



**FLORENCE COPPER INC.**

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[florencecopper.com](http://florencecopper.com)

October 30, 2014

Ms. Nancy Rumrill  
U.S. Environmental Protection Agency  
Region 9, Ground Water Office, WTR-9  
75 Hawthorne Street  
San Francisco, California 94105-3901

Sent U.S. Certified Mail  
#7002 0860 0005 5148 1311  
Return Receipt Requested

Subject: Third Quarter 2014 Monitoring Report  
Underground Injection Control (UIC) Permit Number AZ396000001

Dear Ms. Rumrill:

Florence Copper Inc. (formerly Curis Resources (Arizona) Inc.) is submitting this report in accordance with the reporting requirements of Parts II.G.2.(a) through (j) of the UIC Permit No. AZ396000001 issued by the United States Environmental Protection Agency (USEPA) on May 1, 1997. The Florence Copper project is also subject to the requirements of Aquifer Protection Permit (APP) No. 101704 issued by the Arizona Department of Environmental Quality (ADEQ) on June 9, 1997, and last amended on February 14, 2014.

This report pertains to monitoring activities conducted at the Florence Copper project from July 1 through September 30, 2014. Copies of records required by Part II.G.1 are maintained at the mine site, along with other information that is summarized below.

As you are aware, Florence Copper discontinued hydraulic control of the original pilot test facility on September 1, 2004 in order to conduct groundwater quality tests in accordance with the APP and Part II.I.2 of the UIC Permit. A report of the results has been provided to ADEQ and USEPA for review. The recovery wells have remained off until a plan for further activity can be approved. As a result, no extraction flows or water levels are reported under Sections (b) and (c) below.

**(a) A map showing the current status of the mine.**

Figure 1 shows the current monitoring area, including the Point of Compliance (POC) wells and the well field. Figure 2 shows the approximate layout of the well field and denotes the four well observation well/recovery well pairs.

There are four injection/recovery wells and nine original recovery wells. The four injection wells were later used as recovery wells during the rising of the mine block. Five observation wells were installed to demonstrate net inward hydraulic gradient for the 90 days required by the permit. Solution injection began on October 31, 1997 and ceased on February 8, 1998.

**(b) A table and graph showing daily cumulative injection flows and extraction flows in each active mine block over the reporting period.**

There are currently no active mine blocks. Hydraulic control for the test block was discontinued on September 1, 2004 for purposes of collecting groundwater samples following a 90-day period of no hydraulic control, and remains discontinued for evaluation of results. Accordingly, there are no injection or extraction flows to report.

**(c) A table and graph comparing average daily head in the four observation wells surrounding each active mine block with that of the four adjacent extraction wells.**

There are currently no active mine blocks. Hydraulic control was not required during this reporting period for the test block and water level measurements are not required.

**(d) A table showing POC monitoring wells analytical results and Alert Levels.**

The POC Quarterly Compliance Monitoring Report is included as Attachment 1. The report summarizes the results of groundwater monitoring activities and includes tables of the field parameters and analytical results for the quarterly monitoring parameters. Brown and Caldwell, along with Project personnel, conducted quarterly compliance sampling on August 5 through 14, 2014.

Quarterly parameters were analyzed for 29 of the 31 POC monitoring wells. POC monitoring wells M32-UBF and M33-UBF were dry and could not be sampled.

For the Third Quarter 2014, one result exceeded the approved laboratory alert levels (ALs). Sulfate in upgradient well M1-GL was 114 milligrams per liter (mg/L), above the AL of 109 mg/L.

Sulfate has exceeded the AL in M1-GL since the Third Quarter of 2011. No AQL has been set for sulfate and there is no established AWQS. A report has been submitted demonstrating that the AL exceedance is not related to the permitted mining activities and routine quarterly monitoring for the well resumed during the Third Quarter 2012 event.

During the First Quarter 2014, well O49-GL was replaced with well O49-GL(R). No significant changes in water quality have been observed and all results for quarterly parameters were below the ALs.

**(e) Results of the monthly analyses of organic in the injectate**

Organic analyses are not required because no solution was injected during the reporting period.

**(f) Results of monitoring required by 40 CFR 146.33 (b)(1)**

No solution was injected.

**(g) Results of the mechanical integrity tests**

No mechanical integrity test was conducted.

**(h) Results of the annular conductivity monitoring**

Although injection ceased in early 1998, annular conductivity measurements have continued to the present time. A graph showing measurement results for this reporting period is presented on Figure 3. No unusual conditions were noted.

**(i) Well and core hole plugging and abandonment.**

None of the existing wells or core holes were abandoned during the report period.

**(j) A summary of closure operations during the reporting period.**

There were no closure operations during the reporting period.

Florence Copper believes that you will find this report complete and in compliance with all permit conditions. Please contact me at (520) 374-3984 should you have any questions regarding this report.

Sincerely,

Florence Copper Inc.

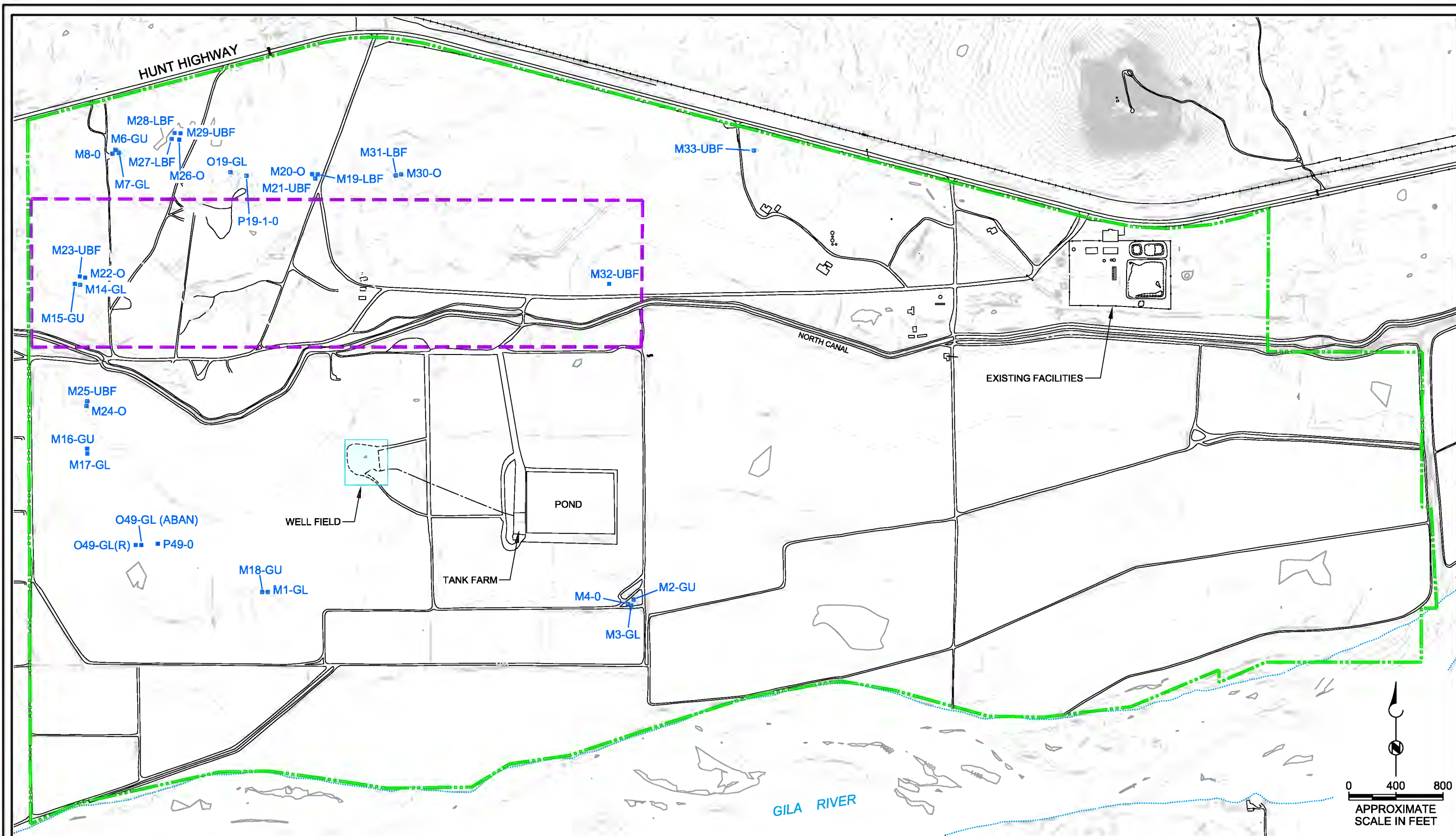
A handwritten signature in blue ink, appearing to read 'Daniel Johnson', with a stylized flourish at the end.

Daniel Johnson  
Vice President Environment and Technical Services

BAS:cr

Attachments

cc: Florence Copper File

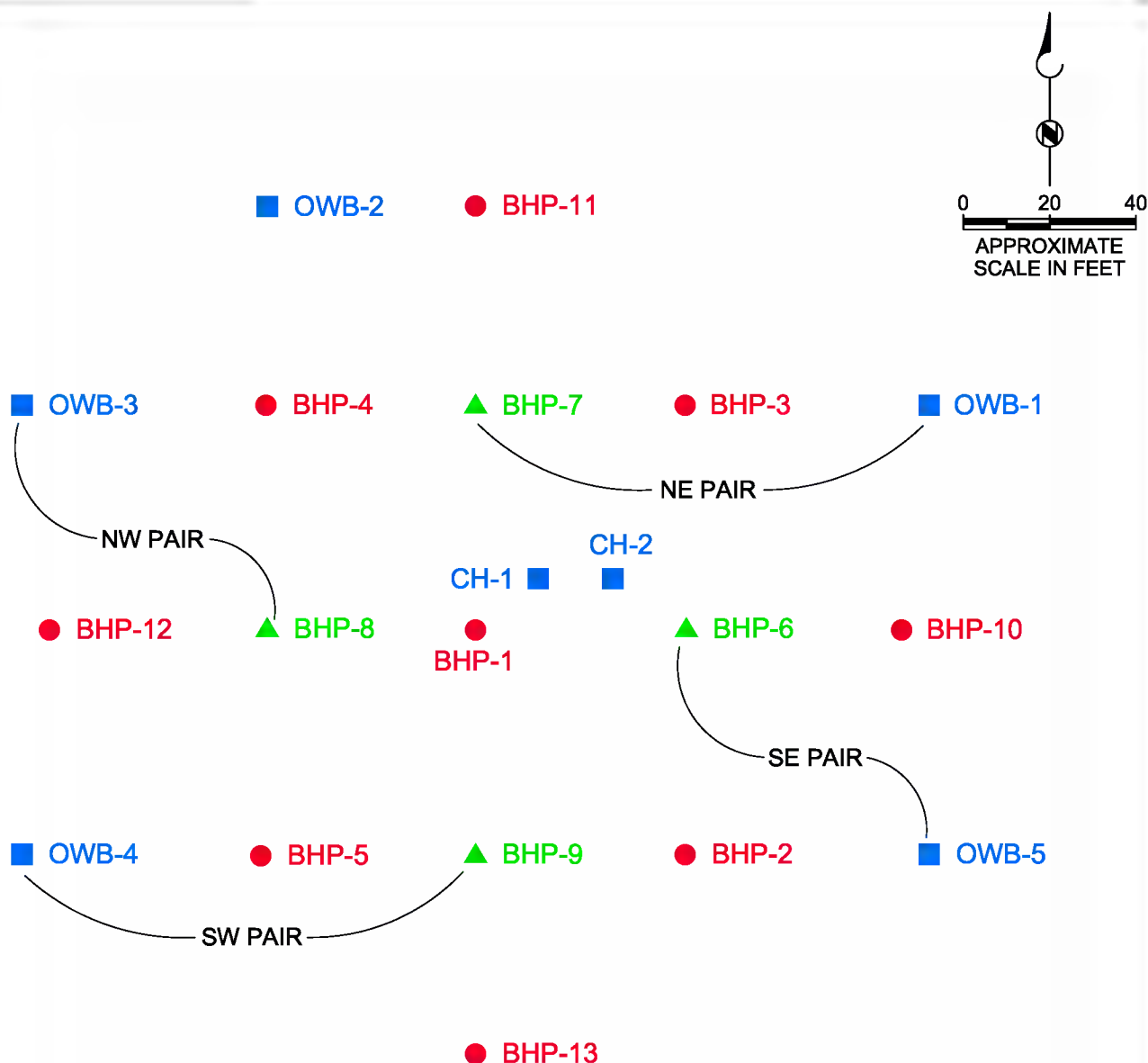


# EXPLANATION

- APPROXIMATE PROPERTY BOUNDARY
- STATE LEASE LAND BOUNDARY
- M3-GL POC MONITORING WELL
- WELL FIELD DETAIL, FIGURE 2



Figure 1  
**MONITORING AREA**  
 FLORENCE COPPER PROJECT  
 FLORENCE, ARIZONA

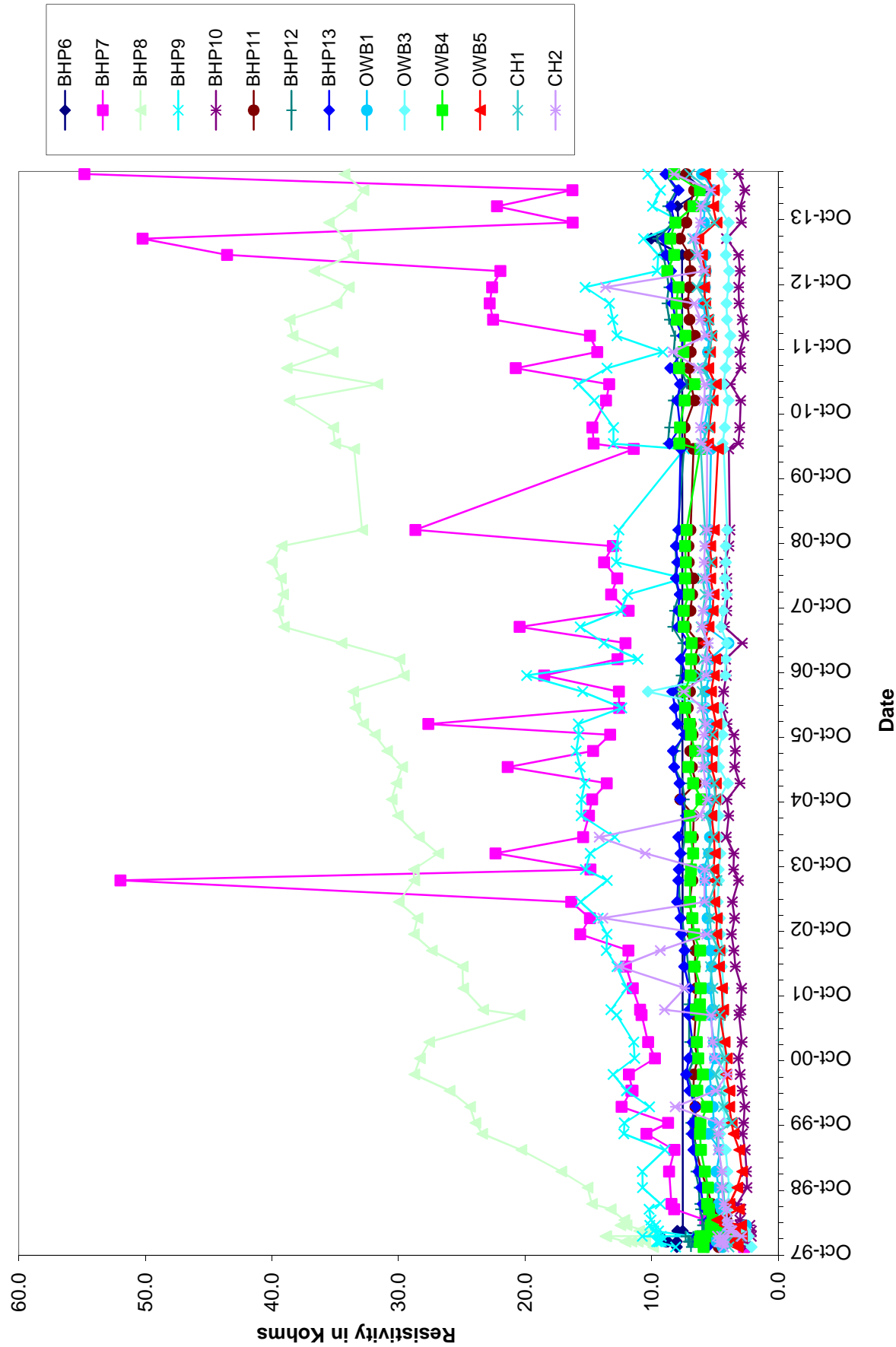


### EXPLANATION

- BHP-10 RECOVERY WELL (CURRENTLY INACTIVE)
- OWB-2 OBSERVATION WELL
- ▲ BHP-8 INJECTION / RECOVERY WELL  
(RECOVERY MODE SINCE 1998)



Figure 3 - Well Field Annular Resistivity



## ATTACHMENT 1

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### POC Quarterly Compliance Monitoring Report

FLORENCE COPPER PROJECT  
QUARTERLY COMPLIANCE MONITORING REPORT  
THIRD QUARTER 2014



### Sampling Activities

Groundwater sampling at the Florence Copper Project site took place on August 5 through August 14, 2014 (Third Quarter 2014). Groundwater sampling and analysis was conducted in accordance with the requirements of Aquifer Protection Permit (APP) No. 101704, Section 2.5.3 (Groundwater Monitoring and Sampling Protocols) and Underground Injection Control (UIC) Permit No. AZ396000001 Part II.F.

Quarterly parameters, as listed in Section 4.0 Table 4.5 of the APP, were analyzed from the designated Point of Compliance (POC) wells. The quarterly analytical parameters are magnesium, sulfate, fluoride, and total dissolved solids (TDS) in addition to field pH, temperature, and specific conductance. The field parameters of dissolved oxygen (DO) and turbidity are also monitored to determine stabilization of wells sampled using low-flow purging methods, but are not reported.

During the Third Quarter 2014 sampling event, 29 POC wells were sampled. Two POC wells (M32-UBF and M33-UBF) were dry and could not be sampled. Analyses of the samples were conducted by TestAmerica Laboratories - Phoenix (TestAmerica). Analytical results for the quarterly parameters are provided in Table 1 and field parameters measured during sampling are indicated in Table 2.

The majority of the monitoring well network is equipped with low-flow bladder pumps. Low-flow sampling was conducted in accordance with Section 2.5.3 (Groundwater Monitoring and Sampling Protocols). Wells M16-GU, M20-O, M22-O, M24-O, O49-GL(R) and P49-O are equipped with stainless-steel electric pumps. The wells were sampled by purging a minimum of three borehole volumes, except for M20-O which is purged dry for two consecutive days and allowed to recharge prior to sampling. No reduced pumping volumes occurred, and there were no other modified sampling procedures noted.

For the Third Quarter 2014, one result exceeded an approved Alert Level (AL). Sulfate in upgradient well M1-GL was 114 milligrams per liter (mg/L), above the AL of 109 mg/L.

Sulfate has exceeded the AL in M1-GL since the Third Quarter of 2011. No AQL has been set for sulfate and there is no established AWQS. A report has been submitted demonstrating that the AL exceedance is not related to the permitted mining activities and routine quarterly monitoring for the well resumed during the Third Quarter 2012 event.

It should be noted that during the First Quarter 2014, well O49-GL was replaced with well O49-GL(R). No significant changes in water quality have been observed and all the results for quarterly parameters were below the ALs.

As described above, a general increase in sulfate concentrations in M1-GL has been observed since 2000. A similar general increase has been observed in sulfate



concentrations in M27-LBF since 2000; however, there is no sulfate increase in nearby wells M28-LBF which is screened below M27-LBF, or M29-UBF which is screened above M27-LBF. Recently, concentrations of magnesium, sulfate, and TDS appear to be increasing in upgradient wells M2-GU, M3-GL, and M4-O. In the upper aquifer, a decreasing trend for magnesium concentrations and an increasing trend for fluoride concentrations were observed from 2000 to 2008, stabilizing since 2008. Rising concentrations were also observed in upgradient wells M2-GU and M18-GU for magnesium, sulfate, and TDS from 2005 to 2007, declining somewhat since 2008. Site-wide water levels have declined more than 50 feet in all three aquifer zones since the start of monitoring in 1996, and have been relatively stable or have recovered slightly since 2004.

Of the 23 wells with low-flow pumps, some changes in water quality have been observed, since these pumps were installed between the Third Quarter 2011 and the First Quarter of 2012. Concentrations of the indicator parameters in M26-O, and M28-LFB have decreased on an average basis from 5 percent to 60 percent. Concentrations in M4-O have increased on an average basis from 20 percent to 80 percent. The changes of concentrations are likely related to the change of sampling methodology.

### Contingency Sampling Plans

No contingency sampling plan was required during the Third Quarter 2014. No contingency sampling plan is required for the fourth Quarter of 2014.

**Table 1. Summary of Analytical Results, Quarterly Parameters**

Well ID	Sample Date	Magnesium		Sulfate		Fluoride		Total Dissolved Solids	
		Concentration	Alert Level	Concentration	Alert Level	Concentration	Alert Level	Concentration	Alert Level
M1-GL	Aug 12 2014	20	31	<b>114</b>	109	0.66	1.3	720	1028
M2-GU	Aug 14 2014	25	39	169	275	0.77	1.4	950	1496
M3-GL	Aug 14 2014	21	36	157	187	0.63	1.3	768	1157
M4-O	Aug 14 2014	6.8	15	75.9	405	2.63	5.1	516	1072
M4-O (Dup)	Aug 14 2014	6.6	15	75.5	405	2.59	5.1	482	1072
M6-GU	Aug 07 2014	2.3	5.1	53.1	86	0.59	1.3	366	620
M7-GL	Aug 07 2014	<0.2	1	23.0	82	0.81	1.7	256	464
M8-O	Aug 07 2014	<0.2	1	55.6	122	2.23	3.6	366	609
M14-GL	Aug 11 2014	2.1	23	59.7	144	0.56	1.4	436	874
M15-GU	Aug 11 2014	19	44	59.8	126	0.46	1.2	676	1359
M16-GU	Aug 07 2014	28	52	205	248	0.67	1.1	1060	1635
M17-GL	Aug 12 2014	3.1	9.3	42.9	209	0.67	1.6	326	831
M18-GU	Aug 12 2014	19	36	150	288	0.89	1.6	790	1323
M19-LBF	Aug 11 2014	11	21	43.8	89	<0.4	1	492	794
M20-O	Aug 14 2014	7.7	14	67.4	112	0.82	1.7	472	809
M21-UBF	Aug 07 2014	24	87	181	487	0.82	1.1	904	2867
M21-UBF (Dup)	Aug 07 2014	24	87	176	487	0.82	1.1	898	2867
M22-O	Aug 12 2014	5.8	8.6	53.6	86	0.66	1.3	412	1094
M23-UBF	Aug 11 2014	32	69	245	411	0.75	1.3	1270	2392
M24-O	Aug 11 2014	9.8	19	736	1364	1.07	2.5	1320	2363
M25-UBF	Aug 11 2014	39	76	262	387	0.62	1.6	1520	2683
M26-O	Aug 06 2014	<0.2	1	56.1	105	1.26	3.4	308	556
M27-LBF	Aug 06 2014	32	51	148	179	<0.4	1	1240	1745
M28-LBF	Aug 06 2014	1.0	2.6	14.9	81	0.62	1.6	332	610
M29-UBF	Aug 05 2014	30	84	224	465	0.59	1.1	1120	2751
M30-O	Aug 05 2014	11	18	60.0	102	0.66	1.6	544	824
M30-O (Dup)	Aug 05 2014	12	18	59.9	102	0.58	1.6	530	824
M31-LBF	Aug 05 2014	23	46	188	330	0.69	1.3	910	1665
O19-GL	Aug 05 2014	11	17	59.2	99	0.47	1.4	510	770
O49-GL(R)	Aug 14 2014	10	18	74.4	159	<0.4	1	638	849
P19-1-O	Aug 05 2014	5.2	12	66.0	107	1.47	2.8	474	767
P49-O	Aug 14 2014	3.3	6.2	104	181	0.96	2	460	801
Arizona Aquifer Water Quality Standard		-		-		4		-	

All Results in Milligrams per Liter (mg/l)

< = Less than the Laboratory Practical Quantitation Limit



**Table 2. Summary of Quarterly Field Parameters**

Well ID	Sample Date	Temperature (°C)	Temperature (°F)	pH	Conductivity (µmhos/cm)
M1-GL	Aug 12 2014	20.6	69.1	7.49	1107
M2-GU	Aug 14 2014	21.3	70.3	7.14	1290
M3-GL	Aug 14 2014	20.5	68.9	7.27	1082
M4-O	Aug 14 2014	22.5	72.5	7.40	698
M6-GU	Aug 07 2014	24.1	75.4	8.00	583
M7-GL	Aug 07 2014	24.3	75.7	9.09	424
M8-O	Aug 07 2014	23.8	74.8	8.89	642
M14-GL	Aug 11 2014	23.0	73.4	8.20	704
M15-GU	Aug 11 2014	22.6	72.7	7.33	976
M16-GU	Aug 07 2014	22.9	73.2	7.32	1620
M17-GL	Aug 12 2014	22.5	72.5	8.69	689
M18-GU	Aug 12 2014	21.1	70.0	7.34	1300
M19-LBF	Aug 11 2014	23.9	75.0	7.47	698
M20-O	Aug 14 2014	22.4	72.3	7.34	860
M21-UBF	Aug 07 2014	23.3	73.9	7.24	1400
M22-O	Aug 12 2014	27.3	81.1	8.00	760
M23-UBF	Aug 11 2014	23.0	73.4	7.20	1680
M24-O	Aug 11 2014	29.4	84.9	7.89	1632
M25-UBF	Aug 11 2014	21.6	70.9	7.11	1985
M26-O	Aug 06 2014	23.5	74.3	8.72	481
M27-LBF	Aug 06 2014	23.5	74.3	7.33	1549
M28-LBF	Aug 06 2014	24.4	75.9	9.05	606
M29-UBF	Aug 05 2014	24.5	76.1	7.28	1828
M30-O	Aug 05 2014	23.3	73.9	7.30	815
M31-LBF	Aug 05 2014	22.7	72.9	7.27	1380
O19-GL	Aug 05 2014	25.2	77.4	7.74	795
O49-GL(R)	Aug 14 2014	24.8	76.6	7.73	1254
P19-1-O	Aug 05 2014	22.5	72.5	7.40	730
P49-O	Aug 14 2014	26.9	80.4	7.71	659

°C = Degrees Celcius

°F = Degrees Fahrenheit

µmhos/cm = Micromhos per Centimeter