

**IRONCLAD (#72)**  
**(MINFILE#105M 063)**

**1. LOCATION AND ACCESS**

The Ironclad site lies above and below Keno 700 Road about 2.5 km out of Keno City. 4 trenches (Trenches 2 to 4) lie just above the road. Another trench (Trench 1) lies just below the road. A single adit (Adit 1) lies about 70 m down the slope of Keno Hill from the road. The approximate UTM coordinates for the site are 7087700 m N 486970 m E. The elevation of the site is approximately 1175 m.

**2. SITE PHYSIOGRAPHY**

The Ironclad site lies on the south slope of Keno Hill. The site slopes from the uphill trenches (Trenches 2 to 4) down to a single adit (Adit 1). Keno 700 Road passes between the uphill trenches and Adit 1. The adit site is built on a large pile of overburden consisting of approximately 60% soil and 40% coarse quartzite. Surface water from the site drains towards Lightning Creek.

**3. GEOLOGY AND MINERALIZATION**

The minfile reports that the major rock type at the Ironclad site is medium to thick bedded quartzite. Minor rock types consist of carbonaceous phyllite and greenstone lenses. The vein fault is reported to be 1.5 to 3 m wide with narrow lenses of galena, tetrahedrite and sphalerite.

**4. SITE HISTORY**

According to the minfile a 4.6 m shaft was developed at the Ironclad site in 1931. 152 m of drifting took place from 1952 to 1954.

**5. MINE DEVELOPMENT**

**5.1 Mine Openings And Excavations**

Adit 1 (photo 72-1)

Collapsed adit

Location: in the hillside approximately 70 m below Keno 700 Road (see Figure 1)

Dimensions (L x W x H): unknown

Supports: unknown – wooden portal

Condition: adit is collapsed

Accessibility: adit site can be accessed on foot from Keno 700 Road

### Trench 1

Location: northeast end of trench lies about 10 m south of Keno 700 Road (see Figure 1)

Dimensions (L x W x H): 70 m x 7 m x 2-3 m - longitudinal bearing AZ 058

Condition: stable

### Trench 2

Location: about 10 m north of Keno 700 Road and 30 m northeast of Trench 1 (see Figure 1)

Dimensions (L x W x H): 40 m x 4 m x 1-2 m – longitudinal bearing AZ 320

Condition: stable

### Trench 3 (photo 72-5)

Location: about 25 m north of Keno 700 Road and 5 m west of Trench 2 (see Figure 1)

Dimensions (L x W x H): 45 m x 4 m x 1-2 m – longitudinal bearing AZ 334

Condition: stable

### Trench 4

Location: about 30 m north of Keno 700 Road and 25 m west of Trench 3 (see Figure 1)

Dimensions (L x W x H): 50 m x 3 m x 1-2 m

Condition: stable

### Trench 5

Location: about 15 m north of Trench 2

Dimensions (L x W x H): 32 m x 6 m x 2 m – longitudinal bearing AZ 329

Condition: stable

## 5.2 Waste Rock Disposal Areas

Two large waste rock piles (Waste rock pile #1 and Waste rock pile #2) are located below the adit at the Ironclad site. Several piles of overburden have been built up at the end of Trenches 1,2 and 3.

### Waste rock pile #1 (photo 72-2)

Waste rock pile #1 is located about 30 m south of Adit 1. It lies directly beside Waste rock pile #2 to the west. The pile appears stable at a slope of about 35°. Waste rock pile #1 is primarily fine to

blocky rusty and weathered quartzite. It also consists of about 10% phyllite and 5% quartz vein material. Minor siderite veining and greenstone were also observed in this pile. A 47 cm test pit (Test Pit 72WR01) dug at Waste rock pile #1 revealed four distinct layers of material (photo 72-3). The layers consisted of 8 cm of green yellow to green brown sandy quartzite and quartz veining overlaying 2 cm of dark grey graphitic phyllite, 27 cm of leached pale yellow sandy quartzite and quartz veining, and 10 cm of yellow brown to light brown sandy quartzite and quartzite. Waste rock samples were taken from the pale yellow layer (sample 72WR01-01) and the yellow brown to light brown layer (sample 72WR01-02). The field paste pH and conductivity of sample 72WR01-01 were 7.1 and 10  $\mu\text{S}/\text{cm}$  respectively. The field paste pH and conductivity of sample 72WR01-02 were 7.4 and 20  $\mu\text{S}/\text{cm}$  respectively. Laboratory analysis data is provided in Attachment B.

#### Waste rock pile #2 (photo 72-4)

Waste rock pile #2 is located about 30 m south of Adit 1. It lies directly beside Waste rock pile #1 to the east. The pile appears stable at a slope of about 30°. Waste rock pile #2 is primarily fine carbonaceous phyllite with minor graphite. A section of the pile at the southeast edge consists of rusty and weathered blocky quartzite with trace of disseminated pyrite. A 38 cm test pit (Test Pit 72WR02) dug at Waste rock pile #2 revealed a subsurface layer consisting of green brown fine phyllite with some platy and rusty coarse fragments. Waste rock sample 72WR02-01 was taken from the subsurface layer. The field paste pH and conductivity of sample 72WR02-01 were 6.8 and 18  $\mu\text{S}/\text{cm}$  respectively. Laboratory analysis data is provided in Attachment B.

### 5.3 Tailings Impoundments

No tailings were observed at the Ironclad site.

### 5.4 Minesite Water Treatment

No water treatment occurs at the Ironclad site.

## 6. MINE SITE INFRASTRUCTURE

### 6.1 Buildings

Evidence was found that a building once stood at the Ironclad site. Metal and wood debris are located in an area about 15 m west of Adit 1 (photo 72-6).

## **6.2 Fuel Storage**

A number of empty 45 gallon drums were found at the Ironclad site. They appear to have been discarded in a location about 40m west of Adit 1.

## **6.3 Rail and Trestle**

Evidence of a rail and trestle system running from the adit to the top of the waste rock piles was found at the Ironclad site. Rails and wooden ties were found running the top of each waste rock pile.

## **6.4 Milling and Processing Infrastructure**

There was no evidence or record of milling or processing activities occurring at the Ironclad site.

## **6.5 Electrical Equipment**

There was no electrical equipment observed at the Ironclad site except for a single discarded battery.

## **7. SOLID WASTE DUMPS**

No solid waste dumps were observed at the Ironclad site.

## **8. POTENTIAL CONTAMINANTS OF CONCERN**

No evidence of potential contamination was found at the Ironclad site.

## **9. WATER QUALITY**

No surface water was observed at the Ironclad site. Runoff from the site drains towards Lightning Creek. No water quality samples were taken.

## **10. RECLAMATION**

The Ironclad site has been mostly overgrown with trees and bushes. The waste rock pile, however, remains largely unvegetated. There have been no known reclamation measures carried out by past or present operators of the site.

Site Number	Detection Limit	Units	72WR01-02 - Sept./99 - Soil
Sample Description			Waste rock sample from pile 72WR01 at Ironclad
Paste pH (field)	N/A	pH	7.4
Conductivity (field)	N/A	µS/cm	20
pH in Saturated Paste			
pH	0.1	pH	7
pH in Soil (1:2 water)			
pH	0.01	pH	7.8
ICP Semi-Trace Scan			
Aluminum	5	µg/g	15800
Antimony	2	µg/g	2
Arsenic	2	µg/g	600
Barium	0.05	µg/g	258
Beryllium	0.1	µg/g	0.6
Bismuth	5	µg/g	<5
Cadmium	0.1	µg/g	1.4
Calcium	5	µg/g	354
Chromium	0.5	µg/g	21.1
Cobalt	0.1	µg/g	3.5
Copper	0.5	µg/g	52.4
Iron	1	µg/g	32000
Lead	1	µg/g	37
Lithium	0.5	µg/g	3.6
Magnesium	1	µg/g	241
Manganese	0.5	µg/g	149
Mercury	0.01	µg/g	<0.01
Molybdenum	1	µg/g	2
Nickel	1	µg/g	20.6
Phosphorus	5	µg/g	915
Potassium	20	µg/g	4500
Selenium	2	µg/g	<2
Silicon	5	µg/g	79
Silver	0.5	µg/g	0.8
Sodium	5	µg/g	541
Strontium	1	µg/g	81
Sulphur	10	µg/g	230
Thorium	1	µg/g	4
Tin	1	µg/g	10
Titanium	0.2	µg/g	29
Uranium	5	µg/g	<5
Vanadium	1	µg/g	25
Zinc	0.5	µg/g	265
Zirconium	0.1	µg/g	6.6

**ATTACHMENT B: 1999 IRONCLAD WASTE ROCK SAMPLES LABORATORY RESULTS  
MODIFIED SOBEK METHOD ACID-BASE ACCOUNTING TEST**

SAMPLE	SITE DESCRIPTION	PASTE pH	S(T) %	S(SO4) %	AP	NP	NET NP	NP/AP
72WR01-01 - Sept./99 - Soil	Waste rock sample from pile 72WR01 at Ironclad	7.8	0.03	0.01	0.6	1.3	0.7	2.1
72WR01-01 - Sept./99 - Soil RE	Waste rock sample from pile 72WR01 at Ironclad	7.8	N/D	N/D	0.6	1.3	0.6	2.0

AP = ACID POTENTIAL IN TONNES CaCO<sub>3</sub> EQUIVALENT PER 1000 TONNES OF MATERIAL.

NP = NEUTRALIZATION POTENTIAL IN TONNES CaCO<sub>3</sub> EQUIVALENT PER 1000 TONNES OF MATERIAL.

NET NP = NET NEUTRALIZATION POTENTIAL = TONNES CaCO<sub>3</sub> EQUIVALENT PER 1000 TONNES OF MATERIAL.

NOTE: WHEN S(T) AND/OR S(SO<sub>4</sub>) IS REPORTED AS <0.01, IT IS ASSUMED TO BE ZERO FOR THE AP CALCULATION.

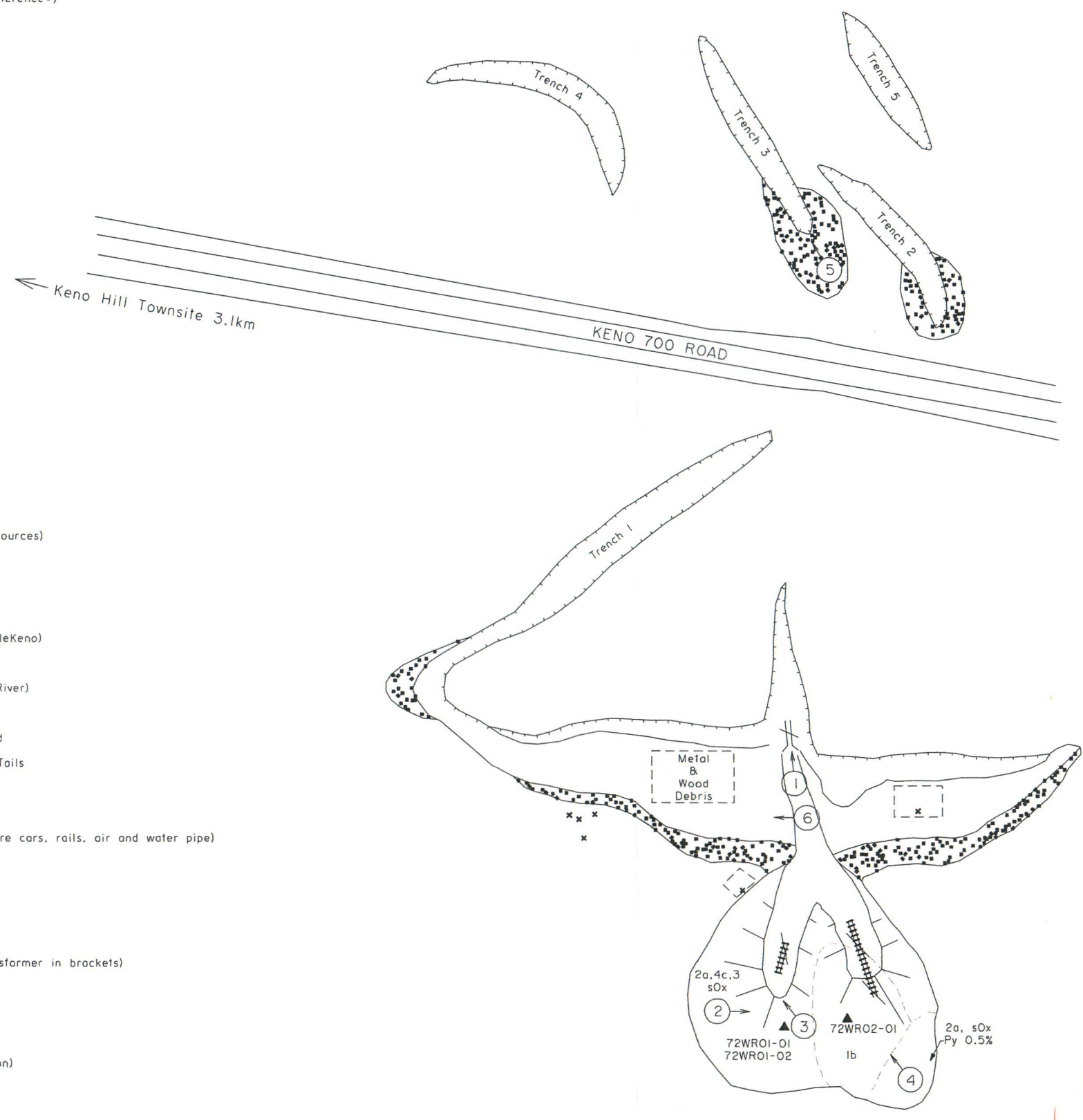
N/D = NO DUPLICATE ASSAY. CALCULATIONS ARE BASED ON ASSAY RESULTS OF THE INITIAL SAMPLE.

RE = REPLICATE.

NOTE - A HIGH LEVEL OF SOLUBLE METALS (ESPECIALLY IRON) WERE OBSERVED IN MANY SAMPLES DURING THE ABA TITRATIONS.

SAMPLES WITH A NEGATIVE NET NP SHOULD BE TESTED FOR MOBILE METALS USING STANDARD SHAKE FLASK EXTRACTION TESTS.

- 22A Building (22A: building site present reference\*)  
Indicates Asbestos Material
- ▣ 22A Collapsed Building
- ↗ Adit
- ✂ Collapsed Adit
- Shaft
- ▣ Collapsed/Backfilled Shaft
- ⬢ Mine Rock Dump
- ⬢ Bedrock Open Pit
- ⬢ Trench
- ⬢ Stripped Overburden Stockpile
- ⬢ Stripped / Disturbed Area
- Outcrop Boundary
- ⬢ Highway
- ⬢ Road (gravel, 2 wheel drive)
- ⬢ Road (gravel, 4X4 accessible)
- ⬢ Road (inaccessible)
- ⬢ Trail
- ⬢ Culvert
- ◆ 24501-01 1999 Soil Sample (this study)
- ◇ Pre 1999 Soil Sample (other sources)
- ▲ 25WR04-01 1999 Waste Rock Sample (this study)
- △ Pre 1999 Waste Rock Sample (other sources)
- W0-12-06 1999 Water Sample
- Pre 1999 Water Sample
- ⚡ Tension Cracks
- ⚡ Mass Movement (note: for Forms: BelleKeno)
- ⚡ Groundwater Seep
- ⚡ Surface Water Flow (Stream, Creek, River)
- ⚡ Lake
- ⚡ Settling Pond / Water Treatment Pond
- ⚡ Tailings Dam / Tailings Pond / Mill Tails
- ⚡ Ponded Water / Trench
- ⚡ Barrels
- ⚡ Abandoned Equipment (compressors, ore cars, rails, air and water pipe)
- ⚡ Mine Rails / Trestle
- ⚡ Collapsed Trestle
- ⚡ Solid Waste Disposal Site
- ⚡ Area of Soil Contamination
- ⚡ \*(6) Transformer Location (number of transformer in brackets)
- ⚡ Power Line
- ⚡ Power Line Collapsed
- ⚡ Aerial Transmission Towers
- ⚡ 5 Photo Site (arrow shows view direction)
- ⚡ GPS Survey Location
- ⚡ Former Building Site (Elsa)



**Waste Rock Geological Legend**

This legend intended for use as a key to the observed lithological content of the mine dumps and stockpiles of surficial materials investigated. It does not represent regional stratigraphy and no stratigraphic sequence is implied.

**Pyrite content as percent:** eg. Py 2%. Occurs as an alteration halo adjacent to vein fault structure.

**Oxidation:** Weak (wOx), moderate (mOx) and intense (iOx).

**Quaternary:** (5) Undifferentiated, unconsolidated colluvium, glacial till.

**Veins:** (4a) Quartz veins;  
(4b) Quartz-pyrite veins;  
(4c) Quartz-siderite + trace galena-sphalerite veins;  
(4d) Siderite-quartz + trace galena-sphalerite veins;

**Greenstone:** (3) Amphibole-chlorite-plagioclase metadiorite or melagabbro.

**Quartzite:** (2a) Thick bedded, blocky gray quartzite;  
(2b) Thin bedded, broken, quartzite with carbonaceous phyllite interbeds;  
(2c) Calcareous quartzite.

**Phyllite:** (1a) Broken sericite-chlorite phyllite;  
(1b) Carbonaceous phyllite.



CAD FILE: SITE72.DGN

	Public Works And Government Services Canada	Travaux publics et Services gouvernementaux Canada	designed by: conçu par:	date:
	Architectural & Engineering Services Western Region		drawn by: dessiné par: C.S.	Nov. / 99
Drawing title: <b>Ironclad Site #72 Site Assessment</b> Yukon Territory		Titre du dessin: révisé par:		project no. no. du projet: 125-12.01
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Photo 72-1: Collapsed adit Ironclad portal. (Azimuth 000°)



Photo 72-2: Waste Rock pile 72WR01 looking towards treset structure on WR01. (Azimuth 090°)



Photo 72-3: Waste rock sample pit for 72WR01-01 and -02. Note distinct colour change.



Photo 72-4: Waste rock pile 72WR02. Note rusty quartzite material and collapsed tressel structure.  
(Azimuth 340°)



Photo 72-5: Cat trench TR03 above road. (Azimuth 340°)



Photo 72-6: Levelled mine portal area showing metal and wood debris.