KENO HILL PROPERTY

ADIT DISCHARGE SURVEY

2007

Prepared for:

Yukon Government

By:

ACCESS CONSULTING GROUP

March 2008

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1.0 INTRODUCTION

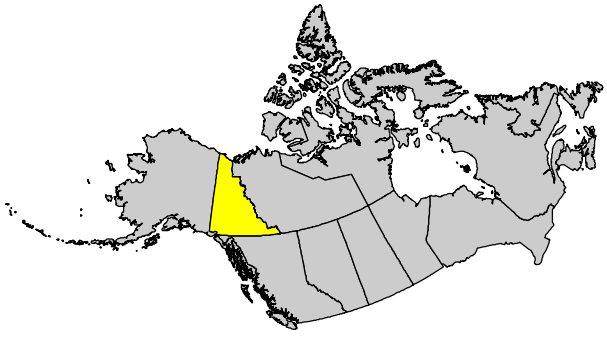
United Keno Hill Mines Ltd., the previous owner of the properties located on and around Galena Hill, Keno Hill and Sourdough Hill, ceased operations in 1989. Please refer to Figure 1 "General Location Map" for project location orientation. In January 2001, The Minister of the Department of Indian and Northern Affairs Canada (INAC) exercised his authority under the Yukon Waters Act by issuing a determination that the mine had been abandoned. INAC took over care and maintenance (C&M) of the site after this time. In October 2001, the site was declared a Type II Site under the Devolution Transfer Agreement, which meant that Yukon would manage the property, but environmental liability would remain with the Government of Canada after devolution April 1, 2003.

On June 26, 2003, Yukon Government (YG) declared the properties and the works on these sites abandoned once again. YG subsequently took over the management of C&M and water treatment activities at the site.

The Court appointed PricewaterhouseCoopers Inc. as Interim Receiver and Receiver-Manager of United Keno Hill Mines Limited and UKH Minerals Limited (collectively known as "UKHM") on April 6, 2004, and through a selection process Alexco Resource Corp. (Alexco) became the preferred purchaser of the UKHM assets (June 24, 2005). As per the Court arranged sale, Alexco created Elsa Reclamation and Development Company Ltd., a wholly owned subsidiary of Alexco (hereinafter referred to as ERDC), to provide a project-specific legal vehicle to undertake ownership and management of the site.

YG has entered into a contractual arrangement with ERDC to perform environmental care and maintenance at the site. The agreement further provides for ERDC to develop a Reclamation Plan (ESM Closure Plan) for the site to address long term site liabilities, plan implementation, and allows Alexco to continue to develop the exploration potential of the property.

As part of the ESM Closure Plan there are a variety of tasks to be considered and a diverse group of stakeholders and interested public to be consulted. All plans hold the overlaying objective; to ensure public, wildlife, and aquatic resources safety by providing long-term environmental protection with a focus on protecting water quality. The goal of the ESM Closure Plan is to remediate and reclaim previous site disturbances.



ERDC

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KENO HILL SILVER DISTRICT

ADIT DISCHARGE SURVEY

PROJECT LOCATION

Drawn By: HD	**FIGURE 1**
Checked By: DC	Date: March 2008

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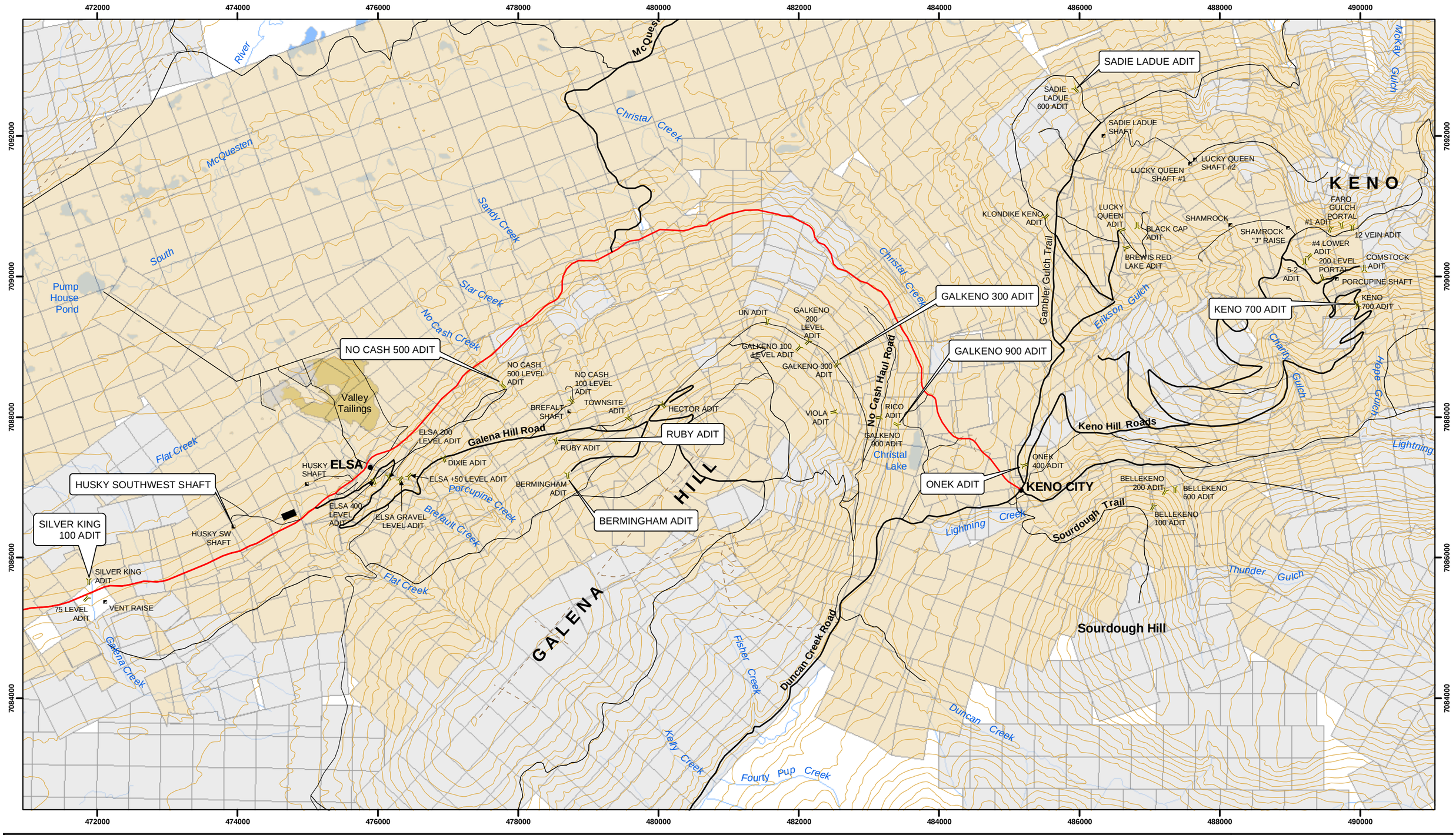

N

1:50,000
(when plotted on 11x17 inch sheet)

0 1 2 4 km

Legend

Topography
- Town
- Silver Trail
- Secondary Road
- Limited-use road
- Trail
- Watercourse
- Waterbody

Mine Workings
- Valley Tailings
- Adit
- Shaft (to surface - connection to underground not determined)

Quartz Claims
- Elsa Reclamation and Development Corp. and Related Companies Quartz Claims
- Other Quartz Claim

First Nation Settlement Land
- First Nation Settlement Land

Notes:
This map is for illustrative purposes only.
This is not a legal document.
National Topographic Data Base (NTDB) compiled by Natural Resources Canada at a scale of 1:50,000. Cadastral data compiled by Natural Resources Canada. Reproduced under license from © Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Quartz claim boundaries are current as of December 7, 2007.
Data source: http://geomaticsyukon.ca.
Ownership is current as of Dec. 11, 2007. Digital claim status report obtained from the Mining Recorder website at http://www.yukonminingrecorder.ca/
Projection: UTM Zone 8 NAD83
NTS Sheet 105M/13 and 105M/14

ERDC
ACCESS

Keno Hill Silver District
Adit Discharge Survey

Adit Discharge Survey Locations

Drawn By: HD	Date: March 2008	**FIGURE 2**
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In June 2007 an Adit Discharge Survey workplan (Appendix A) was completed and approved as part of the closure plan's special projects. The purpose of this workplan was to outline the tasks, responsibilities and budget necessary to understand the Keno Hill's adits flowpath, and down gradient water quality. A review was conducted of Onek and No Cash 500 discharges in early 2006 to determine potential areas of fugitive flows that might require mitigation or treatment during closure. It was recommended that similar investigations be initiated at other adits within the property to extend the understanding of these adit's characteristics and help shape the final decision making for mine closure at these sites.

In the summer of 2007 ACG personnel (Dave Desmarais and Durand Cornett) conducted the adit discharge survey workplan. The objectives of this survey are outlined as follows:

- Determine the discharge path from adit to a surface water source if possible;
- GPS the discharge path;
- Established sample locations;
- Obtain water samples at locations along the path;
- Collect in-situ water quality;
- Receive lab results of water's analysis;
- Photograph library; and
- Report on the results of the survey.

To achieve these objectives ACG delineated water flow routes from each adit and recorded the path with the assistance of GPS until they either entered the ground indefinitely or become part of a larger body of surface water. At each site, water quality tests, both in-situ (pH, conductivity, temperature, total dissolved solids, ORP and discharge) and ex-situ, were conducted at station locations along the path. The adit locations included in this study were; Silver King 100, Husky South West, Bermingham, Ruby, No Cash 500, Galkeno 300, Galkeno 900, Keno 700, Onek, and Sadie Ladue. These site locations can be seen in Figure 2 "Site Locations." Each location is provided with a map of its water course and water quality analysis. Water quality results were compared with the CCME Fresh Water Aquatic Life Guidelines and Effluent Quality Standards as Part E of the Water Use Licence (QZ06-074) provided below:

Part E – Effluent Quality Standards

25. No Waste discharges from the wastewater treatment systems at Bellekeno 600 adit, Silver King 100 adit, Galkeno 300 adit, Galkeno 900 adit and the Valley Tailings Area shall exceed the following limits:

Parameter	Maximum Grab Concentration Objective (mg/L)
pH	6.5-9.5 units
Suspended solids	25.0
Arsenic (Total)	0.50
Cadmium (Total)	0.05
Copper (Total)	0.30
Lead (Total)	0.20
Nickel (Total)	0.50
Silver (Total)	0.10
Zinc (Total)	0.50

27. The points of compliance at the Bellekeno 600 adit, Silver King 100 adit, Galkeno 300 adit, Galkeno 900 adit and the Valley Tailings Area for the effluent quality standards included in this licence shall be the final point of control prior to discharging effluent to the environment.

Provided in the following sections are a site by site breakdown of specific methodologies, results and photos from the adit discharge survey 2007.

2.0 ADIT DISCHARGE SURVEY RESULTS

The following sections will outlay the results of 2007's adit discharge survey. A site description, adit flow path delineation, figure, photos, and water quality data and analysis is provided for each of the adits visited. There were two adits that produced no results and therefore left out of this survey analysis; Lucky Queen has had no discharge since June 2006 as noted in quarterly reports, and Blackcap adit did not have any discharge at the time of the site-visit.

2.1 SILVER KING 100 ADIT

The Silver King mine site straddles the Silver Trail Highway (Hwy 11) at Galena Creek, about 4 kilometres southwest of Elsa Village. Silver King is the westernmost mine in the Keno Hill mining camp. Refer to Figure 2 "Site Locations" for further location representation.

On May 30, 2007 R. McIntyre, D. Desmarais and D. Cornett conducted an adit discharge survey for Silver King 100. This consisted of:

- Following the discharge path using visual evidence and insitu conductivity analysis from the adit to Galena Creek;
- Tracking the discharge path using a GPS;
- Sampling of surface water at locations SK100-1 etc;
- Entering waypoints for each sample location;
- Performing insitu measurements for pH, Conductivity, Temperature, TDS and ORP and
- Submitting samples to be analyzed at Norwest Laboratory for total metals, pH and SO_4.

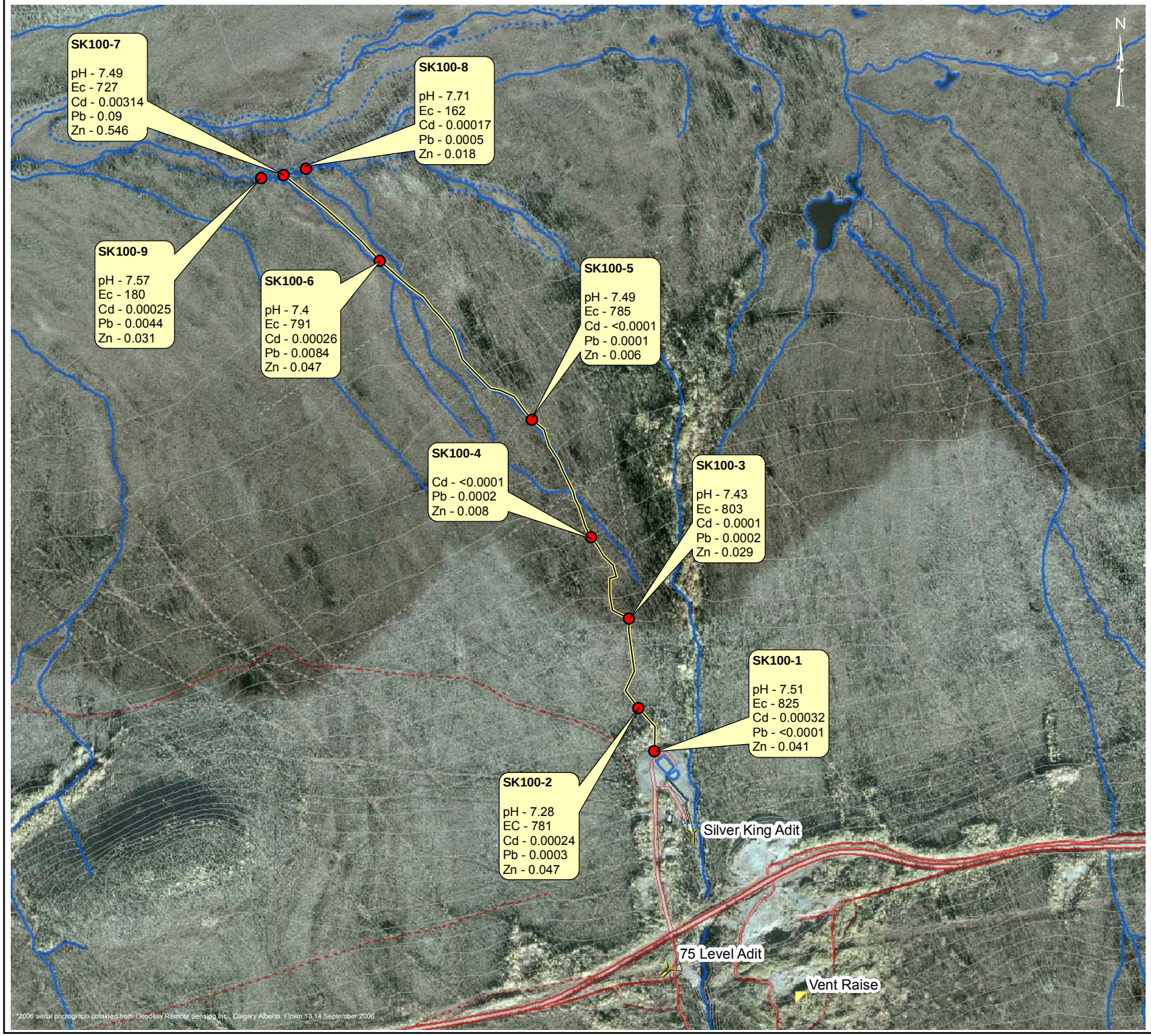
2.1.1 ADIT DISCHARGE RESULTS

The adit discharge survey for the Silver King 100 level adit was relatively uncomplicated. The discharge path was broken up from underground flow and surface indicators of glacial ice and water on surface. Silver King 100's discharge flows from the adit (plate 1) and travels approximately 1.5 km down gradient to where it empties out into Flat Creek, as shown in Figure 3. There is an instance when this discharge reaches the valley where its flow travels on the permafrost surface, as evident in plate 2. Its path to Flat Creek is manifested in multiple channels flowing together towards the end point Flat Creek, never in one defined channel. This point of entry is just downstream of Galena Creek. Please see plates 1-3 below for a visual reference of Silver King 100 adit's discharge path.

Plate 1: Silver King 100 treatment pond decant

Plate 2: Evidence of flow over permafrost

Plate 3: Silver King 100 down gradient of waste rock pile



Keno Hill Silver District

Adit Discharge Survey

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Legend

Sample ID
pH - pH units
EC = Conductivity - µS/cm
Cd = Cadmium - mg/L
Pb = Lead - mg/L
Zn = Zinc - mg/L

- Sample Location
- Adit
- Shaft
- Adit Discharge Route*
- Public Road
- Exploration roads
- Trails
- Cutlines
- Contour
- Surface water (actual and potential)
- Swampy area
- Pit
- Pipe

Notes:
Projection UTM NAD83 Zone 8
*Adit discharge surveyed by Access Consulting Group Summer 2007

Scale:
1:10,000
(when plotted 8.5x11")

0 50 100 200 300 m

Figure 3

Silver King Adit

ACCESS CONSULTING GROUP

Drawn by: HD | Checked by: DC

Date: March 2008

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2.1.2 WATER QUALITY RESULTS

Table 1 presents the water quality results for selected parameters contrasted with the Water Use Licence standards and the CCME guidelines. Refer to Figure 3 for sample station locations. For a full listing of water quality results at Silver King 100 see Appendix B, Water Quality Data.

There were nine sample stations along the Silver King 100 adit discharge flow path. A number of stations exceeded CCME guidelines, especially in cadmium in zinc. Cadmium exceeds the CCME guidelines at station SK100-1, SK100-2, SK100-3, SK100-6, and SK100-7. At none of these stations does cadmium concentration exceed the Water Use Licence (WUL) standard 0.05 mg/l. Zinc exceeds the CCME guideline of 0.03 mg/l at five stations (1, 2, 6, 7 and 9). The elevated zinc value at station 7 is due to the discharge's flow emerging to surface from traveling between permafrost and surface debris. These concentrations do not however, surpass WUL standards. The parameters arsenic, copper and lead are above CCME guidelines at stations 6 and 7. There is a single instance of silver being 0.0021 mg/l, above the 0.0001 mg/l CCME standard. However, this appears to be an isolated case as all other silver levels are within the acceptable range.

Table 1 Water Quality Data Summary at Silver King 100

Site Description	discharge approx. 190m downgradient of adit entrance	discharge approx. 100m downgradient of SK 100-1	discharge approx. 180m downgradient of SK 100-2	discharge approx. 190m downgradient of SK 100-3	Historical Mean at Silver King Adit (June 2006 - January 2008)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	SK100-1	SK100-2	SK100-3	SK100-4				
Date	30-May-07	30-May-07	30-May-07	30-May-07				
Parameter [1]								
Arsenic	0.0045	0.0016	0.0014	0.0007	0.07	0.5	0.005	0.0002
Cadmium	0.00032	0.00024	0.0001	<0.00001	0.011	0.05	0.000017	0.00001
Copper	<0.001	<0.001	<0.001	<0.001	0.02	0.3	0.004	0.001
Lead	<0.0001	0.0003	0.0002	0.0002	0.0012	0.2	0.007	0.0001
Nickel	0.0066	0.001	0.0022	<0.0005	0.079	0.5	0.15	0.0005
Silver	<0.0001	<0.0001	<0.0001	<0.0001	0.00012	0.1	0.0001	0.0001
Zinc	0.041	0.047	0.029	0.008	1.05	0.5	0.03	0.001
pH	7.51	7.28	7.43		6.8	6.5-9.5	6.5-9	

Site Description	discharge approx. 250m downgradient of SK 100-4	discharge approx. 410m downgradient of SK 100-5	discharge approx. 250m downgradient of SK 100-6	discharge approx. 50m east of SK 100-7	discharge approx. 50m west of SK 100-7	Historical Mean at Silver King Adit (June 2006 - January 2008)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	SK100-5	SK100-6	SK100-7	SK100-8	SK100-9				
Date	30-May-07	30-May-07	30-May-07	30-May-07	30-May-07				
Parameter [1]									
Arsenic	0.0006	0.0141	0.148	0.0007	0.0048	0.07	0.5	0.005	0.0002
Cadmium	<0.00001	0.00026	0.00314	0.00017	0.00025	0.011	0.05	0.000017	0.00001
Copper	<0.001	0.014	0.17	0.004	0.008	0.02	0.3	0.004	0.001
Lead	0.0001	0.0084	0.09	0.0005	0.0044	0.0012	0.2	0.007	0.0001
Nickel	<0.0005	0.0077	0.134	0.0007	0.0044	0.079	0.5	0.15	0.0005
Silver	<0.0001	<0.0001	0.0021	<0.0001	<0.0001	0.00012	0.1	0.0001	0.0001
Zinc	0.006	0.047	0.546	0.018	0.031	1.05	0.5	0.03	0.001
pH	7.49	7.4	7.49	7.71	7.57	6.8	6.5-9.5	6.5-9	

[1] All units are in mg/L unless otherwise indicated.
CCME guidelines for copper, lead and nickel are based on hardness levels

2.2 HUSKY SOUTH WEST ADIT

The Husky South West adit is located north of the Silver Trail Highway approximately 1 km west of Flat Creek. Refer to Figure 2 "Site Locations" for further location representation.

On June 1, 2007, D. Desmarais and D. Cornett conducted an adit discharge survey for Husky South West. This consisted of:

- following the discharge path sample collection and spatial delineation of a plume of solids discovered at the toe of the waste rock pile;
- ICP analysis of samples for total metals concentrations;
- tracking of adit discharge water from the adit entrance; and
- sampling of surface water flow at 6 locations (HSW1-HSW6) and analysis at Norwest Laboratory for total metals.

2.2.1 ADIT DISCHARGE RESULTS

Due to the mixing of surface water melt adjacent to the Husky South West adit discharge flow path, the results of this particular location's discharge survey results are inconclusive. It is suggested that field personnel revisit and review the flow discharge path at Husky South West in July or August 2008 to evade freshet. Please see plates 4-8 below for a visual reference of Husky South West adit's discharge path.

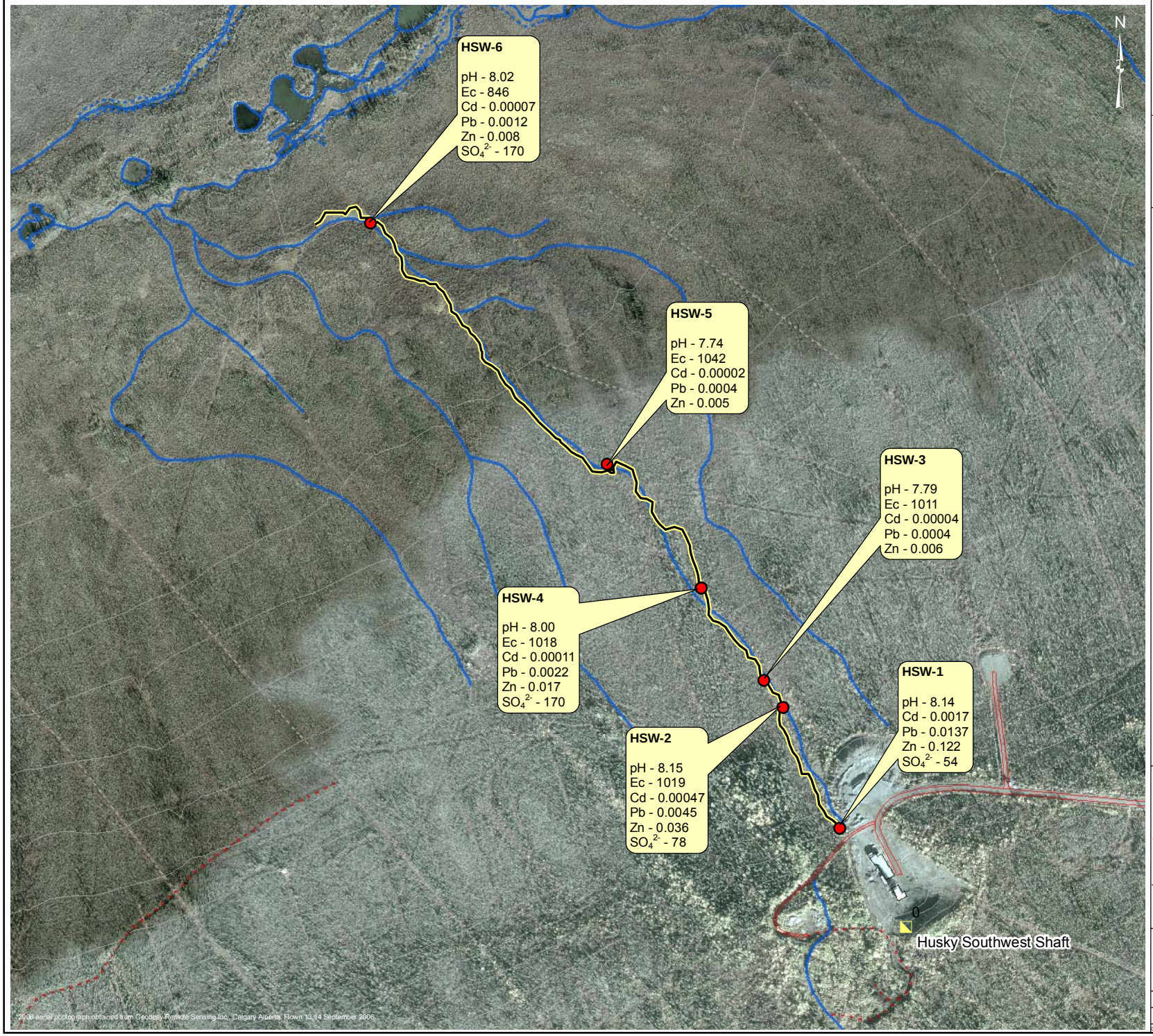
Plate 4: Husky South West

Plate 5: Husky South West surface flow

Plate 6: Husky South West

Plate 7: Husky South West

Plate 8: Husky South West



Keno Hill Silver District

Adit Discharge Survey

ERDC

Legend

Sample ID
pH = pH units
Ec = Conductivity - µS/cm
Cd = Cadmium - mg/L
Pb = Lead - mg/L
Zn = Zinc - mg/L
SO_4^{2-} = Sulphate - mg/L

- Sample Location
- Adit
- Shaft
- Adit Discharge Route*
- Public Road
- Exploration roads
- Trails
- Cutlines
- Contour
- Surface water (actual and potential)
- Swampy area
- Pit
- Pipe

Notes:
Projection UTM NAD83 Zone 8
*Adit discharge surveyed by Access Consulting Group Summer 2007

Scale:
1:6,500
(when plotted 8.5x11")
0 50 100 200 m

Figure 4

Husky Southwest Shaft

ACCESS CONSULTING GROUP

Drawn by: HD	Checked by: DC
Date: March 2008	

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2.2.2 WATER QUALITY RESULTS

Table 2 presents the water quality results for selected parameters contrasted with the Water Use Licence standards and the CCME guidelines. Refer to Figure 4 for sample station locations. For a full listing of water quality results at Husky South West look to Appendix B, Water Quality Data. The water quality results are shown, however the outcome may not entirely be characteristic of only Husky South West's adit discharge as adjacent surface water melt may have influenced results.

There were five sample stations along the Husky South West adit discharge path. Cadmium concentrations were above CCME guidelines at all of these stations, fluctuating between 0.00002 – 0.0017 mg/l. Two parameters (Nickel and pH) remain below both CCME and WUL guidelines at all stations. The rest of the parameters (with only a couple exceptions) fall well below both guidelines after the first sample station. All parameters, apart from cadmium, are below guidelines by the final two stations.

Table 2 Water Quality Data Summary at Husky South West

Site Description	discharge approx. 180m downgradient of Husky SW Shaft	discharge approx. 180m downgradient of HSW-1	discharge approx. 50m downgradient of HSW-2	discharge approx. 140m downgradient of HSW-3	discharge approx. 200m downgradient of Ruby-4	discharge approx. 250m downgradient of Ruby-5	Historical Mean at Husky South West (June 2006-Jan. 2008)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	HSW-1	HSW-2	HSW-3	HSW-4	HSW-5	HSW-6				
Date	1-Jun-07	1-Jun-07	1-Jun-07	1-Jun-07	1-Jun-07	1-Jun-07				
Parameter [1]										
Arsenic	0.0086	0.0031	0.0009	0.0044	0.0013	0.0029	0.014	0.5	0.005	0.0002
Cadmium	0.0017	0.00047	0.00004	0.00011	0.00002	0.00007	0.021	0.05	0.000017	0.00001
Copper	0.005	0.003	0.003	0.005	0.002	0.002	0.004	0.3	0.004	0.001
Lead	0.0137	0.0045	0.0004	0.0022	0.0004	0.0012	0.01	0.2	0.007	0.0001
Nickel	0.0018	<0.0005	<0.0005	0.0026	<0.0005	<0.0005	0.04	0.5	0.15	0.0005
Silver	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00017	0.1	0.0001	0.0001
Zinc	0.122	0.036	0.006	0.017	0.005	0.008	1.41	0.5	0.03	0.001
pH	8.14	8.15	7.79	8	7.74	8.02	7.3	6.5-9.5	6.5-9	

Notes:

[1] All units are in mg/L unless otherwise indicated.

CCME guidelines for copper, lead and nickel are based on hardness levels

2.3 BERMINGHAM ADIT

The Bermingham adit is located on the northwest side of Galena Hill. It is approximately 1.5 km up the switchback located at the Hector Adit. Refer to Figure 2 "Site Locations" for further location representation.

On June 2, 2007, D. Desmarais and D. Cornett conducted an adit discharge survey for the Bermingham adit. This consisted of:

- Following the discharge path using visual evidence and insitu conductivity analysis from the adit to sample location BERM-4 where the discharge entered No Cash Creek;
- Tracking the discharge path using a GPS;
- Sampling of surface water at locations BERM-1, 2, 3 and 4;
- Entering waypoints for each sample location;
- Performing insitu measurements for pH, Conductivity, Temperature, TDS and ORP; and
- Submitting samples to be analyzed at Norwest Laboratory for total metals, pH and S04.

2.3.1 ADIT DISCHARGE RESULTS

The discharge from the Bermingham adit as shown in Plates 9-13, remains on surface from the adit to No Cash Creek. The adit the discharge flows down over the waste rock pile and into a narrow depression. The discharge flows northwest down hill to Calumet Drive to a point approximately 80 m from Calumet Drive, as shown in Plate 10 it turns to parallel the road before crossing at the culvert. Once across Calumet Drive the discharge continues down gradient in a northeast direction to the head water of No Cash Creek.

As shown in Plate 11 the flow path travels through approximately 800m of surface vegetation before draining into No Cash Creek. The discharge intersects a large patch of glaciated ice and turns away from the depression where it spreads out into multiple channels. Without the ice, the discharge from the Bermingham adit would most likely continue along the depression and join with the discharge from the Ruby adit which drains into Star Creek. Results from the samples obtained along the discharge path are summarized in Table 3. It is suggested that field personnel revisit and review the flow discharge path at Bermingham later in the summer 2008 field season.

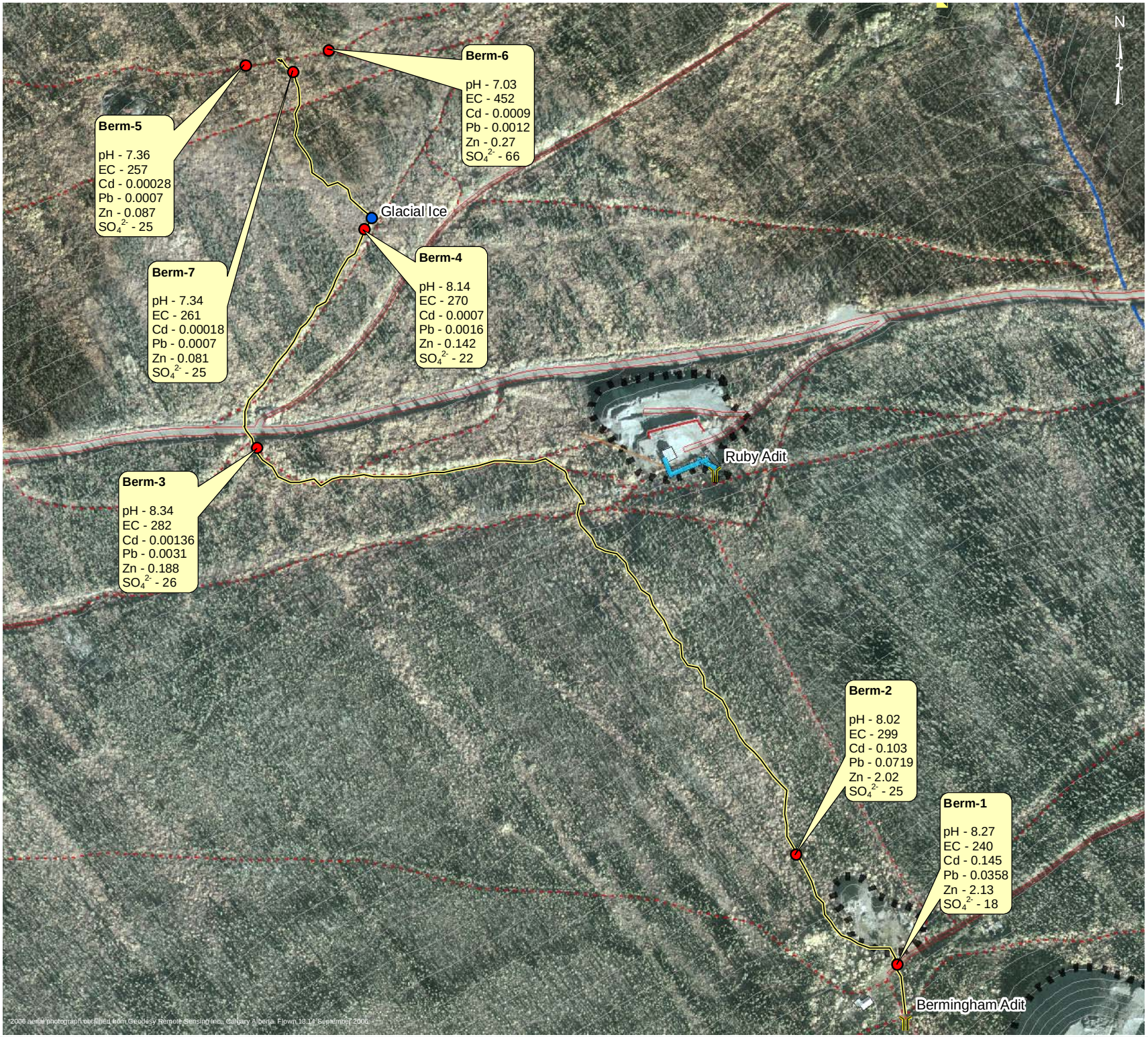
Plate 9:
Bermingham Adit

Plate 10: Bermingham discharge running parallel to Calumet Drive

Plate 11: Bermingham discharge upstream of Calumet Drive culvert

Plate 12: Bermingham discharge path redirected by glacier

Plate 13: Bermingham discharge entering unknown source



Keno Hill Silver District

Adit Discharge Survey

ERDC

Legend

Sample ID
pH - pH units
Cd = Cadmium - mg/L
Pb = Lead - mg/L
Zn = Zinc - mg/L
SO_4^{2-} = Sulphate - mg/L

- Sample Location
- Adit
- Shaft
- Adit Discharge Route*
- Public Road
- Exploration roads
- Trails
- Cutlines
- Contour
- Surface water (actual and potential)
- Swampy area
- Pit
- Pipe

Notes:
Projection UTM NAD83 Zone 8
Adit discharge surveyed by Access Consulting Group Summer 2007

Scale:
1:4,500
(when plotted 8.5x11")

0 10 20 40 60 80 100 120 140 160 m

Figure 5

Bermingham Adit

ACCESS Consulting Group

Drawn by: HD | Checked by: DC

Date: March 2008

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2.3.2 WATER QUALITY RESULTS

Table 3 presents the water quality results for selected parameters contrasted with the Water Use Licence standards and the CCME guidelines. Refer to Figure 5 for sample station locations. For a full listing of water quality results at Bermingham look to Appendix B, Water Quality Data.

Of the 7 sample stations along Bermingham's adit discharge flow path, only two of the parameters shown in the table below exceeded guidelines at all stations. There were four parameters (arsenic, copper, lead and silver) whose concentrations exceeded CCME guidelines at the site of the adit and by the second sample station (Berm-2). Levels of pH fell below the accepted range 6.5-9.5 by 0.71 pH units at Berm-6. Excluding these instances, water quality met guidelines for both the CCME and WUL standards.

Table 3 Water Quality Data Summary at Bermingham Adit

Site Description	discharge over WRSA 50m downgradient of adit entrance	discharge approx. 435m downgradient of Berm-1	discharge just south of Calumet Dr. culvert	discharge approx. 210m downgradient of Berm-3	discharge approx. 205m NW of Glacial Ice waypoint	discharge approx. 220m NW of Glacial Ice waypoint	discharge approx. 160m NW of Glacial Ice waypoint	Historical Mean at Bermingham (June 2005-Sept. 2007)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	Berm-1	Berm-2	Berm-3	Berm-4	Berm-5	Berm-6	Berm-7				
Date	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07				
Parameter [1]											
Arsenic	0.0086	0.0171	0.0017	0.0008	0.0004	0.001	0.0002	0.041	0.5	0.005	0.0002
Cadmium	0.145	0.103	0.00136	0.0007	0.00028	0.0009	0.00018	0.23	0.05	0.000017	0.00001
Copper	0.018	0.011	0.002	0.003	0.002	0.002	0.002	0.0064	0.3	0.003	0.001
Lead	0.0358	0.0719	0.0031	0.0016	0.0007	0.0012	0.0007	0.02	0.2	0.004	0.0001
Nickel	0.0022	0.0025	0.0027	0.0021	0.0016	0.0043	0.0018	0.003	0.5	0.11	0.0005
Silver	0.0013	0.0022	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	0.001	0.1	0.0001	0.0001
Zinc	2.13	2.02	0.188	0.142	0.087	0.27	0.081	4.6	0.5	0.03	0.001
pH	7.09	7.21	7.15	7.14	6.8	5.79	6.82	6.9	6.5-9.5	6.5-9	

Notes:

[1] All units are in mg/L unless otherwise indicated.

CCME guidelines for copper, lead and nickel are based on hardness levels

2.4 RUBY ADIT

The Ruby Adit is located on the northwest side of Galena Hill off the Galena Hill Road. It is 3.5 km east of Elsa. Refer to Figure 2 "Site Locations" for further location representation.

On June 2, 2007, D. Desmarais and D. Cornett conducted an adit discharge survey for Ruby adit. This consisted of:

- Following the discharge path using visual evidence and insitu conductivity analysis from the adit to Star Creek;
- Tracking the discharge path using a GPS;
- Sampling of surface water at locations;
- Entering waypoints for each sample location;
- Performing insitu measurements for pH, Conductivity, Temperature, TDS and ORP and
- Submitting samples to be analyzed at Norwest Laboratory for total metals, pH and S04.

2.4.1 DISCHARGE RESULTS

Discharge exits from the Ruby adit and flows down gradient over the waste rock storage area (Plate 14). Field personnel continued to follow this flow down hill toward the culvert at Calumet Drive, as shown in Plate 15. The discharge is collected in the culvert flowing under Calumet Drive and continues down gradient. Once it passes Calumet Drive the discharge flows under an ice surface (Plate 16 - 18) for approximately 500 m. It emerges from under the ice surface and empties into head water of Star Creek.

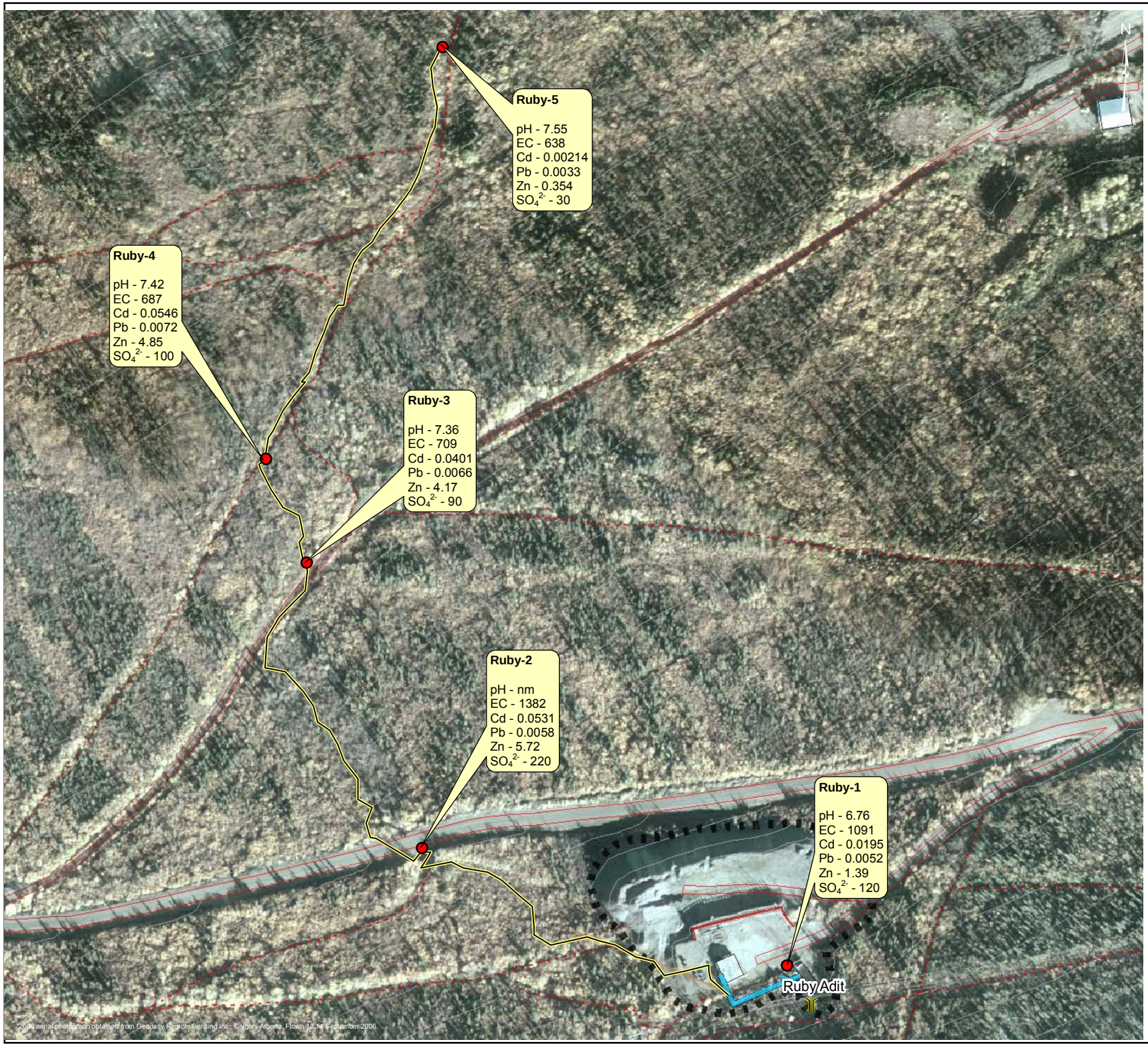
Plate 14: Ruby discharge at toe of waste rock pile

Plate 15: Ruby discharge at Calumet Drive

Plate 16: Ruby discharge down gradient of Calumet Drive culvert

Plate 17: Ruby discharge flowing under ice down gradient from Calumet Drive

Plate 18: Ruby discharge by tram line tower



Keno Hill Silver District

Adit Discharge Survey

ERDC

Legend

Sample ID
pH - pH units
EC = Conductivity - µS/cm
Cd = Cadmium - mg/L
Pb = Lead - mg/L
Zn = Zinc - mg/L
SO_4^{2-} = Sulphate - mg/L

- Sample Location
- Adit
- Shaft
- Adit Discharge Route*
- Public Road
- Exploration roads
- Trails
- Cutlines
- Contour
- Surface water (actual and potential)
- Swampy area
- Pit
- Pipe

Notes:
Projection UTM NAD83 Zone 8
Adit discharge surveyed by Access Consulting Group Summer 2007

Scale:
1:2,500
(when plotted 8.5x11")

0 10 20 40 60 80 m

Figure 6

Ruby Adit

ACCESS CONSULTING GROUP

Drawn by: HD | Checked by: DC

Date: March 2008

Our File: D:\Projects\All\Projects\ALEX-05-01g\dms\UKHM\AditDischargeSurvey_Summer07\Fig6_RubyAdit.mxd

2.4.2 WATER QUALITY RESULTS

Table 4 presents the water quality results for selected parameters contrasted with the Water Use Licence standards and the CCME guidelines. Refer to Figure 6 for sample station locations. For a full listing of water quality results at Ruby look to Appendix B, Water Quality Data.

Field personnel acquired five samples along the Ruby adit's discharge flow path. Two of the parameters (zinc and cadmium) shown in the table below exceeded standards at all five stations. At Ruby-4 only two parameters fell within guidelines. However, by the fifth station, before the discharge met with the Star Creek drainage source, three of the parameters met guidelines. Concentration levels of pH dropped below the minimum range limit of 6.5 at two stations (Ruby-2 and Ruby-4). Beyond these listed instances, water quality generally met with guidelines to connect with Star Creek.

Table 4 Water Quality Data Summary at Ruby Adit

Site Description	adit discharge pipe 20m north of adit entrance	discharge approx. 180m downgradient of Ruby-1	discharge approx. 145m downgradient of Ruby-2	discharge approx. 65m downgradient of Ruby-3	discharge approx. 210m downgradient of Ruby-4	Historical Mean at Ruby (June 2005-Sept. 2007)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	Ruby-1	Ruby-2	Ruby-3	Ruby-4	Ruby-5				
Date	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07				
Parameter [1]									
Arsenic	0.0097	0.0014	0.0007	0.0015	0.0007	0.05066	0.5	0.005	0.0002
Cadmium	0.0195	0.0531	0.0401	0.0546	0.00214	0.020514	0.05	0.000017	0.00001
Copper	0.002	0.004	0.006	0.008	0.002	0.00775	0.3	0.004	0.001
Lead	0.0052	0.0058	0.0066	0.0072	0.0033	0.09786	0.2	0.007	0.0001
Nickel	0.0237	0.0247	0.0218	0.0252	0.0056	0.02654	0.5	0.15	0.0005
Silver	0.0001	<0.0001	0.0002	0.0002	<0.0001	0.017	0.1	0.0001	0.0001
Zinc	1.39	5.72	4.17	4.85	0.354	1.47	0.5	0.03	0.001
pH	7.96	5.16	6.59	6.36	7.04	7.686	6.5-9.5	6.5-9	

Notes:

[1] All units are in mg/L unless otherwise indicated.

CCME guidelines for copper, lead and nickel are based on hardness levels

2.5 NO CASH 500 ADIT

The No Cash 500 adit is located on the northwest side of Galena Hill approximately 0.5 km north of the Silver Trail Highway. It meets where No Cash Creek crosses the Silver Trail Highway. Refer to Figure 2 "Site Locations" for further location representation.

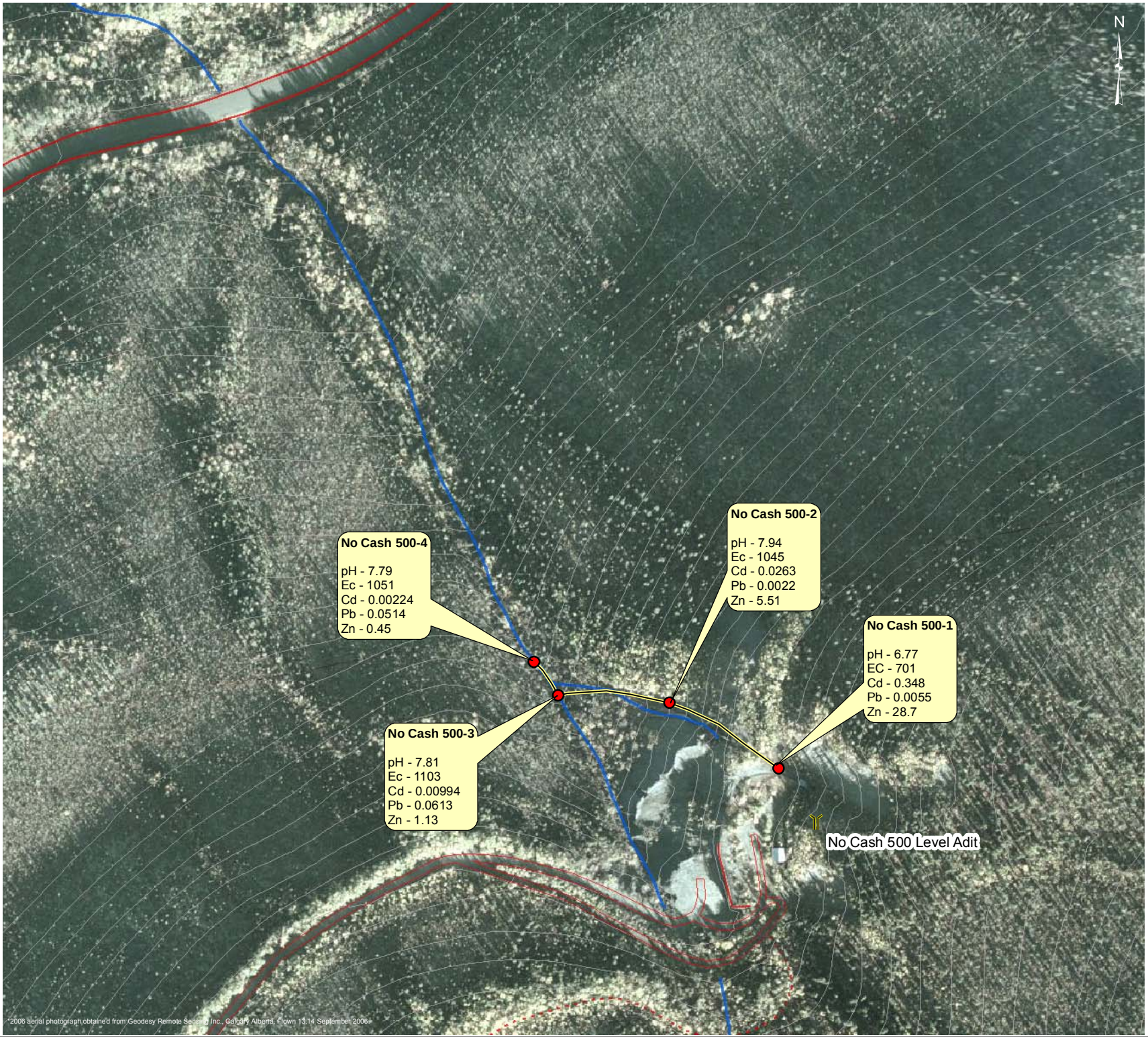
On May 30, 2007, D. Desmarais and D. Cornett conducted an adit discharge survey for the No Cash 500 adit. This consisted of:

- Following the discharge from effluent pipe down the waste rock pile to the confluence with No Cash Creek using visual evidence and insitu conductivity analysis ;
- Tracking the discharge path using a GPS;
- Sampling of surface water at locations NC500-1, NC500- 2, NC500- 3 and NC500-4;
- Entering waypoints for each sample location;
- Performing insitu measurements for flow, pH, Conductivity, Temperature, TDS and ORP and
- Submitting samples to be analyzed at Norwest Laboratory for total metals, pH and S04.

2.5.1 DISCHARGE RESULTS

The adit discharge survey for No Cash 500 was straightforward. Not only was the discharge path short, but it was clearly visible from the waste rock pile as shown in Plate 19. The discharge from the No Cash 500 adit travels via an underground pipe from the adit to the waste rock pile. There the discharge flows downhill over the waste rock pile and enters into No Cash Creek approximately 100 m away. Results from the samples obtained along the discharge path are summarized in Table 5.

Plate 19: No Cash 500 discharge path



Keno Hill Silver District

Adit Discharge Survey

ERDC

Legend

Sample ID
pH - pH units
EC = Conductivity - µS/cm
Cd = Cadmium - mg/L
Pb = Lead - mg/L
Zn = Zinc - mg/L
SO_4^{2-} = Sulphate - mg/L

- Sample Location
- Adit
- Shaft
- Adit Discharge Route*
- Public Road
- Exploration roads
- Trails
- Cutlines
- Contour
- Surface water (actual and potential)
- Swampy area
- Pit
- Pipe

Notes:
Projection UTM NAD83 Zone 8
*Adit discharge surveyed by Access Consulting Group Summer 2007

Scale:
1:2,500
(when plotted 8.5x11")

0 10 20 40 60 80 m

Figure 7

No Cash 500 Adit

ACCESS CONSULTING GROUP

Drawn by: HD	Checked by: DC
Date: March 2008	

Our File: D:\Project\AllProjects\ALEX-05-01\gis\mxd\UKH\AditDischargeSurvey_Summer07\Fig7_NoCashAdit.mxd

2.5.2 WATER QUALITY RESULTS

Table 5 presents the water quality results for selected parameters contrasted with the Water Use Licence standards and the CCME guidelines. Refer to Figure 7 for sample station locations. For a full listing of water quality results at No Cash 500 look to Appendix B, Water Quality Data.

The water quality results vary at each of the four sample stations along the No Cash adit discharge flow path. The first station expectedly has the most parameters exceeding guidelines (five of the eight parameters). Cadmium and zinc exceed guidelines for the remaining stations. Cadmium exceeds only the CCME guidelines, whereas zinc exceeds the WUL guidelines up to the fourth station as well as CCME's. Nickel is the one parameter's concentration levels that consistently remain within guidelines.

Table 5 Water Quality Data Summary at No Cash 500 Adit

Site Description	adit discharge pipe emerges from WRSA 40m downgradient of adit entrance	discharge approx. 60 m downgradient of No Cash 500-1	discharge approx. 70 m downgradient of No Cash 500-2	discharge approx. 40 m downgradient of No Cash 500-3	Historical Mean at No Cash 500 Adit (July 2005 - September 2007)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	No Cash 500-1	No Cash 500-2	No Cash 500-3	No Cash 500-4				
Date	30-May-07	30-May-07	30-May-07	30-May-07				
Parameter [1]								
Arsenic	0.0211	0.0013	0.0028	0.0019	0.017	0.5	0.005	0.0002
Cadmium	0.348	0.0263	0.00994	0.00224	0.14	0.05	0.000017	0.00001
Copper	0.071	0.004	0.005	0.003	0.028	0.3	0.004	0.001
Lead	0.0055	0.0022	0.0613	0.0514	0.017	0.2	0.007	0.0001
Nickel	0.0564	0.0107	0.0043	0.0028	0.07	0.5	0.15	0.0005
Silver	0.0004	<0.0001	0.0006	0.0005	0.00034	0.1	0.0001	0.0001
Zinc	28.7	5.51	1.13	0.45	16.16	0.5	0.03	0.001
pH	6.77	7.94	7.81	7.79	7.47	6.5-9.5	6.5-9	

Notes:

[1] All units are in mg/L unless otherwise indicated.

CCME guidelines for copper, lead and nickel are based on hardness levels

2.6 GALKENO 300

The Galkeno 300 adit is located on the east side of Galena Hill. It is approximately 3 km northwest of Keno City. Refer to Figure 2 "Site Locations" for further location representation.

On June 3, 2007, D. Desmarais and D. Cornett conducted an adit discharge survey for the Galkeno 300 level adit. This consisted of:

- Following the discharge path using visual evidence and insitu conductivity analysis from the adit to sample location GK300-4 where the discharge entered Christal Creek drainage valley;
- Tracking the discharge path using a GPS;
- Sampling of surface water at locations KV28, GK300-1, GK300-2, GK300-3 and GK300-4;
- Entering waypoints for each sample location;
- Performing insitu measurements for pH, Conductivity, Temperature, TDS and ORP and
- Submitting samples to be analyzed at Norwest Laboratory for total metals, pH and S04.

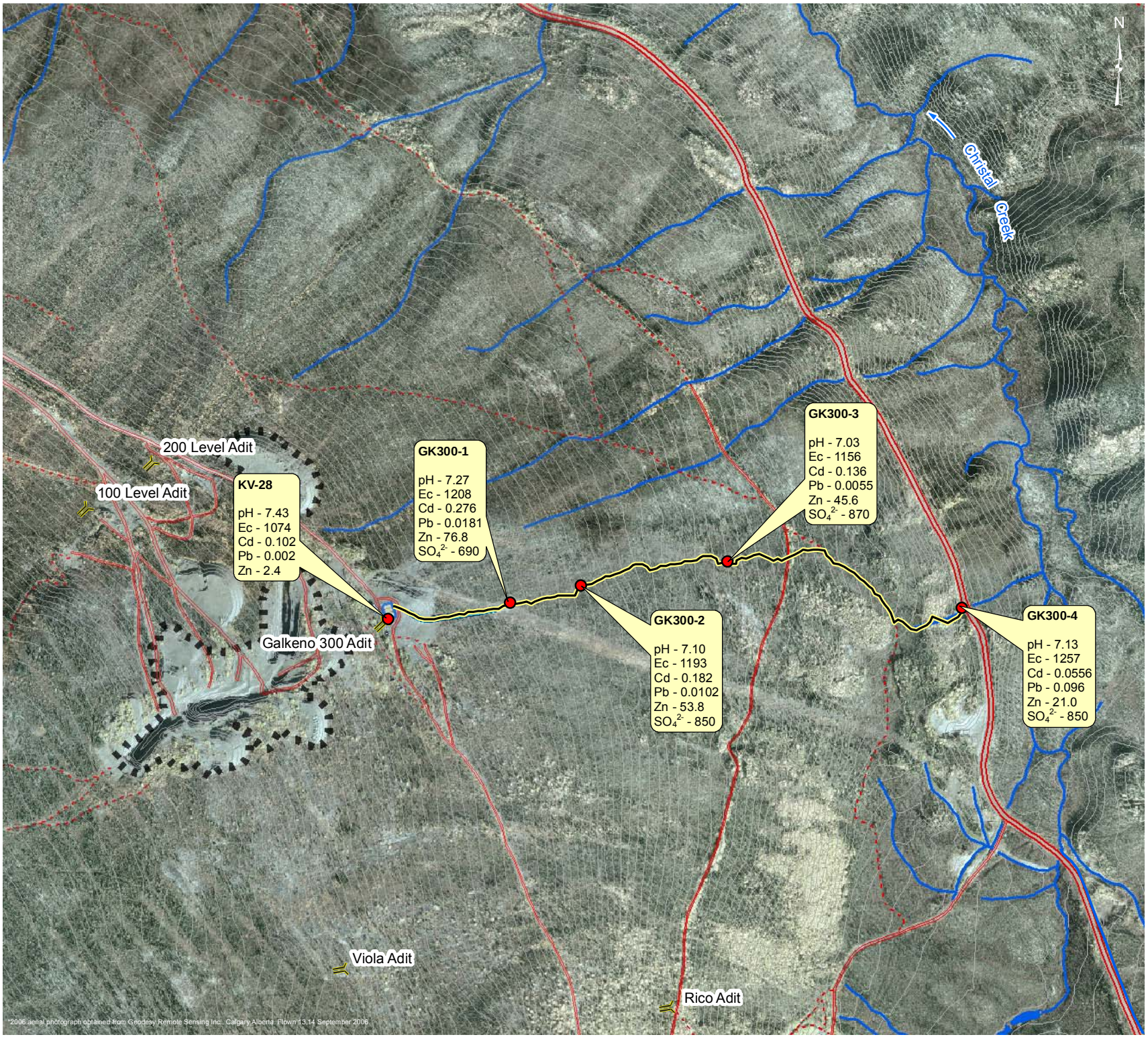
2.6.1 DISCHARGE RESULTS

Galkeno 300 adit discharge flows out of the treatment pond and travels down a discharge pipe. When it exits the discharge pipe it flows down Galena Hill both on the surface and underground in multiple channels. The flow is discontinuous in its pattern, thus attention had to be paid to the sound of traveling discharge by field personnel. Once it reaches the bottom of Galena Hill, Galkeno 300's discharge path passes on the surface of the old No Cash 500 Haul Road. On the other side of the Haul Road the flow is collected into one distinct channel as it follows an old Cat trail. The flow continues down the Cat trail until it enters and emerges from Culvert 4 just before the Silver Trail Hwy. From Culvert 4 the flow drops down into Christal Creek drainage valley and meets at site KV-16. Please see plates 20-22 below for a visual reference of Galkeno 300 adit's discharge path.

Plate 20: Galkeno 300 discharge going to ground

Plate 21: Galkeno 300 discharge at Silver Trail Highway

Plate 22: Galkeno 300 discharge turned southwest following an old Cat trail depression



Keno Hill Silver District

Adit Discharge Survey

ERDC

Legend

- Sample ID
  - pH - pH units
  - EC = Conductivity - µS/cm
  - Cd = Cadmium - mg/L
  - Pb = Lead - mg/L
  - Zn = Zinc - mg/L
  - SO_4^{2-} = Sulphate - mg/L
- Sample Location
- Adit
- Shaft
- Adit Discharge Route*
- Public Road
- Exploration roads
- Trails
- Cutlines
- Contour
- Surface water (actual and potential)
- Swampy area
- Pit
- Pipe

Notes:
Projection UTM NAD83 Zone 8
*Adit discharge surveyed by Access Consulting Group Summer 2007

Scale:
1:10,000
(when plotted 8.5x11")
0 50 100 200 300 m

Figure 8

Galkeno 300 Adit

ACCESS CONSULTING GROUP

Drawn by: HD	Checked by: DC
Date: March 2008	

Dir File: D:\Project\APprojects\ALEX-05-01\gis\mxd\UKH\AditDischargeSurvey_Summer07.Fig6_G300Adit.mxd

2.6.2 WATER QUALITY RESULTS

Table 6 presents the water quality results for selected parameters contrasted with the Water Use Licence standards and the CCME guidelines. Refer to Figure 8 for sample station locations. For a full listing of water quality results at Galkeno 300 look to Appendix B, Water Quality Data.

There were five sample events along the Galkeno 300 adit discharge flow path. The first sample station (KV28) is one that is sampled on a monthly basis as per Keno Hill's Water Use Licence (QZ06-074). The remaining four stations were chosen and sampled as part of this adit discharge survey. There are two parameters (silver and pH) that remain within CCME and WUL guidelines at all stations. There are two parameters (cadmium and zinc) that exceed guidelines at all stations. The first station (KV28) is at the treatment pond and expectedly has almost all parameters within guidelines. From the treatment pond to the Christal Creek discharge valley, parameter concentration results stay above CCME guidelines.

Table 6 Water Quality Data Summary at Galkeno 300

Site Description	Galkeno 300 treatment Pond Decant	Galkeno 300 discharge down gradient of energy dispersion pile	Discharge approx. 125m down graident from location GK300-1	Discharge approx. 300m down graident from location GK300-2	Galkeno 300 discharge at Silver Trail Highway	Historical Mean at Galkeno 300 (October 2004-January2008)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	KV28	GK300-1	GK300-2	GK300-3	GK300-4				
Date	3-Jun-07	3-Jun-07	3-Jun-07	3-Jun-07	3-Jun-07				
Parameter [1]									
Arsenic	0.0034	0.042	0.013	0.0088	0.0996	0.17	0.5	0.005	0.0002
Cadmium	0.102	0.276	0.182	0.136	0.0556	0.35	0.05	0.000017	0.00001
Copper	<0.002	0.022	0.016	0.012	0.096	0.017	0.3	0.004	0.001
Lead	0.002	0.0181	0.0102	0.0055	0.096	0.034	0.2	0.007	0.0001
Nickel	0.013	0.255	0.198	0.149	0.121	0.39	0.5	0.15	0.0005
Silver	<0.0002	<0.0001	0.0001	<0.0001	0.002	0.0003	0.1	0.0001	0.0001
Zinc	2.4	76.8	53.8	45.6	21	140	0.5	0.03	0.001
pH	7.43	7.27	7.1	7.03	7.13	6.2	6.5-9.5	6.5-9	

Notes:

[1] All units are in mg/L unless otherwise indicated.

CCME guidelines for copper, lead and nickel are based on hardness levels

2.7 GALKENO 900

The Galkeno 900 adit is located on the east side of Galena Hill. This adit is just west of Christal Lake. Refer to Figure 2 "Site Locations" for further location representation.

On June 1, 2007, D. Desmarais and D. Cornett of conducted an adit discharge survey for the Galkeno 900 adit. This consisted of:

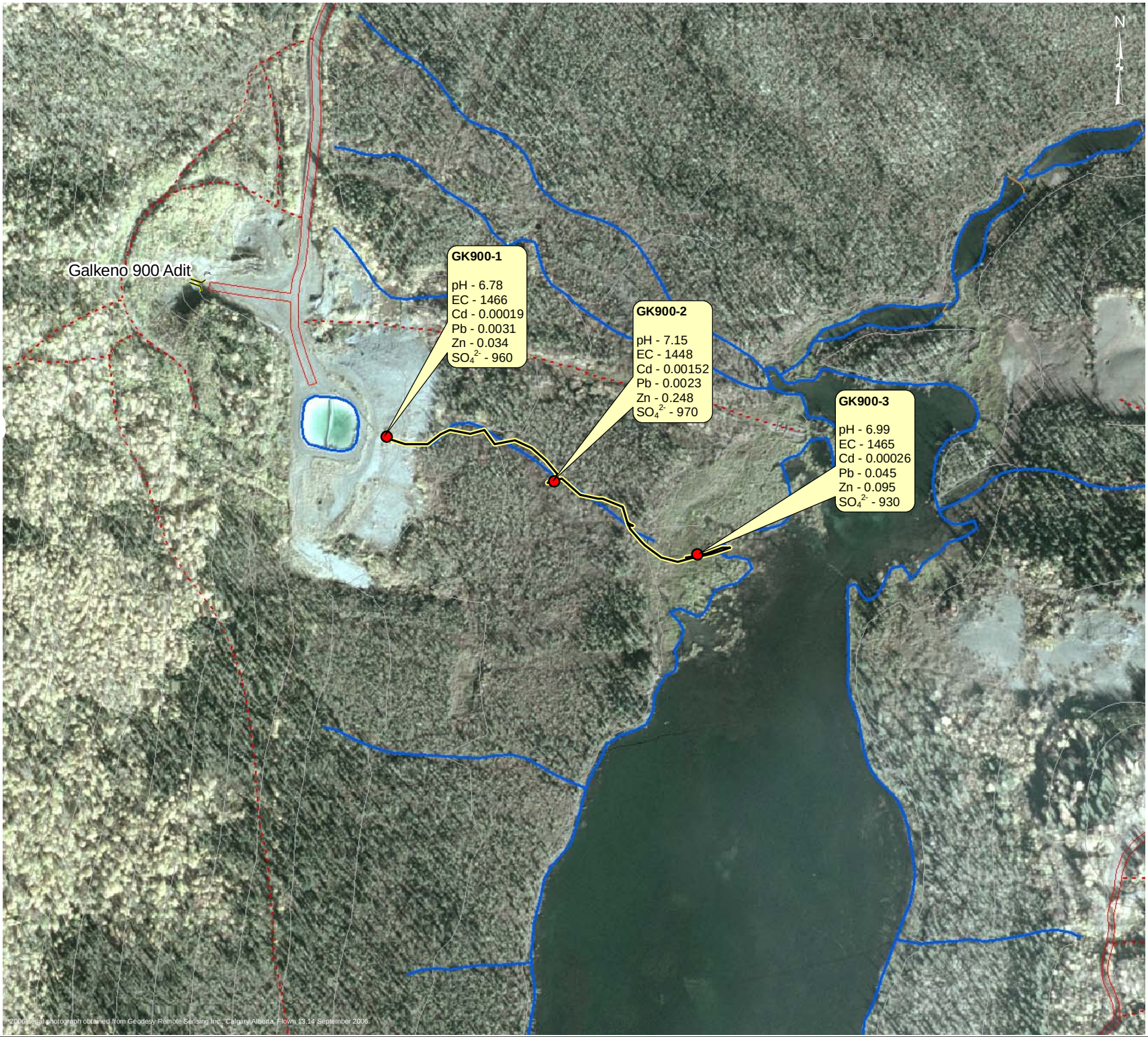
- Following the discharge path using visual evidence and insitu conductivity analysis from the adit to Christal Lake;
- Tracking the discharge path using a GPS;
- Sampling of surface water at locations GK900-1, GK900- 2 and GK900- 3;
- Entering waypoints for each sample location;
- Performing insitu measurements for flow, pH, Conductivity, Temperature, TDS and ORP and
- Submitting samples to be analyzed at Norwest Laboratory for total metals, pH and sulphate.

2.7.1 DISCHARGE RESULTS

The adit discharge survey for Galkeno 900 adit was straightforward. The discharge path was short and most of the path is clearly visible from the treatment pond decant as shown in Plate 24. The discharge from the Galkeno 900 adit treatment plant travels via an underground pipe from the adit to the settling pond. Once through the treatment pond the discharge flows down hill and over energy dispersion sheeting before entering the vegetative area between the pond and Christal Lake. As shown in Plate 23 the flow path travels through approximately 190m of surface vegetation and marshes before draining into Christal Lake.

Plate 23: Galkeno 900 discharge into Christal Lake

Plate 24: Galkeno 900 upon treatment pond decant



Keno Hill Silver District

Adit Discharge Survey

ERDC

Legend

Sample ID
pH - pH units
Cd = Cadmium - mg/L
Pb = Lead - mg/L
Zn = Zinc - mg/L
SO_4^{2-} = Sulphate - mg/L

- Sample Location
- Adit
- Shaft
- Adit Discharge Route*
- Public Road
- Exploration roads
- Trails
- Cutlines
- Contour
- Surface water (actual and potential)
- Swampy area
- Pit
- Pipe

Notes:
Projection UTM NAD83 Zone 8
*Adit discharge surveyed by Access Consulting Group Summer 2007

Scale:
1:2,500
(when plotted 8.5x11")

0 10 20 40 60 80 m

Figure 9

Galkeno 900 Adit

ACCESS CONSULTING GROUP

Drawn by: HD	Checked by: DC
Date: March 2008	

Our File: D:\Project\AllProjects\ALEX-05-01\gis\mxd\UKH\AditDischargeSurvey_Summer07\Fig9_G900Adit.mxd

2.7.2 WATER QUALITY RESULTS

Table 7 presents the water quality results for selected parameters contrasted with the Water Use Licence standards and the CCME guidelines. Refer to Figure 9 for sample station locations. For a full listing of water quality results at Galkeno 900 look to Appendix B, Water Quality Data.

Due to the short length of this adit flow path there were only three stations sampled. Cadmium and zinc exceed CCME guideline of 0.03 mg/l at the three sample stations. Arsenic concentrations exceed the CCME guideline (0.005 mg/l) at the first two stations and drops to the adequate concentrations of 0.0015 mg/l at the final station. Lead has a single event of exceeding the CCME guideline at the third station. This appears to be an isolated instance as it is within guideline at the rest of the stations. All remaining parameters and station's water quality results are within guidelines.

Table 7 Water Quality Data Summary at Galkeno 900

Site Description	Galkeno 900 treatment pond decant	discharge approx. mid point from pond decant to Christal Lake	Galkeno 900 discharge at Christal Lake	Historical Mean at Galkeno 900 (June 2006-January2008)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	**GK900-1**	**GK900-2**	**GK900-3**				
Date	1-Jun-07	1-Jun-07	1-Jun-07				
Parameter [1]							
Arsenic	0.0382	0.0176	0.0015	0.098	0.5	0.005	0.0002
Cadmium	0.00019	0.00152	0.00026	0.0015	0.05	0.000017	0.00001
Copper	<0.001	<0.001	<0.001	0.004	0.3	0.004	0.001
Lead	0.0031	0.0023	0.045	0.004	0.2	0.007	0.0001
Nickel	0.126	0.0655	0.0035	0.2	0.5	0.15	0.0005
Silver	<0.0001	<0.0001	<0.0001	<0.0001	0.1	0.0001	0.0001
Zinc	0.034	0.248	0.095	5.6	0.5	0.03	0.001
pH	7.96	7.93	7.9	7.1	6.5-9.5	6.5-9	

Notes:

[1] All units are in mg/L unless otherwise indicated.

CCME guidelines for copper, lead and nickel are based on hardness levels

2.8 KENO 700 ADIT

The Keno 700 adit is located 6 km east-northeast of Keno City along Keno Hill Road. This adit is on Keno Hill, south west of Monument Hill. Refer to Figure 2 “Site Locations” for further location representation.

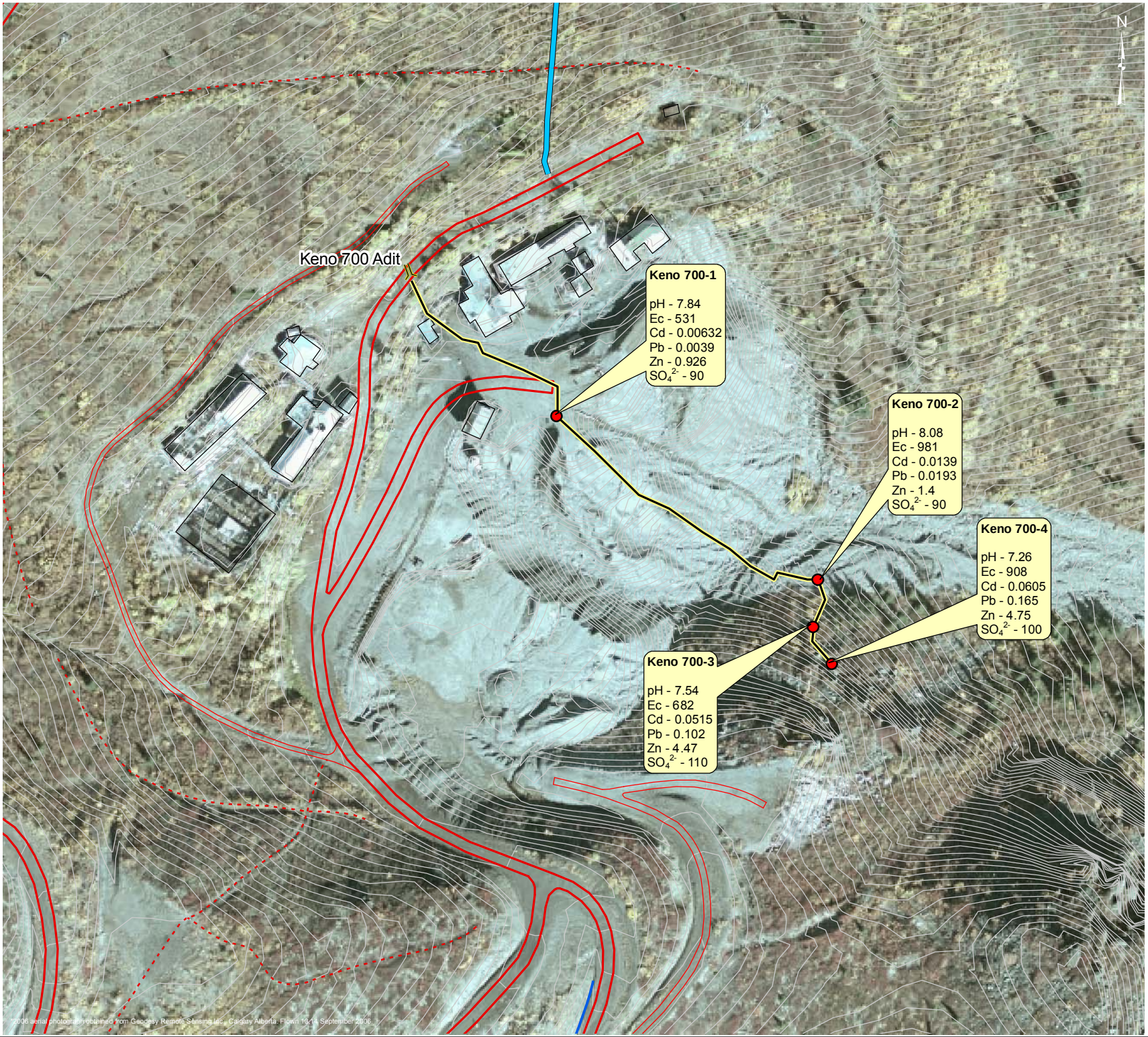
On June 2, 2007, D. Desmarais and D. Cornett conducted an adit discharge survey for Keno 700. This consisted of:

- Walking the discharge path starting from the effluent pipe down gradient to Keno 700-4;
- Following the discharge path using visual indicators – water on surface, ice, topographic features and conductivity testing,
- Tracking the discharge path using a GPS;
- Inputting waypoints for sample locations;
- Sampling of surface water at locations Keno700-1, Keno700-2, Keno700-3 and Keno700-4; and
- Sending samples to Norwest Laboratory for ICP total metals, pH and S04 analysis

2.8.1 DISCHARGE RESULTS

The adit discharge path for Keno 700 is particularly straightforward. The flow emerges from the adit and enters a steel pipe. Flow continues traveling within this steel pipe through the waste rock storage area. It emerges from the steel pipe and enters into the Hope Gulch. Please see plate 25 below for a visual reference of Keno 700 adit’s discharge path.

Plate 25: Keno 700 discharge path



Keno Hill Silver District

Adit Discharge Survey

ERDC

Legend

Sample ID
pH = pH units
EC = Conductivity - µS/cm
Cd = Cadmium - mg/L
Pb = Lead - mg/L
Zn = Zinc - mg/L
SO_4^{2-} = Sulphate - mg/L

- Sample Location
- Adit
- Shaft
- Adit Discharge Route*
- Public Road
- Exploration roads
- Trails
- Cutlines
- Contour
- Surface water (actual and potential)
- Swampy area
- Pit
- Pipe

Notes:
Projection UTM NAD83 Zone 8
*Adit discharge surveyed by Access Consulting Group Summer 2007

Scale:
1:1,500
(when plotted 8.5x11")

0 10 20 40 m

Figure 10

Keno 700 Adit

ACCESS Consulting Group

Drawn by: HD	Checked by: DC
Date: March 2008	

Our File: D:\Projects\AllProjects\ALEX-05-01\gis\mxd\UKHM\AditDischargeSurvey_Summer07\Fig10_Keno700Adit.mxd

2.8.2 WATER QUALITY RESULTS

Table 8 presents the water quality results for selected parameters contrasted with the Water Use Licence standards and the CCME guidelines. Refer to Figure 10 for sample station locations. For a full listing of water quality results at Keno 700 look to Appendix B, Water Quality Data.

There were four sample events along the Keno 700 Adit discharge flow path on June 2, 2007. Of the eight parameters contrasted in Table 8 with WUL and CCME guidelines three of them (arsenic, cadmium and zinc) exceeded guidelines at the four stations. Three of the parameters shown below (copper, lead, and silver) increase in concentration as the flow reaches the final sample station. Emerging flow from the adit pipe (the first station) shows the lowest concentrations, with only three parameters exceeding guidelines. As the flow continues its path toward Hope Gulch the number of parameters exceeding guidelines doubles with 6 exceeding guidelines at the final sample station. Nickel and pH are the two parameters that remain within guidelines from the adit entrance to the final station.

Table 8 Water Quality Data Summary at Keno 700 Adit

Site Description	Keno 700 discharge from end of adit pipe	Keno 700 discharge before influence from culvert flow at location	Keno 700 discharge downstream of influence from culvert flow at location	discharge from culvert flow at location before influence of Keno 700	Historical Mean at Keno 700 (August 2003-September2007)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	Keno 700-1	Keno 700-2	Keno 700-3	Keno 700-4				
Date	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07				
Parameter [1]								
Arsenic	0.0296	0.0217	0.0168	0.0161	0.03	0.5	0.005	0.0002
Cadmium	0.00632	0.0139	0.0515	0.0605	0.01	0.05	0.000017	0.00001
Copper	0.004	0.004	0.006	0.006	0.003	0.3	0.004	0.001
Lead	0.0039	0.0193	0.102	0.165	0.0019	0.2	0.007	0.0001
Nickel	0.0042	0.0046	0.0087	0.0083	0.006	0.5	0.15	0.0005
Silver	<0.0001	0.0002	0.0013	0.002	0.0001	0.1	0.0001	0.0001
Zinc	0.926	1.4	4.47	4.75	1.3	0.5	0.03	0.001
pH	7.84	8.08	7.54	7.26	7.7	6.5-9.5	6.5-9	

Notes:

[1] All units are in mg/L unless otherwise indicated.

CCME guidelines for copper, lead and nickel are based on hardness levels

2.9 ONEK ADIT

The Onek adit is north of Keno City, just east of the Gambler Gulch Trail. It is in the low lying valley of Keno Hill. Refer to Figure 2 "Site Locations" for further location representation.

On June 1, 2007, D. Desmarais and D. Cornett conducted an adit discharge survey for the Onek adit. This consisted of:

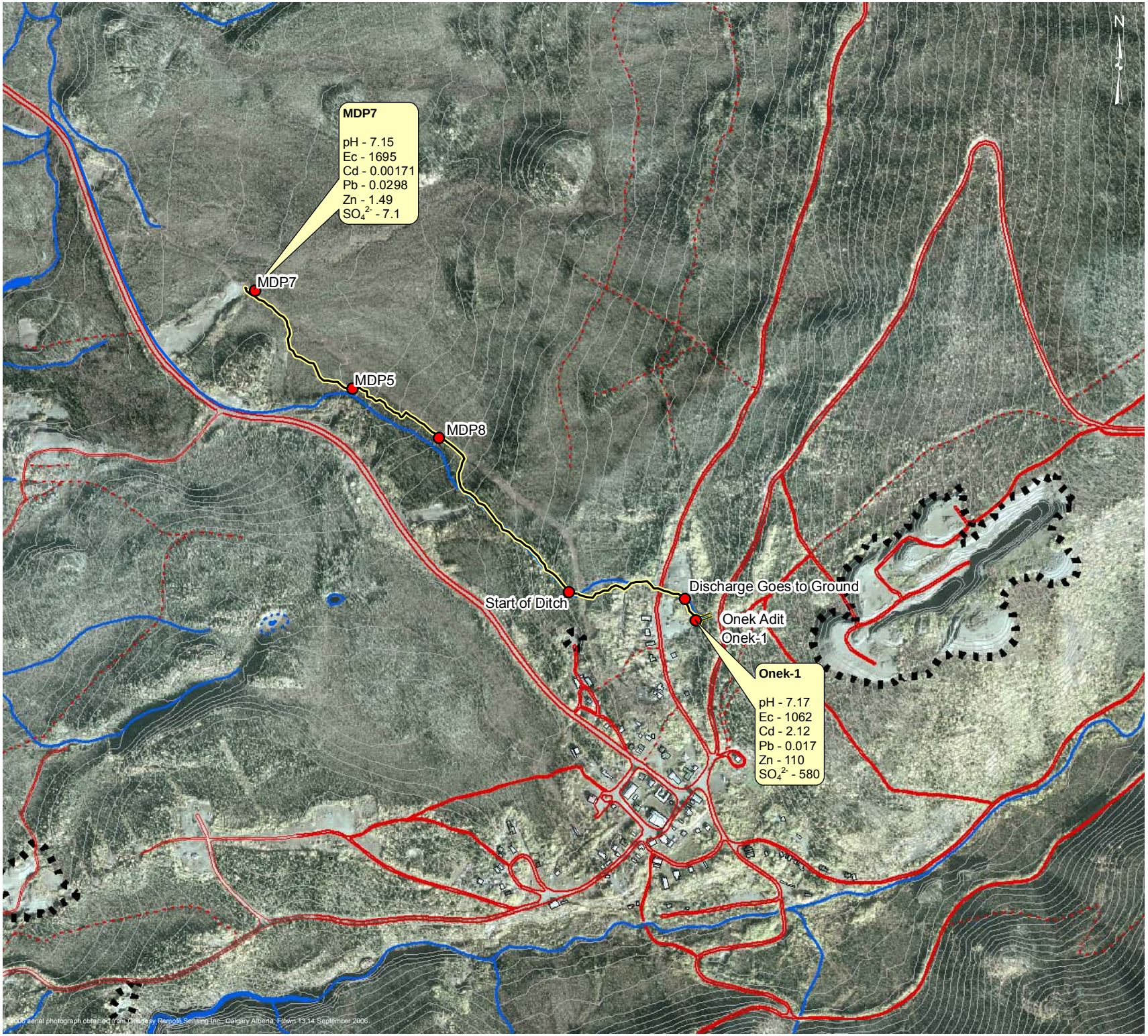
- Following the discharge path using visual evidence and insitu conductivity analysis from the adit to Christal Creek;
- Tracking the discharge path using a GPS;
- Sampling of surface water at locations ONEK-1 and MDP7;
- Entering waypoints for each sample location;
- Performing insitu measurements for flow, pH, Conductivity, Temperature, TDS and ORP and
- Submitting samples to be analyzed at Norwest Laboratory for total metals, pH and sulphate.

2.9.1 DISCHARGE RESULTS

The discharge from Onek adit goes into the ground approximately 50 m down gradient of the adit, as shown in Figure 11. The flow could not be tracked with absolute certainty due to its underground path. Field personnel followed an assumed flow path along the telephone cut line and along the moveable drive points installed in the summer of 2006. This route followed an existing low lying ditch down gradient of the adit. Once at the power line, the flow turns to bog where no one defined channel can be distinguished. It can not be said with certainty that this flow path drains into the Christal Creek drainage. Please see plates 26-27 below for a visual reference of Onek adit's discharge path.

Plate 26: Onek drainage looking toward Gambler Gulch Trail

Plate 27: Onek discharge path



Keno Hill Silver District

Adit Discharge Survey

ERDC

Legend

Sample ID
pH - pH units
EC = Conductivity - µS/cm
Cd = Cadmium - mg/L
Pb = Lead - mg/L
Zn = Zinc - mg/L
SO_4^{2-} = Sulphate - mg/L

- Sample Location
- Adit
- Shaft
- Adit Discharge Route*
- Public Road
- Exploration roads
- Trails
- Cutlines
- Contour
- Surface water (actual and potential)
- Swampy area
- Pit
- Pipe

Notes:
Projection UTM NAD83 Zone 8
*Adit discharge surveyed by Access Consulting Group Summer 2007

Scale:
1:10,000
(when plotted 8.5x11")
0 50 100 200 300 m

Figure 11

Onek Adit

ACCESS Consulting Group

Drawn by: HD	Checked by: DC
Date: March 2008	

Dwr File: D:\Project\AllProjects\ALEX-05-01\gis\mxd\UKMH\AditDischargeSurvey_Summer07\Fig11_OnekAdit.mxd

2.9.2 WATER QUALITY RESULTS

Table 9 presents the water quality results for selected parameters contrasted with the Water Use Licence standards and the CCME guidelines. Refer to Figure 11 for sample station locations. For a full listing of water quality results at Onek Adit look to Appendix B, Water Quality Data.

Only two of the four stations labeled in Figure 11 were sampled and received results, with selected parameters shown in the table below. The other two drive point monitoring stations (MDP8 and MDP5) were established in July 2006, but at the time of this adit discharge survey did not have water to grab from. Therefore, stations ONEK-1 and MDP-7 are representational of current adit flow and groundwater quality. A significant number of samples' parameters shown below exceeded CCME and/or WUL guidelines. Nickel and zinc remained within guidelines at both sample stations as did copper at ONEK-1.

Table 9 Water Quality Data Summary at Onek Adit

Site Description	Onek discharge from end of adit pipe	discharge approx. 1.1 km downgradiet of adit entrance	Historical Mean at Onek (June2000-Sept. 2007)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	ONEK-1	MDP7				
Date	1-Jun-07	1-Jun-07				
Parameter [1]						
Arsenic	0.015	0.0091	0.11	0.5	0.005	0.0002
Cadmium	2.12	0.00171	1.94	0.05	0.000017	0.00001
Copper	0.002	0.011	0.017	0.3	0.004	0.001
Lead	0.017	0.0298	0.031	0.2	0.007	0.0001
Nickel	0.0365	0.0118	0.03	0.5	0.15	0.0005
Silver	0.0004	0.0004	0.001	0.1	0.0001	0.0001
Zinc	110	1.49	100.2	0.5	0.03	0.001
pH	7.17	7.15	7.3	6.5-9.5	6.5-9	

Notes:

[1] All units are in mg/L unless otherwise indicated.

CCME guidelines for copper, lead and nickel are based on hardness levels

2.10 SADIE LADUE ADIT

The Sadie Ladue 600 adit is located approximately 7 km north of Keno City. It is 1 km northwest of Gambler Gulch Trail on the Northwest side of Keno Hill. Refer to Figure 2 "Site Locations" for further location representation.

On June 28, 2007, D. Desmarais and D. Cornett conducted an adit discharge survey for Sadie Ladue. This consisted of:

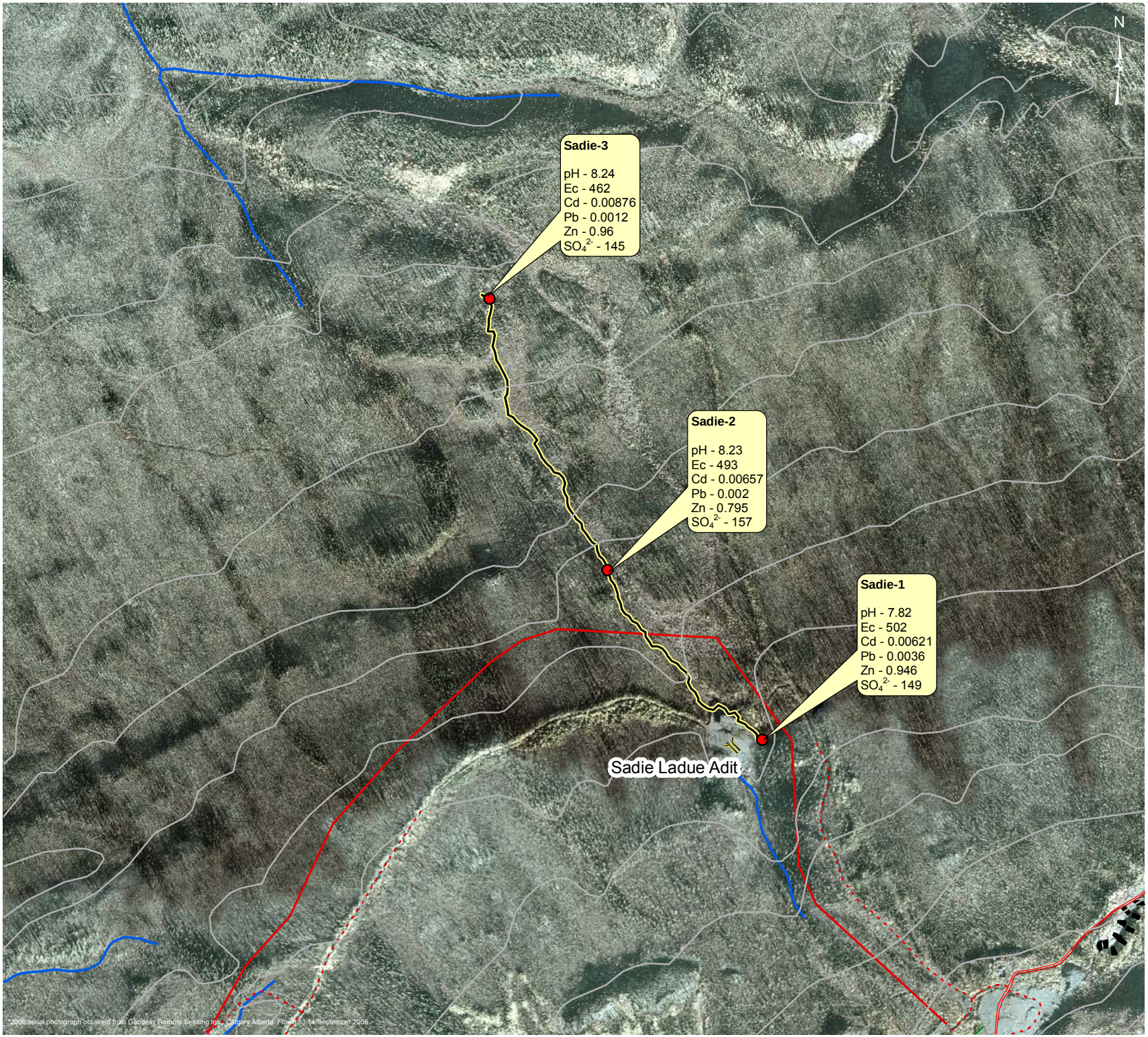
- Following the discharge path using visual evidence and insitu conductivity analysis from the adit to an unknown water source;
- Tracking the discharge path using a GPS;
- Sampling of surface water at locations Sadie-1, 2 and 3;
- Entering waypoints for each sample location;
- Performing insitu measurements for pH, Conductivity, Temperature, TDS and ORP and
- Submitting samples to be analyzed at Norwest Laboratory for total metals, pH and S04.

2.10.1 DISCHARGE RESULTS

Sadie Ladue discharge flow emerges from the adit in multiple channels. A select number of these channels are collected by a culvert. The flow continues down gradient over the waste rock storage area when all channels merge into one single defined channel. This channel carries on for approximately 800 m until it joins with an unknown water source (the last sample station Sadie-3). It is suggested that field personnel revisit and review the flow discharge path at Sadie Ladue in the summer 2008 field season. Please see plates 28-29 below for a visual reference of Sadie Ladue adit's discharge path.

Plate 28: Sadie Ladue adit discharge

Plate 29: Sadie Ladue flow from adit through culvert



Keno Hill Silver District

Adit Discharge Survey

ERDC

Legend

Sample ID
pH - pH units
EC = Conductivity - µS/cm
Cd = Cadmium - mg/L
Pb = Lead - mg/L
Zn = Zinc - mg/L
SO_4^{2-} = Sulphate - mg/L

- Sample Location
- Adit
- Shaft
- Adit Discharge Route*
- Public Road
- Exploration roads
- Trails
- Cutlines
- Contour
- Surface water (actual and potential)
- Swampy area
- Pit
- Pipe

Notes:
Projection UTM NAD83 Zone 8
*Adit discharge surveyed by Access Consulting Group Summer 2007

Scale:
1:8,500
(when plotted 8.5x11")

0 50 100 200 300 m

Figure 12

Sadie Ladue Adit

ACCESS Consulting Group

Drawn by: HD	Checked by: DC
Date: March 2008	

Our file: D:\Projects\Projects\AL-EX-05-01\gis\mxd\UKH\AditDischargeSurvey_Summer07\Fig12_SadieAdit.mxd

2.10.2 WATER QUALITY RESULTS

Table 10 presents the water quality results for selected parameters contrasted with the Water Use Licence standards and the CCME guidelines. Refer to Figure 12 for sample station locations. For a full listing of water quality results at Sadie Ladue look to Appendix B, Water Quality Data.

There were three sampled stations at Sadie Ladue on June 28, 2007. All parameters, with the exception of cadmium and zinc, met WUL and CCME guidelines. Both cadmium and zinc had their highest concentrations at the final sample station, before joining an unknown drainage system. Cadmium remained within the WUL standard if 0.05 mg/l, whereas zinc exceeded both the CCME and WUL guidelines. The remaining six parameters summarized below were confirmed to be at adequate concentrations.

Table 10 Water Quality Data Summary at Sadie Ladue

Site Description	Discharge from Sadie Ladue adit in culvert	Discharge approx. 300m down graident from location Sadie-1	Discharge approx. 500m down graident from location Sadie-2	Historical Mean at Sadie Ladue (Nov. 2000-Sept. 2007)	Water Use Licence Effluent Quality Guidelines	CCME Guidelines	Detection Limit
Site ID	Sadie-1	Sadie-2	Sadie-3				
Date	28-Jun-07	28-Jun-07	28-Jun-07				
Parameter [1]							
Arsenic	0.003	0.001	0.001	0.08	0.5	0.005	0.0002
Cadmium	0.00621	0.00657	0.00876	0.2	0.05	0.000017	0.00001
Copper	0.004	0.002	0.002	0.021	0.3	0.004	0.001
Lead	0.0036	0.002	0.0012	0.045	0.2	0.007	0.0001
Nickel	0.0161	0.0064	0.0061	0.15	0.5	0.15	0.0005
Silver	<0.0001	<0.0002	<0.0001	0.002	0.1	0.0001	0.0001
Zinc	0.946	0.795	0.96	0.53	0.5	0.03	0.001
pH	7.82	8.23	8.24	6.95	6.5-9.5	6.5-9	

Notes:

[1] All units are in mg/L unless otherwise indicated.

CCME guidelines for copper, lead and nickel are based on hardness levels

3.0 SUMMARY & RECOMMENDATIONS

The 2007 Adit Discharge Survey confirms and verifies many outstanding components to the knowledge base of Keno Hill Mine's drainage systems. The findings of this adit discharge survey confirms the receiving water drainage, identifies site locations for the AMP monitoring, and verifies the hydraulic catchment areas for the mass balance model loading model. The table below summarizes these results and their correlation.

Adit	Receiving Water Drainage	AMP Monitoring Station	1996 Mass Balance Catchment	2008 Mass Balance Catchment
Silver King 100	Flat Creek via ground	SK100-7, SK100-8, SK100-9	Galena Creek above the mouth	Galena Creek above the mouth
Husky South West	Flat Creek via ground	HSW-6	Flat Creek above station KV-9 and below Porcupine Creek diversion channel	Flat Creek above station KV-9 and below Porcupine Creek diversion channel
Bermingham	No Cash Creek via ground	Berm-4	No Cash Creek above Highway 2, which drains to South McQuesten River between station KV-2 and KV-1	No Cash Creek above Highway 2, which drains to South McQuesten River between station KV-2 and KV-1
Ruby	Star Creek via ground	Ruby-5	No Cash Creek above Highway 2, which drains to South McQuesten River between station KV-2 and KV-1	No Cash Creek above Highway 2, which drains to South McQuesten River between station KV-2 and KV-1
No Cash 500	No Cash Creek	No Cash-500-4	No Cash Creek above Highway 2	No Cash Creek above Highway 2
Galkeno 300	Christal Creek	GK300-4	Christal Creek between station KV-7 and KV-6	Christal Creek between station KV-7 and KV-6
Galkeno 900	Christal Lake	GK900-3	Christal Creek above station KV-6	Christal Creek above station KV-6
Keno 700	Lightning Creek	Keno 700-4	Hope Gulch above KV-39	Hope Gulch above KV-39
Onek	Christal Creek via ground	MDP7	Christal Creek above station KV-6	Christal Creek above station KV-6
Sadie Ladue	Ladue Creek via unnamed watercourse	Sadie-3	Ladue Creek via unnamed watercourse northeast of KV-35 and southwest of KV-73	Ladue Creek via unnamed watercourse northeast of KV-35 and southwest of KV-73

Having completed the 2007 Adit Discharge Survey, the following recommendations are suggested for the 2008 season (May-September):

- revisit and review the flow discharge path at Husky South West in July or August 2008;
- revisit and review the flow discharge path at Bermingham in the summer 2008 field season;
- revisit and review the flow discharge path at Sadie Ladue in the summer 2008 field season; and
- ensure adits are reporting to identified mass balance loading model

4.0 LIMITATIONS

This report was prepared for the exclusive use of the Yukon Government, and is based on information collected during research and interview efforts. Access Consulting Group has followed standard professional procedures in conducting this analysis and in preparing the contents of this report. The material in this report reflects Access Consulting Group's best judgment in light of the information available at the time of the preparation of this report. Any use that a third party makes of this report, or any reliance on decisions to be made based on it, are the responsibility of the third parties. Access Consulting Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. Access Consulting Group believes that the contents of this report are substantively correct.

The information contained in this report is based solely on conditions observed at the time of the research and have been developed or obtained through the exercise of Access Consulting Group's professional judgment and are set to the best of Access Consulting Group's knowledge, information, and belief. Although every effort has been made to confirm that all such information and data is factual, complete and accurate, Access Consulting Group offers no guarantees or warranties, either expressed or implied, with respect to such information or data.

Access Consulting Group shall not by the act of issuing this report be deemed to have represented that any information presented is exhaustive or will identify all conditions of any site or remediation option, and persons relying on the results thereof do so at their own risk.

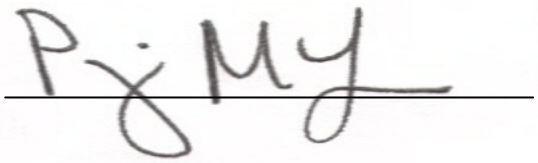
5.0 CERTIFICATION

Should you have any questions regarding this report, or if you require further information, please contact the undersigned at Access Consulting Group in Whitehorse, Yukon, at (867) 668-6463.

Respectfully submitted,

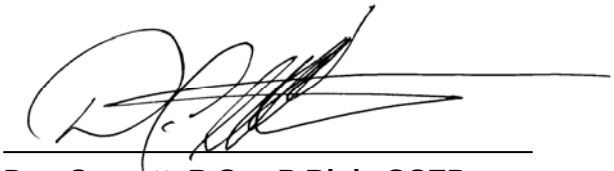
ACCESS CONSULTING GROUP

Prepared by:



Paige MacLean, B.E.S.
Environmental Scientist

Reviewed by:



Dan Cornett, B.Sc., P.Biol., CCEP
Sr. Environmental Scientist,
Principal (Vice President), Access Consulting Group

KENO HILL PROPERTY
ADIT DISCHARGE SURVEY
2007

Appendix A

Adit Discharge Survey Workplan

ERDC

Site Investigation and Improvements Special Projects
United Keno Hill Mines

Project Work Plan – Phase I

Project Title: STUDY PLAN FOR ADIT DISCHARGE SURVEY

Project Description

Poor-quality adit discharges can have harmful effects on aquatic life, fisheries, and riparian areas downstream. Adit discharges, regardless of the water quality, can contribute to the leaching of metals from waste-rock dumps that are commonly near the adit. The sampling programs that have been carried out at the site over the last several years provide a good basis for assessing water quality impacts and trends. A complete description of site workings is provided in the report entitled, "UKHM Site Characterization Report", (Access Mining Consultants Ltd., 1996). Chapter 5 – Site Description, of this report provides a detailed description of the entire Keno Hill Mines site developments, including history, type of development and infrastructure, and site plans and figures. The reader is referred to this report for a complete description of development activities undertaken at the old mine workings located on the property.

A review was conducted of Onek and No Cash 500 discharges in early 2007 to determine potential areas of fugitive flows that might require mitigation or treatment during closure. From the field and laboratory analyses naturally occurring organic materials are breaking down under anaerobic sulfate reducing conditions, precipitating zinc as a sulphide mineral from concentrations as high as 90 PPM at Onek and under steep hydraulic gradients such as exist at No Cash 500, and in both cases result in groundwater and surface water seepage high in bicarbonate concentrations and substantially void of zinc loading. It was recommended that similar investigations be initiated at other adits within the property as a detailed understanding of the flow pathways and down gradient effects are not well understood. In addition, an Adaptive Management Plan has been prepared to guide further follow up monitoring and management of old mine working discharges, however additional studies are required to support closure planning for these old mine workings. The following outlines the methodology for these investigations:

The adit locations to be included in this study are; Bermingham, Galkena 300, Galkena 900, Husky Southwest, No Cash 500, Ruby, Silver King, Townsite, UN, Bellekeno, Black Cap, Sadie Ladue, Onek, Lucky Queen, and Keno 700.

Objective

The purpose of this study is to document old mine workings flow paths and determine the extent of adit discharge contamination down gradient by identifying water flow path and sampling thoroughly. This information will update the mass balance model and help shape the final decision making for mine closure at these sites. The tasks below outline the methodology for this study:

Task 1:

A site visit to each of the above adits is the primary stage in this study. At each site, water quality tests (both in-situ and ex-situ) will be are conducted. Water-quality parameters are recorded using electronic monitoring instruments. The field parameters included: pH, specific conductivity, oxidation-reduction potential (ORP), temperature, and dissolved oxygen. Total Zn concentrations would also be measured on site using ERDC's AA machine. As data is retrieved additional water samples will be taken as necessary and analysed at an external laboratory for total ICP metals, hardness, and SO4. Water flow is measured at each site using a digital water flow probe meter. This data is recorded by field staff personnel. Several photographs are taken at each site to visually document the area for future reference. These photographs will be used as a mapping tool to indicate sites and water flow in data reporting.

Task 2:

During the field study adit discharge water flow pathways will be delineated. The water flow routes from each adit are investigated and recorded. Field personnel will meticulously follow the water's flow routes, with the assistance of GPS, the streams will be documented until they either enter the ground indefinitely or become part of a larger body of surface water. Where stream bifurcation occurs, field personnel will pursue both direction and document the route in detail, so as to apply the bifurcation ratio in order to assess stream concentration and flooding potential. If necessary, a dye test will be performed using uranine/ fluorescein to help ascertain flow path. Tracking the flow and collecting data will provide insight into the quantity and quality of runoff generated within each subcatchment, flow rate, flow depth, quality of water and definition of the down gradient receiving environment. While tracking the water's flow route, water measurements will be taken at strategic locations including; complete chemistry tests, water quality (pH, temperature, total zinc etc), and photo hubs set up.

Task 3:

The deliverable for this task is a comprehensive compilation and review of each adit's drainage data. It will summarize the following:

- Tables outlining the inflows and outflows on the streams' route,
- Established sample locations
- A map of the water flow route and all sample locations based on GPS routing survey,
- Result of water sampling,
- Methodology outline ,
- Predictions of concentration levels,
- Photograph library
- Contaminant transport figures and
- Input into an updated mass balance model.
- Input into a geochemical process review
- Water quality analysis.

Task 4:

Where the water flows underground, staff will install shallow drive points to collect water quality for subsurface ground water and conduct insitu tests. Piezometers are driven into the ground, or the soil at the bottom of a borehole with any direct push or drilling technology. Drive points should be spaced approximately 20 m apart.

If it is determined that drive points will not sufficiently sample water, the need for groundwater wells would be assessed and installed. The need, number, and installation of ground water wells will be determined and performed by the field staff. Wells will be put down by either digging, driving, boring or drilling. Staff will monitor wells for elevation and water quality for insitu measurements.

Task 5:

Based on the knowledge gained from this study of adit effluent routing and down gradient effects, a review of closure issues will be conducted by ACG and ERDC. The findings of this study will be compared with the closure issues outlines earlier in the closure planning process. These closure issues will be altered according to the adit effluent results. Preliminary closure measures and options for remediation and water management will be identified.

Team Members/Responsibilities:

Project member's roles and responsibilities are as follows:

ACG – Staff from Access Consulting Group will be wholly responsible for completing this study. They will be performing the field tests/work, GIS, mapping, documentation and administrative duties.

ERDC will provide camp and logistics support and equipment as necessary

Schedule/Milestones

The proposed schedule for this project is presented below.

Phase	Timelines	Deliverable
Adit Field Surveys	May 28- July 1 2007	Verbal or written update
Adit Drainage data compilation	August 30, 2007	Adit drainage field maps and data summary
Follow up - Fieldwork	July 1 – July 30, 2007	Verbal or written update.
Data Analysis / Reporting	October - November, 2007	Draft Data Summary Nov 30 Final Report – Dec 15

Budget:

Estimated Expenditures: $50,253 (see attached detail)

Approval Requirement:

Submitted by: _____ **Date:**

Government of Yukon Approval: _____ **Date**

BUDGET FOR ADIT DISCHARGE SURVEY

Adit Discharge Survey							
Task ID	**Description**	**Labour/Equipment**	**Days/Units**	**$/Day***	**$/Unit****	**Lump Sum**	**Cost**
1	Adit Source Survey and Flowpath documentation (15 sites) .	**Task Total**					**$ 19,200**
		ACG-Senior	2	$1,080			$ 2,160
		ACG-Intermediate	10	$720			$ 7,200
		ACG-Junior	10	$640			$ 6,400
		ACG-Support Staff	1	$440			$ 440
		Camp cost	0	$50			$ -
		Vehicle cost	10	$300			$ 3,000
2	Installation of Sampling Equipment and Analyses	**Task Total**					**$ 14,600**
		ACG-Senior	1	$1,080			$ 1,080
		ACG-Intermediate	3	$720			$ 2,160
		ACG-Junior	3	$640			$ 1,920
		ACG-Support Staff	1	$440			$ 440
		Water Samples	15		$500		$ 7,500
		Camp cost	0	$50			$ -
		Vehicle cost	5	$300			$ 1,500
3	Data Reporting	**Task Total**					**$ 11,420**
		ACG-Senior	1.5	$1,080			$ 1,620
		ACG-Intermediate	5	$720			$ 3,600
		ACG-Junior	5	$640			$ 3,200
		ACG-Support Staff - GIS	5	$600			$ 3,000
4	Data Review, integration to site-wide mass balance model and process review for closure options.	**Task Total**					$ 1,200
		J. Harrington	1	$1,200			$ 1,200
5	Process review for Closure Issues	**Task Total**					**$ 1,440**
		ACG-Intermediate	2	$720			$ 1,440
Contingency				5%			$ 2,393
Project Costs							**$ 50,253**

* Cost per day based on hourly rates and 8 hour day.

**One unit = one sample

KENO HILL PROPERTY
ADIT DISCHARGE SURVEY
2007

Appendix B

Water Quality Data

Keno Hill Property - Adit Discharge Study
Water Quailty Data

Site ID	GK900-1	GK900-2	GK900-3	KV28	GK300-1	GK300-2	GK300-3	GK300-4	Keno 700-1	Keno 700-2	Keno 700-3	Keno 700-4
Lab Lot ID	552656-1	552656-2	552656-3	552656-13	552656-13	552656-14	552656-15	552656-16	552656-7	552656-6	552656-4	552656-5
Date	1-Jun-07	1-Jun-07	1-Jun-07	3-Jun-07	3-Jun-07	3-Jun-07	3-Jun-07	3-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07
Parameter [1]												
InSitu Measurements												
pH	6.78	7.15	6.99	7.06								
Conductivity µS/cm	1466	1448	1465									
Temperature °C	8.1	7.8	8.2	1								
Total Dissolved Solids ppt	2.37	2.45	2.34									
ORP mV			93									
Discharge m3/sec	0.0035			0.025								
Total Metals (Trace)												
Aluminum	0.009	0.024	0.006	0.01	0.03	1.28	0.713	24.4	0.01	0.036	0.206	0.329
Antimony	0.0018	0.001	0.0003	<0.0004	0.0004	0.0002	0.0002	0.002	0.0027	0.0042	0.007	0.0079
Arsenic	0.0382	0.0176	0.0015	0.0034	0.042	0.013	0.0088	0.0996	0.0296	0.0217	0.0168	0.0161
Barium	0.005	0.005	0.006	0.007	0.007	0.084	0.043	0.505	0.009	0.011	0.017	0.02
Beryllium	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	0.0007	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
Boron	0.006	0.006	0.005	0.01	0.006	0.005	0.006	0.01	0.003	0.004	0.004	0.004
Cadmium	0.00019	0.00152	0.00026	0.102	0.276	0.182	0.136	0.0556	0.00632	0.0139	0.0515	0.0605
Calcium	394	389	368	226	198	206	226	287	66.9	65.7	44.6	35.3
Chromium	0.0005	0.0006	<0.0005	<0.001	0.0005	0.0025	0.0015	0.0372	<0.0005	<0.0005	0.0008	0.0009
Cobalt	0.0149	0.0071	0.0001	0.007	0.0804	0.0579	0.0325	0.029	0.0001	0.0001	0.0004	0.0004
Copper	<0.001	<0.001	<0.001	<0.002	0.022	0.016	0.012	0.096	0.004	0.004	0.006	0.006
Iron	<0.1	0.1	<0.1	0.2	4.9	1.7	1	47.2	<0.1	0.1	0.5	0.8
Lead	0.0031	0.0023	0.045	0.002	0.0181	0.0102	0.0055	0.096	0.0039	0.0193	0.102	0.165
Lithium	0.056	0.058	0.054	0.021	0.022	0.022	0.023	0.043	0.003	0.003	0.002	0.001
Magnesium	37.1	38.3	37	4.7	17.2	7.1	13.2	39.1	9.3	9.2	8.1	7.1
Manganese	7.78	4.05	0.151	76.2	136	128	107	26.8	0.073	0.022	0.128	0.194
Molybdenum	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	0.005	<0.001	<0.001	<0.001	<0.001
Nickel	0.126	0.0655	0.0035	0.013	0.255	0.198	0.149	0.121	0.0042	0.0046	0.0087	0.0083
Potassium	0.8	0.9	0.8	<0.8	0.7	0.9	0.9	2.8	<0.4	<0.4	0.4	<0.4
Selenium	<0.0002	<0.0002	<0.0002	0.001	0.0006	0.0012	0.0007	0.0026	<0.0002	0.0006	0.0009	0.0006
Silicon	3.41	3.4	3.32	0.59	3.22	5.4	4.7	24.4	2.4	2.38	1.76	1.78
Silver	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	0.0001	<0.0001	0.002	<0.0001	0.0002	0.0013	0.002
Sodium	1.8	1.8	1.7	1	1.3	1.4	1.4	2.6	1	1	0.6	0.5
Strontium	0.543	0.573	0.553	0.372	0.362	0.368	0.407	0.594	0.166	0.167	0.113	0.086
Sulfur	339	339	317	236	279	282	288	287	31.2	32.3	38.9	35.7
Thallium	<0.00005	<0.00005	<0.00005	0.00085	0.001	0.00029	0.00013	0.00031	<0.00005	<0.00005	<0.00005	<0.00005
Tin	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001
Titanium	0.0801	0.0664	0.061	0.0581	0.058	0.116	0.0796	0.688	0.0326	0.0376	0.0463	0.0492
Uranium	0.0089	0.0088	0.0093	<0.001	<0.0005	<0.0005	<0.0005	0.0038	0.0018	0.0012	<0.0005	<0.0005
Vanadium	0.0006	0.0003	0.0002	0.0003	<0.0001	0.0039	0.0021	0.057	<0.0001	0.0001	0.0005	0.0008
Zinc	0.034	0.248	0.095	2.4	76.8	53.8	45.6	21	0.926	1.4	4.47	4.75
Zirconium	<0.001	<0.001	<0.001	<0.002	<0.001	0.001	<0.001	0.01	<0.001	<0.001	<0.001	<0.001
Routine												
pH	7.96	7.93	7.9	7.43	7.27	7.1	7.03	7.13	7.84	8.08	7.54	7.26
Sulphate SO4	960	970	930		690	850	870	850	90	90	110	100

Notes:

[1] All units are in mg/L unless otherwise indicated.

Keno Hill Property - Adit Discharge Study
Water Quailty Data

Site ID	Ruby-1	Ruby-2	Ruby-3	Ruby-4	Ruby-5	Berm-1	Berm-2	Berm-3	Berm-4	Berm-5	Berm-6	Berm-7	No Cash 500-1
Lab Lot ID	552656-8	552656-9	552656-10	552656-11	552656-12	552656-17	552656-18	552656-19	552656-20	552656-21	552656-22	552656-23	552656-24
Date	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	2-Jun-07	30-May-07
Parameter [1]													
InSitu Measurements													
pH	6.76	nm	7.36	7.42	7.55	8.27	8.02	8.34	8.14	7.36	7.03	7.34	6.77
Conductivity µS/cm	1091	1382	709	687	638	240	299	282	270	257	452	261	701
Temperature °C	1.2	0.5	1.8	1.8	1.8	1.5	3	1.9	2	1.7	1.1	1.6	3.0
Total Dissolved Solids ppt	5.3	690	364	362	322	130	147	144	127	126	234	128	
ORP mV	73	128	98	119	127	97	148	146	127	295	265	261	
Discharge m3/sec	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	0.0055
Total Metals (Trace)													
Aluminum	0.073	0.043	0.235	0.255	0.065	0.367	0.934	0.115	0.087	0.077	0.109	0.065	0.113
Antimony	0.0029	0.0003	0.0004	0.0004	0.0007	0.0012	0.003	0.0006	0.0005	0.0005	0.0003	0.0006	0.0011
Arsenic	0.0097	0.0014	0.0007	0.0015	0.0007	0.0086	0.0171	0.0017	0.0008	0.0004	0.001	0.0002	0.0211
Barium	0.008	0.014	0.023	0.026	0.017	0.009	0.022	0.028	0.023	0.02	0.041	0.02	0.005
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	0.006	0.004	0.002	0.003	0.003	0.003	0.004	0.002	0.003	0.002	0.002	0.003	0.005
Cadmium	0.0195	0.0531	0.0401	0.0546	0.00214	0.145	0.103	0.00136	0.0007	0.00028	0.0009	0.00018	0.348
Calcium	71.8	71.2	27.1	28.2	13.5	10	12.6	12.2	10.9	9.8	18.5	10.1	154
Chromium	0.0005	<0.0005	0.0007	0.0007	0.0005	0.0013	0.0024	0.0006	0.0008	0.0005	0.0005	0.0006	0.0007
Cobalt	0.0044	<0.0001	0.0014	0.0026	0.0002	0.0004	0.0005	0.0004	<0.0001	<0.0001	0.0003	<0.0001	0.0081
Copper	0.002	0.004	0.006	0.008	0.002	0.018	0.011	0.002	0.003	0.002	0.002	0.002	0.071
Iron	0.8	<0.1	0.4	0.5	<0.1	0.5	1.6	0.2	<0.1	<0.1	0.2	<0.1	7.2
Lead	0.0052	0.0058	0.0066	0.0072	0.0033	0.0358	0.0719	0.0031	0.0016	0.0007	0.0012	0.0007	0.0055
Lithium	0.014	0.008	0.003	0.003	0.003	0.003	0.004	0.001	0.001	0.001	0.002	0.001	0.022
Magnesium	12	11.9	5.6	5.3	2.6	2.4	3.2	3	2.8	2.8	5.9	2.9	16.1
Manganese	2.9	0.535	4.03	6.56	0.16	0.636	0.265	0.137	0.008	0.014	0.202	<0.005	12.7
Molybdenum	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	0.0237	0.0247	0.0218	0.0252	0.0056	0.0022	0.0025	0.0027	0.0021	0.0016	0.0043	0.0018	0.0564
Potassium	<0.4	0.5	<0.4	0.4	<0.4	<0.4	0.4	<0.4	<0.4	<0.4	1.3	<0.4	0.5
Selenium	0.0021	0.0021	<0.0002	0.0003	0.0003	0.0006	0.0006	0.0007	0.0004	<0.0002	0.0003	0.0003	0.0011
Silicon	3.42	2.63	2.39	2.21	1.89	2.13	3.86	2.05	1.99	2.17	2.68	2.08	2.6
Silver	0.0001	<0.0001	0.0002	0.0002	<0.0001	0.0013	0.0022	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	0.0004
Sodium	0.9	0.8	0.6	0.5	0.4	<0.4	<0.4	<0.4	<0.4	0.4	0.9	0.4	1.2
Strontium	0.096	0.099	0.052	0.049	0.03	0.026	0.032	0.03	0.027	0.024	0.045	0.024	0.203
Sulfur	44.2	75.1	31.3	35	8.9	6	8.3	9	7.7	8.6	22.7	8.7	156
Thallium	0.00029	<0.00005	<0.00005	<0.00005	0.00005	<0.00005	0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00246
Tin	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	0.0375	0.0382	0.0429	0.0366	0.0362	0.0859	0.0796	0.0533	0.0848	0.0515	0.0516	0.0471	0.0544
Uranium	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0053
Vanadium	<0.0001	0.0001	0.0005	0.0003	0.0002	0.0008	0.0025	0.0002	0.0002	0.0002	0.0004	0.0002	<0.0001
Zinc	1.39	5.72	4.17	4.85	0.354	2.13	2.02	0.188	0.142	0.087	0.27	0.081	28.7
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Routine													
pH	7.96	5.16	6.59	6.36	7.04	7.09	7.21	7.15	7.14	6.8	5.79	6.82	
Sulphate SO4	120	220	90	100	30	18	25	26	22	25	66	25	

Notes:

[1] All units are in mg/L unless

Keno Hill Property - Adit Discharge Study
Water Quailty Data

Site ID	No Cash 500-2	No Cash 500-3	No Cash 500-4	SK100-1	SK100-2	SK100-3	SK100-4	SK100-5	SK100-6	SK100-7	SK100-8
Lab Lot ID	552656-25	552656-26	552656-27	552656-28	552656-29	552656-30	552656-31	552656-32	552656-33	552656-34	552656-35
Date	30-May-07	30-May-07	30-May-07	30-May-07	30-May-07	30-May-07	30-May-07	30-May-07	30-May-07	30-May-07	30-May-07
Parameter [1]											
InSitu Measurements											
pH				7.51	7.28					7.49	7.71
Conductivity µS/cm				825	781					727	162
Temperature °C				4.8	6.1					1.7	1.2
Total Dissolved Solids ppt											
ORP mV											
Discharge m3/sec				2.7							
Total Metals (Trace)											
Aluminum	0.109	0.36	0.511	0.006	0.007	0.009	0.006	<0.005	3.76	66.2	0.023
Antimony	0.0003	0.0012	0.0009	0.0223	0.0133	0.0036	0.0057	0.0037	0.0012	0.004	0.0008
Arsenic	0.0013	0.0028	0.0019	0.0045	0.0016	0.0014	0.0007	0.0006	0.0141	0.148	0.0007
Barium	0.02	0.032	0.04	0.005	0.004	0.014	0.048	0.039	0.159	1.6	0.022
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0023	<0.0001
Bismuth	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.0005
Boron	0.005	0.004	0.004	0.006	0.006	0.006	0.004	0.004	0.004	0.021	0.004
Cadmium	0.0263	0.00994	0.00224	0.00032	0.00024	0.0001	<0.00001	<0.00001	0.00026	0.00314	0.00017
Calcium	135	16.9	10.4	152	159	145	146	133	143	165	27.2
Chromium	<0.0005	0.0009	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0071	0.1	<0.0005
Cobalt	0.0002	0.0007	0.0006	0.0013	0.0003	0.0005	0.0002	<0.0001	0.0031	0.0518	0.0001
Copper	0.004	0.005	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	0.014	0.17	0.004
Iron	0.3	0.7	0.7	0.6	0.3	0.2	<0.1	<0.1	6.7	107	<0.1
Lead	0.0022	0.0613	0.0514	<0.0001	0.0003	0.0002	0.0002	0.0001	0.0084	0.09	0.0005
Lithium	0.019	0.002	0.001	0.018	0.018	0.025	0.015	0.016	0.015	0.078	0.001
Magnesium	16.9	3.6	2.9	39.2	38.7	32.2	34.2	31.2	39.3	57	7.2
Manganese	0.227	0.474	0.236	0.429	0.072	0.127	0.043	0.028	0.246	2.76	0.013
Molybdenum	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001
Nickel	0.0107	0.0043	0.0028	0.0066	0.001	0.0022	<0.0005	<0.0005	0.0077	0.134	0.0007
Potassium	0.6	0.5	0.4	1.4	1.4	2.1	1.4	1.8	1.5	6	<0.4
Selenium	0.0013	0.0004	<0.0002	0.0004	<0.0002	<0.0002	0.0004	0.0002	0.0004	0.0037	<0.0002
Silicon	2.18	1.77	1.91	3.2	3.3	2.99	3.19	3.11	7.94	55.6	1.88
Silver	<0.0001	0.0006	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0021	<0.0001
Sodium	1.1	0.9	0.8	2.7	2.7	2.3	2.4	2.2	2.8	4.7	1.1
Strontium	0.219	0.033	0.024	0.308	0.328	0.295	0.29	0.27	0.281	0.431	0.085
Sulfur	122	15.5	9.8	157	155	127	128	121	120	116	7.4
Thallium	0.00005	0.00006	<0.00005	0.00302	0.00144	0.0004	<0.00005	<0.00005	0.00008	0.00078	<0.00005
Tin	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001
Titanium	0.0133	0.0114	0.0156	0.0145	0.0145	0.0119	0.0112	0.0106	0.127	1.67	0.0011
Uranium	0.0011	<0.0005	<0.0005	0.0013	0.0016	0.0019	0.0013	0.0008	0.0027	0.0098	<0.0005
Vanadium	0.0004	0.001	0.0013	0.0002	<0.0001	0.0001	0.0002	0.0001	0.0118	0.165	0.0002
Zinc	5.51	1.13	0.45	0.041	0.047	0.029	0.008	0.006	0.047		0.018
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.03	<0.001
Routine											
pH											
Sulphate SO4											

Notes:

[1] All units are in mg/L unless

Keno Hill Property - Adit Discharge Study
Water Quailty Data

Site ID	SK100-9	HSW-1	HSW-2	HSW-3	HSW-4	HSW-5	HSW-6	ONEK-1	MDP7	Sadie-1	Sadie-2	Sadie-3	Detection Limit
Lab Lot ID	552656-36	552656-37	552656-38	552656-39	552656-40	552656-41	552656-42	552656-37	552656-38	554386-1	554386-2	554386-3	
Date	30-May-07	1-Jun-07	1-Jun-07	1-Jun-07	1-Jun-07	1-Jun-07	1-Jun-07	1-Jun-07	1-Jun-07				
Parameter [1]													
InSitu Measurements													
pH	7.57												
Conductivity µS/cm	180												
Temperature °C	4.2												
Total Dissolved Solids ppt													
ORP mV													
Discharge m3/sec													
Total Metals (Trace)													
Aluminum	1.92	0.942	0.313	0.01	1.14	0.219	0.34	0.006	1.25	0.006	0.049	0.01	0.005
Antimony	0.001	0.0017	0.0008	0.0003	0.0004	0.0003	0.0003	0.0054	0.0012	0.0086	0.0079	0.0067	0.0002
Arsenic	0.0048	0.0086	0.0031	0.0009	0.0044	0.0013	0.0029	0.015	0.0091	0.003	0.001	0.001	0.0002
Barium	0.074	0.094	0.047	0.053	0.08	0.054	0.065	0.008	0.107	0.013	0.035	0.039	0.001
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	0.0001
Bismuth	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	0.0005
Boron	0.004	0.005	0.005	0.002	0.003	0.003	0.003	0.004	0.004	<0.002	<0.004	0.002	0.002
Cadmium	0.00025	0.0017	0.00047	0.00004	0.00011	0.00002	0.00007	2.12	0.00171	0.00621	0.00657	0.00876	0.00001
Calcium	30.9	57.1	61.4	95.4	98.8	122	97.4	186	24.1	76.2	81.6	76.9	0.2
Chromium	0.0037	0.0019	0.001	<0.0005	0.0025	0.0005	0.001	<0.0005	0.0045	<0.0005	<0.001	<0.0005	0.0005
Cobalt	0.0016	0.0007	0.0004	0.0002	0.0019	0.0003	0.0011	0.0194	0.004	0.0002	<0.0002	<0.0001	0.0001
Copper	0.008	0.005	0.003	0.003	0.005	0.002	0.002	0.002	0.011	0.004	0.002	0.002	0.001
Iron	3.2	1.6	0.5	0.1	2.4	0.5	0.9	0.1	3.6	<0.1	<0.2	<0.1	0.1
Lead	0.0044	0.0137	0.0045	0.0004	0.0022	0.0004	0.0012	0.017	0.0298	0.0036	0.002	0.0012	0.0001
Lithium	0.004	0.003	0.008	0.008	0.01	0.012	0.009	0.022	0.004	0.002	0.003	0.003	0.001
Magnesium	8.5	15.3	13.9	24.4	23.1	28.8	22.7	15.7	3.1	27.1	28.1	25.9	0.1
Manganese	0.094	0.07	0.089	0.182	1.2	0.218	1.18	13.8	1.15	0.027	<0.01	0.041	0.005
Molybdenum	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.002	0.002	0.001
Nickel	0.0044	0.0018	<0.0005	<0.0005	0.0026	<0.0005	<0.0005	0.0365	0.0118	0.0161	0.0064	0.0061	0.0005
Potassium	0.8	1	0.8	0.9	1.1	0.9	1	0.5	<0.4	0.5	<0.8	0.6	0.4
Selenium	0.0006	0.0015	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	0.0005	0.0005	0.0002
Silicon	5.5	4.05	2.75	2.53	4.92	3.53	3.32	4.93	3.71	2.26	2.55	2.62	0.05
Silver	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	0.0004	<0.0001	<0.0002	<0.0001	0.0001
Sodium	1.2	0.7	0.7	1.6	1.3	1.7	1.3	1.5	0.9	1.8	2	2	0.4
Strontium	0.093	0.154	0.139	0.183	0.187	0.218	0.184	0.228	0.053	0.313	0.332	0.314	0.001
Sulfur	10.3	18.8	25.7	61.5	60.1	82	59.6	196	2.8	46.5	49.8	45.6	0.3
Thallium	<0.00005	0.00011	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0001	<0.00005	<0.00005	<0.0001	<0.00005	0.00005
Tin	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	0.001
Titanium	0.0671	0.0449	0.0533	0.0055	0.0821	0.0144	0.0603	0.0079	0.0315	0.0008	0.0043	0.0024	0.0005
Uranium	0.0006	0.0014	0.0009	0.0008	0.0009	0.0013	0.0008	<0.0005	<0.0005	0.0068	0.0061	0.0057	0.0005
Vanadium	0.0056	0.0034	0.0012	0.0001	0.0035	0.0007	0.0011	<0.0001	0.0056	0.0002	0.0004	0.0002	0.0001
Zinc	0.031	0.122	0.036	0.006	0.017	0.005	0.008	110	1.49	0.946	0.795	0.96	0.001
Zirconium	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.002	<0.001	0.001
Routine													
pH		8.14	8.15		8		8.02	7.17	7.15	7.82	8.23	8.24	
Sulphate SO4		54	78		170		170	580	7.1	149	157	145	0.1

Notes:

[1] All units are in mg/L unless