

## **- Initial Monitoring Results - Six (6) Monitor Wells Completed West of the Mill and Solvent Extraction (SX) Buildings**

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**Date:** 09/30/2007 6:42 PM  
**Subject:** Initial Monitoring Results - Six (6) Monitor Wells Completed West of the Mill and Solvent Extraction (SX) Buildings  
**CC:** "Schutterle, Shelley (RTEA)" <Shelley.Schutterle@riotinto.com>

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Stephen Cohen:

Attached please find the following files:

NewMonitorWell-WATER-Data.xls – This Microsoft Excel file contains the initial sample data for the six (6) newly completed monitor wells West of the Mill and Solvent Extraction (SX) Buildings

TMWS\_72\_&\_73.xls – This Microsoft Excel (\*.xls) file contains the sample data for TMWs 72 and 73 which are completed near the Southwest corner of the diesel contaminated soil excavation from approximately 90 to 115 feet below surface. They are shown on the map.

2007-WELLS\_revised.pdf – This Adobe Acrobat Portable document Format (\*.pdf) file contains a map showing the location of all of the newly completed wells.

IMG\_4450.JPG – Image of the newly completed well in the bottom of the diesel contaminated soil excavation.

The following pertains to the wells:

- Six (6) wells (TMW's - 103, 106, 107, 108, 109 and 110 were completed.
- Sample data for a single instance in time in the second quarter of 2007 is available for each well. This means there is a single sample results for each well with the exception of TMW-108 which was sampled at two (2) different depths (112 and 143 feet) on the same date. This was done in order to determine if there were vertical differences in water quality in the well.
- Additional samples were collected from these wells in September 2007. The results from these samples are not yet available.
- The samples were analyzed for radionuclides, Guideline 8 parameters, diesel range organics (DRO) and volatile organics (VOA).
- The following pertains to the completion depths for the wells
  - All of the wells were completed into the Battle Spring Aquifer
  - TMW's 103, 107, and 109 were screened from 95 feet to 115 feet below surface to assess the uppermost portion of the aquifer
  - TMW's 106, 108 and 110 were screened from 95 feet to 145 feet below surface to assess the upper fifty (50) feet of the aquifer.
- Only one (1) well TMW-108 showed any organic contamination. It contained 0.0012 milligrams per liter methylene chloride.
- Two (2) wells had uranium concentrations that exceeded the groundwater protection standard (GPS) of 36 picoCuries per liter, those being TMW-108 ( 778 picoCuries per liter – 112 feet and 1040 picoCuries per liter – 143 feet) and TMW-109 (452 picoCuries per liter). The highest result 1040 picoCuries per liter is 1.15 milligrams per liter). Both of these wells are near the Northwest corner of the Solvent Extraction (SX) Building. These values are close to the initial concentration discovered in TMW's 96 and 97 which are along the West wall of the Solvent Extraction (SX) Building. These concentrations declined rapidly following commencement of pumpback from these two (2) wells in 2005.
- Neither of these wells exhibited anywhere near the concentration of uranium found in TMW-73 which is located near the Southwest corner of the diesel contaminated soil excavation which is completed from 90 to 115 feet below surface. The most recent sample of that well (April 6, 2007) had a uranium concentration of 7.6 milligrams per liter. This indicates that

the uranium concentrations seen in TMW-73 are not coming from the Catchment Basin since TMW 109 should have exhibited a uranium concentration greater than 452 picoCuries per liter (0.67 milligrams per liter) for TMW-73 which is completed at the same depth as TMW-109 to exhibit one of 7.6 milligrams per liter.

- TMW's 103 and 106 are located by the Southwest corner of the Ore Pad and did not contain uranium in excess of the groundwater protection standard. This indicates that the multi-milligrams per liter uranium concentrations seen in TMW-73 are not related to the Ore Pad.
- A well, TMW-10 was completed in the bottom of the diesel contaminated soil excavation using a trackhoe. It is completed in the upper saturated ten (10) feet of the Battle Spring Formation. It has been sampled. Sample results are not yet available. The material at the bottom of the diesel contaminated soil excavation in the immediate vicinity of this well exhibited anomalously high gamma radiation readings. Bulk samples collected in this limited area of the excavation for the well (TMW-10) did not contain significant concentrations of uranium in spite of the fact that the area exhibited elevated gamma. The elevated gamma readings were solely due to elevated radium-226 concentrations. This is evident from the analytical results for the bulk samples. Detailed samples were also collected of the hole wall prior to the installation of the well casing. These sample results are pending.

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<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
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TEXT.htm	14573	
NewMonitorWell-WATER-Data.xls		86528
IMG_4450.JPG	2632359	
2007-WELLS_revised.pdf	535489	
TMWS 72 & 73.xls	160256	
Mime.822	4696502	

**Options**

**Expiration Date:** None  
**Priority:** Standard  
**ReplyRequested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

Kennecott Uranium Company  
Sweetwater Uranium Project  
**TMW-110**

Northing: 148088.65      Groundwater  
Easting: 323625.57      Protection      5/21/07

**FIELD DATA mg/l:**      (GPS)  
Temperature (C)      as of 5/26/05      10.70  
pH (Std. Units)      7.84  
Cond. (umho/cm)      0.64  
TDS

**MAJOR IONS mg/l:**  
Alk-CaCO<sub>3</sub>      106  
Bicarbonate (HCO<sub>3</sub>)      129  
Calcium (Ca)      89.3  
Carbonate (CO<sub>3</sub>)      -1  
Chloride (Cl)      8  
Fluoride (F)      0.2  
Magnesium (Mg)      6.7  
Nitrate-N (NO<sub>3</sub>)      -0.1  
Potassium (K)      3.5  
Silica (SiO<sub>2</sub>)      10  
Sodium (Na)      44  
Sulfate (SO<sub>4</sub>)      212

**NON-METALS:**  
Cyanide (CN)      -0.005

**PHYSICAL PROPERTIES:**  
Cond (umho/cm)      675  
pH      GPS (6.8)      7.63  
TDS @ 180° C.      GPS (500)      426

**METALS-DISSOLVED mg/l:**  
Aluminum (Al)      GPS (1.8)      -0.1  
Arsenic (As)      GPS (.05)      0.007  
Barium (Ba)      -0.1  
Beryllium (Be)      GPS (.01)      -0.01  
Boron (B)      -0.1  
Cadmium (Cd)      GPS (.01)      -0.005  
Chromium (Cr)      GPS (.05)      -0.01  
Cobalt (Co)      0.001  
Copper (Cu)      -0.01  
Iron (Fe)      GPS (0.6)      -0.05  
Lead (Pb)      -0.01  
Manganese (Mn)      GPS (0.2)      0.04  
Mercury (Hg)      -0.0002  
Molybdenum (Mo)      -0.01  
Nickel (Ni)      GPS (.01)      -0.01  
Selenium (Se)      GPS (.01)      0.002  
Silver (Ag)      -0.01  
Thallium (Tl)      -0.01  
Vanadium (V<sub>2</sub>O<sub>5</sub>)      -0.1  
Zinc (ZN)      -0.01

**RADIOMETRIC pCi/l:**

Uranium, natural	GPS (36)	23.2
Radium 226		1.3
Radium Precision +/-		0.4
Radium 228		1.6
Radium Precision +/-		0.9
Comb. Ra226/228	GPS (5.8)	2.9
Thorium 230	GPS (7.0)	-0.2
Thorium Precision +/-		
Lead (Pb210)	GPS (8.9)	-1
Lead Precision +/-		
Gross Alpha	GPS (15)	3.6
Gross Alpha Precision +/-		0.9

**QUALITY ASSURANCE DATA:**

TDS A/C Balance (dec. %)	0.97
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**ORGANICS mg/L:**

Diesel Range Organics (DRO)	GPS 10 (3)	-1
Gasoline Range Organics (GRO)	GPS 10 (3)	-0.036

**VOLATILE ORGANIC COMPOUNDS mg/L:** All ND

Chloromethane	0.12
1,1-Dichloroethane	GPS 3 (2)
1,1-Dichloroethene	GPS 0.007 (1)
Naphthalene	GPS 1.3 (2)
Toluene	GPS 1 (1)
1,1,1-Trichloroethane	GPS 0.20 (1)
1,2,4-Trimethylbenzene	GPS 0.012 (4)
1,3,5-Trimethylbenzene	GPS 0.012 (4)
m+p Xylenes	GPS 10 (1)

(1) - EPA MCL

(2) - WY Drinking Water Equivalent Level

(3) - WY VRP, Fact Sheet 12

(4) - EPA RBC - Tap Water

(LAB: Energy Labs Inc. unless noted.)

pH	Std Units
TDS	Mg/l
Nickel	
Uranium	pCi/L
Comb. Ra226/228	
Gross Alpha	
DRO, GRO & m+p Xylenes	
1,1-Dichloroethane	
1,1-Dichloroethene	
Naphthalene	
Toluene	
Manganese & 1,1,1-Trichloroethane	
1,2,4- & 1,3,5-Trimethylbenzene	
Lead	
Iron	
Aluminum	

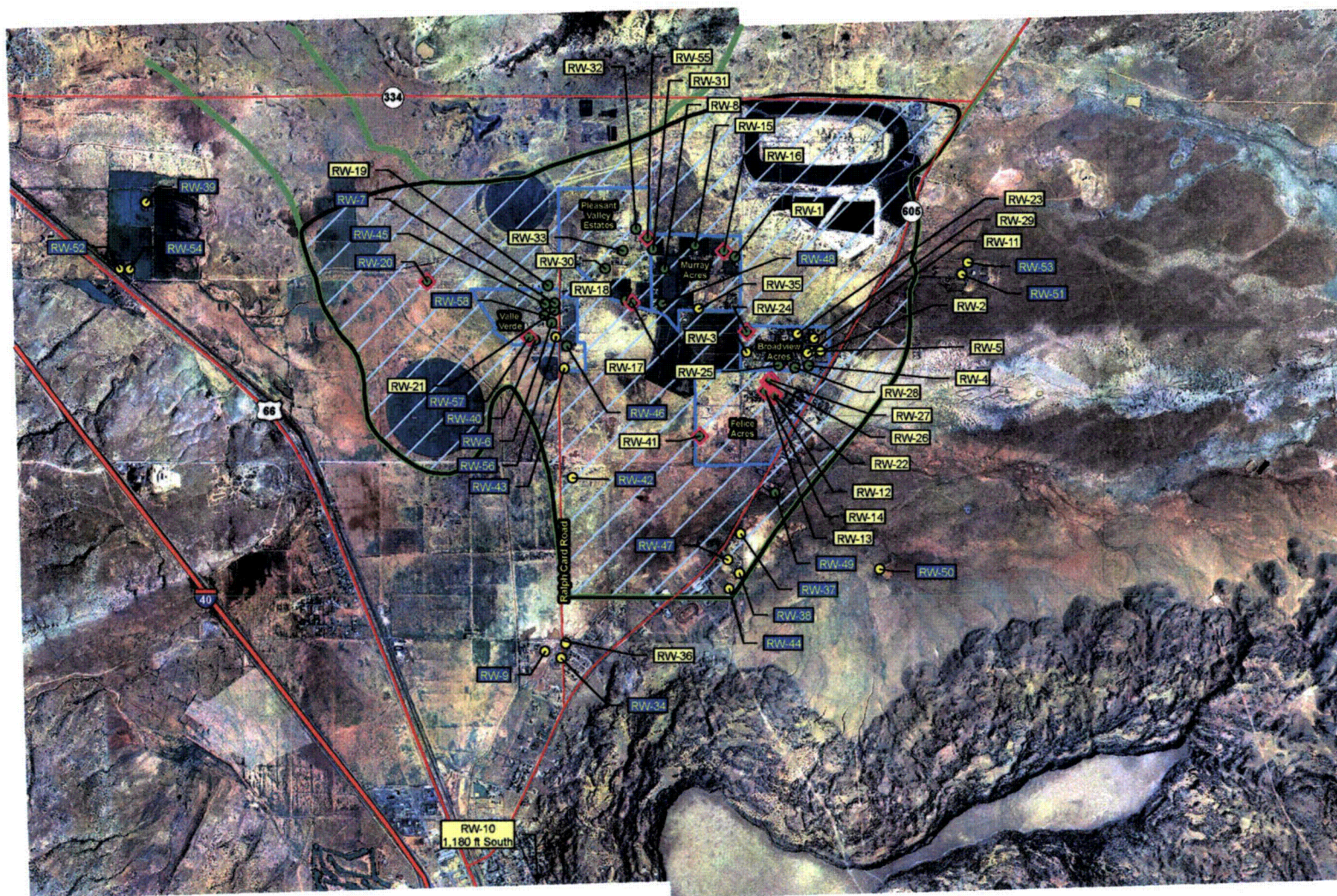
[illegible]

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DATA SOURCES:  
 NMED Ground Water Quality Bureau,  
 Superfund Oversight Section  
 RGIS  
 Homestake Mining Company

PROJECTION:  
 New Mexico State Plane Coordinate System  
 Western Zone  
 North American Datum, 1927

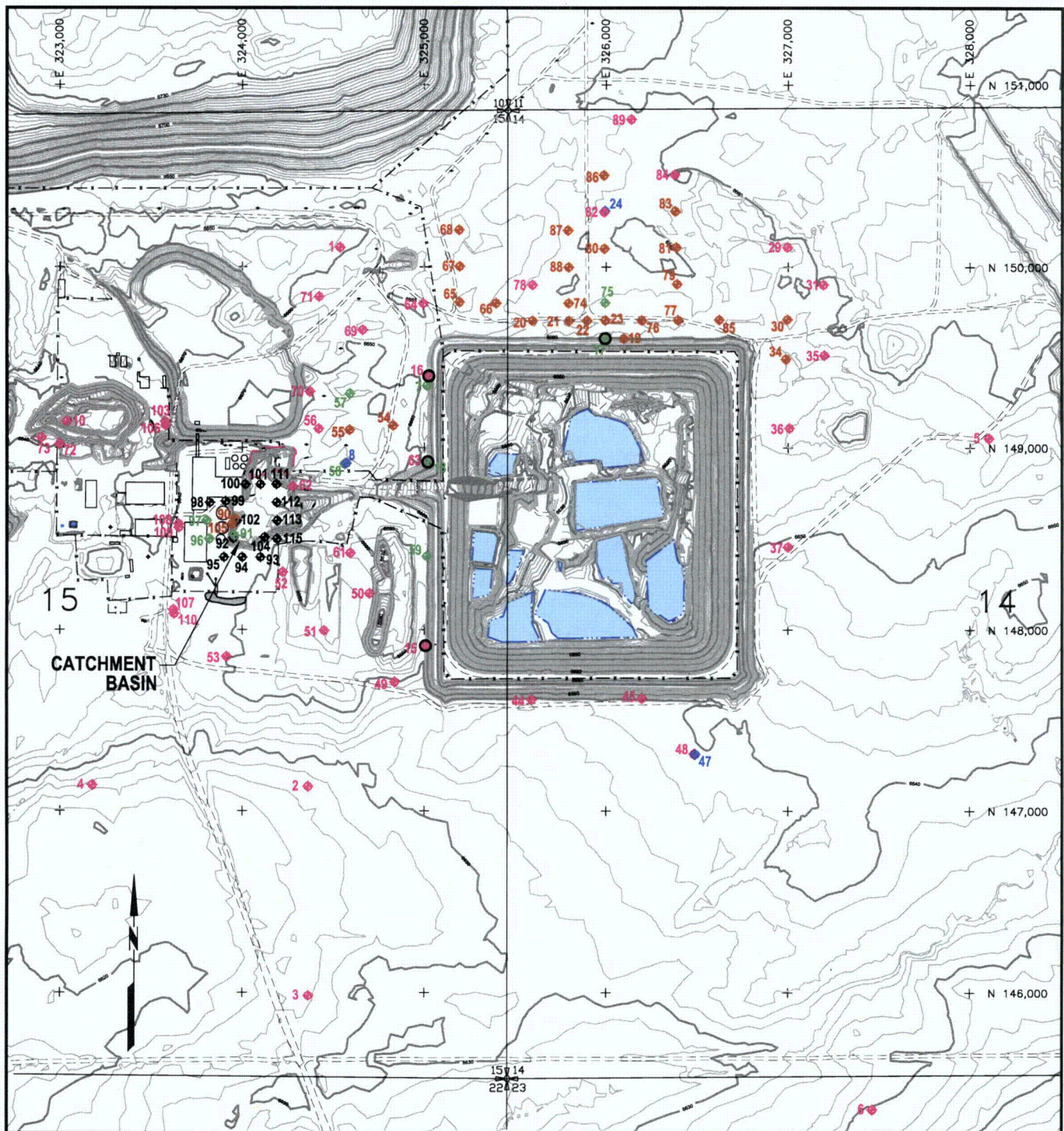
Map produced by K. Greenow, April, 2007  
 NMED DOE Oversight Bureau  
 134 State Road 4, Suite A  
 White Rock, NM 87044

0 0.5 1 2 3 Miles

### Residential wells sampled by NMED 2005-2007 in the vicinity of the Homestake Mining Company Superfund Site, Milan, NM

- RW-1 Residence NOT on Village of Milan water supply
- Health-based regulatory exceedances for U, Se, NO<sub>3</sub>, Pb
- ◆ Site specific background exceedances for U, Se, NO<sub>3</sub>, Pb
- Sampled residential wells without health-based contaminant regulatory exceedances
- Area under NMED study for HMC remedial action
- Area of underlying aquifers where one or more health-based contaminant concentrations potentially exceed regulatory standards





SCALE IN FEET  
0 800  
TOPOGRAPHY UPDATED FEBRUARY 2006  
BY ROBERT JACK SMITH & ASSOC. INC.  
CONSULTING LAND SURVEYORS  
P.O. BOX 1104, 1015 HARSHMAN ST.  
RAWLINS, WY 82301

NOTES:  
1. ALL WELLS HAVE A TMW PREFIX (TYP.)

#### LEGEND

- ◆ SHALLOW WELLS (PERCHED)
- ◆ DEEP AQUIFER WELLS
- ◆ AQUIFER WELLS
- ◆ PUMPBACK WELLS, AQUIFER
- ◆ COMPLIANCE MONITORING WELLS
- POINT OF COMPLIANCE (POC) WELLS (TAILINGS IMPOUNDMENT)



### SWEETWATER URANIUM FACILITY TAILINGS CELL MONITORING WELL MAP

Date: SEPTEMBER 2007  
Project: 06-442\REP2007\1  
File: 2007-WELLS.dwg