A	Field Sample	11/1/2004	--	1100	--	--	--	20	--	--
EBT3-60M	SED-30B	Field Sample	11/1/2004	--	3100	--	--	--	20	6	--
EBT3-60M	SED-30C	Field Sample	11/1/2004	--	1700	--	--	--	23	--	--
EBT3-60M	SED-30D	Field Sample	11/1/2004	--	1400	--	--	--	36	4.5	--
EM-POND6	SED-POND-6	Field Sample	9/19/2006	--	1770	--	--	--	--	--	--
EM-SEEP13	SED-35C	Field Sample	11/3/2004	--	360	--	--	--	--	--	--
SED-51C	SED-51C	Field Sample	10/23/2007	--	3300	--	--	--	15	--	--

Table 4-5
Exceedances in Sediment
Remedial Investigation
Ely Mine
Vershire, Vermont

Usgs Site Number	Sample Location	Sample Type	Constituent Sediment Criteria Units	Chromium 111 mg/kg	Copper 149 mg/kg	Lead 128 mg/kg	Manganese 1100 mg/kg	Nickel 48.6 mg/kg	Selenium 8.6 mg/kg	Silver 3.7 mg/kg	Zinc 347 mg/kg
Ely Brook - Upper Waste Pile Drainages											
EB-1030M	SED-18D	Field Sample	11/2/2004	--	230 J	--	--	--	--	--	--
EB-770M	SED-40C	Field Sample	10/23/2007	--	990	--	--	--	--	--	--
EB-770M	SED-EB-2B	Field Duplicate	8/23/2006	--	1230	--	2200	--	--	--	--
EB-770M	SED-EB-2B	Field Sample	8/23/2006	--	1160	--	2090	--	--	--	--
EB-815M	SED-17C	Field Duplicate	11/2/2004	--	780 J	--	--	--	--	--	--
EB-815M	SED-17C	Field Sample	11/2/2004	--	920 J	--	--	--	--	--	--
EB-815M	SED-17C	Field Sample	10/23/2007	--	460	--	--	--	--	--	--
EB-865M	EB-865M	Field Sample	6/20/2006	--	320	--	--	--	--	--	--
EBT4-25M	SED-29A	Field Sample	11/2/2004	--	1400 J	--	--	--	30	--	--
EBT4-25M	SED-29C	Field Duplicate	11/2/2004	--	630 J	--	--	--	--	--	--
EBT4-25M	SED-29C	Field Sample	11/2/2004	--	1100 J	--	--	--	--	--	--
EBT4-25M	SED-29D	Field Sample	11/2/2004	--	1100 J	--	--	--	13	--	--
EM-SEEP14	SED-42C	Field Sample	10/23/2007	--	810	--	--	--	14	--	--
EM-SEEP16	SED-45C	Field Sample	10/23/2007	--	1400	--	--	--	30	8.8	--
EM-SEEP17	SED-46C	Field Sample	10/23/2007	--	1300	--	--	--	53	5.8	--
EM-SEEP18	SED-47C	Field Sample	10/23/2007	--	2400	--	--	--	45	--	--
EM-SEEP19	SED-48C	Field Sample	10/23/2007	--	1100	--	--	--	37	--	--
SED-53C	SED-53C	Field Sample	10/23/2007	--	3000	--	--	--	46	--	--
SED-54C	SED-54C	Field Sample	10/23/2007	--	2600	--	--	--	45	--	--
SED-55C	SED-55C	Field Duplicate	10/23/2007	--	1900	--	--	--	33	--	--
SED-55C	SED-55C	Field Sample	10/23/2007	--	2200	--	--	--	36	--	--
SED-56C	SED-56C	Field Sample	10/23/2007	--	740	--	--	--	9.6	--	--
SED-57C	SED-57C	Field Sample	10/23/2007	--	520	--	--	--	--	--	--
Schoolhouse Brook - Lower Schoolhouse Brook											
SB-1140M	LOC-52	Field Sample	9/10/2001	--	231	--	--	--	--	--	--
SB-1360M	SED-01A	Field Sample	11/3/2004	--	200	--	--	--	--	--	--
SB-1360M	SED-01C	Field Sample	11/3/2004	--	230	--	--	--	--	--	--
SB-1360M	SED-01D	Field Sample	11/3/2004	--	180	--	--	--	--	--	--
SB-1360M	SED-SB-4B	Field Sample	8/23/2006	--	198	--	--	--	--	--	--
SB-140M	SB-140M	Field Sample	6/20/2006	--	170	--	--	--	--	--	--
SB-140M	SED-SB-5B	Field Duplicate	8/22/2006	--	255	--	--	--	--	--	--
SB-140M	SED-SB-5B	Field Sample	8/22/2006	--	243	--	--	--	--	--	--
SB-20M	SED-27A	Field Sample	11/4/2004	--	260	--	--	--	--	--	--
SB-20M	SED-27B	Field Sample	11/4/2004	--	290	--	--	--	--	--	--
SB-20M	SED-27C	Field Duplicate	11/4/2004	--	230	--	--	--	--	--	--
SB-20M	SED-27C	Field Sample	11/4/2004	--	200	--	--	--	--	--	--
SB-20M	SED-27D	Field Sample	11/4/2004	--	540	--	--	--	--	--	--
SB-2400M	SB-2400M	Field Sample	6/20/2006	--	160	--	--	--	--	--	--
SB-2400M	SED-SB-3B	Field Sample	8/22/2006	--	167	--	--	--	--	--	--
SB-2900M	SED-02C	Field Sample	11/4/2004	--	220	--	--	--	--	--	--
SB-2900M	SED-02D	Field Sample	11/4/2004	--	240	--	--	--	--	--	--
SB-2900M	SED-02E	Field Sample	11/4/2004	--	210	--	--	--	--	--	--
SB-2920M	SED-03A	Field Sample	11/4/2004	--	160	--	--	--	--	--	--
SB-2920M	SED-03C	Field Sample	11/4/2004	--	290	--	--	--	--	--	--
Schoolhouse Brook - Smelter Area											
SB-3020M	SED-04A	Field Sample	11/4/2004	--	150	--	--	--	--	--	--
SB-3020M	SED-04C	Field Sample	11/4/2004	--	230	--	--	--	--	--	--
SB-3020M	SED-04D	Field Sample	11/4/2004	--	240	--	--	--	--	--	--
SB-3020M	SED-04E	Field Sample	11/4/2004	--	870	--	--	--	--	--	--
SB-3125M	SB-3125M	Field Sample	6/20/2006	--	300	--	--	--	--	--	--
SB-3125M	SED-05A	Field Sample	11/4/2004	--	240	--	--	--	--	--	--
SB-3125M	SED-05C	Field Sample	11/4/2004	--	220	--	--	--	--	--	--
SB-3125M	SED-05D	Field Sample	11/4/2004	--	430	--	--	--	--	--	--
SB-3250M	SED-06C	Field Sample	11/4/2004	--	410	--	--	--	--	--	--
SB-3250M	SED-06D	Field Sample	11/4/2004	--	720	--	--	--	--	--	--
SB-3260M	SED-SB	Field Sample	8/23/2006	--	1390	--	1120	--	9.8	--	--

Notes:
J = Estimated concentration
(mg/kg) = Milligrams per kilogram
-- = Constituent not detected above sediment crtieria
Sediment criteria developed during Elizabeth Mine Remedial Investigation
Values shown are the maximum detected concentration at each sample location for constituents that exceed sediment criteria

Table 4-6
Groundwater Analytical Results
Remedial Investigation
Ely Mine
Vershire, Vermont

DRAFT

LOCATION	Units	Groundwater	BOM-01	BOM-01	BOM-03	MW-01A	MW-01A	MW-01B	MW-01B	MW-01C	MW-01C	MW-02A	MW-02A	MW-02A	MW-02A	MW-02B	MW-02B	MW-02B	MW-02C	MW-02C	MW-02C	MW-02C
SAMPLE ID			ELY-BOM-1	ELY-BOM-1	ELY-GW-BOM3	ELY-MW-01A	ELY-MW-01A	ELY-MW-01B	ELY-MW-01B	ELY-MW-01C	ELY-MW-01C	ELY-MW-02A	ELY-QS-01	ELY-MW-02A	ELY-MW-02A DUP	ELY-MW-02B	ELY-MW-02B	ELY-GW-MW-02B	ELY-MW-02C	ELY-MW-02C	ELY-GW-MW-02C	ELY-GW-MW-02C DUP
DATE		Criteria	12/11/06	06/14/07	11/12/07	12/13/06	06/12/07	12/13/06	06/12/07	12/13/06	06/12/07	12/12/06	12/12/06	06/12/07	06/12/07	12/13/06	06/12/07	11/06/07	12/13/06	06/13/07	11/06/07	11/06/07
Total Metals																						
Aluminum	(µg/l)	NE	4400	7700	360000	1700	1100	390	500	230	47 J	2300	2300	3100	3500	150000	700	48 J	11000	2000	170	180
Antimony	(µg/l)	6.0	0.15 U J	0.13 U J	4.32 J	0.09 U J	0.1 U J	0.05 U J	0.06 U J	0.03 U J	0.03 U J	0.02 U J	0.05 U J	0.02 U J	0.04 U J	0.31 J	0.04 U J	0.12 U J	0.4 J	0.19 U J	0.7 U	0.5 U
Arsenic	(µg/l)	10.	0.11 U J	0.6	4.88 J	0.32 J	0.1 J	0.15 J	0.21 J	0.14 J	0.11 J	0.5 U	0.1 J	0.5 U	0.12 J	4.8	0.14 J	0.13 U J	3.2	0.6	0.33 U J	0.3 U J
Barium	(µg/l)	2000.	36.0	40.2	85.0	32.2	18.0	34.0	41.5	23.1	22.6	26.0	25.2	23.2	23.4	1202	40.5	33.5	146.0	57.7	25.9	27.3
Beryllium	(µg/l)	4.0	0.19 J	0.6	[7.3]	0.1 J	0.21 J	0.5 U	0.5 U	0.5 U	0.5 U	0.2 J	0.21 J	0.37 J	0.41 J	3.2	0.03 U J	0.5 U	1.6	0.24 J	0.03 U J	0.5 U
Cadmium	(µg/l)	5.0	0.05 U J	0.05 J	[9.0]	3.1	3.5	0.08 U J	0.5 U	0.02 U J	0.5 U	2.3	2.2	[6.0]	[5.5]	1.1	0.5 U	0.5 U	0.33 J	0.05 J	0.02 U J	0.05 U J
Calcium	(µg/l)	NE	12000	12000	42000	43000	47000	82000	81000	61000	56000	31000	31000	29000	29000	380000	59000	59000	58000	49000	50000	51000
Chromium	(µg/l)	100.	14.5	24.4	[172.0]	23.5	0.21 J	2.8	1.4	5.2	0.9	27.2	21.5	0.11 J	0.16 J	[289.5]	1.8	0.23 U J	16.6	4.7	0.42 J	0.4 U J
Cobalt	(µg/l)	NE	13.4	24.0	140.5 J	220.1	261.5	0.6	0.8	0.28 U J	0.17 U J	124.0	121.5	306.0	257.5	96.2	0.8	0.17 U J	4.3	1.3	0.37 U J	0.28 U J
Copper	(µg/l)	1300.	32	75	[9950]	[3130]	[1780]	2.8 J	11	2.6 J	1.1 J	[2380]	[2340]	[4240]	[4370]	[2230]	12	0.7 U	19	7.4 J	1.1 U	0.9 U
Cyanide	(µg/l)	200.	5 U	5 U	5 U	2.9 J	5 U	3.5 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	(µg/l)	NE	6600	16000	310000	8100	1300	460	640	250	130	13000	13000	8200	6000	200000	1600	420	22000	2800	250	220
Lead	(µg/l)	15.	3.4 U	7.6	[27.2]	2.4	0.6	0.2 U J	0.19 J	0.9	0.04 J	0.45 U J	0.41 U J	0.17 J	0.17 U J	[52.2]	0.4 J	0.07 U J	[15.3]	5.9	0.6	0.5
Magnesium	(µg/l)	NE	3900	4100	14000	8700	9700	10000	10000	7800	7700	5000	5000	3800	3900	90000	9700	9000	10000	8500	8000	8000
Manganese	(µg/l)	300.	213.7	[676.4]	[1781]	[1084]	[1299]	133.1	38.5	3.91 U J	1.1	[771.8]	[751.7]	[654.9]	[633.2]	[3488]	91.2	53.5	224.5	36.3	9.1	9.4
Mercury	(µg/l)	2.0	0.2 U	0.2 U	0.2 U	0.03 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.04 J	0.2 U	0.2 U	0.2 U	0.2 U	0.01 U J	0.01 U J
Molybdenum	(µg/l)	40.	0.88 J	1.5 U	28.4	3.05 J	0.9 U	2.72 J	1.90	1.83 J	1.5 U	3.41 J	2.82 J	0.07 U J	0.22 U J	27.0	1.5	1.6	17.1	2.3	4.1	2.7
Nickel	(µg/l)	100.	23.0	50.7	[125.0] J	38.8	25.5	3.1	2.1	3.5	0.8	38.5	34.2	64.2	52.8	[177.3]	1.7	1.0	20.9	3.0	1.3	1.4
Potassium	(µg/l)	NE	3700	3600	14000	11000	11000	8900	6900	4800	4300	6500	6500	6600	6600	84000	5200	5000	7700	5500	5600	5600
Selenium	(µg/l)	50.	1-	1	8.9 J	7	5	0.7 J	0.8 J	0.7 J	0.7 J	2	2	1	2	11	0.6 J	0.6 J	1	0.6 J	0.5 J	0.4 J
Silver	(µg/l)	NE	0.13 U J	0.7	4.15 J	0.13 U J	0.03 J	0.5 U	0.5 U	0.5 U	0.5 U	0.03 U J	0.5 U	0.5 U	0.5 U	0.9	0.5 U	0.5 U	0.08 U J	0.05 U J	0.5 U	0.5 U
Sodium	(µg/l)	NE	1200 J	2700	12000	35000	29000	11000	8400	4700	3800	19000	18000	28000	28000	14000	8200	9400	21000	8300	9400	9500
Strontium	(µg/l)	NE	53	54	200	217	235	420	397	276	246	187	187	176	176	1800	373	372	419	228	224	228
Thallium	(µg/l)	2.0	0.09 U J	0.12 U J	[2.33] J	0.12 U J	0.14 U J	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U J	0.09 U J	0.18 U J	0.16 U J	[3.0]	0.5 U	0.5 U	0.15 U J	0.03 U J	0.05 U J	0.5 U
Vanadium	(µg/l)	NE	15.0	30.8	36.6	3.0	0.5 U	3.3	2.8	4.3	3.6	0.5 U	0.16 U J	0.5 U	0.5 U	260.8	1.6	0.11 U J	6.6	7.2	2.4	2.4
Zinc	(µg/l)	NE	58.6 U	58.8	1234	1595	1212	13.7 U	5.6 U	9.0 U	3.13 U J	688.5	658.5	1852	1591	937.0	9.3	2.75 U J	148.1	79.4	3.32 U J	2.55 U J
Dissolved Metals																						
Aluminum	(µg/l)	NE	69 J	1000	6900	370	1100	55 J	37 J	98 J	100 U	2400	2300	3700	3700	64 J	100 U	100 U	70 J	100 U	100 U	100 U
Antimony	(µg/l)	6.0	0.04 U J	0.13 J	0.82 J	0.03 U J	0.18 U J	0.04 U J	0.06 U J	0.03 U J	0.03 U J	0.02 U J	0.05 U J	0.03 U J	0.04 U J	0.38 U J	0.05 U J	0.5 U	0.11 U J	0.04 U J	0.49 U J	0.09 U J
Arsenic	(µg/l)	10.	0.5 U	0.18 J	0.19 U J	0.5 U	0.5 U	0.15 J	0.16 J	0.14 J	0.09 J	0.5 U	0.08 J	0.11 J	0.08 J	0.35 J	0.11 J	0.24 U J	0.6	0.14 J	0.18 J	0.15 U J
Barium	(µg/l)	2000.	4.0	9.4	14.5	24.0	17.9	30.9	40.6	21.2	22.1	23.5	23.5	22.9	22.8	34.1	33.0	33.8	19.5	22.7	24.4	22.4
Beryllium	(µg/l)	4.0	0.5 U	0.11 J	0.93 J	0.07 J	0.19 J	0.5 U	0.5 U	0.5 U	0.5 U	0.23 J	0.19 J	0.41 J	0.41 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cadmium	(µg/l)	5.0	0.5 U	0.5 U	[8.2]	2.9	3.4	0.07 J	0.5 U	0.02 J	0.5 U	2.4	2.3	[5.2]	[5.2]	0.02 J	0.5 U	0.5 U	0.5 U	0.5 U	0.03 U J	0.03 U J
Calcium	(µg/l)	NE	11000	10000	41000	44000	48000	82000	83000	62000	56000	32000	32000	30000	30000	49000	58000	59000	44000	48000	51000	49000
Chromium	(µg/l)	100.	0.43 U J	4.5	0.92 J	2.1	0.29 J	0.6	0.37 J	2.1	0.9	5.0	6.5	0.17 J	0.16 J	0.12 U J	0.08 J	0.19 J	0.09 U J	0.09 J	0.21 U J	0.12 U J
Cobalt	(µg/l)	NE	0.32 J	5.0	126.9	211.3	263.3	0.37 J	0.5	0.15 J	0.19 U J	112.1	114.2	247.6	246.0	0.34 J	0.26 U J	0.27 U J	0.4 J	0.32 U J	0.29 U J	0.15 U J
Copper	(µg/l)	1300.	10 U J	19	[5110]	[2620] J	[1850]	10 U J	5.1 J	2 J	1.4 J	[2420] J	[2360] J	[4540]	[4580]	7.2 J	5.1 J	0.6	2.8 J	1.6 J	2.0	0.48 U J
Iron	(µg/l)	NE	90	3200	1200	2200	1500	90	100	80	80	10000	10000	6000	5700	110	340	320	540	180	80	90
Lead	(µg/l)	15.	0.09 U J	1.8	0.71 J	0.7	0.7	0.03 U J	0.13 U J	0.1 U J	0.06 U J	0.3 J	0.7	0.34 J	0.2 J	0.05 U J	0.09 U J	0.18 U J	0.19 U J	0.06 U J	0.2 U J	0.04 U J
Magnesium	(µg/l)	NE	1200	1500	9200	8400	10000	10000	10000	7800	7800	5200	5100	4000	4000	8100	9500	8900	6900	8000	8000	7700
Manganese	(µg/l)	300.	3.48 J	173.1	[1243]	[1055]	[1292]	124.6	34.1	1.59 J	1.8	[743.5]	[744.8]	[616.9]	[628.2]	49.9	68.0	53.6	79.7	15.7	8.9	7.5
Mercury	(µg/l)	2.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.07 J	0.2 U	0.2 U	0.2 U	0.2 U
Molybdenum	(µg/l)	40.	0.41 U J	0.6 U	2.9	0.57 U J	0.9 U	2.66 U J	2.0 U	1.66 U J	1.6 U	0.91 U J	1.27 U J	0.17 U J	0.26 U J	26.5	1.5 U	2.5	19.0	1.4 U	2.0	0.8
Nickel	(µg/l)	100.	1.5	17.0	76.0	28.5	26.7	1.9	2.7	2.2	2.4	27.4	30.2	54.2	50.3	3.3	0.7	1.2	1.5	4	1.2	1.0
Potassium	(µg/l)	NE	1700 J	1800 J	7100	11000	12000	8900	6900	4800	4400	6500	6400	6800	6800	11000	5000	5000	5000	5100	5500	5300
Selenium	(µg/l)	50.	1 U	0.3 J	3	7	4	0.7 J	0.8 J	0.5 J	0.6 J	2	2	2	2	0.4 J	0.6 J	0.5 J	0.3 J	0.4 J	0.5 J	1 U
Silver	(µg/l)	NE	0.5 U	0.2 J	0.09 U J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	(µg/l)	NE	900 J	980 J	8800	34000	31000	12000	8500	4800	4200	19000	19000	29000	29000	8600	8600	9200	19000	8100	9700	9400
Strontium	(µg/l)	NE	50	40	200	210	240	420	420	270	250	190	190	180	180	350	380	370	280	220	220	220
Thallium	(µg/l)	2.0	0.03 U J	0.03 J	0.56 J	0.1 U J	0.15 U J	0.5 U	0.5 U	0.5 U	0.5 U	0.11 J	0.1 U J	0.18 U J	0.18 J	0.5 U	0.5 U	0.04 U J	0.5 U	0.5 U	0.04 U J	0.03 U J
Vanadium	(µg/l)	NE	0.33 J	5.3	0.5 J	0.5 U	0.5 U	2.3	1.9	3.8	3.6	0.5 U	0.5 U	0.5 U	0.5 U	0.19 J	0.5 U	0.18 U J	0.7	1.3	1.7	1.4
Zinc	(µg/l)	NE	5.7 U	15.6 J	1084	1072	1181 J	3.61 U J	4.12 U J	3.33 U J	8.9 U J	648.0	648.0	1525 J	1485 J	6.8 U	11.6 U J	2.94 U J	8.6	5.6 U J	2.96 U J	2.57 U J
Conventional Water Quality Parameters																						
Acidity	(µg/l)	NE	2000 U	2000 U	350000	16000	46000	2000 U	2000 U	2000 U	2000 U	44000	48000	54000	54000	10000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Alkalinity (as CaCO3)	(µg/l)	NE	32000	28000	2000 U	4400	2000 U	96000	91000	96000	87000	2200	2100	2000 U	2000 U	1200000	80000	75000	140000	100000	100000	100000
Alkalinity, Bicarbonate (as CaCO3)	(µg/l)	NE	32000	28000	2000 U	4400	2000 U	96000	91000	96000	87000	2200	2100	2000 U	2000 U	1200000	80000	75000	140000	100000	100000	100000
Carbonate (as CaCO3)	(µg/l)	NE	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	20000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Chloride	(µg/l)	NE	NA	490 J	440 J	NA	50000	NA	610	NA	510	NA	NA	46000	50000	NA	790	840	NA	640	480 J	500
Hydroxide (as CaCO3)	(µg/l)	NE	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	20000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Nitrate plus Nitrite (as N)	(µg/l)	10000.	75 J	220	75 J	120	180	40 J	71 J	75 J	480	260	260	400	420	150	80 J	660	41 J	490	63 J	57 J
Sulfate	(µg/l)	NE	8200	9200	200000	210000	280000	230000	230000	130000	120000	200000	210000	170000	170000	140000	160000	160000	94000	90000	83000	83000
Sulfide	(µg/l)	NE	100 U	100 U	50 J	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	290	100 U	100 U	100 U	100 U	100 U	100 U
Field Parameters																						
Depth to Water	(ft)	NE	NA	45.84	24.45	17.75	17.55	20.65	17.82	13.9	12.49	11.90	11.90	13.41	NA	13.41	15.58	19.60	12.31	13.12	16.43	16.43
Dissolved Oxygen	(mg/l)	NE	9.81	9.65	7.38	8.90	2.41	4.07	0.38	3.03	1.47	1.41	1.41	1.02	NA	1.57	3.3	0.27	1.92	0.19	0.37	0.37
ORP	(mV)	NE	67.5	186.2	310.	206.5	322.9	129.8	284.5	240.8	252.1	202.5	202.5	251.6	NA	-274.1	-155.6	-148.6	-102.2	-154.7	37.4	37.4
pH	(SU)	NE	7.92	8.92	4.68	5.77	2.58	8.28	5.78	8.41	7.25	5.13	5.13	3.55	NA	8.26	7.70	7.98	7.78	7.91	7.59	7.59
Specific Conductivity	(µS/cm)	NE	100.	106.	450.	563.	720.	602.	556.	441.	387.	408.	408.	469.	NA	426.	459.	450.	408.	420.	378.	378.
Temperature	(C)	NE	4.01	11.29	8.69	12.24	10.61	10.07	11.01	8.68	10.38	11.54	11.54	9.26	NA	12.75	11.50	9.03	8.71	10.12	9.65	9.65
Turbidity	(NTU)	NE	NA	117.	1000+.	38.5	8.4	47.7	20.3	12.3	6.81	2.3	2.3	5.31	NA	1000.+	61.5	3.	1000.+	165.	5.	5.

Notes:
U = Constituent not detected at listed detection limit
J = Estimated concentration
UJ = Constituent not detected at estimated detection limit
R = Data rejected, unusable
(µg/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mV) = Millivolts
(SU) = Standard Units
(µS/cm) = Microsiemens per centimeter
(C) = Degrees Centigrade
(NTU) = Nephelometric Turbidity Units
NA = Not analyzed for this constituent
NE = Not established
[ ] = Denotes exceedance of groundwater criteria
Groundwater criteria developed during Elizabeth Mine Remedial Investigation

Table 4-6
Groundwater Analytical Results
Remedial Investigation
Ely Mine
Vershire, Vermont

LOCATION	Units	Groundwater Criteria	MW-03C	MW-03C	MW-04A	MW-04A	MW-04C	MW-04C	MW-05A	MW-05A	MW-05A	MW-05B	MW-05B	MW-05C	MW-05C	MW-06A	MW-06A	MW-06C	MW-06C	MW-07A	MW-07A	MW-07C	MW-07C
SAMPLE ID			ELY-MW-03C	ELY-MW-03C	ELY-MW-04A	ELY-MW-04A	ELY-MW-04C	ELY-MW-04C	ELY-MW-05A	ELY-MW-05A	ELY-GW-MW-05A	ELY-MW-05B	ELY-MW-05B	ELY-MW-05C	ELY-MW-05C	ELY-MW-06A	ELY-MW-06A	ELY-MW-06C	ELY-MW-06C	ELY-MW-07A	ELY-MW-07A	ELY-MW-07C	ELY-MW-07C
DATE			12/11/06	06/12/07	12/12/06	06/13/07	12/12/06	06/13/07	12/12/06	06/13/07	11/07/07	12/12/06	06/13/07	12/12/06	06/13/07	12/12/06	06/12/07	12/11/06	06/13/07	12/11/06	06/13/07	12/11/06	06/13/07
Total Metals																							
Aluminum	(µg/l)	NE	270	120	36000	14000	340	30 J	25000	25000	25000	13000	490	570	62 J	140	160	380	130	2000	60 J	3700	560
Antimony	(µg/l)	6.0	0.03 U J	0.04 U J	0.1 U J	0.13 U J	0.2 U J	0.04 U J	0.17 U J	0.09 U J	0.17 U J	0.19 U J	0.03 U J	0.14 U J	0.02 U J	0.08 U J	0.06 U J	0.04 U J	0.04 U J	0.08 U J	0.02 U J	0.23 U J	0.13 U J
Arsenic	(µg/l)	10.	0.11 U J	0.18 J	0.7	0.5 U	0.19 J	0.37 J	0.7	0.5 U	0.5 U	1.0	0.32 J	0.32 J	0.2 J	0.13 J	0.5 U	0.28 U J	0.13 J	0.19 U J	0.5 U	0.5 U	0.13 J
Barium	(µg/l)	2000.	11.3	12.3	139.4	18.9	25.8	17.2	41.9	10.8	11.9	133.8	16.5	23.2	17.4	21.5	20.8	20.5	16.5	25.2	10	37.0	13.5
Beryllium	(µg/l)	4.0	0.5 U	0.5 U	1.0	0.6	0.5 U	0.5 U	1.2	1.2	1.4	0.3 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.9	0.13 U J
Cadmium	(µg/l)	5.0	0.5 U	0.5 U	[15.1]	[12.2]	0.16 U J	0.5 U	[16.6]	[13.5]	[14.0]	0.45 U J	0.5 U	0.27 U J	0.13 J	0.06 U J	0.5 U	0.13 U J	0.5 U	0.5 U	0.5 U	0.06 U J	0.5 U
Calcium	(µg/l)	NE	11000	12000	62000	45000	59000	53000	69000	39000	47000	85000	100000	130000	130000	21000	18000	120000	96000	8400	5400	10000	6100
Chromium	(µg/l)	100.	4.6	0.4 J	88.4	3.1	5.7	0.1 J	[365.4]	0.5	0.47 U J	77.2	0.9	17.5	0.39 J	1.2 U	0.46 J	3.8	0.44 J	6.1	0.36 J	4.9	0.49 J
Cobalt	(µg/l)	NE	5.0	0.14 U J	317.8	282.5	1.0	0.44 U J	280.3	266.6	259.7	30.8	2.9	6.7	0.6	0.7	0.23 U J	0.9	0.41 U J	1.4	0.09 U J	5.4	0.2 U J
Copper	(µg/l)	1300.	10 U	1.5 J	[12300]	[10700]	2.9 J	7.7 J	[14100]	[13600]	[15400]	146	18	27	14	10 U	2.1 J	4.5 J	10 U	5.3 J	10 U	8.8 J	10 U
Cyanide	(µg/l)	200.	5 U	5 U	5 U	5 U	5 U	5 U	3.3 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2.4 J
Iron	(µg/l)	NE	190	49 J	20000	660	460	450	9600	180	160	15000	1500	900	200	120	220	470	120	2200	50	2400	320
Lead	(µg/l)	15.	0.26 U J	0.09 U J	6.6	0.4 J	2.4	0.05 U J	11.6	1.5	0.3 U J	7.9	0.32 J	0.8 U	0.08 J	0.9	0.19 U J	3.5 U	0.2 J	2.6 U	0.08 U J	10 U	1.4
Magnesium	(µg/l)	NE	960	790	19000	10000	7400	7000	14000	13000	14000	16000	17000	20000	21000	2200	1800	10000	9000	1800	760	2400	910
Manganese	(µg/l)	300.	6.7 U	1.7	[2645]	[1207]	[395.1]	[342.4]	[2238]	[1572]	[1656]	[4026]	[3200]	[432.3]	29.0	252.1	48.0	29.4	2.7	85.6	22.7	123.2	20.0
Mercury	(µg/l)	2.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.03 J	0.2 U	0.2 U	0.02 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Molybdenum	(µg/l)	40.	0.62 U J	0.19 U J	7.2	0.19 U J	5.3	2.1	[52.4]	0.06 U J	0.26 U J	16.1	4.6	3.38 J	0.36 U J	1.48 J	1.1 U	2.96 J	1.2 U	0.24 U J	0.14 U J	0.68 U J	0.17 U J
Nickel	(µg/l)	100.	2.9	0.5	[191.3]	92.0	5.2	1.6	[340.6]	[100.8]	[103.6]	67.4	4.4	19.1	5.0	3.2	1.9	7.8	3.3	6.1	0.7	5.4	1.0
Potassium	(µg/l)	NE	5300	2300 J	17000	11000	9000	5900	9700	6400	7600	16000	5600	11000	8700	3600	4100	7100	5600	1900 J	1200 J	2600	1000 J
Selenium	(µg/l)	50.	1 U	1 U	6	4	0.6 J	0.5 J	6	4	5	2	1	1	2	1 U	1 U	1	0.9 J	1 U	1 U	0.6 J	1 U
Silver	(µg/l)	NE	0.5 U	0.5 U	0.2 J	0.5 U	0.5 U	0.5 U	0.43 J	0.13 U J	0.15 U J	0.15 U J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.08 U J	0.5 U
Sodium	(µg/l)	NE	2600	2500	11000	5800	15000	6400	9000	6900	10000	110000	17000	7600	4800	5700	1000 J	8800	4400	2300	1800 J	6700	1200 J
Strontium	(µg/l)	NE	146	87	223	173	207	185	264	131	159	372	463	422	430	92	73	386	327	32	22	70	22
Thallium	(µg/l)	2.0	0.5 U	0.5 U	0.49 J	0.33 J	0.5 U	0.5 U	0.32 J	0.24 J	0.27 U J	0.26 J	0.5 U	0.5 U	0.5 U	0.5 U	0.03 U J	0.5 U	0.5 U	0.06 U J	0.5 U	0.08 U J	0.5 U
Vanadium	(µg/l)	NE	0.9	0.7	35.3	1.0	0.9	0.07 J	0.8	0.1 J	0.14 U J	27.4	0.8	1.1	0.18 J	0.3 U J	0.46 J	1.0	0.33 J	4.4	0.14 J	2.5	0.37 J
Zinc	(µg/l)	NE	5.1 U	151.2	1158	932.2	58.8	4.28 U J	1500	1548	1636	165.7	12.9	201.6	104.4	19.1 U	54.6	17.4 U	82.3	44.1 U	175.1	54.0 U	22.0
Dissolved Metals																							
Aluminum	(µg/l)	NE	120	100	12000	13000	36 J	100 U	6300	24000	24000	360	32 J	84 J	33 J	100 U	100 U	48 J	100 U	290	100 U	100 U	330
Antimony	(µg/l)	6.0	0.04 U J	0.9	0.03 U J	0.02 U J	0.17 U J	0.03 U J	0.03 U J	0.03 U J	0.1 U J	0.11 U J	0.05 U J	0.04 U J	0.02 U J	0.09 U J	0.05 U J	0.05 U J	0.03 U J	0.06 U J	0.02 U J	0.05 U J	0.13 J
Arsenic	(µg/l)	10.	0.11 J	0.12 J	0.1 J	0.5 U	0.17 J	0.35 J	0.08 J	0.5 U	0.5 U	0.4 J	0.3 J	0.2 J	0.18 J	0.5 U	0.5 U	0.27 J	0.15 J	0.5 U	0.11 J	0.15 J	0.11 J
Barium	(µg/l)	2000.	10.7	10.7	21.1	16.8	22.0	17.5	22.4	11.2	12.0	38.5	15.6	18.7	16.3	20.6	19.1	19.5	15.7	10.9	10	3.4	10.5
Beryllium	(µg/l)	4.0	0.5 U	0.5 U	0.5	0.6	0.5 U	0.5 U	0.7 J	1.2	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.08 J
Cadmium	(µg/l)	5.0	0.5 U	0.5 U	[12.6]	[12.5]	0.09 U J	0.5 U	[11.6]	[14.5]	[14.3]	0.17 U J	0.5 U	0.22 U J	0.09 J	0.07 U J	0.5 U	0.2 U J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Calcium	(µg/l)	NE	*10000*	*11000*	*62000*	*46000*	*59000*	*53000*	*87000*	*46000*	*45000*	*74000*	*100000*	*140000*	*130000*	*21000*	*18000*	*120000*	*96000*	*8300*	*5400*	*4800*	*5700*
Chromium	(µg/l)	100.	1.4	0.31 J	15.1	1.6	0.24 U J	0.5 U	9.1	0.44 J	0.42 U J	2.0	0.22 J	1.1	0.28 J	0.49 U J	0.27 J	0.7	0.35 J	4.2	0.44 J	0.26 U J	0.4 J
Cobalt	(µg/l)	NE	1.3	0.19 U J	266.8	289.4	0.7	0.48 J	247.2	281.2	261.3	9.1	2.2	5.9	0.6	0.7	0.2 U J	0.6	0.47 J	0.36 J	0.08 U J	2.5	0.21 U J
Copper	(µg/l)	1300.	10 U J	2 J	[9260] J	[10900]	10 U J	8.3 J	[10400] J	[14300]	[15100]	8 J	12	4.6 J	12	1.8 J	2.2 J	2.8 J	3.4 J	1.4 J	10 U	10 U J	1.2 J
Iron	(µg/l)	NE	50 U	50 U	420	120	160	390	420	130	160	480	430	210	160	33 J	24 J	100	100	310	50 U	50 U	180
Lead	(µg/l)	15.	0.42 J	11.4	0.47 J	0.24 J	0.44 J	0.04 U J	1.7	0.4 J	0.37 U J	1.4	0.1 U J	0.09 U J	0.08 U J	0.7	0.1 U J	1.8	0.12 U J	0.5	0.08 U J	0.07 U J	0.9
Magnesium	(µg/l)	NE	940	770	11000	10000	7400	7000	14000	14000	13000	10000	17000	20000	21000	2200	1800	10000	9200	1100	760	780	840
Manganese	(µg/l)	300.	3.81 J	4.1	[2237]	[1248]	[355.8]	[347.6]	[2223]	[1748]	[1675]	[4033]	[3093]	[423.2]	29.4	251.7	40.6	20	4.8	43.6	19.5	19.1	15.2
Mercury	(µg/l)	2.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.07 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Molybdenum	(µg/l)	40.	0.64 U J	0.23 U J	2.41 U J	0.18 U J	4.78 J	2.2 U	2.25 U J	0.14 U J	0.21 U J	8.4	4.7	1.9 U J	0.34 U J	1.43 U J	1.1 U	2.87 J	1.3 U	1.37 U J	0.16 U J	0.64 U J	0.19 U J
Nickel	(µg/l)	100.	1.4	4.4	[134.6]	95.1	2.8	2.4	[118.0]	[111.1]	[105.1]	16.2	5.5	11.2	8.4	6.2	5.4	7.3	6.5	6.2	1.0	1.1	4.0
Potassium	(µg/l)	NE	5200	2400 J	9200	11000	8600	5900	8700	6900	7500	8600	5800	10000	8700	3600	4100	6900	5600	1400 J	1100 J	990 J	890 J
Selenium	(µg/l)	50.	1 U	1 U	4	4	0.7 J	0.4 J	4	5	5	1	1	1	1	1 U	1 U	1	0.8 J	1 U	1 U	1 U	1 U
Silver	(µg/l)	NE	0.03 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.13 J	0.16 U J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	(µg/l)	NE	2800	1100 J	8800	5800	14000	6400	8000	7300	9800	110000	17000	6200	5200	5800	1400 J	8200	4600	2700	910 J	4400	750 J
Strontium	(µg/l)	NE	140	90	200	180	200	190	330	170	150	290	470	410	430	90	70	370	320	30	20	30	20
Thallium	(µg/l)	2.0	0.5 U	0.5 U	0.15 J	0.31 J	0.5 U	0.5 U	0.21 J	0.27 J	0.32 J	0.04 U J	0.5 U	0.5 U	0.5 U	0.5 U	0.03 J	0.03 U J	0.5 U	0.03 U J	0.5 U	0.5 U	0.5 U
Vanadium	(µg/l)	NE	0.7	0.6	0.5 U	0.5 U	0.23 J	0.5 U	0.06 J	0.06 J	0.1 J	0.8	0.19 J	0.21 J	0.15 J	0.11 J	0.13 J	0.39 J	0.31 J	0.6	0.07 J	0.21 J	0.23 J
Zinc	(µg/l)	NE	5.7	6.0 U J	848.6	922.3 J	10.9	4.04 U J	1140	1612 J	1715	24.6	8.4 U J	16.2	32.6 J	26.0	18.3 J	17.7	20.1 J	10.5	3.87 U J	5.1 U	11.1 U J
Conventional Water Quality Parameters																							
Acidity	(µg/l)	NE	2000 U	2000 U	160000	140000	2000 U	2000 U	39000	170000	200000	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	5000	8900	2000 U	2000 U
Alkalinity (as CaCO3)	(µg/l)	NE	40000	39000	900 J	1300 U J	150000	130000	21000	2000 U	2000 U	190000	130000	110000	88000	58000	44000	160000	130000	27000	17000	23000	16000
Alkalinity, Bicarbonate (as CaCO3)	(µg/l)	NE	40000	39000	900 J	2000 U	150000	130000	21000	2000 U	2000 U	190000	130000	110000	88000	58000	44000	160000	130000	27000	17000	23000	16000
Carbonate (as CaCO3)	(µg/l)	NE	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Chloride	(µg/l)	NE	NA	460 J	NA	320 J	NA	560	NA	360 J	440 U J	NA	350 J	NA	780	NA	330 J	NA	540	NA	350 J	NA	330 J
Hydroxide (as CaCO3)	(µg/l)	NE	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Nitrate plus Nitrite (as N)	(µg/l)	10000.	37 J	76 J	84 J	140	58 J	87 J	180	190	330	100 U	2000	52 J	120	34 J	120	92 J	110	99 J	210	94 J	230
Sulfate	(µg/l)	NE	7200	6600	480000	340000	110000	63000	400000	510000	490000	370000	330000	420000	420000	22000	20000	250000	210000	5700	7200	6000	5400
Sulfide	(µg/l)	NE	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Field Parameters																							
Depth to Water	(ft)	NE	22.02	23.12	4.94	5.66	6.51	7.14	12.59	13.48	15.02	13.80	13.65	14.15	15.70	6.46	7.15	10.86	11.9	3.06	5.28	2.40	4.19
Dissolved Oxygen	(mg/l)	NE	9.37	7.89	9.11	5.80	4.77	0.33	7.68	9.94	8.72	1.82	0.50	0.90	2.5	1.81	7.65	3.72	1.22	7.34	6.14	10.64	8.26
ORP	(mV)	NE	109.2	191.1	303.3	255.6	1.0	77.8	210.3	264.7	213.5	81.8	-103.3	76.4	217.3	46.1	243.5	212.8	40.3	159.6	156.9	124.2	172.
pH	(SU)	NE	8.17	9.4	5.18	4.32	8.13	6.79	5.97	4.04	4.16	7.03	7.22	7.25	6.08	7.06	6.21	7.12	7.39	6.42	6.61	7.41	6.40
Specific Conductivity	(µS/cm)	NE	83.	120.	599.	710.	437.	434.	704.	693.	633.	932.	875.	872.	994.	697.	126.	177.	641.	66.	56.	84.	61.
Temperature	(C)	NE	10.38	9.87	10.17	10.37	10.25	9.66	10.42	9.41	9.31	12.28	9.78	8.77	9.38	11.61	8.93	9.35	8.55	7.66	11.16	9.35	9.13
Turbidity	(NTU)	NE	3.5	4.21	1000.+	84.4	7.73	17.5	24.5	5.76	2.	78.9	6.71	17.0	1.81	7.07	7.22	7.81	2.06	103.	2.32	369.	66.5

Notes:
U = Constituent not detected at listed detection limit
J = Estimated concentration
UJ = Constituent not detected at estimated detection limit
R = Data rejected, unusable
(µg/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mV) = Millivolts
(SU) = Standard Units
(µS/cm) = Microsiemens per centimeter
(C) = Degrees Centigrade
(NTU) = Nephelometric Turbidity Units
NA = Not analyzed for this constituent
NE = Not established
[ ] = Denotes exceedance of groundwater criteria
Groundwater criteria developed during Elizabeth Mine Remedial Investigation

Table 4-6
Groundwater Analytical Results
Remedial Investigation
Ely Mine
Vershire, Vermont

LOCATION	Units	Groundwater	MW-08A	MW-08A	MW-09A	MW-09C	MW-10B	MW-10C	MW-11A	MW-11C	MW-12C	MW-13A	MW-14A	MW-15A	MW-16A
SAMPLE ID		Criteria	ELY-MW-08A	ELY-MW-08A	ELY-GW-MW-09A	ELY-GW-MW-09C	ELY-GW-MW-10B	ELY-GW-MW-10C	ELY-GW-MW-11A	ELY-GW-MW-11C	ELY-GW-MW-12C	ELY-GW-MW-13A	ELY-GW-MW-14A	ELY-GW-MW-15A	ELY-GW-MW-16A
DATE			12/12/06	06/12/07	11/06/07	11/06/07	11/06/07	11/06/07	11/07/07	11/07/07	11/07/07	11/07/07	11/07/07	11/05/07	11/05/07
Total Metals															
Aluminum	(µg/l)	NE	22000	22000	17000	130	65 J	170	100 U	2600	800	200	330	1700	63 J
Antimony	(µg/l)	6.0	0.1 U J	0.5 U	0.34 U J	0.32 U J	0.12 U J	0.2 U J	0.49 U J	0.35 U J	0.07 U J	0.15 U J	0.07 U J	1.4	0.6
Arsenic	(µg/l)	10.	0.18 J	0.5 U	0.5 U	0.43 U J	0.12 U J	0.11 U J	0.15 U J	0.34 U J	0.11 U J	0.14 U J	0.12 U J	0.6 U	0.32 U J
Barium	(µg/l)	2000.	27.4	11.5	35.6	19.2	16.1	6.6	27.1	40.6	24.2	27.8	10.5	42.7	23.9
Beryllium	(µg/l)	4.0	0.8	0.8	1.6	0.5 U	0.5 U	0.5 U	0.5 U	0.06 J	0.27 J	0.5 U	0.5 U	0.08 U J	0.5 U
Cadmium	(µg/l)	5.0	[10.9]	[10.2]	[14.6]	0.31 U J	0.22 U J	0.08 U J	0.6	0.5 U	3.4	0.5 U	0.05 J	0.07 U J	0.02 U J
Calcium	(µg/l)	NE	57000	49000	40000	100000	5000	21000	12000	45000	46000	30000	10000	33000	33000
Chromium	(µg/l)	100.	22.4	3.5	2.3	1.8	0.32 U J	0.5	0.31 U J	8.3	1.1	0.6	0.9	4.5	0.28 U J
Cobalt	(µg/l)	NE	240.4	208.9	215.2	4.3	12.6	0.17 U J	19.6	2.1	51.7	1.1	5.4	2.7	0.35 U J
Copper	(µg/l)	1300.	[8710]	[8060]	[10300]	15.7	136.3	7.3	26.7	20.8	[1436]	11.0	26.0	11.7	0.7
Cyanide	(µg/l)	200.	5 U	5 U	5 U	3.2 J	3 J	2.9 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	(µg/l)	NE	4600	930	4300	140	100	190	310	2800	120	200	450	1900	60
Lead	(µg/l)	15.	3.2	0.16 U J	0.42 J	0.2 U J	0.15 U J	0.6	0.17 U J	1.4	0.09 U J	0.1 U J	0.6	1.2	0.24 U J
Magnesium	(µg/l)	NE	14000	13000	12000	15000	1100	4700	2900	6600	8000	4600	1900	5300	2100
Manganese	(µg/l)	300.	[1934]	[1393]	[2574]	137.8	[318.0]	5.5	[2851]	117.1	[423.9]	[329.4]	281.7	[800.6]	91.4
Mercury	(µg/l)	2.0	0.2 U	0.2 U	0.01 U J	0.01 U J	0.01 U J	0.01 U J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.01 U J	0.01 U J
Molybdenum	(µg/l)	40.	*0.53 U J*	*0.08 U J*	1.2	[78.5]	39.5	[92.7]	*12.1*	*3.0*	*0.34 U J*	*1.5*	3.2	*14.5*	4.1
Nickel	(µg/l)	100.	[112.3]	90.8	[402.1]	21.7	[229.2]	0.9	11.1	12.4	35.1	7.2	3.6	8.8	1.0
Potassium	(µg/l)	NE	6500	5200	12000	15000	2200 J	7100	3700	7200	6900	5800	2800	11000	4800
Selenium	(µg/l)	50.	4	4	5	1	2	7	3	3	2	0.3 J	0.8 J	0.8 J	0.3 J
Silver	(µg/l)	NE	0.04 U J	0.07 U J	0.5 U	0.04 U J	0.13 U J	0.6	0.05 U J	0.03 U J	0.5 U	0.5 U	0.12 U J	0.04 U J	0.03 U J
Sodium	(µg/l)	NE	7400	6400	21000	22000	2600	3000	3900	5500	6700	2500	1100 J	30000	6100
Strontium	(µg/l)	NE	117	104	245	436	28	51	79	213	235	152	71	163	182
Thallium	(µg/l)	2.0	0.14 U J	0.1 U J	0.12 U J	0.5 U	0.03 U J	0.03 U J	0.05 U J	0.06 U J	0.09 U J	0.5 U	0.5 U	0.13 U J	0.07 U J
Vanadium	(µg/l)	NE	8.5	1.6	0.28 U J	2.1	0.27 U J	2.6	0.3 J	10	0.36 J	0.6	0.8	5.0	0.6
Zinc	(µg/l)	NE	1309	1295	2560	46.6	570.2	4 U J	21.0	23.4	508.0	4.6 U J	13.6	10.8 U	1.53 U J
Dissolved Metals															
Aluminum	(µg/l)	NE	20000	21000	17000	120	100 U	34 J	100 U	70 J	460	43 J	100 U	170	100 U
Antimony	(µg/l)	6.0	0.03 U J	0.02 U J	0.15 U J	0.18 U J	0.05 U J	0.2 U J	0.6 U	0.41 U J	0.08 U J	0.13 U J	0.09 U J	1.4	0.5 U
Arsenic	(µg/l)	10.	0.5 U	0.5 U	0.5 U	0.37 J	0.5 U	0.22 J	0.15 U J	0.37 U J	0.15 U J	0.11 U J	0.08 U J	0.6	0.2 J
Barium	(µg/l)	2000.	15.1	10.5	33.2	19.0	14.1	6.2	26.6	20.6	24.1	26.7	8.6	27.1	21.0
Beryllium	(µg/l)	4.0	0.8	0.8	1.5	0.5 U	0.5 U	0.5 U	0.03 J	0.5 U	0.25 J	0.5 U	0.5 U	0.05 U J	0.5 U
Cadmium	(µg/l)	5.0	[11.5]	[10.6]	[13.6]	0.25 U J	0.18 U J	0.02 U J	0.5	0.5 U	3.3	0.5 U	0.05 U J	0.05 U J	0.02 U J
Calcium	(µg/l)	NE	56000	49000	42000	100000	5100	21000	12000	43000	46000	31000	11000	32000	33000
Chromium	(µg/l)	100.	6.4	0.6	2.0	1.5	0.13 U J	0.29 U J	0.28 J	0.5	1.0	0.15 U J	0.24 U J	0.7	0.22 U J
Cobalt	(µg/l)	NE	246.6	231.0	202.2	4.0	11.3	0.1 U J	19.7	0.5	51.5	1.0	5.90	1.3	0.26 U J
Copper	(µg/l)	1300.	[8840] J	[7940]	[10400]	12.4	117.6	2.4	18.4	1.9	[1367]	11.4	18.8	2.9	0.7
Iron	(µg/l)	NE	420	160	4900	80	50 U	29 J	320	90	80	60	50 U	200	50 U
Lead	(µg/l)	15.	2.1	0.19 U J	0.41 J	0.1 U J	0.08 U J	0.08 U J	0.22 U J	0.13 U J	0.12 U J	0.08 U J	0.05 U J	0.5	0.2 U J
Magnesium	(µg/l)	NE	14000	14000	13000	14000	1100	4700	3000	5200	8000	4600	1800	4300	2100
Manganese	(µg/l)	300.	[1936]	[1497]	[2584]	133.8	299.8	3.0	[2894]	72.2	[413.0]	[323.6]	268.3	[696.3]	80.4
Mercury	(µg/l)	2.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.07 J	0.07 J	0.07 J	0.07 J	0.07 J	0.2 U	0.2 U
Molybdenum	(µg/l)	40.	0.42 U J	0.05 U J	0.7	[77.1]	34.4	[92.2]	11.9	3.1	0.45 U J	1.5	3.7	14.2	3.5
Nickel	(µg/l)	100.	[112.3]	[104.9]	[384.9]	20.9	[199.6]	0.8	11 2	5.6	34.7	7.7	3.1	4.3	0.9
Potassium	(µg/l)	NE	6200	5100	12000	15000	2100 J	7100	3800	6000	6800	5800	2700	10000	4800
Selenium	(µg/l)	50.	4	4	5	2	2	8	3	3	1	0.3 J	0.7 J	0.9 J	0.4 J
Silver	(µg/l)	NE	0.5 U	0.07 J	0.03 U J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.04 U J	0.5 U
Sodium	(µg/l)	NE	7000	5500	21000	21000	2500	3400	3600	4800	6600	2900	1400 J	28000	6100
Strontium	(µg/l)	NE	110	100	260	440	30	50	80	200	230	150	70	150	180
Thallium	(µg/l)	2.0	0.12 U J	0.1 J	0.13 U J	0.5 U	0.5 U	0.5 U	0.06 U J	0.03 U J	0.07 U J	0.03 U J	0.5 U	0.12 U J	0.05 U J
Vanadium	(µg/l)	NE	0.09 J	0.5 U	*0.08 U J*	2	*0.11 U J*	2.5	0.3 J	2.5	*0.26 U J*	*0.28 U J*	*0.13 U J*	1.2	0.5
Zinc	(µg/l)	NE	1342	1341 J	2408	31.2	491.5	3.24 U J	20.9	5.4 U	501.0	5.8 U	7.9 U	4.56 U J	3.17 U J
Conventional Water Quality Parameters															
Acidity	(µg/l)	NE	140000	140000	150000	2000 U	18000	2000 U	17000	2000 U	25000	2000 U	7400	2000 U	2000 U
Alkalinity (as CaCO3)	(µg/l)	NE	2000 U	2000 U	2000 U	54000	15000	69000	26000	110000	14000	62000	29000	130000	100000
Alkalinity, Bicarbonate (as CaCO3)	(µg/l)	NE	2000 U	2000 U	2000 U	54000	15000	69000	26000	110000	14000	62000	29000	130000	100000
Carbonate (as CaCO3)	(µg/l)	NE	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Chloride	(µg/l)	NE	NA	390 J	520	900	350 J	400 J	1400	570	370 U J	500	420 U J	1500	450 J
Hydroxide (as CaCO3)	(µg/l)	NE	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Nitrate plus Nitrite (as N)	(µg/l)	10000.	47 J	82 J	180	180	79 J	42 J	150	110	150	160	84 J	69 J	84 J
Sulfate	(µg/l)	NE	390000	430000	330000	350000	12000	19000	42000	49000	190000	59000	14000	47000	11000
Sulfide	(µg/l)	NE	*100 U*	*100 U*	*100 U*	*100 U*	100 U	100 U	*100 U*	100 U	100 U	100 U	*100 U*	*100 U*	*100 U*
Field Parameters															
Depth to Water	(ft)	NE	5.15	5.12	3.87	22.48	3.78	4.60	4.05	11.90	7.90	3.97	2.62	2.66	3.95
Dissolved Oxygen	(mg/l)	NE	6.44	10.26	5.91	4.73	5.95	4.05	0.44	0.93	6.84	10.24	4.21	2.34	1.77
ORP	(mV)	NE	256.0	418.6	323.9	207.6	237.7	176.8	-5.8	-37.8	186.8	163.1	163.9	140.5	147.1
pH	(SU)	NE	4.19	4.26	4.32	8.26	6.08	8.00	6.10	7.38	5.87	5.65	6.40	7.63	7.53
Specific Conductivity	(µS/cm)	NE	627.	620.	612.	770.	78.	189.	174.	330.	283.	245.	111.	401.	253.
Temperature	(C)	NE	9.24	9.4	8.89	7.72	8.01	8.19	9.30	8.87	10.51	8.63	8.02	10.11	9.40
Turbidity	(NTU)	NE	13.9	25.6	5.	2.	4.	11.	2.	114.	3.	6.	11.	57.	2.

Notes:
U = Constituent not detected at listed detection limit
J = Estimated concentration
UJ = Constituent not detected at estimated detection limit
R = Data rejected, unusable
(µg/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mV) = Millivolts
(SU) = Standard Units
(µS/cm) = Microsiemens per centimeter
(C) = Degrees Centigrade
(NTU) = Nephelometric Turbidity Units
NA = Not analyzed for this constituent
NE = Not established
[ ] = Denotes exceedance of groundwater criteria
Groundwater criteria developed during Elizabeth Mine Remedial Investigation

Table 4-7
Residential Well Analytical Results
Remedial Investigation
Ely Mine
Vershire, Vermont

LOCATION SAMPLE ID DATE	Units	Groundwater Criteria	RES-01 EMV-GW-RES-01 12/05/07	RES-01 EMV-GW-RES-01 (DUP) 12/05/07
Total Metals				
Aluminum	(µg/l)	NE	32 J	100 U
Antimony	(µg/l)	6.0	0.35 J	0.44 J
Arsenic	(µg/l)	10.	2.0 U	2.0 U
Barium	(µg/l)	2000.	26.3	26.0
Beryllium	(µg/l)	4.0	2.0 U	2.0 U
Cadmium	(µg/l)	5.0	2.0 U	2.0 U
Calcium	(µg/l)	NE	38000	37000
Chromium	(µg/l)	100.	0.57 J	0.4 J
Cobalt	(µg/l)	NE	0.16 J	0.19 J
Copper	(µg/l)	1300.	12	11
Cyanide	(µg/l)	200.	5 U	5 U
Iron	(µg/l)	NE	50	42 J
Lead	(µg/l)	15.	0.81 J	0.8 J
Magnesium	(µg/l)	NE	4700	4600
Manganese	(µg/l)	300.	1.72 J	1.13 J
Mercury	(µg/l)	2.0	0.2 U	0.2 U
Molybdenum	(µg/l)	40.	0.61 J	0.88 J
Nickel	(µg/l)	100.	0.75 J	0.82 J
Potassium	(µg/l)	NE	3400	3400
Selenium	(µg/l)	50.	4 U	4 U
Silver	(µg/l)	NE	2.0 U	2.0 U
Sodium	(µg/l)	NE	7200	6900
Strontium	(µg/l)	NE	172	171
Thallium	(µg/l)	2.0	2.0 U	2.0 U
Vanadium	(µg/l)	NE	0.51 J	0.47 J
Zinc	(µg/l)	NE	4.34 J	4.59 J
Dissolved Metals				
Aluminum	(µg/l)	NE	100 U	100 U
Antimony	(µg/l)	6.0	1.17 J	2.0 U
Arsenic	(µg/l)	10.	2.0 U	2.0 U
Barium	(µg/l)	2000.	25.1	24.9
Beryllium	(µg/l)	4.0	2.0 U	2.0 U
Cadmium	(µg/l)	5.0	2.0 U	2.0 U
Calcium	(µg/l)	NE	37000	37000
Chromium	(µg/l)	100.	2.0 U	0.39 J
Cobalt	(µg/l)	NE	0.21 J	0.1 J
Copper	(µg/l)	1300.	12	12
Iron	(µg/l)	NE	38 J	38 J
Lead	(µg/l)	15.	0.66 J	0.58 J
Magnesium	(µg/l)	NE	4500	4600
Manganese	(µg/l)	300.	0.82 J	1.75 J
Mercury	(µg/l)	2.0	0.2 U	0.2 U
Molybdenum	(µg/l)	40.	1.55 J	0.33 J
Nickel	(µg/l)	100.	0.51 J	0.4 J
Potassium	(µg/l)	NE	3400	3400
Selenium	(µg/l)	50.	4 U	4 U
Silver	(µg/l)	NE	2.0 U	2.0 U
Sodium	(µg/l)	NE	6800	7100
Strontium	(µg/l)	NE	170	170
Thallium	(µg/l)	2.0	2.0 U	2.0 U
Vanadium	(µg/l)	NE	0.43 J	0.39 J
Zinc	(µg/l)	NE	5.3 J	6.1 J
Conventional Water Quality Parameters				
Acidity	(µg/l)	NE	2000 U	2000 U
Alkalinity (as CaCO3)	(µg/l)	NE	100000	100000
Alkalinity, Bicarbonate (as CaCO3)	(µg/l)	NE	100000	100000
Carbonate (as CaCO3)	(µg/l)	NE	2000 U	2000 U
Chloride	(µg/l)	NE	9500	9500
Hydroxide (as CaCO3)	(µg/l)	NE	2000 U	2000 U
Nitrate plus Nitrite (as N)	(µg/l)	10000.	1500	1600
Sulfate	(µg/l)	NE	9200	9100
Sulfide	(µg/l)	NE	100 U	100 U
Field Parameters				
Dissolved Oxygen	(mg/l)	NE	2.15	NA
ORP	(mV)	NE	80.3	NA
pH	(SU)	NE	6.81	NA
Specific Conductivity	(µS/cm)	NE	175.	NA
Temperature	(C)	NE	7.97	NA
Turbidity	(NTU)	NE	1.	NA

Notes:
U = Constituent not detected at listed detection limit
J = Estimated concentration
UJ = Constituent not detected at estimated detection limit
R = Data rejected, unusable
(µg/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mV) = Millivolts
(SU) = Standard Units
(µS/cm) = Microsiemens per centimeter
(C) = Degrees Centigrade
(NTU) = Nephelometric Turbidity Units
NA = Not analyzed for this constituent
NE = Not established
[ ] = Denotes exceedance of groundwater criteria
Groundwater criteria developed during Elizabeth Mine Remedial Investigation

Figures

FIGURES

Sources:

Historic site features and 1-meter interval contour base map obtained from Public Archaeology Lab (PAL), Pawtucket, Rhode Island.

Water course and 50-foot topographic contour data obtained from the Vermont Center for Geographic Information, Inc. Waterbury, VT and PAL. Water courses modified based on site reconaisance.

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PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION
PROJECT LOCATION: VERSHIRE, VERMONT
CLIENT: U.S. ARMY CORPS OF ENGINEERS
PROJECT NO: 39459198 FILE: ElyMine_RI.dwg

TITLE: SITE LOCUS
SCALE: AS SHOWN DATE: NOV 2008
Figure: 1–1

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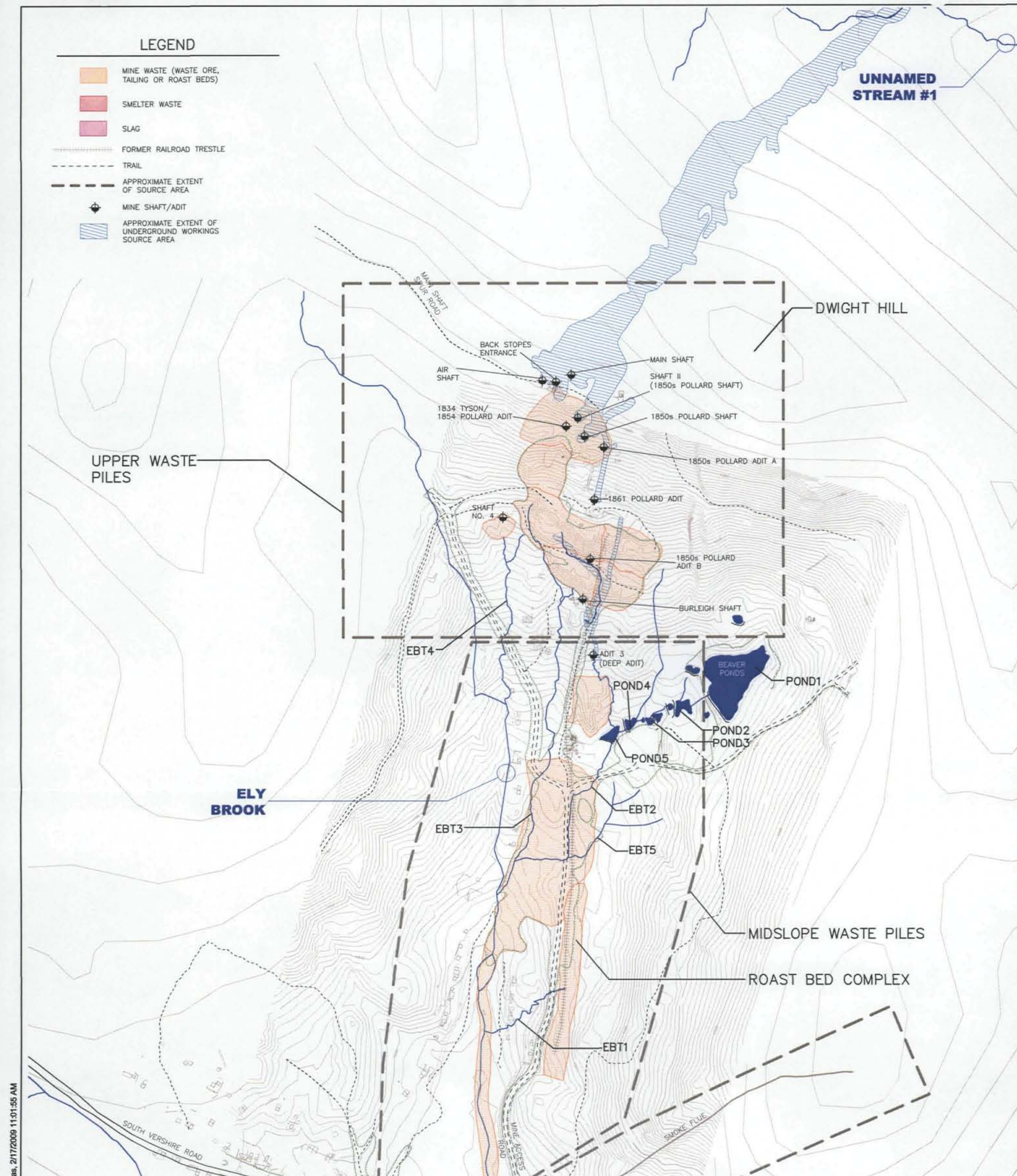

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Historic site features and 1-meter interval contour base map obtained from Public Archaeology Lab (PAL), Pawtucket, Rhode Island.

Water course and 50-foot topographic contour data obtained from the Vermont Center for Geographic Information, Inc. Waterbury, VT and PAL. Water courses modified based on site reconaissance.

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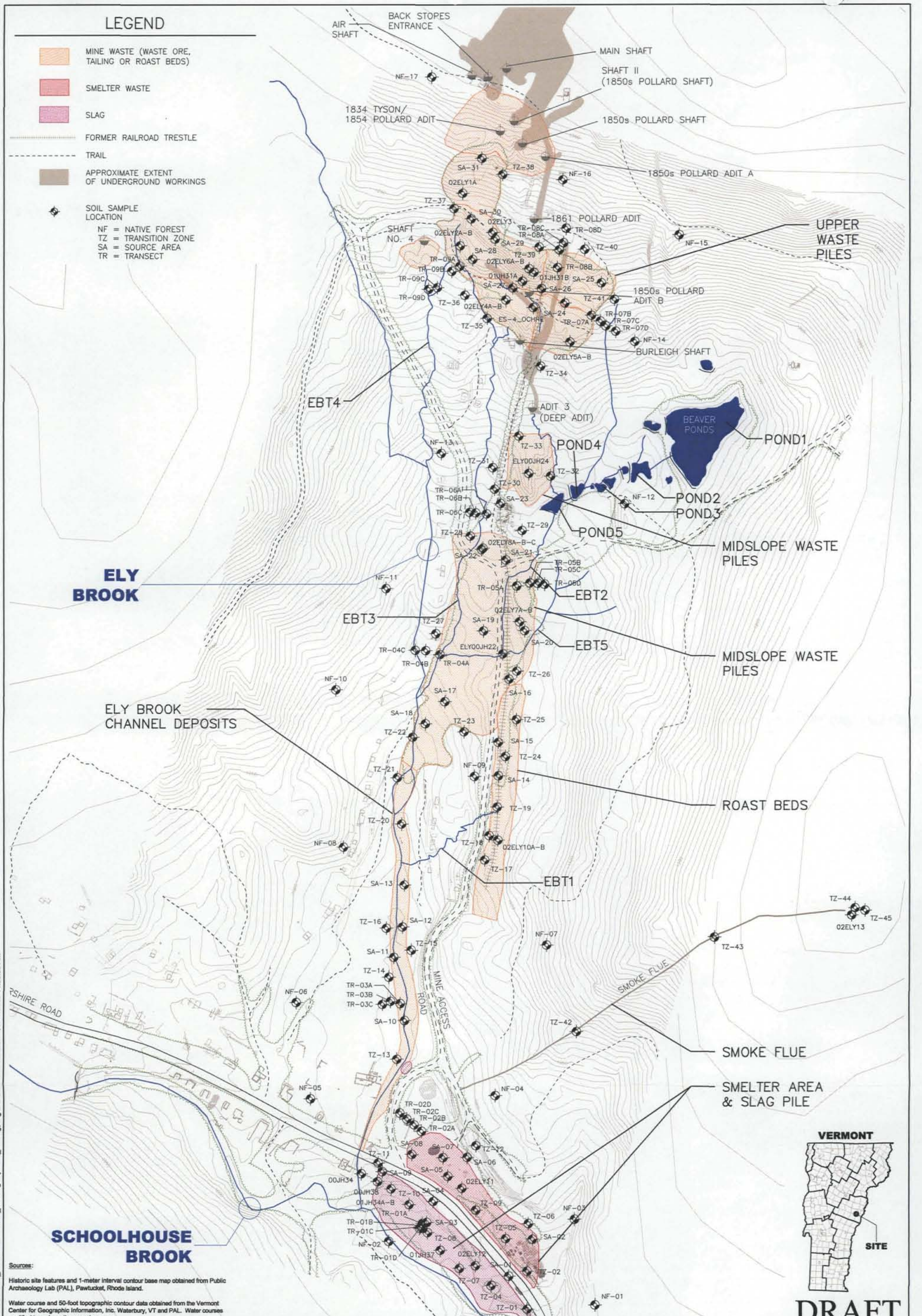

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PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION

PROJECT LOCATION: VERSHIRE, VERMONT

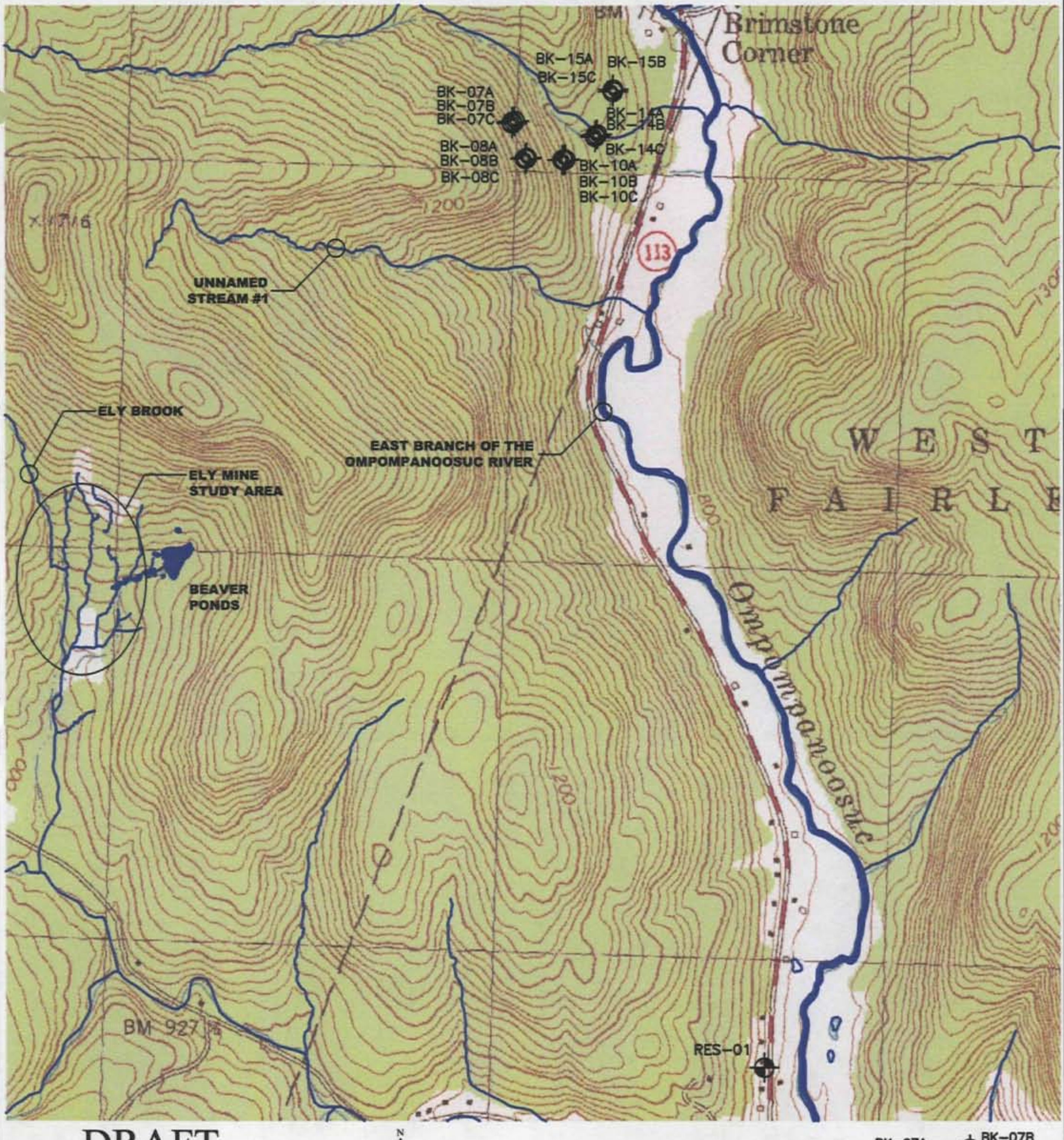
CLIENT: U.S. ARMY CORPS OF ENGINEERS

PROJECT NO: 39459198 FILE: ElyMine_RI.dwg

TITLE: RI SURFACE SOIL SAMPLE LOCATIONS AND TARGET FEATURES

SCALE: AS SHOWN DATE: NOV 2008

Figure: 2-2



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Sources:

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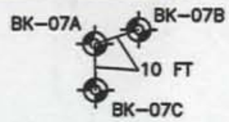
TYPICAL ARRANGEMENT OF BACKGROUND SAMPLES:



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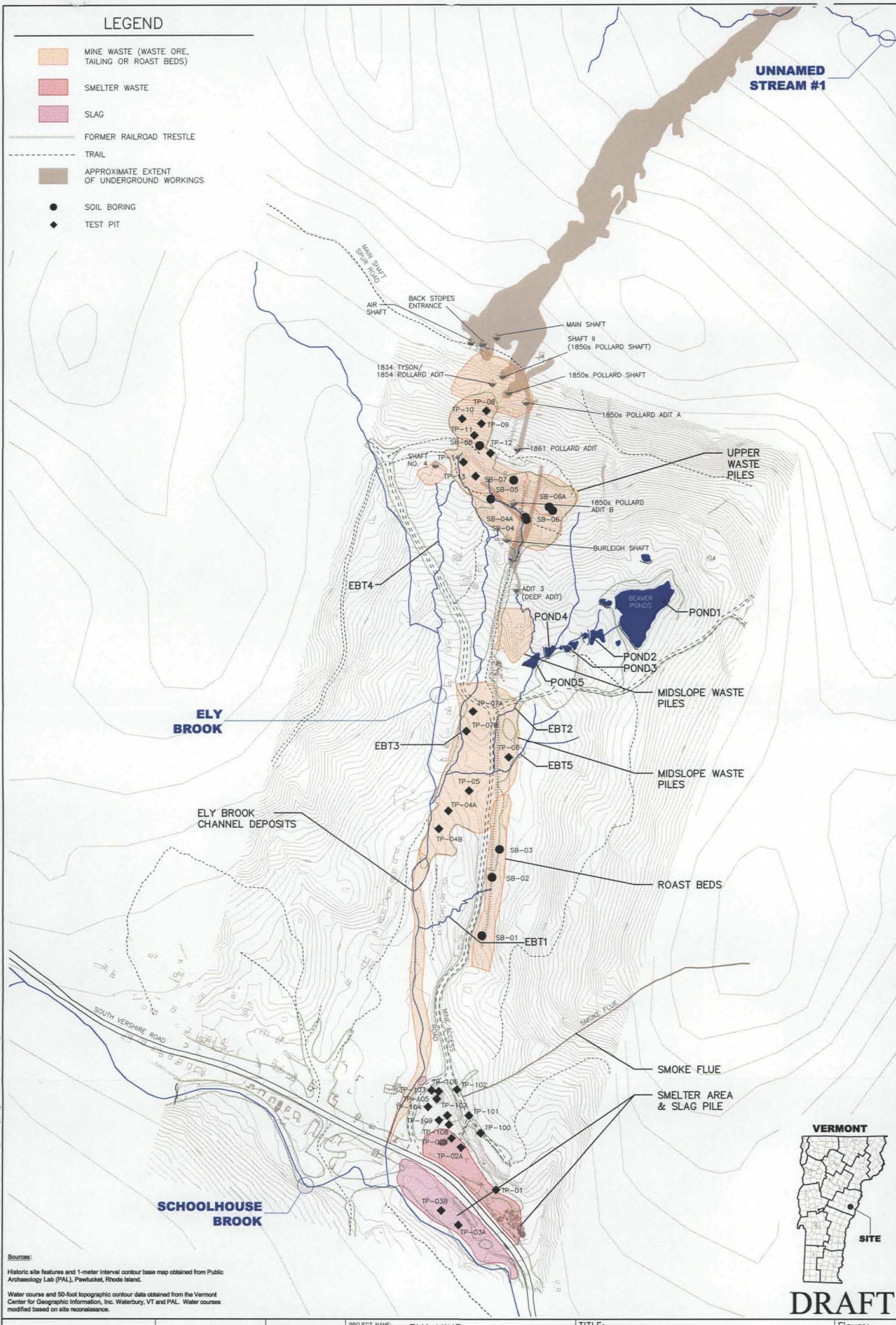

Sources:

Historic site features and 1-meter interval contour base map obtained from Public Archaeology Lab (PAL), Pawtucket, Rhode Island.

Water course and 50-foot topographic contour data obtained from the Vermont Center for Geographic Information, Inc. Waterbury, VT and PAL. Water courses modified based on site reconaissance.

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TITLE: RI SUBSURFACE SOIL SAMPLE LOCATIONS & TARGET FEATURES	SCALE: AS SHOWN	DATE: NOV 2008	Figure: 2-4

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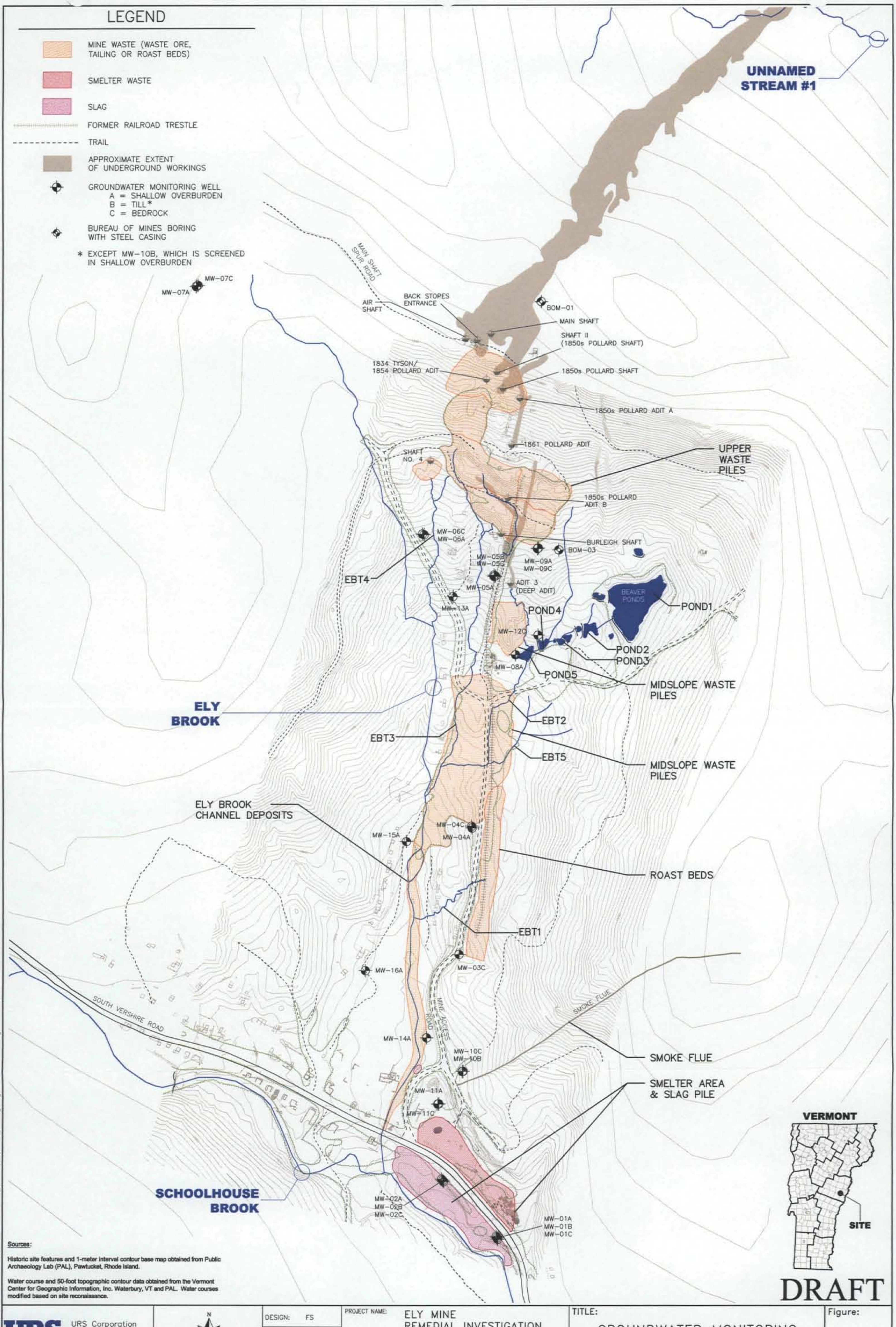

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TITLE: GROUNDWATER MONITORING LOCATIONS & TARGET FEATURES

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Figure: 2-7

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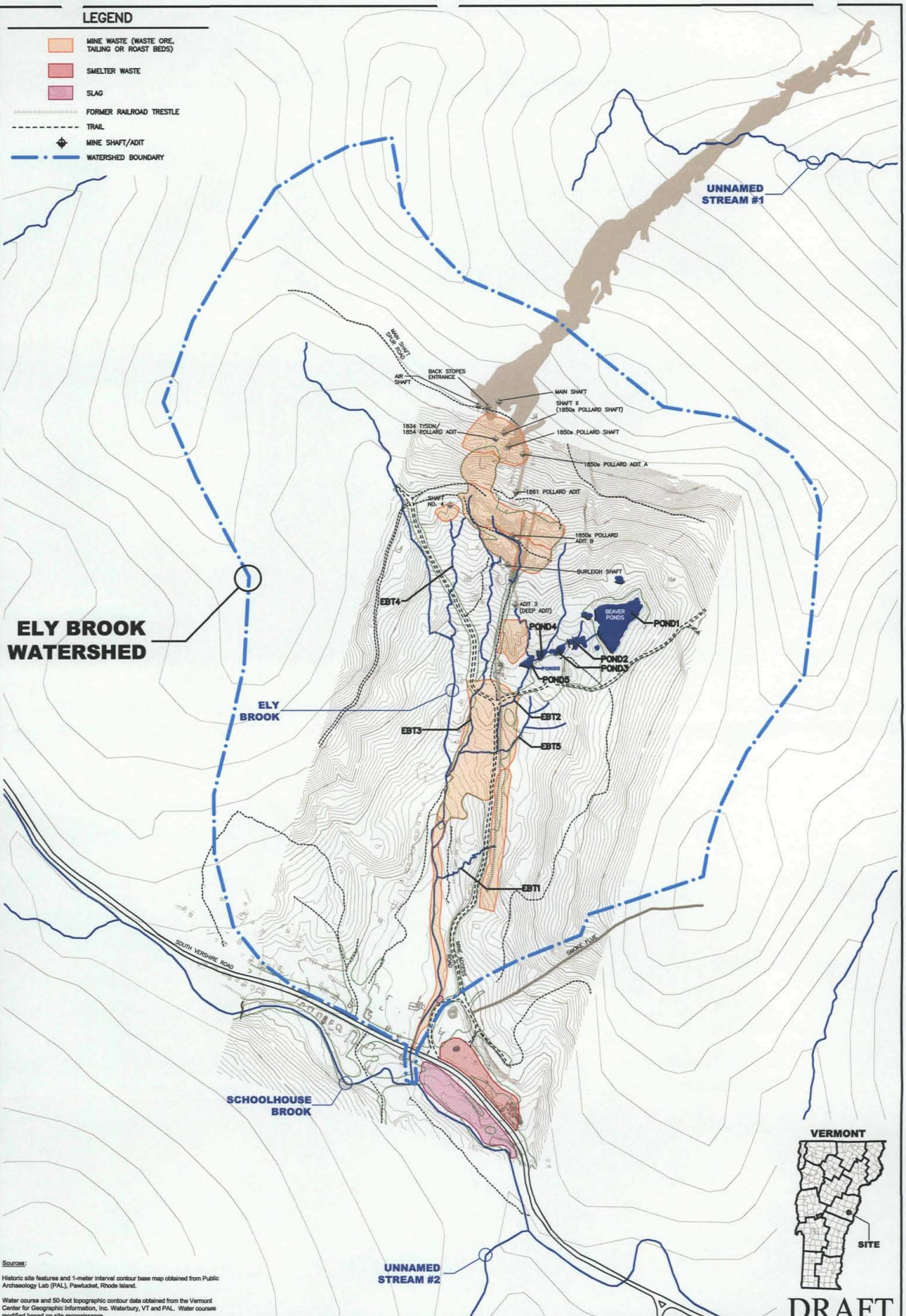

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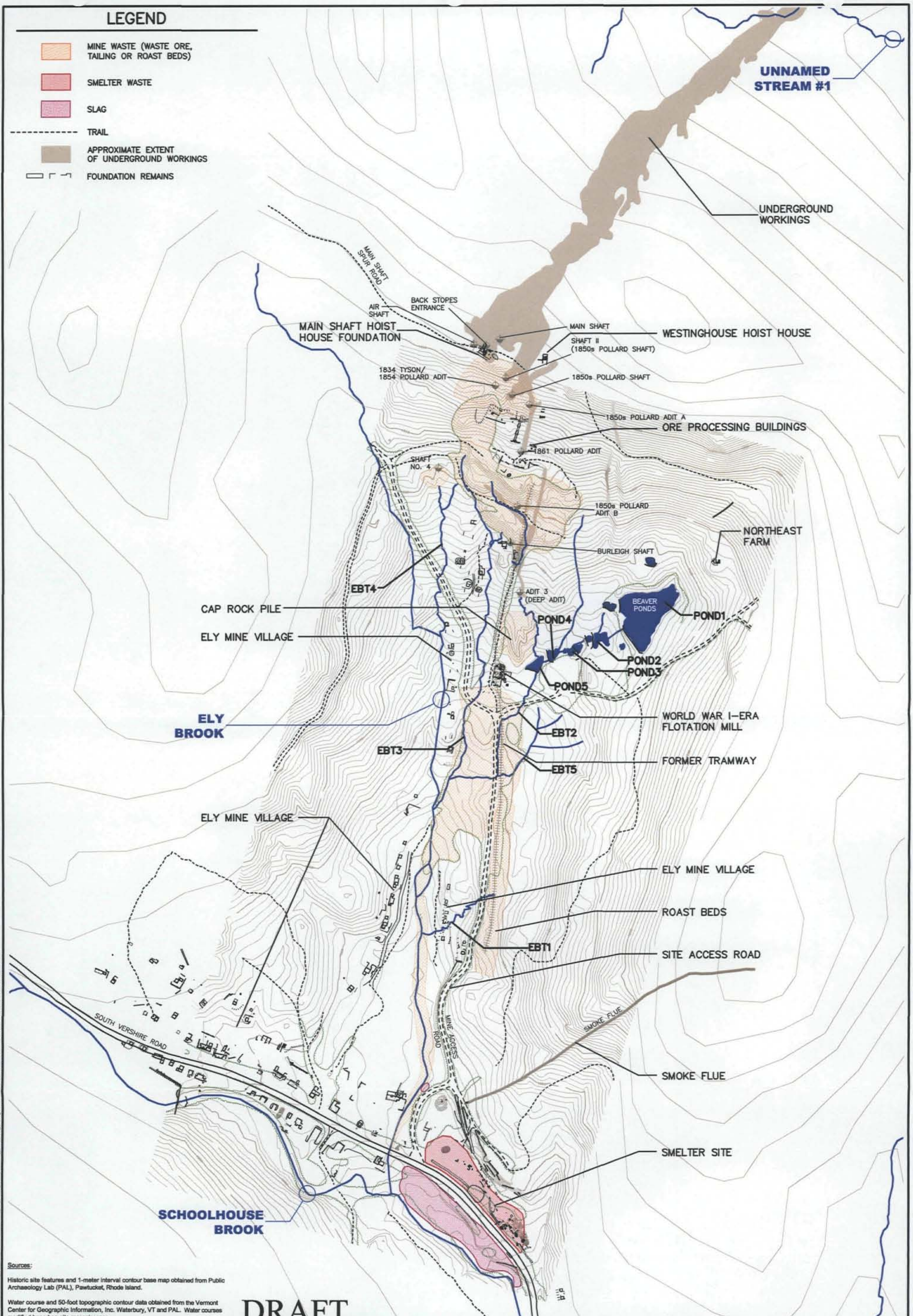

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Historic site features and 1-meter interval contour base map obtained from Public Archaeology Lab (PAL), Pawtucket, Rhode Island.

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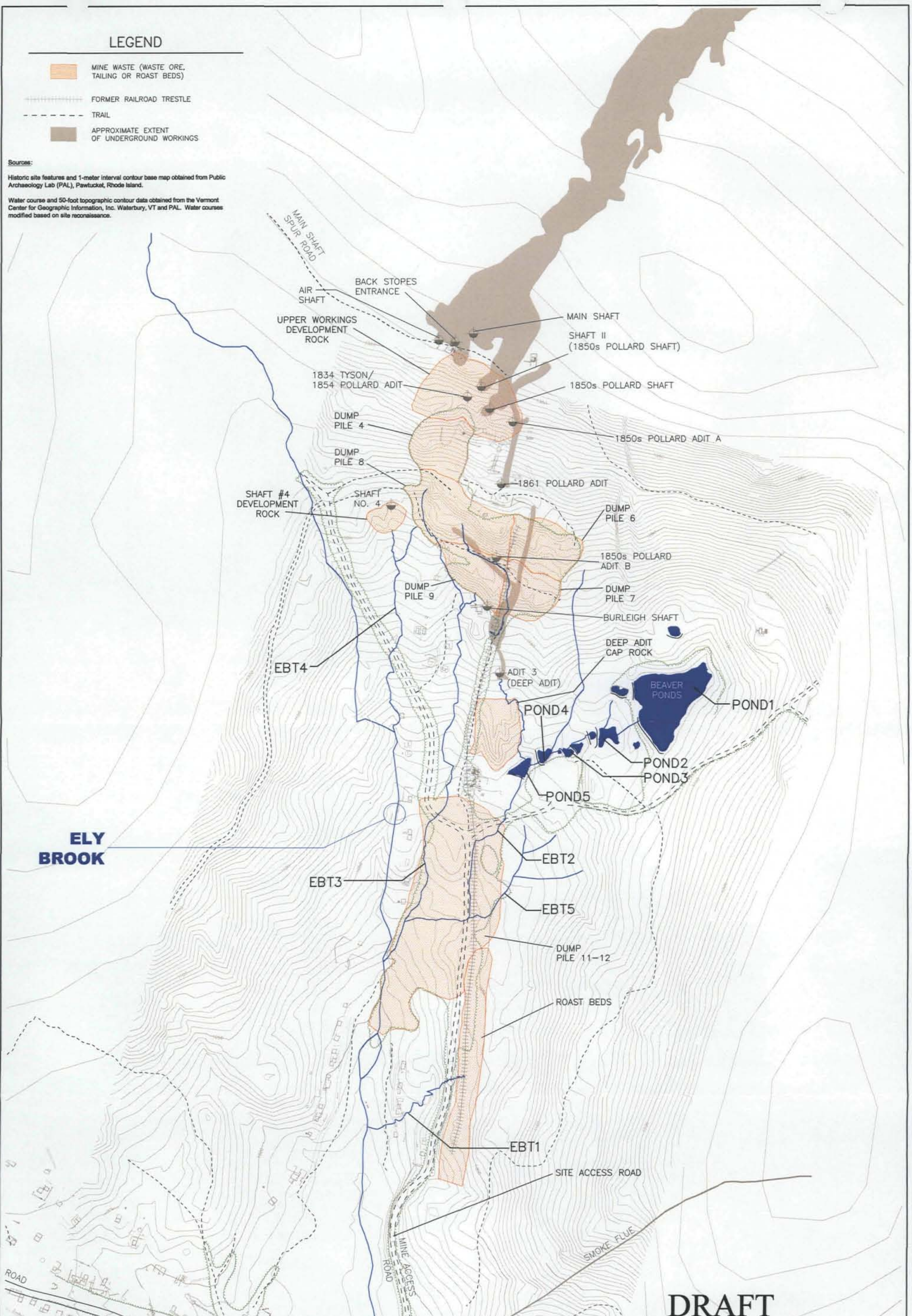

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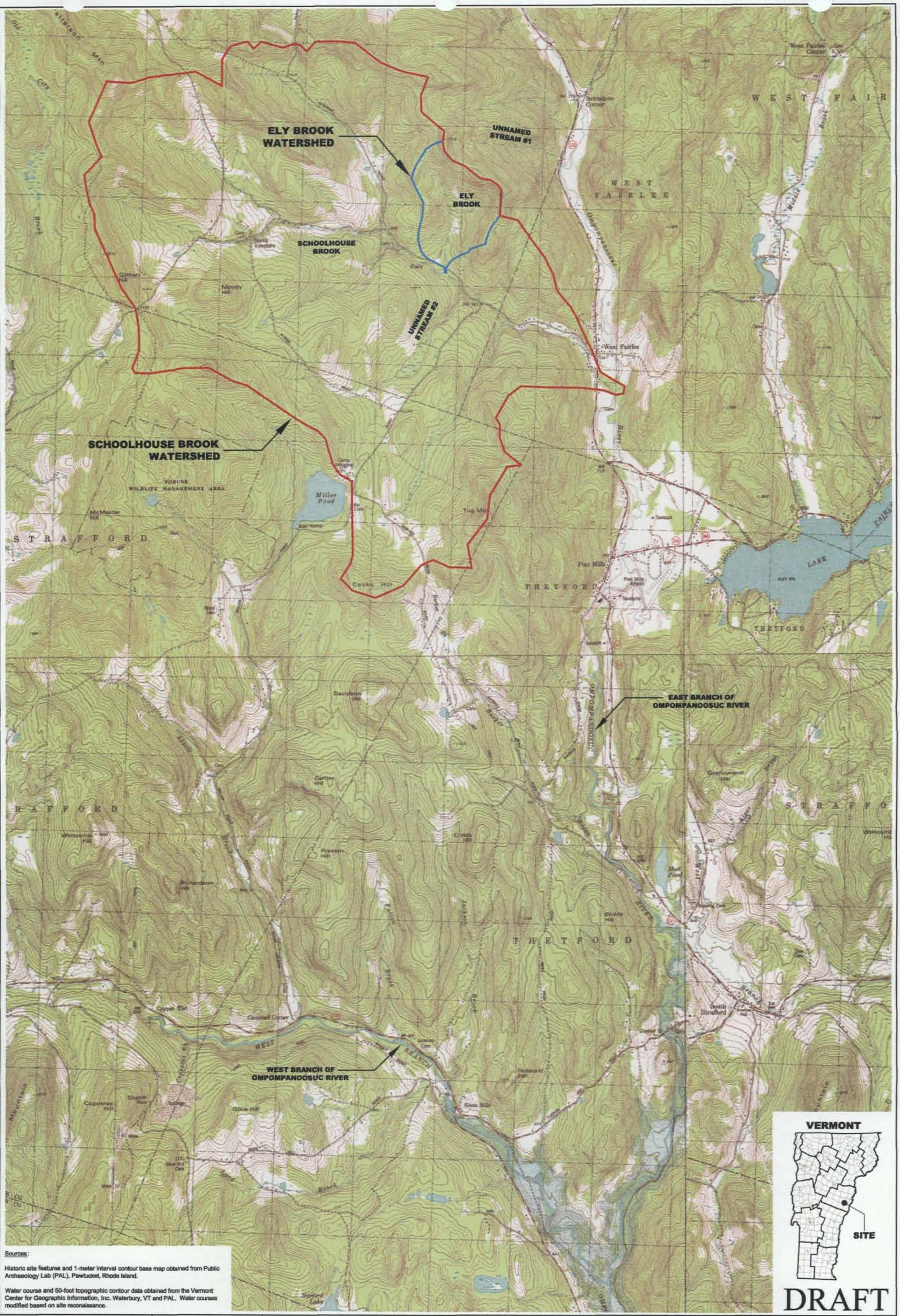

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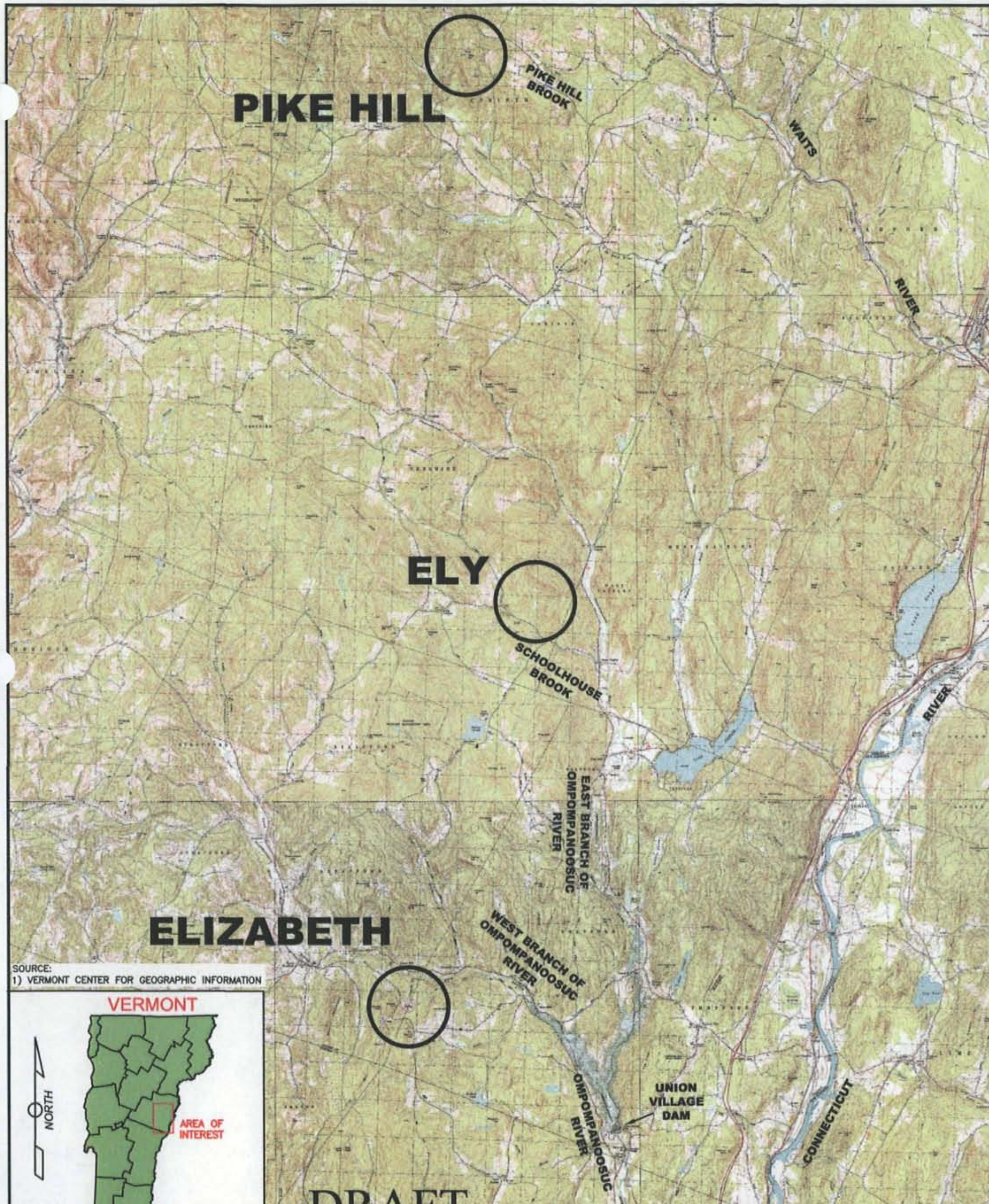

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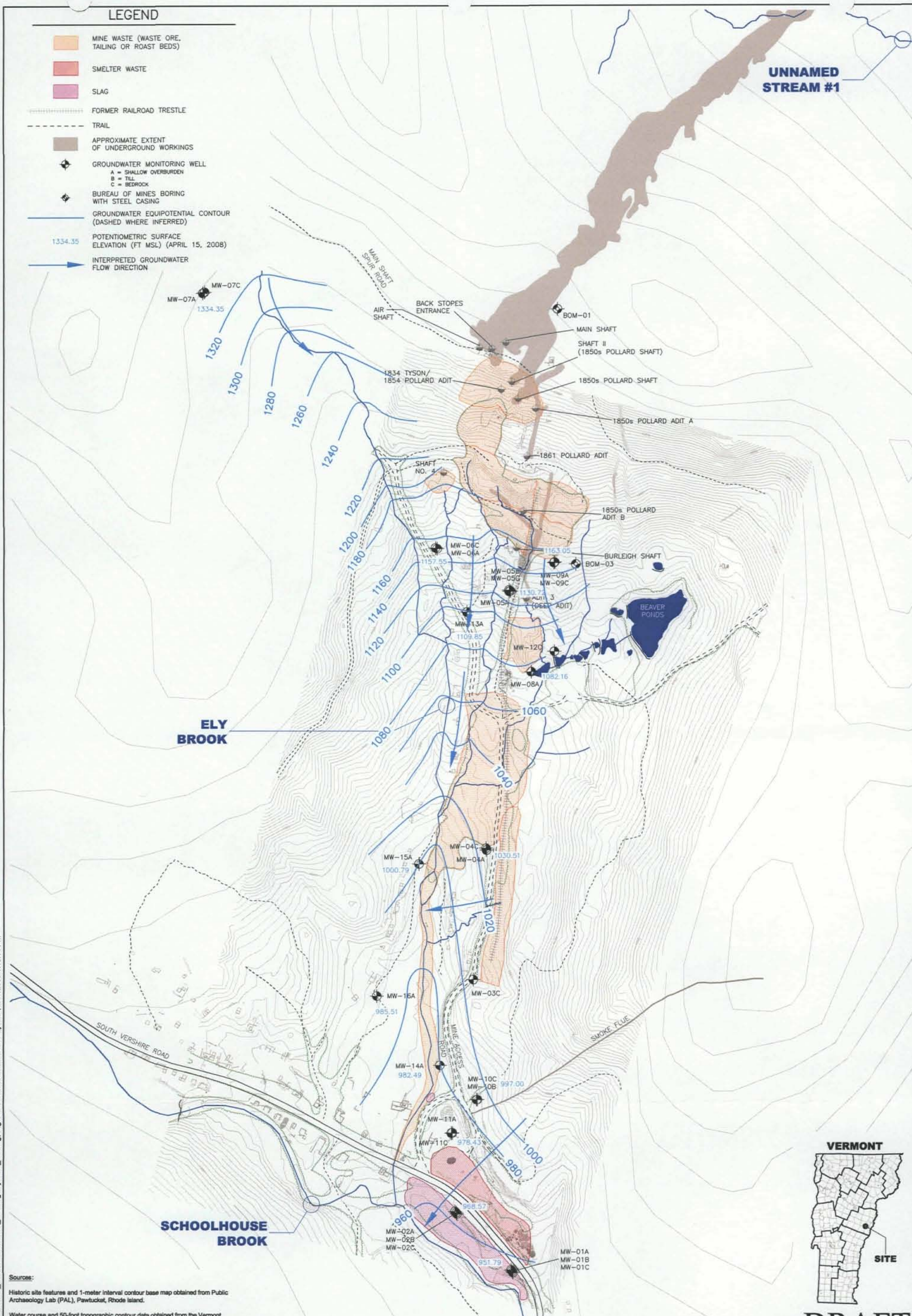

Sources:

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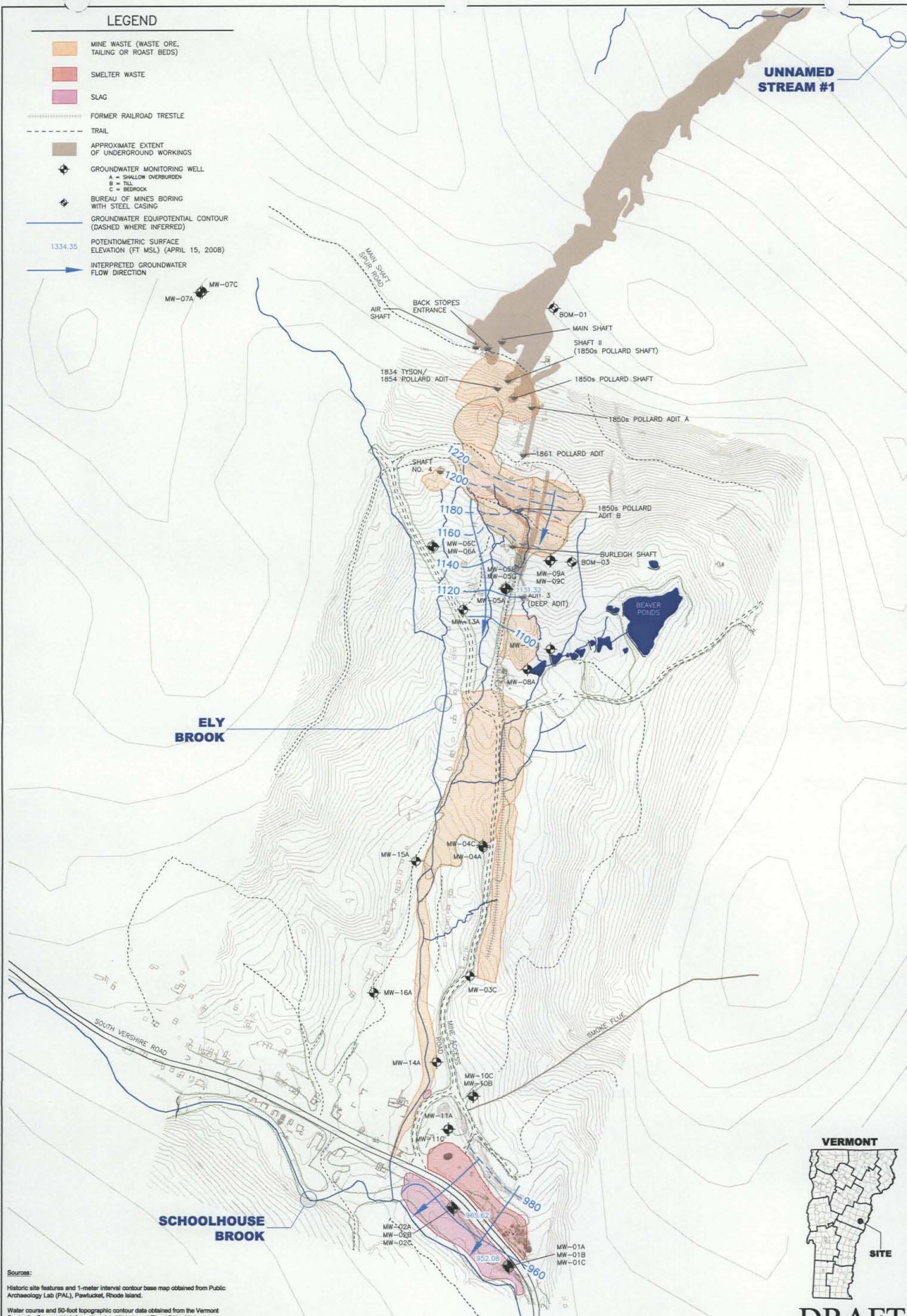
PROJECT NO: 39459198 FILE: ElyMine_RI.dwg

TITLE: EQUIPOTENTIAL CONTOURS FOR THE SHALLOW OVERBURDEN GROUNDWATER FLOW SYSTEM

SCALE: AS SHOWN DATE: NOV 2008

Figure: 3-9



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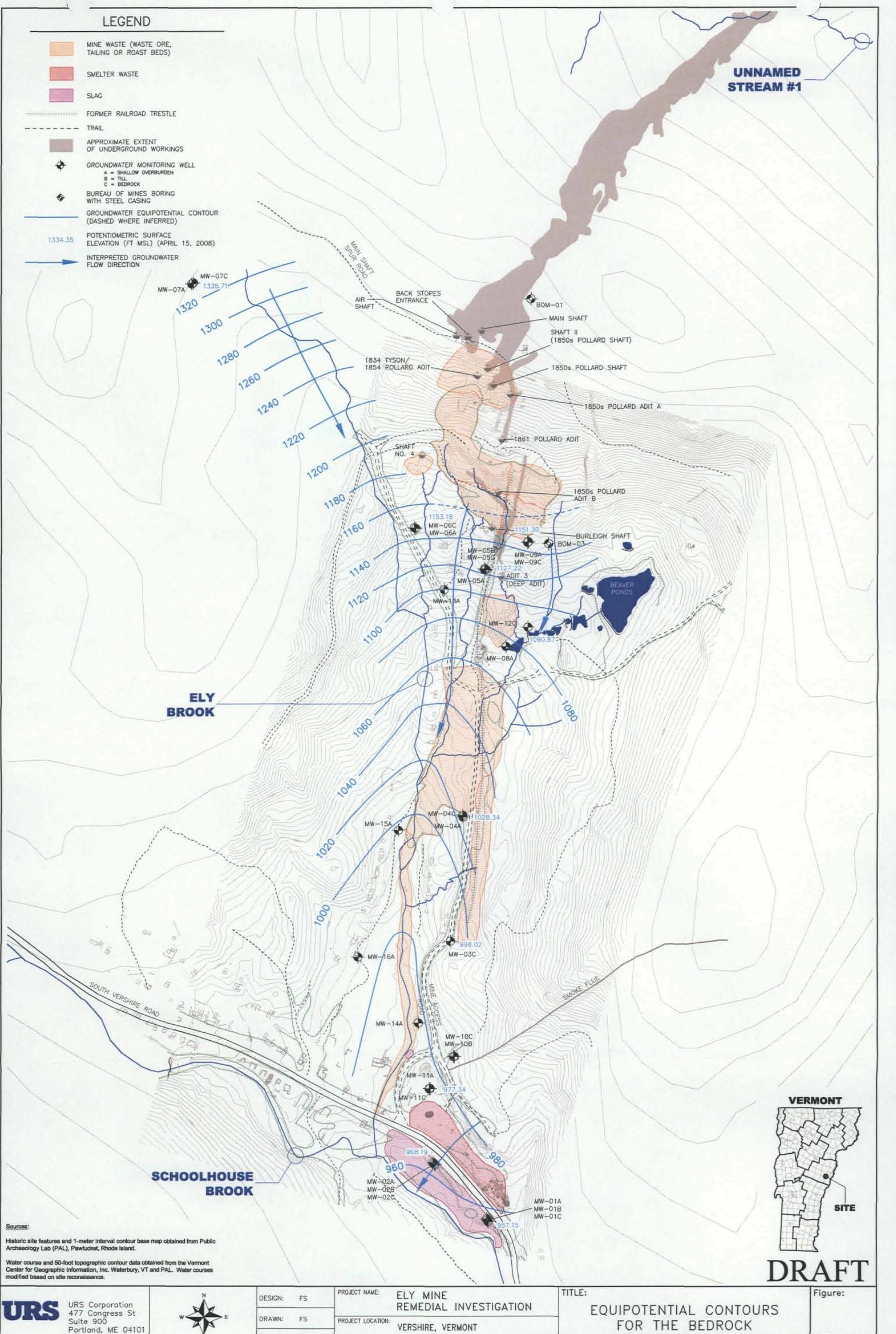
SCALE: AS SHOWN DATE: NOV 2008

Figure: 3-10



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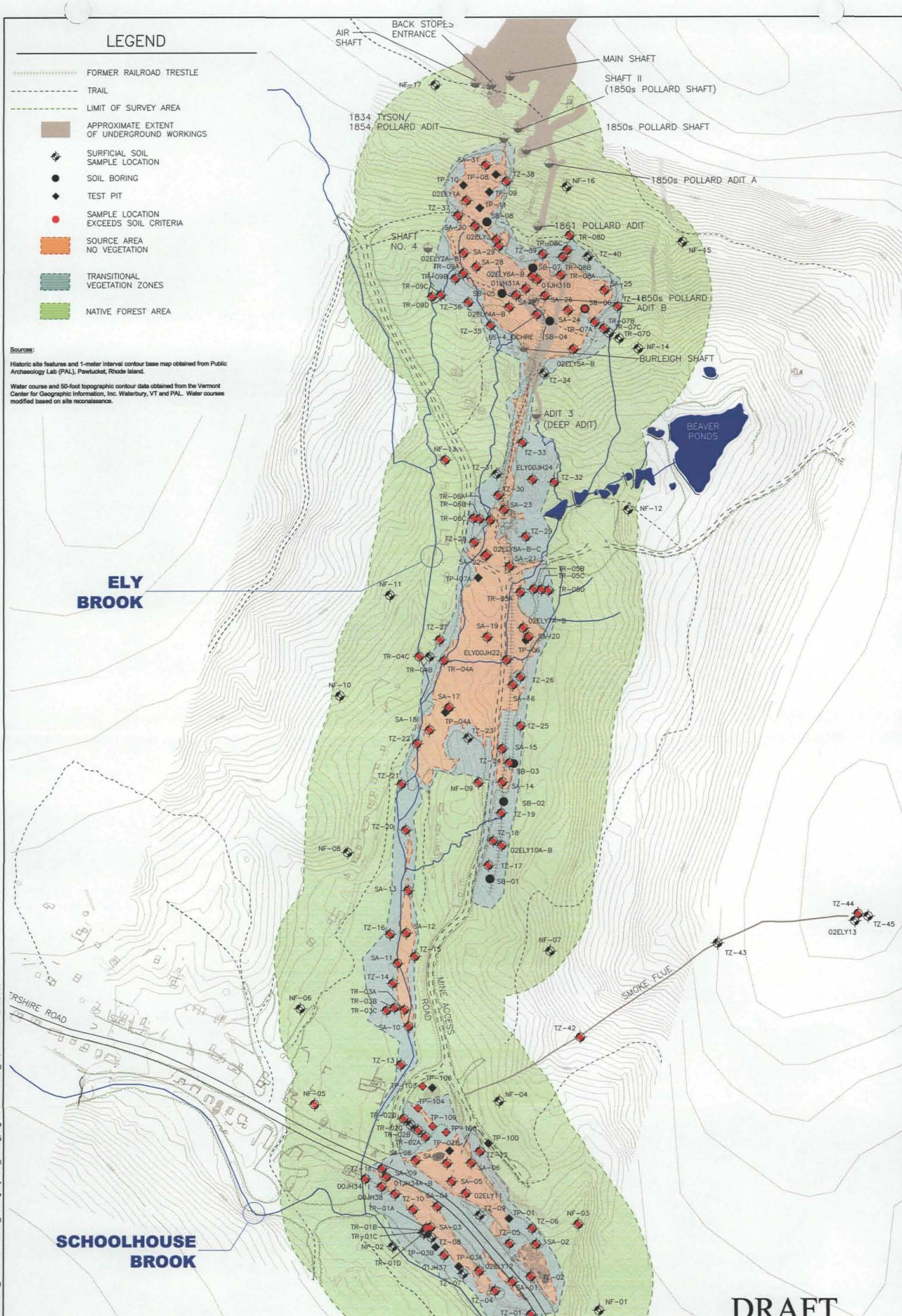

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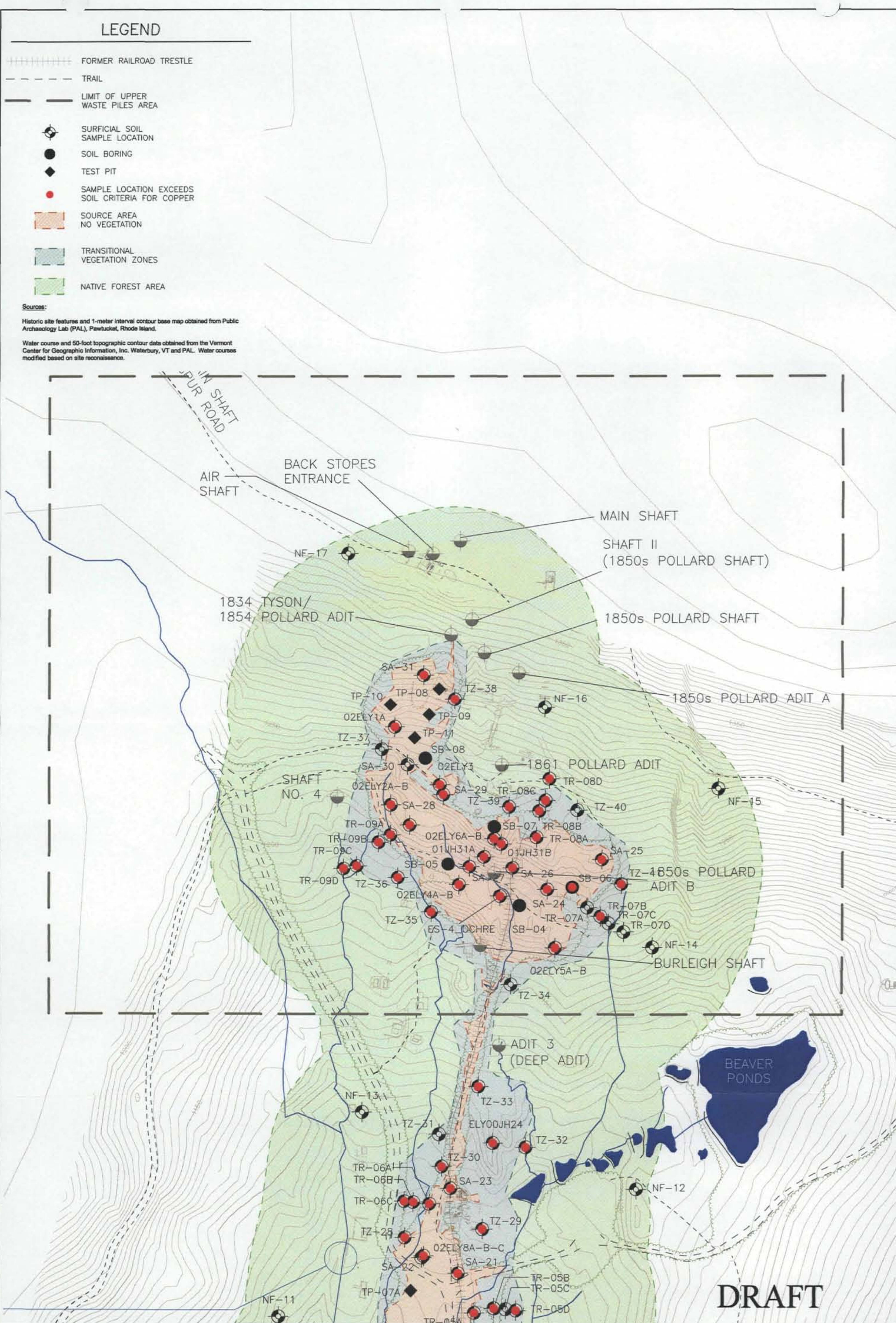

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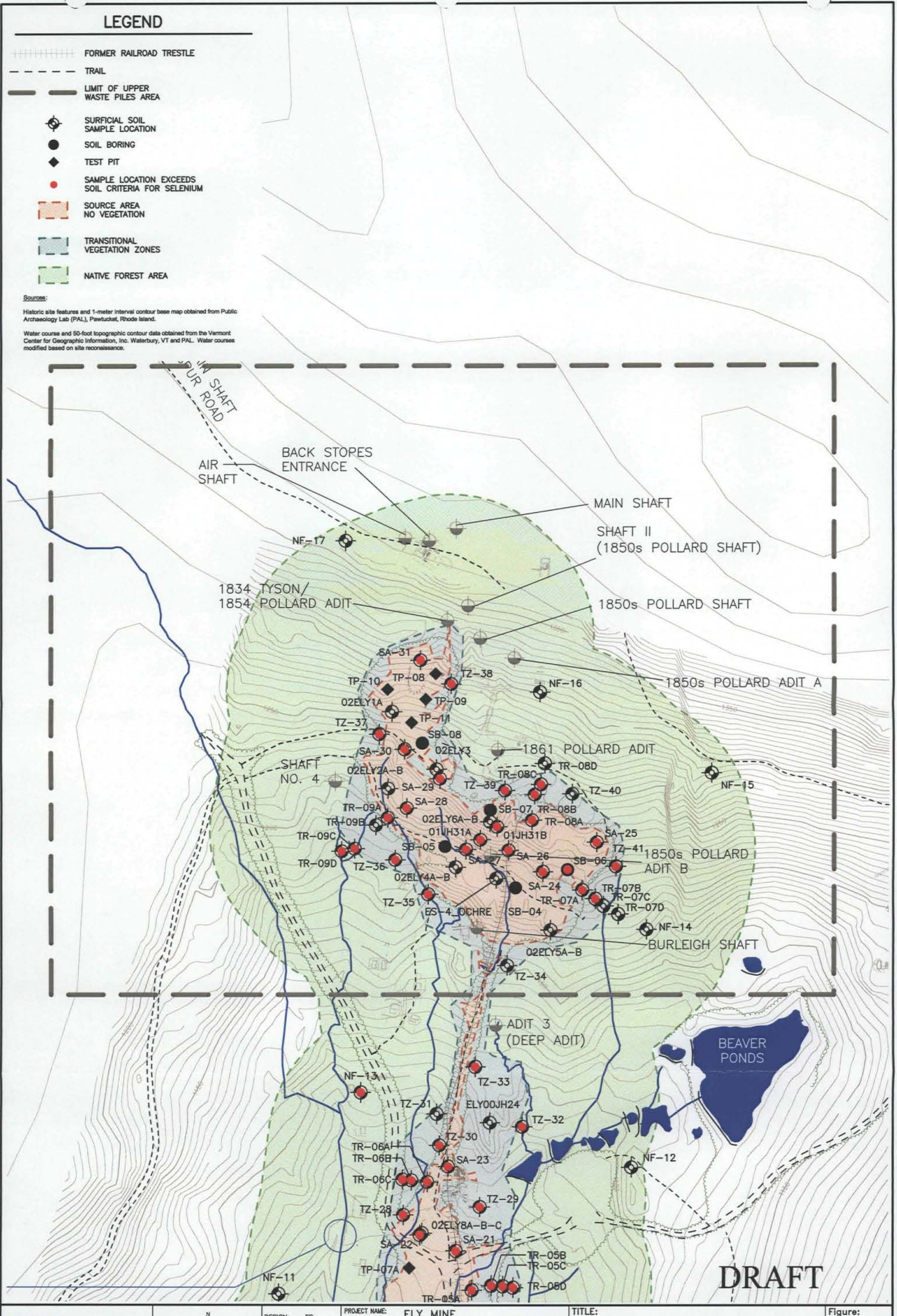

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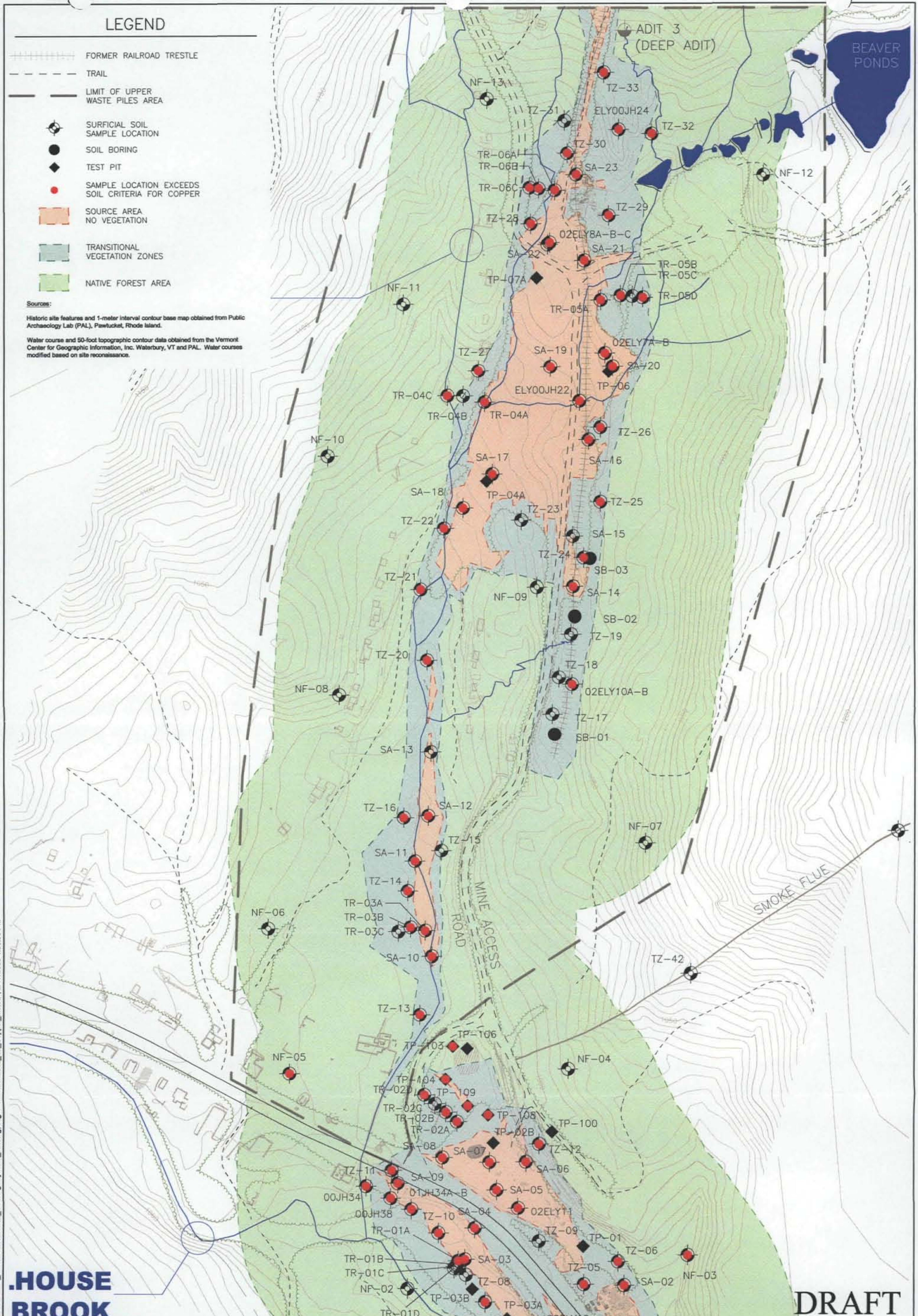
DESIGN: FS	PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION	TITLE: AREAL EXTENT OF SELENIUM IMPACTS IN SURFACE SOILS UPPER WASTE PILES	Figure: 4-3
DRAWN: FS	PROJECT LOCATION: VERSHIRE, VERMONT		
CHECKED: KHM	CLIENT: U.S. ARMY CORPS OF ENGINEERS		
APPROVED: JCC	PROJECT NO: 39459198 FILE: ElyMine_RI.dwg	SCALE: AS SHOWN	DATE: NOV 2008

P:\acad-project\USACE-ELY_MINE-VERSHIRE_VT\dwg\ElyMine_RI.dwg, Fig 4-3 ExceedLocs_SL_Selenium_UWRP, 2/17/2009 1:33:35 PM



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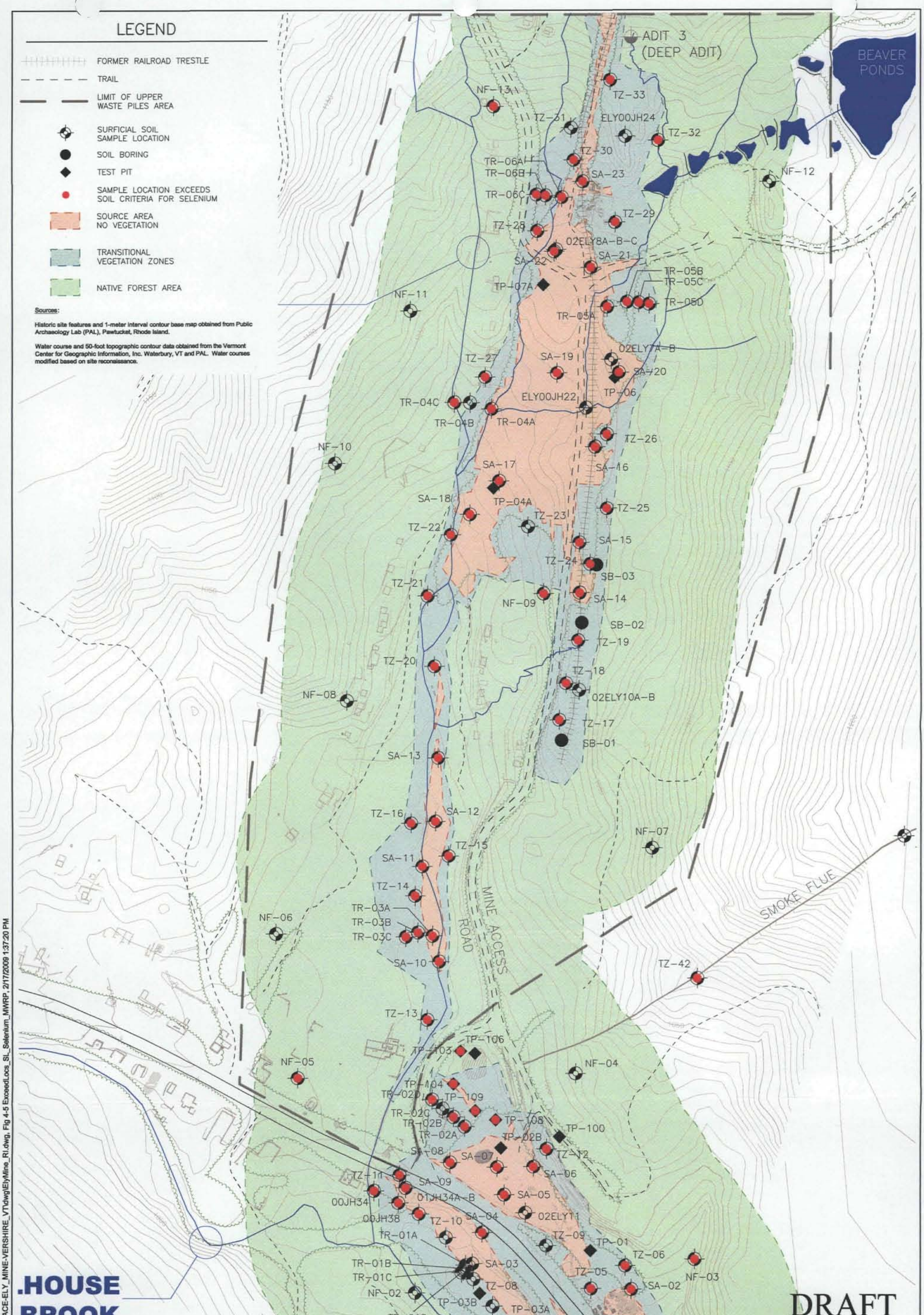
SCALE IN FEET (0, 100, 200)

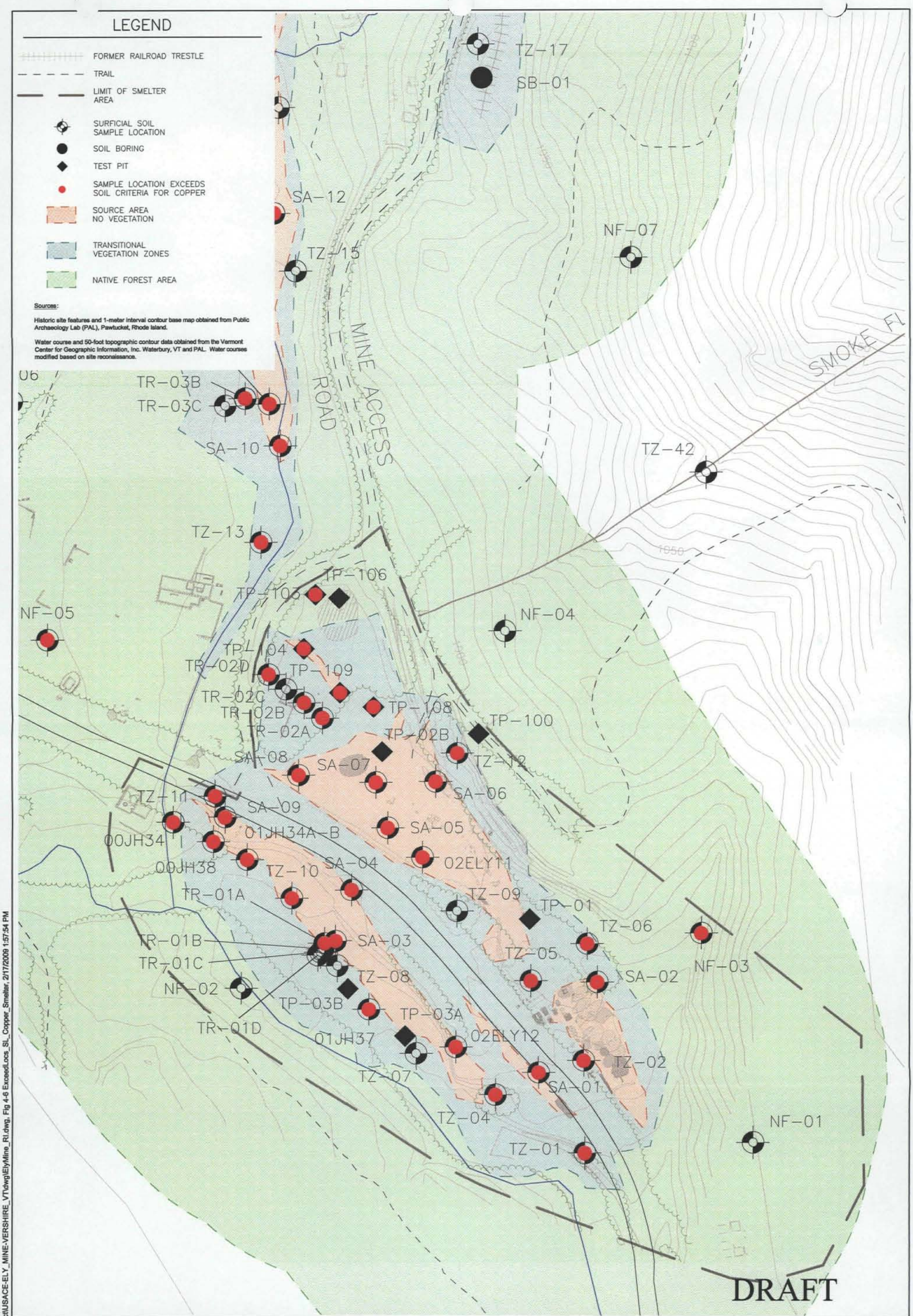
DESIGN: FS	PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION	TITLE: AREAL EXTENT OF COPPER IMPACTS IN SURFACE SOILS MIDSLOPE WASTE PILES	Figure: 4-4
DRAWN: FS	PROJECT LOCATION: VERSHIRE, VERMONT		
CHECKED: KHM	CLIENT: U.S. ARMY CORPS OF ENGINEERS		
APPROVED: JCC	PROJECT NO: 39459198 FILE: ElyMine_RI.dwg	SCALE: AS SHOWN DATE: NOV 2008	



URS Corporation 477 Congress St Suite 900 Portland, ME 04101 Tel: 207.879.7686 Fax: 207.879.7685 www.urscorp.com	DESIGN: FS DRAWN: FS CHECKED: KHM APPROVED: JCC	PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION PROJECT LOCATION: VERSHIRE, VERMONT CLIENT: U.S. ARMY CORPS OF ENGINEERS PROJECT NO: 39459198 FILE: ElyMine_RI.dwg	TITLE: AREAL EXTENT OF SELENIUM IMPACTS IN SURFACE SOILS MIDSLOPE WASTE PILES SCALE: AS SHOWN DATE: NOV 2008 Figure: 4-5

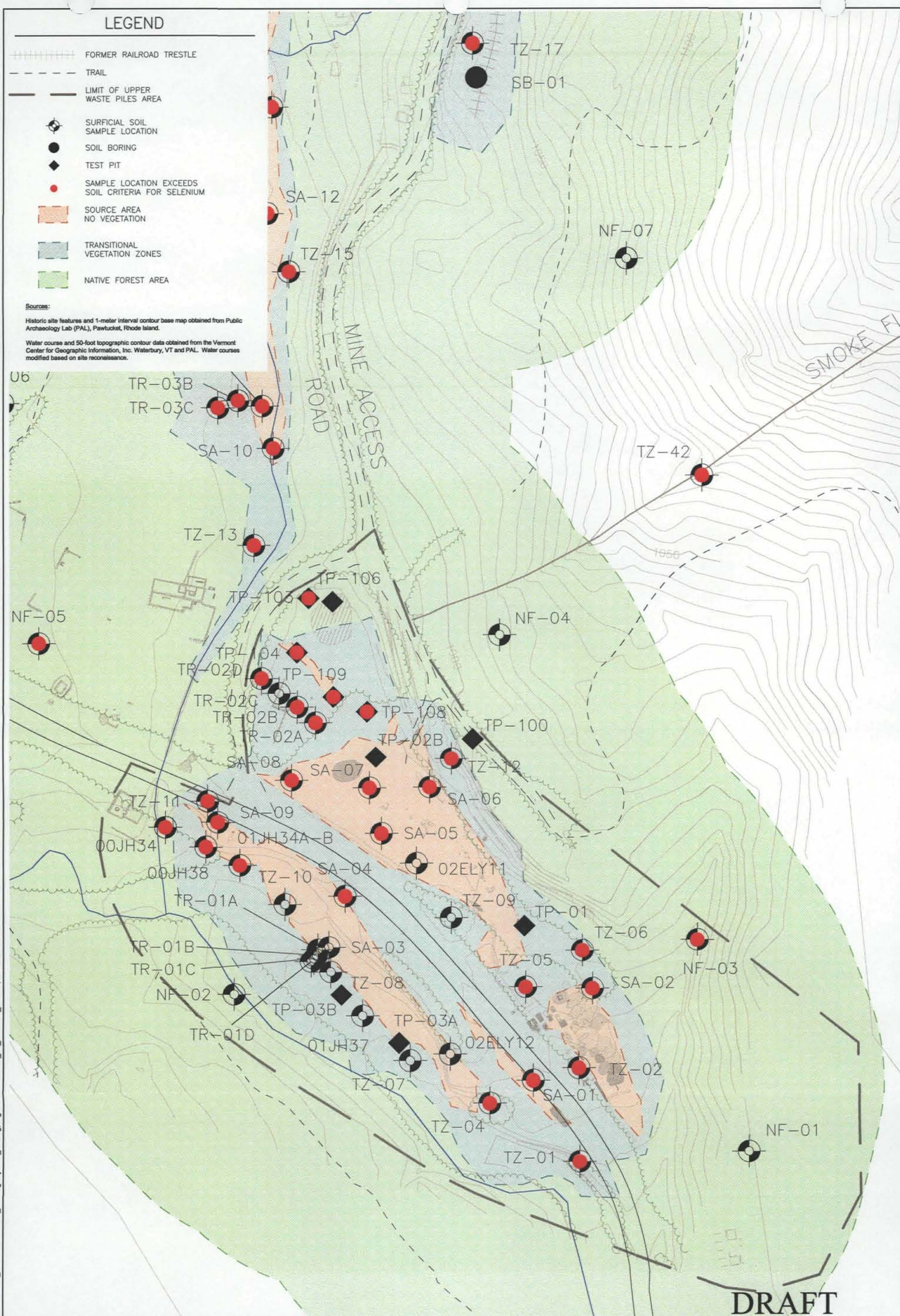
SCALE IN FEET 0 100 200

P:\cad-project\USACE-ELY_MINE-VERSHIRE_VT\dwg\ElyMine_RI.dwg, Fig 4-5 ExceedLocs_SL_Selenium_MWRP, 2/17/2009 1:37:20 PM



P:\acad-project\USACE-ELY_MINE-VERSHIRE_VT\dwg\ElyMine_RI.dwg, Fig 4-6 ExceedLocs_SL_Copper_Smelter, 2/17/2009 1:57:54 PM

URS Corporation 477 Congress St Suite 900 Portland, ME 04101 Tel: 207.879.7686 Fax: 207.879.7685 www.urscorp.com	N / W / E / S 0 60 120 SCALE IN FEET	DESIGN: FS DRAWN: FS CHECKED: KHM APPROVED: JCC	PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION PROJECT LOCATION: VERSHIRE, VERMONT CLIENT: U.S. ARMY CORPS OF ENGINEERS PROJECT NO: 39459198 FILE: ElyMine_RI.dwg	TITLE: AREAL EXTENT OF COPPER IMPACTS IN SURFACE SOILS SMELTER AREA SCALE: AS SHOWN DATE: NOV 2008
				Figure: 4-6



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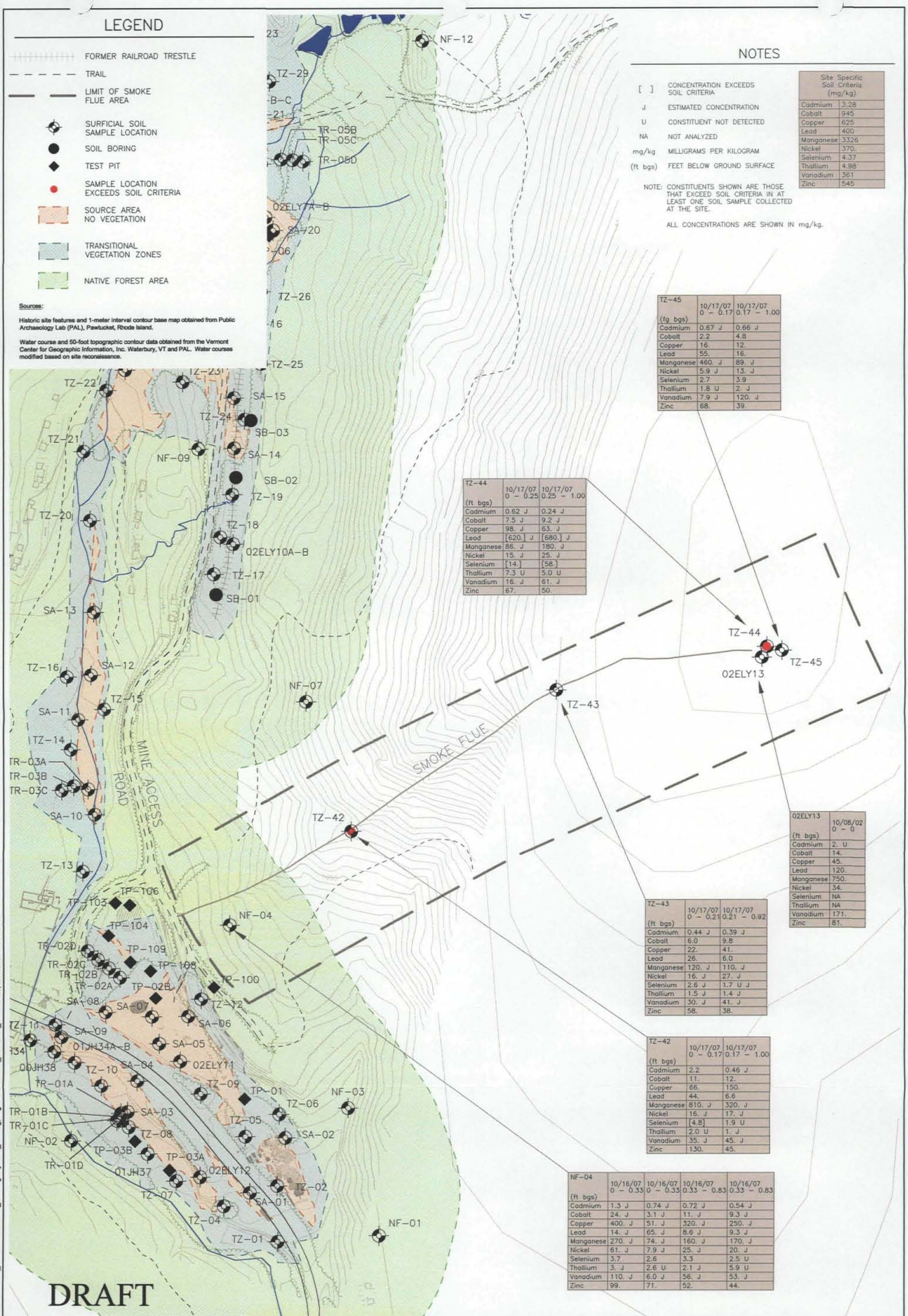
DESIGN: FS	PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION	TITLE: AREAL EXTENT OF SELENIUM IMPACTS IN SURFACE SOILS SMELTER AREA	Figure: 4-7
DRAWN: FS	PROJECT LOCATION: VERSHIRE, VERMONT		
CHECKED: KHM	CLIENT: U.S. ARMY CORPS OF ENGINEERS		
APPROVED: JCC	PROJECT NO: 39459198 FILE: ElyMine_RI.dwg	SCALE: AS SHOWN	DATE: NOV 2008

P:\acad-project\USACE-ELY_MINE-VERSHIRE_VT\dwg\ElyMine_RI.dwg, Fig 4-7 ExceedLocs_SL_Selenium_Smelter, 2/17/2009 2:01:19 PM



NOTES

[ ]	CONCENTRATION EXCEEDS SOIL CRITERIA
J	ESTIMATED CONCENTRATION
U	CONSTITUENT NOT DETECTED
NA	NOT ANALYZED
mg/kg	MILLIGRAMS PER KILOGRAM
(ft bgs)	FEET BELOW GROUND SURFACE

NOTE: CONSTITUENTS SHOWN ARE THOSE THAT EXCEED SOIL CRITERIA IN AT LEAST ONE SOIL SAMPLE COLLECTED AT THE SITE.

ALL CONCENTRATIONS ARE SHOWN IN mg/kg.

Site Specific Soil Criteria (mg/kg)	
Cadmium	3.28
Cobalt	945
Copper	625
Lead	400
Manganese	3326
Nickel	370.
Selenium	4.37
Thallium	4.98
Vanadium	361
Zinc	545

TZ-45 (fg bgs)	10/17/07 0 - 0.17	10/17/07 0.17 - 1.00
Cadmium	0.67 J	0.66 J
Cobalt	2.2	4.8
Copper	16.	12.
Lead	55.	16.
Manganese	460. J	89. J
Nickel	5.9 J	13. J
Selenium	2.7	3.9
Thallium	1.8 U	2. J
Vanadium	7.9 J	120. J
Zinc	68.	39.

TZ-44 (ft bgs)	10/17/07 0 - 0.25	10/17/07 0.25 - 1.00
Cadmium	0.62 J	0.24 J
Cobalt	7.5 J	9.2 J
Copper	98. J	63. J
Lead	[620.] J	[680.] J
Manganese	86. J	180. J
Nickel	15. J	25. J
Selenium	[14.]	[58.]
Thallium	7.3 U	5.0 U
Vanadium	16. J	61. J
Zinc	67.	50.

02ELY13 (ft bgs)	10/08/02 0 - 0
Cadmium	2. U
Cobalt	14.
Copper	45.
Lead	120.
Manganese	750.
Nickel	34.
Selenium	NA
Thallium	NA
Vanadium	171.
Zinc	81.

TZ-43 (ft bgs)	10/17/07 0 - 0.21	10/17/07 0.21 - 0.92
Cadmium	0.44 J	0.39 J
Cobalt	6.0	9.8
Copper	22.	41.
Lead	26.	6.0
Manganese	120. J	110. J
Nickel	16. J	27. J
Selenium	2.6 J	1.7 U J
Thallium	1.5 J	1.4 J
Vanadium	30. J	41. J
Zinc	58.	38.

TZ-42 (ft bgs)	10/17/07 0 - 0.17	10/17/07 0.17 - 1.00
Cadmium	2.2	0.46 J
Cobalt	11.	12.
Copper	66.	150.
Lead	44.	6.6
Manganese	810. J	320. J
Nickel	16. J	17. J
Selenium	[4.8]	1.9 U
Thallium	2.0 U	1. J
Vanadium	35. J	45. J
Zinc	130.	45.

NF-04 (ft bgs)	10/16/07 0 - 0.33	10/16/07 0 - 0.33	10/16/07 0.33 - 0.83	10/16/07 0.33 - 0.83
Cadmium	1.3 J	0.74 J	0.72 J	0.54 J
Cobalt	24. J	3.1 J	11. J	9.3 J
Copper	400. J	51. J	320. J	250. J
Lead	14. J	65. J	8.6 J	9.3 J
Manganese	270. J	74. J	160. J	170. J
Nickel	61. J	7.9 J	25. J	20. J
Selenium	3.7	2.6	3.3	2.5 U
Thallium	3. J	2.6 U	2.1 J	5.9 U
Vanadium	110. J	6.0 J	56. J	53. J
Zinc	99.	71.	52.	44.

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SCALE IN FEET: 0, 100, 200

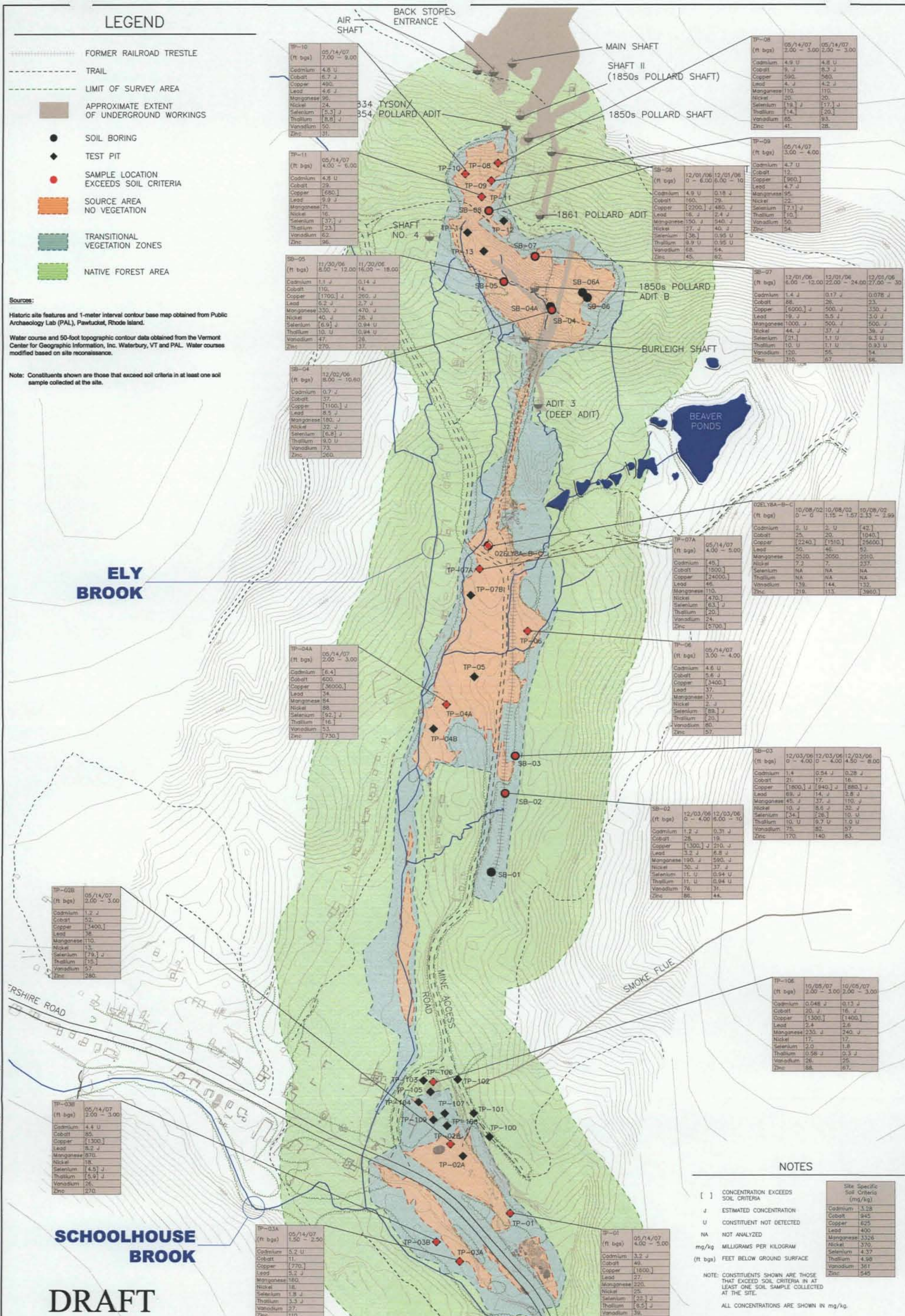
DESIGN:	FS
DRAWN:	FS
CHECKED:	KHM
APPROVED:	JCC

PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION
PROJECT LOCATION: VERSHIRE, VERMONT
CLIENT: U.S. ARMY CORPS OF ENGINEERS
PROJECT NO: 39459198 FILE: ElyMine_RI.dwg

TITLE: RESULTS FOR SELECT CONSTITUENTS IN SOIL SMOKE FLUE AREA

SCALE: AS SHOWN DATE: NOV 2008

Figure: 4-8



TP-10 (ft bgs)	05/14/07 7.00 - 9.00
Cadmium	4.8 U
Cobalt	6.7 J
Copper	490.
Lead	4.6 J
Manganese	96.
Nickel	24.
Selenium	[5.3] J
Thallium	[8.8] J
Vanadium	50.
Zinc	31.

TP-11 (ft bgs)	05/14/07 4.00 - 6.00
Cadmium	4.8 U
Cobalt	29.
Copper	[680.]
Lead	9.9 J
Manganese	71.
Nickel	16.
Selenium	[37.] J
Thallium	[23.]
Vanadium	62.
Zinc	96.

SB-05 (ft bgs)	11/30/06 8.00 - 12.00	11/30/06 16.00 - 18.00
Cadmium	1.1 J	0.14 J
Cobalt	110.	14.
Copper	[1700.] J	260. J
Lead	6.2 J	2.7 J
Manganese	330. J	470. J
Nickel	40. J	28. J
Selenium	[6.9] J	0.94 U
Thallium	10. U	0.94 U
Vanadium	47.	26.
Zinc	270.	37.

SB-04 (ft bgs)	12/02/06 8.00 - 10.60
Cadmium	0.7 J
Cobalt	37.
Copper	[1100.] J
Lead	8.5 J
Manganese	180. J
Nickel	32. J
Selenium	[6.8] J
Thallium	9.0 U
Vanadium	73.
Zinc	260.

TP-08 (ft bgs)	05/14/07 2.00 - 3.00	05/14/07 2.00 - 3.00
Cadmium	4.9 U	4.8 U
Cobalt	9. J	8.3 J
Copper	590.	560.
Lead	4. J	4.2 J
Manganese	110.	110.
Nickel	20.	20.
Selenium	[19.] J	[17.] J
Thallium	[14.]	[20.]
Vanadium	85.	93.
Zinc	41.	28.

TP-09 (ft bgs)	05/14/07 3.00 - 4.00
Cadmium	4.7 U
Cobalt	10.
Copper	[960.]
Lead	4.7 J
Manganese	95.
Nickel	22.
Selenium	[7.1] J
Thallium	[10.]
Vanadium	50.
Zinc	54.

SB-08 (ft bgs)	12/01/06 0 - 6.00	12/01/06 6.00 - 10
Cadmium	4.9 U	0.18 J
Cobalt	160.	29.
Copper	[2200.] J	480. J
Lead	16. J	2.4 J
Manganese	150. J	540. J
Nickel	27. J	40. J
Selenium	[38.]	0.95 U
Thallium	8.9 U	0.95 U
Vanadium	68.	64.
Zinc	45.	62.

SB-07 (ft bgs)	12/01/06 6.00 - 12.00	12/01/06 22.00 - 24.00	12/01/06 27.00 - 30
Cadmium	1.4 J	0.17 J	0.076 J
Cobalt	88.	26.	23.
Copper	[6000.] J	500. J	330. J
Lead	19. J	5.5 J	3.0 J
Manganese	1000. J	500. J	500. J
Nickel	44. J	37. J	39. J
Selenium	[21.]	1.1 U	9.3 U
Thallium	10. U	1.1 U	0.93 U
Vanadium	120.	55.	54.
Zinc	310.	67.	66.

02ELY8A-B-C (ft bgs)	10/08/02 0 - 0	10/08/02 1.15 - 1.57	10/08/02 2.33 - 2.99
Cadmium	2. U	2. U	[42.]
Cobalt	25.	20.	[1040.]
Copper	[2240.]	[1510.]	[25600.]
Lead	50.	46.	52.
Manganese	2520.	2050.	2010.
Nickel	7.2	7.	237.
Selenium	NA	NA	NA
Thallium	NA	NA	NA
Vanadium	139.	144.	132.
Zinc	219.	113.	[3960.]

TP-07A (ft bgs)	05/14/07 4.00 - 5.00
Cadmium	[45.]
Cobalt	[1500.]
Copper	[24000.]
Lead	46.
Manganese	110.
Nickel	[470.]
Selenium	[63.] J
Thallium	[20.]
Vanadium	24.
Zinc	[5700.]

TP-06 (ft bgs)	05/14/07 3.00 - 4.00
Cadmium	4.6 U
Cobalt	5.6 J
Copper	[3400.]
Lead	37.
Manganese	37.
Nickel	2. J
Selenium	[89.] J
Thallium	[20.]
Vanadium	80.
Zinc	57.

TP-04A (ft bgs)	05/14/07 2.00 - 3.00
Cadmium	[6.4]
Cobalt	600.
Copper	[36000.]
Lead	34.
Manganese	84.
Nickel	88.
Selenium	[92.] J
Thallium	[16.]
Vanadium	53.
Zinc	[730.]

SB-03 (ft bgs)	12/03/06 0 - 4.00	12/03/06 0 - 4.00	12/03/06 4.50 - 8.00
Cadmium	1.4	0.54 J	0.28 J
Cobalt	21.	17.	16.
Copper	[1800.] J	[940.] J	[880.] J
Lead	69. J	14. J	2.8 J
Manganese	45. J	37. J	110. J
Nickel	10. J	8.6 J	32. J
Selenium	[34.]	[26.]	10. U
Thallium	10. U	9.7 U	1.0 U
Vanadium	75.	82.	57.
Zinc	170	140	83.

SB-02 (ft bgs)	12/03/06 0 - 4.00	12/03/06 6.00 - 10
Cadmium	1.2 J	0.31 J
Cobalt	28.	19.
Copper	[1300.] J	210. J
Lead	3.2 J	6.8 J
Manganese	190. J	590. J
Nickel	30. J	37. J
Selenium	11. U	0.94 U
Thallium	11. U	0.94 U
Vanadium	76.	31.
Zinc	86.	44.

TP-02B (ft bgs)	05/14/07 2.00 - 3.00
Cadmium	1.2 J
Cobalt	52.
Copper	[3400.]
Lead	38.
Manganese	110.
Nickel	13.
Selenium	[79.] J
Thallium	[15.]
Vanadium	57.
Zinc	280.

TP-108 (ft bgs)	10/05/07 2.00 - 3.00	10/05/07 2.00 - 3.00
Cadmium	0.048 J	0.13 J
Cobalt	20. J	16. J
Copper	[1300.]	[1400.]
Lead	2.4	2.6
Manganese	230. J	240. J
Nickel	17.	17.
Selenium	2.0	1.8
Thallium	0.58 J	0.3 J
Vanadium	26.	25.
Zinc	88.	67.

TP-03B (ft bgs)	05/14/07 2.00 - 3.00
Cadmium	4.4 U
Cobalt	85.
Copper	[1300.]
Lead	8.2 J
Manganese	870.
Nickel	18.
Selenium	[4.5] J
Thallium	[5.9] J
Vanadium	26.
Zinc	270.

TP-03A (ft bgs)	05/14/07 1.50 - 2.50
Cadmium	5.2 U
Cobalt	11.
Copper	[770.]
Lead	5.2 J
Manganese	160.
Nickel	18.
Selenium	1.8 J
Thallium	3.3 J
Vanadium	27.
Zinc	110.

TP-01 (ft bgs)	05/14/07 4.00 - 5.00
Cadmium	3.2 J
Cobalt	49.
Copper	[1600.]
Lead	27.
Manganese	220.
Nickel	25.
Selenium	[22.] J
Thallium	[8.5] J
Vanadium	39.
Zinc	410.

Site Specific Soil Criteria (mg/kg)	
Cadmium	3.28
Cobalt	945
Copper	625
Lead	400
Manganese	3326
Nickel	370.
Selenium	4.37
Thallium	4.98
Vanadium	361
Zinc	546

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DESIGN: FS
DRAWN: FS
CHECKED: KHM
APPROVED: JCC

PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION
PROJECT LOCATION: VERSHIRE, VERMONT
CLIENT: U.S. ARMY CORPS OF ENGINEERS
PROJECT NO: 39459198 FILE: ElyMine_RI.dwg

TITLE: RESULTS FOR SELECT CONSTITUENTS IN SUBSURFACE SOILS

SCALE: AS SHOWN DATE: NOV 2008

Figure: 4-9

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LEGEND

- MINE WASTE (WASTE ORE, TAILING OR ROAST BEDS)
- SMELTER WASTE
- SLAG
- FORMER RAILROAD TRESTLE
- TRAIL
- APPROXIMATE EXTENT OF UNDERGROUND WORKINGS
- GROUNDWATER MONITORING WELL
- BUREAU OF MINES BORING WITH STEEL CASING

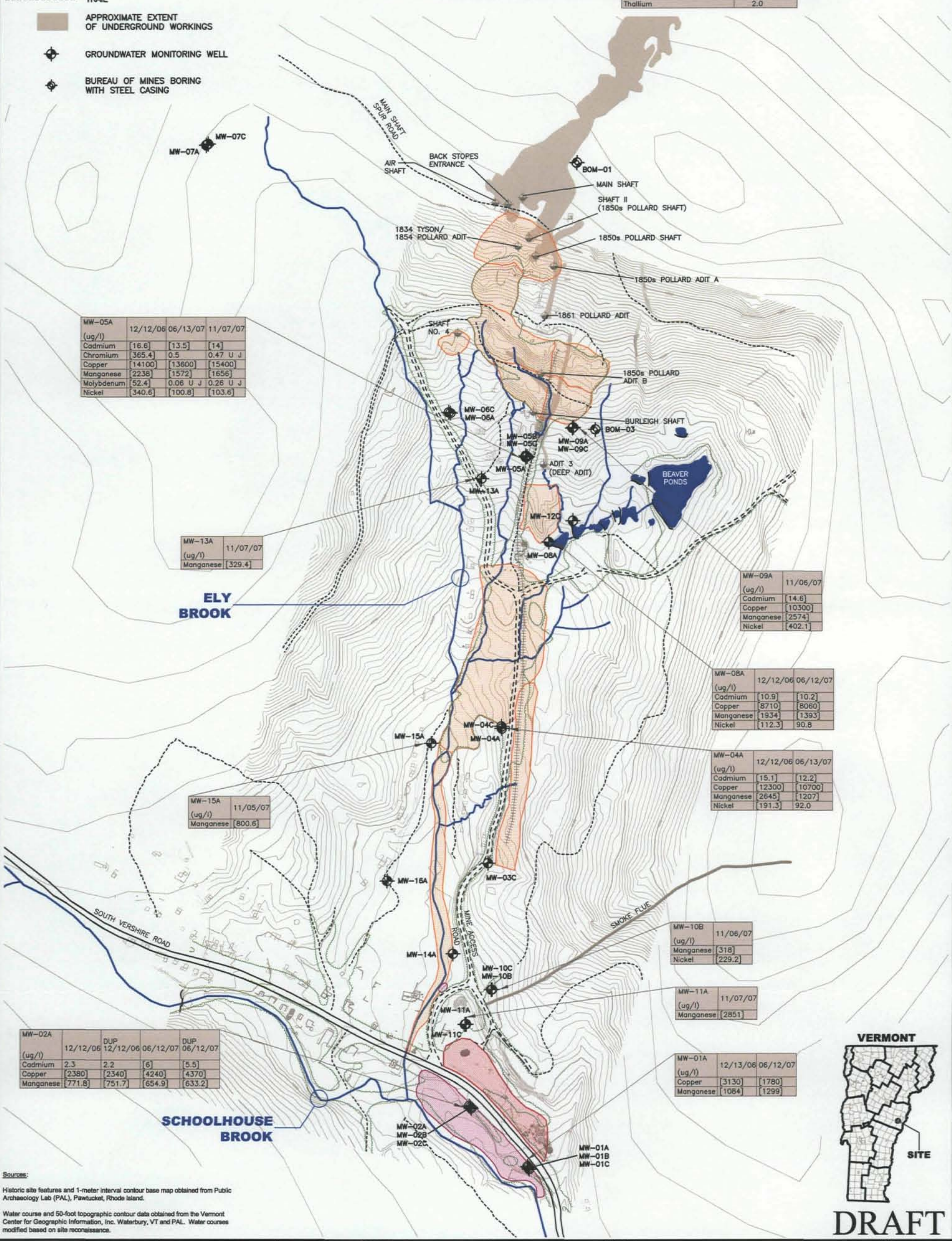
NOTES

[ ] CONCENTRATION EXCEEDS GROUNDWATER WATER CRITERIA

J ESTIMATED CONCENTRATION

U CONSTITUENT NOT DETECTED

Site Specific Groundwater Criteria Micrograms per liter (ug/l)	
Beryllium	4.0
Cadmium	5.0
Chromium	100.
Copper	1300.
Lead	15.
Manganese	300.
Molybdenum	40.
Nickel	100.
Thallium	2.0



MW-05A (ug/l)	12/12/06	06/13/07	11/07/07
Cadmium	[16.6]	[13.5]	[14]
Chromium	[365.4]	0.5	0.47 U J
Copper	[14100]	[13600]	[15400]
Manganese	[2238]	[1572]	[1656]
Molybdenum	[52.4]	0.06 U J	0.26 U J
Nickel	[340.6]	[100.8]	[103.6]

MW-13A (ug/l)	11/07/07
Manganese	[329.4]

MW-09A (ug/l)	11/06/07
Cadmium	[14.6]
Copper	[10300]
Manganese	[2574]
Nickel	[402.1]

MW-08A (ug/l)	12/12/06	06/12/07
Cadmium	[10.9]	[10.2]
Copper	[8710]	[8060]
Manganese	[1934]	[1393]
Nickel	[112.3]	90.8

MW-04A (ug/l)	12/12/06	06/13/07
Cadmium	[15.1]	[12.2]
Copper	[12300]	[10700]
Manganese	[2645]	[1207]
Nickel	[191.3]	92.0

MW-15A (ug/l)	11/05/07
Manganese	[800.6]

MW-10B (ug/l)	11/06/07
Manganese	[318]
Nickel	[229.2]

MW-11A (ug/l)	11/07/07
Manganese	[2851]

MW-02A (ug/l)	12/12/06	DUP 12/12/06	06/12/07	DUP 06/12/07
Cadmium	2.3	2.2	[6]	[5.5]
Copper	[2380]	[2340]	[4240]	[4370]
Manganese	[771.8]	[751.7]	[654.9]	[633.2]

MW-01A (ug/l)	12/13/06	06/12/07
Copper	[3130]	[1780]
Manganese	[1084]	[1299]

Sources:

Historic site features and 1-meter interval contour base map obtained from Public Archaeology Lab (PAL), Pawtucket, Rhode Island.

Water course and 50-foot topographic contour data obtained from the Vermont Center for Geographic Information, Inc. Waterbury, VT and PAL. Water courses modified based on site reconaissance.

DRAFT

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DESIGN: FS	PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION	TITLE: CONSTITUENTS EXCEEDING GROUNDWATER CRITERIA IN SHALLOW OVERBURDEN	Figure: 4-13
DRAWN: FS	PROJECT LOCATION: VERSHIRE, VERMONT		
CHECKED: KHM	CLIENT: U.S. ARMY CORPS OF ENGINEERS		
APPROVED: JCC	PROJECT NO: 39459198 FILE: ElyMine_RI.dwg	SCALE: AS SHOWN	DATE: NOV 2008

LEGEND

- MINE WASTE (WASTE ORE, TAILING OR ROAST BEDS)
- SMELTER WASTE
- SLAG
- FORMER RAILROAD TRESTLE
- TRAIL
- APPROXIMATE EXTENT OF UNDERGROUND WORKINGS
- GROUNDWATER MONITORING WELL
- BUREAU OF MINES BORING WITH STEEL CASING

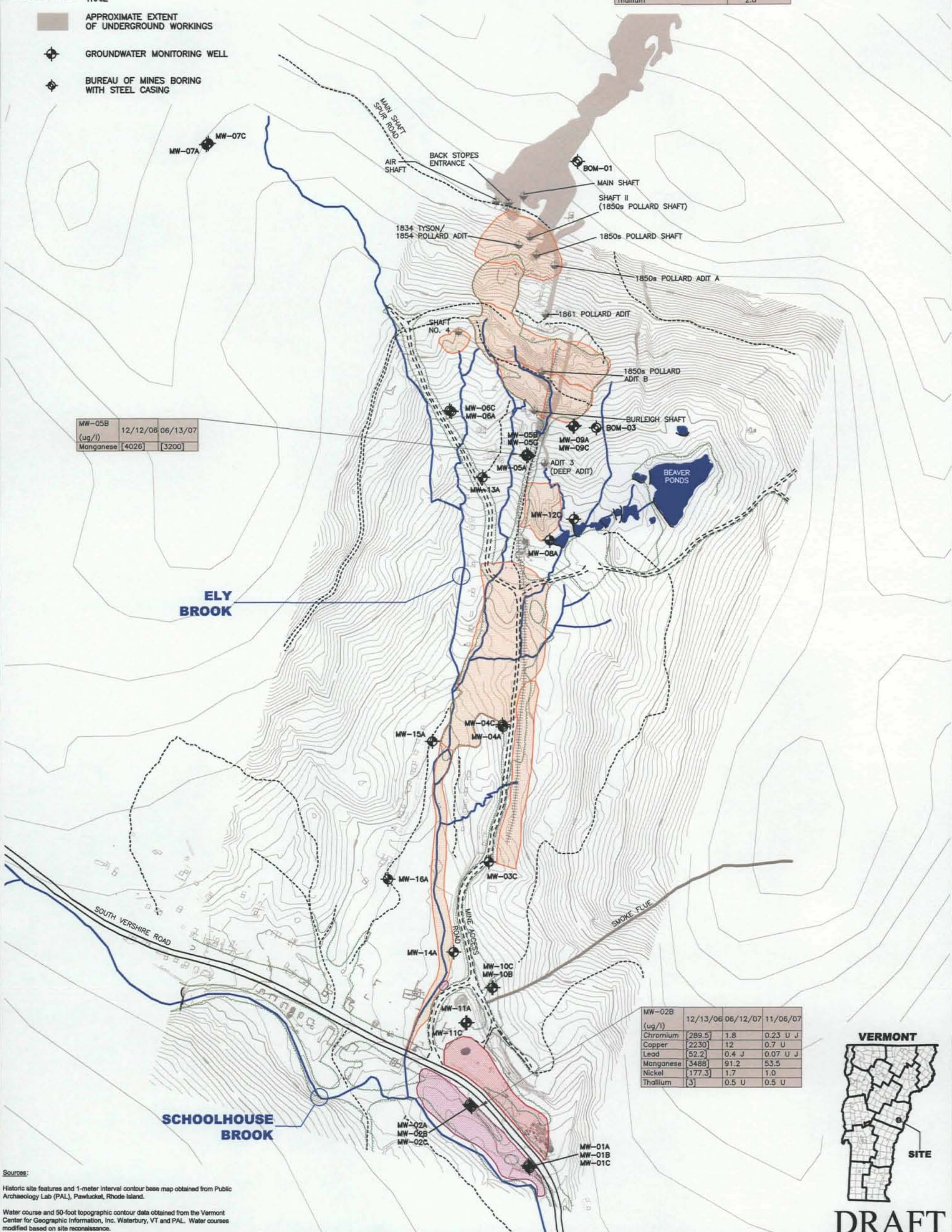
NOTES

[ ] CONCENTRATION EXCEEDS GROUNDWATER WATER CRITERIA

J ESTIMATED CONCENTRATION

U CONSTITUENT NOT DETECTED

Site Specific Groundwater Criteria Micrograms per liter (ug/l)	
Beryllium	4.0
Cadmium	5.0
Chromium	100.
Copper	1300.
Lead	15.
Manganese	300.
Molybdenum	40.
Nickel	100.
Thallium	2.0



MW-05B (ug/l)	12/12/06	06/13/07
Manganese	[4026]	[3200]

MW-02B (ug/l)	12/13/06	06/12/07	11/06/07
Chromium	[289.5]	1.8	0.23 U J
Copper	[2230]	12	0.7 U
Lead	[52.2]	0.4 J	0.07 U J
Manganese	[3488]	91.2	53.5
Nickel	[177.3]	1.7	1.0
Thallium	[3]	0.5 U	0.5 U

Sources:

Historic site features and 1-meter interval contour base map obtained from Public Archaeology Lab (PAL), Pawtucket, Rhode Island.

Water course and 50-foot topographic contour data obtained from the Vermont Center for Geographic Information, Inc. Waterbury, VT and PAL. Water courses modified based on site reconaissance.

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DESIGN:	FS
DRAWN:	FS
CHECKED:	KHM
APPROVED:	JCC

PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION

PROJECT LOCATION: VERSHIRE, VERMONT

CLIENT: U.S. ARMY CORPS OF ENGINEERS

PROJECT NO: 39459198 FILE: ElyMine_RI.dwg

TITLE: CONSTITUENTS EXCEEDING GROUNDWATER CRITERIA IN TILL

SCALE: AS SHOWN DATE: NOV 2008

Figure: 4-14

LEGEND

- MINE WASTE (WASTE ORE, TAILING OR ROAST BEDS)
- SMELTER WASTE
- SLAG
- FORMER RAILROAD TRESTLE
- TRAIL
- APPROXIMATE EXTENT OF UNDERGROUND WORKINGS
- GROUNDWATER MONITORING WELL
- BUREAU OF MINES BORING WITH STEEL CASING

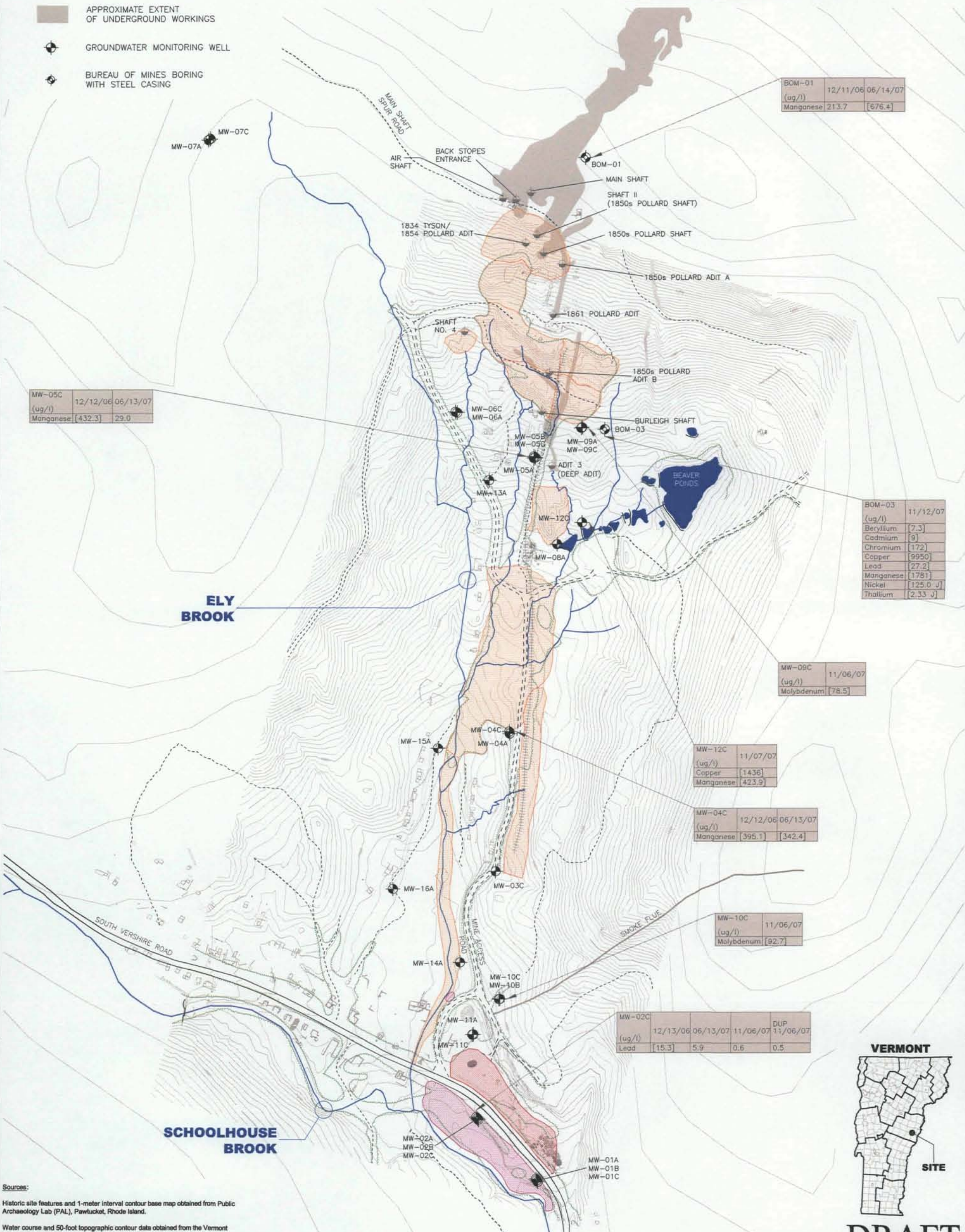
NOTES

[ ] CONCENTRATION EXCEEDS GROUNDWATER WATER CRITERIA

J ESTIMATED CONCENTRATION

U CONSTITUENT NOT DETECTED

Site Specific Groundwater Criteria Micrograms per liter (ug/l)	
Beryllium	4.0
Cadmium	5.0
Chromium	100.
Copper	1300.
Lead	15.
Manganese	300.
Molybdenum	40.
Nickel	100.
Thallium	2.0



BOM-01 (ug/l)	12/11/06	06/14/07
Manganese	213.7	[676.4]

MW-05C (ug/l)	12/12/06	06/13/07
Manganese	[432.3]	29.0

BOM-03 (ug/l)	11/12/07
Beryllium	[7.3]
Cadmium	[9]
Chromium	[172]
Copper	[9950]
Lead	[27.2]
Manganese	[1781]
Nickel	[125.0 J]
Thallium	[2.33 J]

MW-09C (ug/l)	11/06/07
Molybdenum	[78.5]

MW-12C (ug/l)	11/07/07
Copper	[1436]
Manganese	[423.9]

MW-04C (ug/l)	12/12/06	06/13/07
Manganese	[395.1]	[342.4]

MW-10C (ug/l)	11/06/07
Molybdenum	[92.7]

MW-02C (ug/l)	12/13/06	06/13/07	11/06/07	DUP 11/06/07
Lead	[15.3]	5.9	0.6	0.5

Sources:

Historic site features and 1-meter interval contour base map obtained from Public Archaeology Lab (PAL), Pawtucket, Rhode Island.

Water course and 50-foot topographic contour data obtained from the Vermont Center for Geographic Information, Inc. Waterbury, VT and PAL. Water courses modified based on site reconaissance.

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DESIGN: FS	PROJECT NAME: ELY MINE REMEDIAL INVESTIGATION	TITLE: CONSTITUENTS EXCEEDING GROUNDWATER CRITERIA IN BEDROCK	Figure: 4-15
DRAWN: FS	PROJECT LOCATION: VERSHIRE, VERMONT		
CHECKED: KHM	CLIENT: U.S. ARMY CORPS OF ENGINEERS		
APPROVED: JCC	PROJECT NO: 39459198 FILE: ElyMine_RI.dwg	SCALE: AS SHOWN	DATE: NOV 2008

Appendices

APPENDICES A through H

(provided on CD)

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[ ] Map [ ] Photograph [ ] Graph/Chart

[ ] Video [X] Compact Disc [ ] Other (Specify below)

Description or Comments:
Phase 1A Remedial Investigation (RI) Report 02/20/2009 Appendices A through H

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