



PEBBLE PROJECT

DRAFT ENVIRONMENTAL BASELINE STUDIES PROPOSED 2008 STUDY PLANS

CHAPTER 6. WATER QUALITY

DRAFT



Prepared For:
State of Alaska Large Mine Permitting Team
Department of Natural Resources

Prepared By:
 **THE**
pebble
PARTNERSHIP

3201 C Street, Suite 604
Anchorage, AK 99503
(907) 339-2600

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6. WATER QUALITY

The objectives and scope of work for 2008 are the same as those described in the Water Quality 2007 Study Plan with exceptions noted below. The water quality study is composed of surface water, seeps, and groundwater sampling programs.

6.1 Surface Water Quality

Table 6.1-1 contains summary of the study tasks for the surface water quality study for each year, 2004 through 2008. Table 4.1-2 in Chapter 4, Surface Water Hydrology, provides a record of sampling at each station from 2004 through 2007 by month, as well as planned sampling for 2008. The study area is illustrated in Figure 6.1-1.

HDR Alaska, Inc. (HDR) will lead the collection of surface water-quality data for streams, ponds, and lakes and for sediments in the mine study area. Sampling of ponds in the proposed tailings area will be conducted in coordination with SLR Alaska (SLR). The methods for the 2008 surface water quality study, including the seeps program, is described in the 2008 Surface Hydrology and Water Quality Field Sampling Plan (FSP).

The following activities will be performed to support the surface water quality program in 2008.

- Monthly collection of water-quality samples and instantaneous discharge measurements at 39 stations from January through breakup (expected) in May, shown in Figure 6.1-1.
- Monthly collection of water-quality samples and instantaneous discharge measurements at 22 of the same stations from June through the remainder of 2008.
- No sediment sampling will be conducted in 2008.
- Water quality samples to be analyzed in laboratories in accordance with the 2008 Quality Assurance Project Plan.

HDR Alaska, Inc. (HDR) will lead the collection of surface water-quality data for seeps in the mine study area. The surface water quality and seep sampling stations locations are described in Figure 6.1-2.

The following activities will be performed to support the seeps water quality program in 2008.

- Water quality sampling will be conducted five times per year to capture winter baseflow (March), spring breakup (May), summer low flow (July), a fall storm event (September), and late fall (late October).

6.2 Groundwater Quality

Table 6.2-1 contains summary of the study tasks for the groundwater quality study for each year, 2004 through 2008. Table 5.1-2 in Chapter 5, Groundwater Hydrology, provides a record of sampling at each station from 2004 through 2007 by month, as well as planned sampling for 2008. The study area is illustrated in Figure 6.2-1.

Water Management Consultants (WMC) is the primary consultant for the groundwater-quality study in the mine study area, with support provided by SLR Alaska. The methods for the 2008 groundwater quality study are described in the 2008 Groundwater Hydrology and Water Quality FSP.

The following activities will be performed to support the ground water quality program in 2008.

- Groundwater sampling will continue in 2008.
- 89 groundwater wells will be sampled quarterly, including 39 wells installed in 2006, 10 wells installed in 2007, 20 wells installed in 2008, and 30 deep-bedrock multi-level piezometer (Westbay) sample ports. Groundwater sampling stations are described in Figure 6.2-1.
- Groundwater quality sampling methods and protocols are described in Chapter 6 and detailed in the 2008 Groundwater Hydrology and Water Quality Field Sampling Plan (FSP).

TABLES

TABLE 6.1-1
Pebble Project Environmental Studies
Study Summary for Surface Water Quality, 2004-2008
Consultant: HDR Alaska, Inc.

Field Studies Discipline	2004 Study Tasks	2005 Study Tasks	2006 Study Tasks	2007 Study Tasks	2008 Study Tasks
Surface Water Quality	Mine Studies Area				
	Baseline Surface-Water Quality Data Collection (7 Events)	Baseline Surface-Water Quality Data Collection (8 Events)	Baseline Surface-Water Quality Data Collection (10 Events)	Baseline Surface Water-Quality Data Collection (12 Events)	Baseline Surface Water-Quality Data Collection (12 Events)
	Seep Sampling	Seep Sampling	Seep Sampling	Seeps Sampling	Seeps Sampling
				Seeps - Sampling of Areas J, L, and UT East Drainage	
			Seeps - Inventory	Seeps - Inventory	Seeps - Inventory
	Sediment - Field Data Collection	Sediment - Field Data Collection	Sediment - Field Data Collection	Sediment - Field Data Collection	
			Ponds and Lake Sampling	Ponds and Lake Sampling	Ponds and Lake Sampling

TABLE 6.2-1
Pebble Project Environmental Studies
Study Summary for Groundwater Quality, 2004-2008
Consultant: Water Management Consultants

Field Studies Discipline	2004 Study Tasks	2005 Study Tasks	2006 Study Tasks	2007 Study Tasks	2008 Study Tasks
Groundwater Quality	Mine Studies Area				
	Baseline Groundwater Quality Data Collection (2 Events)	Baseline Groundwater Quality Data Collection (4 Events)			
	Progress Report		Environmental Baseline Document		Environmental Baseline Document

FIGURES

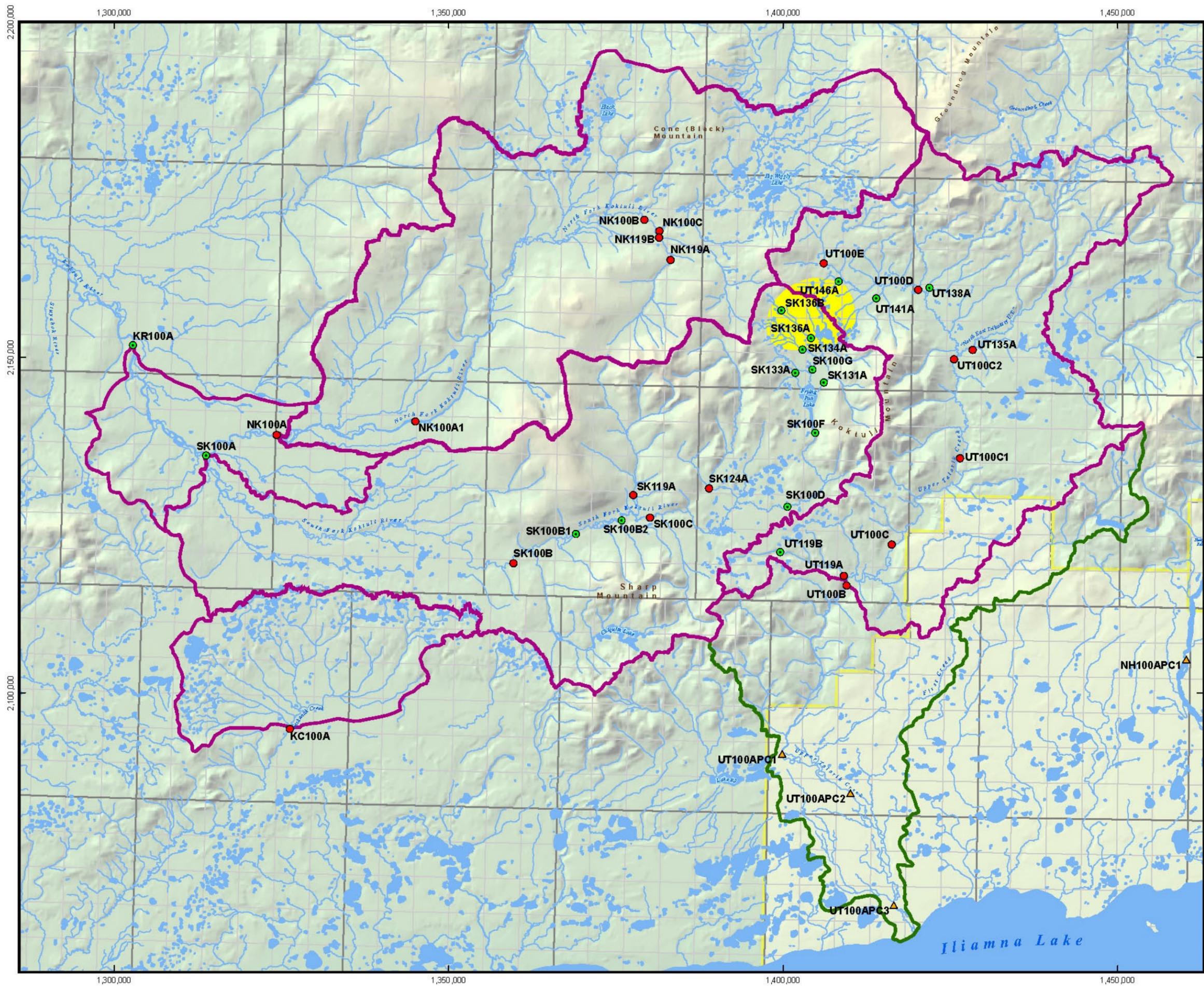
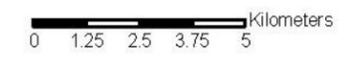


Figure 6.1-1
2008 Study Plan
Surface Hydrology and Water Quality
Sampling Stations

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Legend

- HDR Drainage Boundary
- APCS Drainage Boundary
- Sampling Stations**
 - Continuous
 - Instantaneous
 - APCS Sampling Station
- Stream
- Waterbody
- General Deposit Location
- Village Corporation Boundary (Private Land)



Scale 1:170,000

Alaska State Plane Zone 5 (units feet)
 1983 North American Datum

File: HDR_WQ_2008FSP_V01	Date: April 23, 2008
Version: 1	Author: HDR - MC

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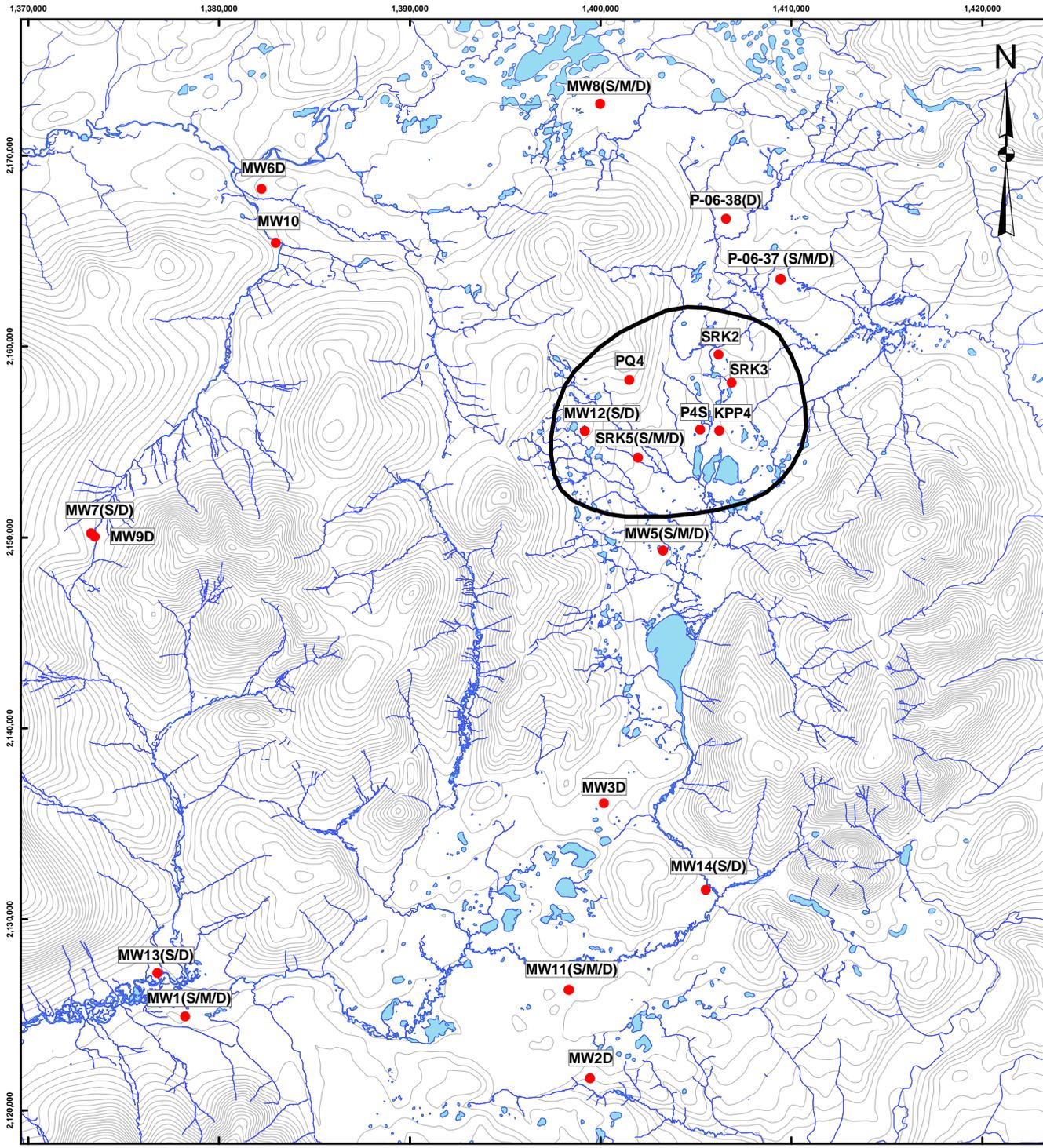
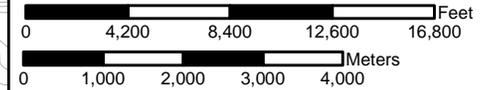
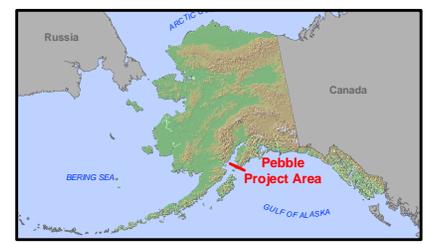


Figure 6.2-1:
2008 Study Plan
Monitoring Well Locations,
Groundwater Studies
Mine Study Area

Legend

- Monitoring Well
- ▭ General Pit Outline
- Lakes
- Rivers
- 50 ft Contour Interval



Scale 1:94,234
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

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