

July 11, 2008

Mr. Robert Casey  
Water Quality Enforcement Unit Manager  
Arizona Department of Environmental Quality  
1110 West Washington Street  
Phoenix, Arizona 85007

**Re: Mitigation Order on Consent No. P-121-07**  
**Monitoring Well Sites Nos. 1 and 12**

Dear Mr. Casey,

This letter requests permission for two proposed modifications to the Work Plan<sup>1</sup> for investigation of sulfate in the vicinity of the Concentrator Tailing Storage Area of the Freeport-McMoRan Copper Queen Branch (CQB). The modifications pertain to proposed monitoring well Sites 1 and 12 (Figure 1). Information on Sites 1 and 12 is provided in Section 3.3.3, Table 7, and Figure 23 of the Work Plan.

We propose to move Site 1 approximately 1,800 feet east of the location proposed in the Work Plan (Figures 1 and 2) because water quality information collected for the well inventory indicates sulfate concentrations exceeding 250 milligrams per liter in a well near the location originally proposed. As discussed in the Work Plan, a single well is planned for Site 1 with the objective of defining the lateral extent of sulfate. The revised location is hoped to be outside the eastern extent of the sulfate plume to satisfy the objective for Site 1.

The Work Plan proposes a single well at Site 12 east of the South Tailing Impoundment and south of the former Warren Wastewater Treatment Plant (Figure 1). Section 3.3.3 and Table 7 of the Work Plan indicate that an existing well at the proposed Site 12 may be substituted for the proposed well if the existing well is suitable for monitoring. The existing well at Site 12 is 593116 owned by City of Bisbee (COB) and installed in 2002. Attachment 1 contains the as-built well construction information filed Arizona Department of Water Resources for 593116. The well is screened the upper portion of the bedrock aquifer from 90 to 150 feet below surface in essentially the same location as the proposed Site 12 (Figure 3 and 4). The depth to water in the 593116 was approximately 58 feet below surface in May 2008 and the sulfate concentration of a sample from the well was 90 mg/L. The CQB has an access agreement with COB for access to 593116 for groundwater monitoring.

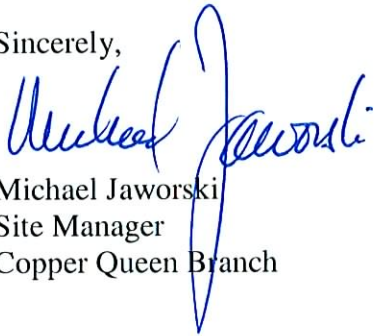
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<sup>1</sup> Hydro Geo Chem, Inc. 2008. Revision 1 Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.

According to the Work Plan, the well at Site 12 would consist of a single well with a 100- to 200-foot screen starting near the water table to determine the lateral extent of sulfate. Well 593116 meets the minimum criteria for Site 12 because it provides a monitoring capability similar to that of a well with a 100-foot screen and the sulfate concentration is less than 250 mg/L indicating the well is outside the plume. Because well 593116 meets the Work Plan objectives for a well at Site 12, CQB requests permission to use 593116 for monitoring in lieu of installing a well at Site 12.

We respectfully request that you respond to this request by July 21, 2008, when drilling is scheduled to start at Site 1. Please do not hesitate to contact Mr. Stuart Brown at (503) 675-5252 or myself at (520) 432-6209 if you have any questions regarding this request.

Sincerely,



Michael Jaworski  
Site Manager  
Copper Queen Branch

Attachments

cc: Cynthia Campbell, Arizona Department of Environmental Quality  
Rebecca Sawyer, Copper Queen Branch  
Sheila Deely, Freeport-McMoRan Copper & Gold Inc.  
Stuart Brown, Bridgewater Group, Inc.  
James Norris, Hydro Geo Chem, Inc.

## **ATTACHMENTS**

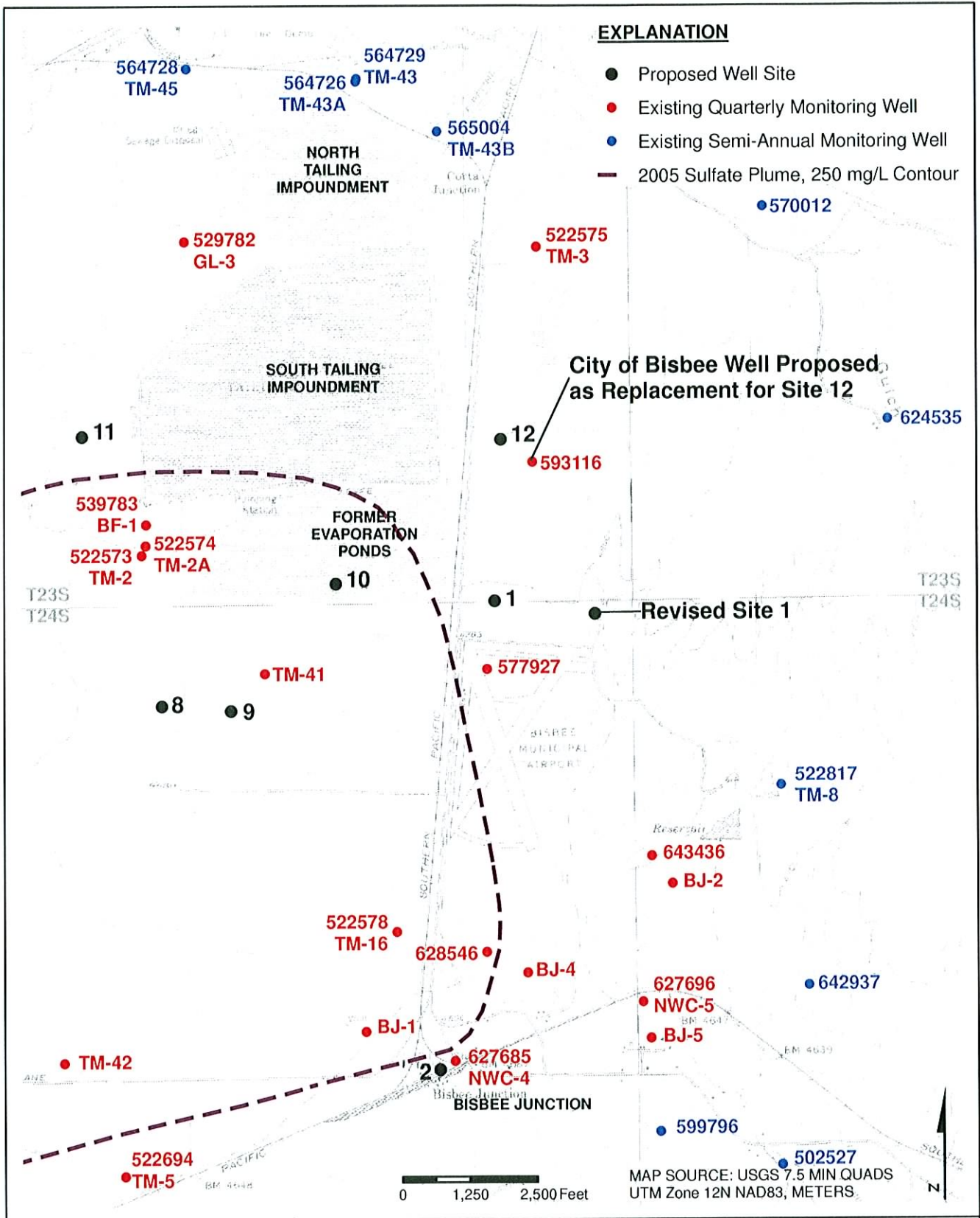
### **FIGURES**

- 1 Sites 1 and 12 Well Locations
- 2 Proposed Revised Site 1 Monitoring Well Locations
- 3 Locations of Proposed Site 12 and Substitute Well 593116
- 4 Schematic Well Diagram for Well 593116

### **ATTACHMENT**

- 1 Arizona Department of Water Resources Imaged Records for Well 593116

## FIGURES



**HYDRO  
GEO  
CHEM, INC.**

**SITES 1 AND 12 WELL LOCATIONS**

Approved	Date	Revised	Date	File Name	Figure
JRN	07/08/08	RAM	07/08/08	8720083G	1





**HYDRO  
GEO  
CHEM, INC.**

**PROPOSED REVISED SITE 1 MONITORING WELL LOCATION**

Approved <b>JRN</b>	Date <b>06/18/08</b>	Author <b>RAM</b>	Date <b>06/30/08</b>	File Name <b>8720079G</b>	Figure <b>2</b>
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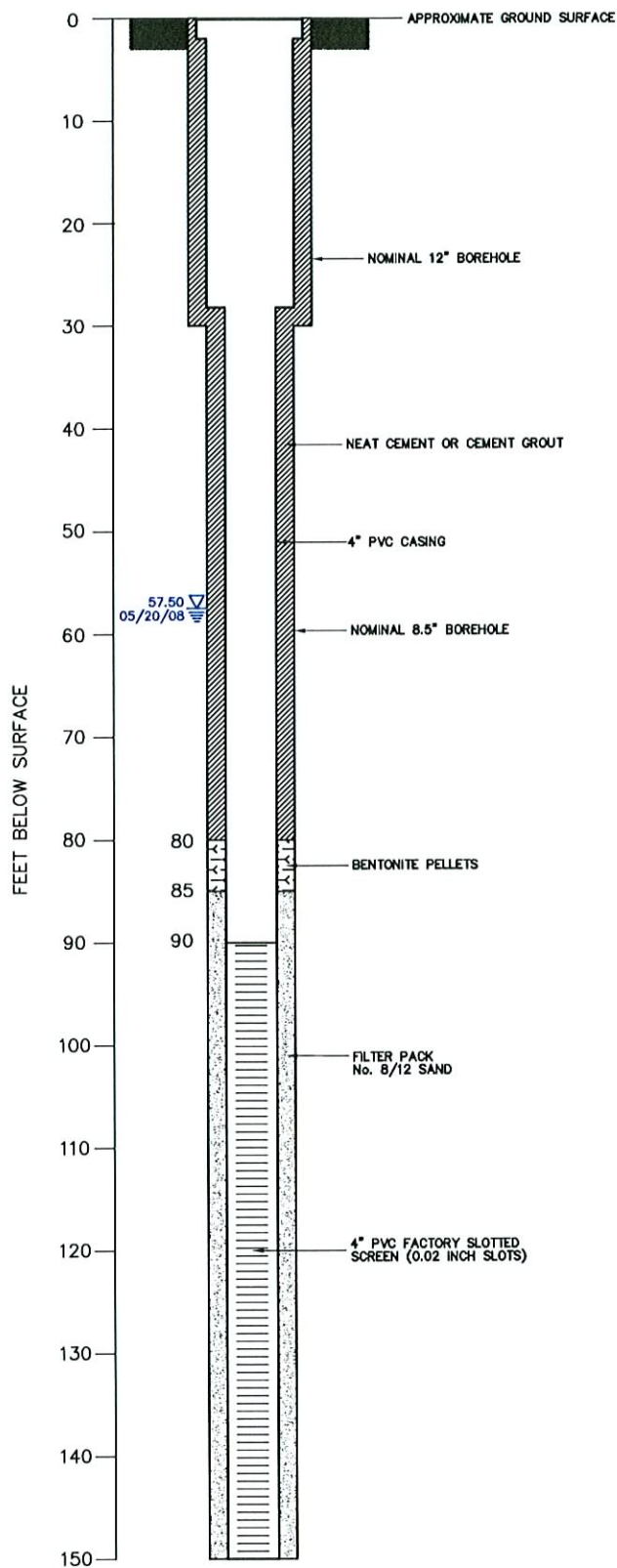


**HYDRO  
 GEO  
 CHEM, INC.**

**LOCATION OF PROPOSED SITE 12 AND  
 SUBSTITUTE WELL 593116**

Approved <b>JRN</b>	Date <b>06/18/08</b>	Author <b>RAM</b>	Date <b>06/30/08</b>	File Name <b>8720084G</b>	Figure <b>3</b>
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**HYDRO  
GEO  
CHEM, INC.**

**SCHEMATIC WELL DIAGRAM FOR  
WELL 593116**

Approved	Date	Author	Date	File Name	Figure
JRN	07/08/08	RAM	07/08/08	8720033A	4



**ATTACHMENT 1**

**ARIZONA DEPARTMENT OF WATER RESOURCES  
IMAGED RECORDS FOR WELL 593116**



ARIZONA DEPARTMENT OF WATER RESOURCES  
 Records Management Section  
 500 N. 3rd Street \* Phoenix, Arizona 85004  
 (602) 417-2405 \* (800) 352-8488  
 www.water.az.gov

**RECEIVED**  
 OCT - 4 2002  
**RECORDS MGT**

Driller Report  
 and  
 Well Log

FILE NUMBER  
**D(23-24) 35 CBD**  
 WELL REGISTRATION NUMBER  
**55-593116**  
 PERMIT NUMBER ( IF ISSUED )

- \* Review instructions prior to completing form
- \* This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.
- \*\* PLEASE PRINT CLEARLY \*\*

**SECTION 1. REGISTRY INFORMATION**

<b>Well Owner</b>		<b>Location of Well</b>					
FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL <b>CITY OF BISBEE</b>		WELL LOCATION ADDRESS (IF KNOWN) <b>N/A.</b>					
MAILING ADDRESS <b>118 ARIZONA ST</b>		TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
CITY / STATE / ZIP <b>BISBEE, AZ 85603</b>		<b>23 S</b>	<b>24 E</b>	<b>35</b>	<b>SW 1/4</b>	<b>NW 1/4</b>	<b>SE 1/4</b>
CONTACT PERSON NAME AND TITLE		LATITUDE <b>31° 22'</b>		LONGITUDE <b>56° W</b>		LONGITUDE <b>109° 52' 51" W</b>	
TELEPHONE NUMBER <b>520-432-6000</b>		LAND SURFACE ELEVATION AT WELL <b>4836.59</b>		Feet Above Sea Level			
FAX		METHOD OF LATITUDE / LONGITUDE (CHECK ONE)				<input type="checkbox"/> Hand-Held	
		<input type="checkbox"/> USGS Quad Map <input type="checkbox"/> Conventional Survey <input checked="" type="checkbox"/> GPS				<input checked="" type="checkbox"/> Survey-Grade	
		COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK <b>0</b> MAP <b>0</b> PARCEL					
		COUNTY WHERE WELL IS LOCATED <b>Cochise Co.</b>					

**SECTION 2. DRILLING AUTHORIZATION**

<b>Drilling Firm</b>	
NAME <b>YELLOW JACKET DRILLING</b>	
DWR LICENSE NUMBER <b>78</b>	
TELEPHONE NUMBER <b>602-453-3252</b>	FAX <b>602-453-3258</b>

**SECTION 3. WELL CONSTRUCTION DETAILS**

DATE WELL CONSTRUCTION STARTED <b>7.16.02</b>	DATE WELL CONSTRUCTION COMPLETED <b>7.22.02</b>	IF FLOWING WELL, METHOD OF FLOW REGULATION <input type="checkbox"/> Valve <input type="checkbox"/> Other
<b>Drill Method</b>	<b>Method of Well Development</b>	<b>Method of Sealing at Reduction Points</b>
CHECK ONE <input checked="" type="checkbox"/> Air Rotary <input type="checkbox"/> Bored or Augered <input type="checkbox"/> Cable Tool <input type="checkbox"/> Dual Rotary <input type="checkbox"/> Mud Rotary <input type="checkbox"/> Reverse Circulation <input type="checkbox"/> Driven <input type="checkbox"/> Jetted <input type="checkbox"/> Air Percussion / Odex Tubing <input type="checkbox"/> Other (please specify)	CHECK ONE <input type="checkbox"/> Airlift <input checked="" type="checkbox"/> Bail <input checked="" type="checkbox"/> Surge Back <input type="checkbox"/> Surge Pump <input type="checkbox"/> Other (please specify)	CHECK ONE <input type="checkbox"/> None <input type="checkbox"/> Packed <input type="checkbox"/> Swedged <input type="checkbox"/> Welded <input type="checkbox"/> Other (please specify)
	<b>Water Level Information</b>	
	STATIC WATER LEVEL <b>101.50 Feet Below Land Surface</b>	
	DATE MEASURED <b>7.22.02</b>	



**SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT)** (attach additional page if needed)

Borehole			Installed Casing													
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)	DEPTH FROM SURFACE		OUTER DIAMETER (Inches)	MATERIAL TYPE (X)				PERFORATION TYPE (X)					SLOT SIZE IF ANY (inches)	
FROM (feet)	TO (feet)		FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED		IF OTHER TYPE, DESCRIBE
0	30'	12	+3	18	8	x				x						
30'	150	8.5	+2.5	90	4		x			x						
			90	150	4		x						x			.020

Installed Annular Material											FILTER PACK		
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)							IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE		SAND	GRAVEL	SIZE
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	CHIPS	PELLETS					
0	80'			x									
80'	85'							x					
85'	150'										x		8/12

DEPTH OF BORING	150	Feet Below Land Surface	DEPTH OF COMPLETED WELL	150	Feet Below Land Surface
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Well Driller Report and Well Log

WELL REGISTRATION NUMBER  
55- 593116

SECTION 6. WELL SITE PLAN			
NAME OF WELL OWNER	COUNTY	ASSESSOR'S PARCEL ID NUMBER	
CITY OF BISBEE	BOOK	0	MAP 0 PARCEL

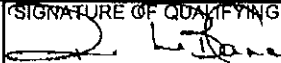
- \* Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- \* Please indicate the distance between the well location and any septic tank system or sewer system.

See attached Site map.

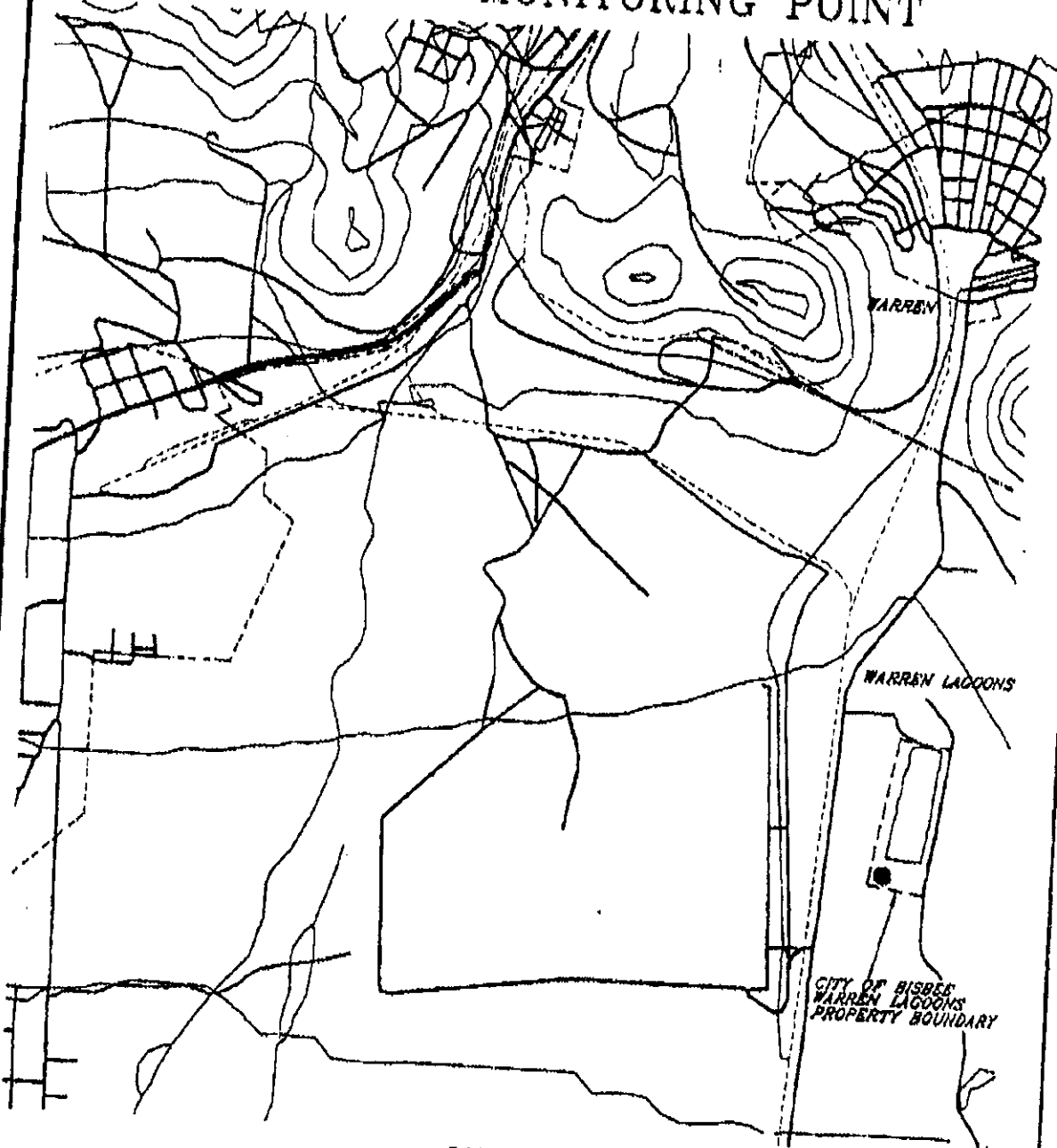


1" = \_\_\_\_\_ ft

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Yellow Jacket Drilling.		8.17.02

# CITY OF BISBEE PROPOSED MONITORING POINT



## LEGEND

- MONITORING WELL LOCATION

FIGURE 1



3660 E. UNIVERSITY DRIVE, SUITE 2 MESA, ARIZONA 85205