

**THIRD QUARTER 2008  
GROUNDWATER MONITORING REPORT  
TASKS 1.0, 2.2 AND 2.3 OF AQUIFER CHARACTERIZATION PLAN  
MITIGATION ORDER ON CONSENT DOCKET NO. P-121-07  
COCHISE COUNTY, ARIZONA**

Prepared for:

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October 27, 2008



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October 27, 2008



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## **1. INTRODUCTION**

This data report provides the results of groundwater monitoring conducted in the third quarter of 2008 in the vicinity of the Freeport-McMoRan Copper Queen Branch (CQB) pursuant to the Mitigation Order on Consent Docket No. P-121-07 (MO). Groundwater monitoring was conducted by CQB pursuant to Tasks 1, 2.2, and 2.3 of the Work Plan (Hydro Geo Chem, Inc. [HGC], 2008a) to characterize sulfate in the vicinity of the Concentrator Tailing Storage Area (CTSA). Pursuant to the MO, the Work Plan was submitted to Arizona Department of Environmental Quality (ADEQ) on December 17, 2007 (ADEQ, 2007). CQB initiated water sampling prior to work plan approval while ADEQ was commenting on the Work Plan and CQB was responding to ADEQ's comments. Revision 1 of the Work Plan was submitted to ADEQ on July 3, 2008 and ADEQ approved the Work Plan on August 3, 2008. HGC prepared this groundwater monitoring report on behalf of CQB.

### **1.1 Scope of Groundwater Monitoring**

The scope of the groundwater monitoring program is described in Sections 3.2, 3.3.2, and 3.3.3 of the Work Plan (HGC, 2008a). Groundwater monitoring for Task 1 consisted of identifying private drinking water supply wells and public water supply system wells within one mile downgradient and crossgradient of the outer edge of the sulfate plume. Under Task 1, water supply wells are to be sampled for sulfate and water levels are to be recorded, if the well is equipped with a sounding tube.

Groundwater monitoring for Task 2.2 consists of water elevation measurement and collection of groundwater samples from wells in the vicinity of the CTSA. Task 2.3 addresses the installation and monitoring of additional offsite wells to define the extent of the sulfate plume and to further evaluate conditions in the former source area.

During the third quarter 2008, two measuring point elevation surveys were completed by Arizona Land Specialists (ALS) for private wells that had a measurable water level, Arizona Water Company (AWC) wells, and the newly installed Bisbee Mitigation Order (BMO) wells. A copy of the survey report completed by ALS is included as Appendix A.1.

#### 1.1.1 Groundwater Monitoring for Task 1

Task 1 of the Work Plan consisted of a well inventory to identify potential private drinking water supply wells and public water supply systems located one mile downgradient and crossgradient of the sulfate plume from the CTSA and in the footprint of the plume. Samples of drinking water supply wells identified this quarter or sampled for trend analysis are analyzed for sulfate. Table 1 lists wells sampled and analyzed for the well inventory (HGC, 2008b).

#### 1.1.2 Groundwater Monitoring for Task 2.2

The Work Plan identifies two purposes for the groundwater monitoring program required in Task 2.2: regional monitoring and plume monitoring. Regional monitoring is set on a semi-



annual basis during the first and third quarters of 2008 to characterize regional hydrologic conditions and any seasonality in water elevations. Samples for regional monitoring are analyzed for a suite of major element constituents to characterize general water quality conditions in addition to sulfate.

Plume monitoring is conducted quarterly at wells that are proximal to the sulfate plume in order to track the plume's location in the aquifer. Samples for plume monitoring are analyzed for sulfate only. This report presents the results of well inventory, regional, and plume monitoring conducted during the third quarter of 2008.

Table 1 lists wells identified in the Work Plan for quarterly and semi-annual monitoring, their availability for sampling in the third quarter of 2008, and their sampling status. Also included in Table 1 are wells added to the plume and regional monitoring program because they were accessible and in a usable location. Figure 1 presents a generalized geology map of the study area and well locations where data were collected during this reporting period.

Pursuant to the Work Plan, HGC and CQB contacted owners of wells identified for sampling in the Work Plan in order to obtain access for sampling. As described in Table 1, not all owners responded to the request for sampling and not all wells were suitable for sampling and water level measurements. In many cases, alternate wells were identified in lieu of wells that were unsuitable for sampling.

Analytical data for monitoring during the third quarter of 2008 were obtained from three sources: HGC, Naco Water Company (NWC) and Naco Sanitary District (NSD). In the third quarter of 2008, HGC collected groundwater samples at wells identified in Table 1 of the Work Plan and for wells identified during the well inventory investigation. NWC provided data for groundwater samples collected in March 2008 and NSD provided data for groundwater samples collected from their wells during the third quarter of 2008 for inclusion in this report.

Groundwater sampling and analysis methods used by HGC are described in the Quality Assurance Project Plan (QAPP) contained in Appendix F of the Work Plan (HGC, 2008a). Results of groundwater monitoring for Task 2.2 are presented in Section 2.

### 1.1.3 Groundwater Monitoring for Task 2.3

Section 2.3 of the Work Plan proposed the installation of additional offsite monitor wells to define the extent of the sulfate plume, to provide installations for ongoing monitoring, to characterize aquifer materials and hydraulic properties, and to determine bedrock depth. During March through September 2008 wells BMO-2008-1, BMO-2008-3B, BMO-2008-6B, BMO-2008-6M, BMO-2008-7M, BMO-2008-9M, BMO-2008-10GU, BMO-2008-10GL, and BMO-2008-11G, were installed, developed, and pump tested and water level and water quality samples collected according to Sections 4.2 and 4.3 of the QAPP. In addition, wells BMO-2008-5B and BMO-2008-5M were installed and water level measurements collected however, well development, pump testing, and water quality samples were collected at the end of the third quarter and analytical results are not available. Results for Wells BMO-2008-5B and BMO-

2008-5M will be reported in the fourth quarter 2008. Wells installed pursuant to Task 2.3 of the Work Plan are added to the quarterly plume monitoring list for Task 2.2. Results of groundwater monitoring for Task 2.3 are presented in Section 2.



## **2. GROUNDWATER MONITORING RESULTS**

### **2.1 Results of Monitoring for Tasks 1, 2.2, and 2.3**

Analytical results and groundwater elevation data for the third quarter of 2008 are tabulated in Table 2 and Table 3, respectively. Figure 2 shows the concentrations of dissolved sulfate in the wells sampled in the third quarter of 2008. The highest sulfate concentration measured at co-located wells was used for concentration contouring. Figure 3 shows groundwater elevations in the third quarter of 2008. Groundwater elevations were calculated using the depth to water measurements made under static (nonpumping) conditions for all wells shown.

### **2.2 Quality Assurance/Quality Control Review**

Pursuant to Section 6.4 of the QAPP, data verification reports were prepared for quality assurance and quality control purposes. The data verification report for data collected by HGC during the third quarter of 2008 is included in Appendix A.

Analytical laboratory reports for samples collected by HGC in the third quarter of 2008 are provided in portable document format on the compact disc in Appendix B. Copies of groundwater sampling forms for samples collected by HGC are in Appendix C.

As determined by the analytical data verification review, all data for samples collected in the third quarter of 2008 by HGC are of acceptable quality for use in the aquifer characterization being conducted pursuant to the Work Plan.

### **3. DISCUSSION**

This data report provides the results of groundwater monitoring conducted in the vicinity of the CTSA for the third quarter of 2008. The purpose of the groundwater monitoring was twofold: (1) to delineate the location of the sulfate plume and (2) to characterize the sulfate concentration and groundwater elevation in the regional aquifer. During the third quarter 2008, groundwater samples were collected from 78 plume and regional area wells and depth to water measurements were collected at 73 wells as presented in Table 1.

Groundwater samples and water level measurements were not collected from all the wells identified in the Work Plan for a variety of reasons, including owner limitations on access, unsuitable well construction, inability to contact the owner, obstruction in well, or a well no longer existing. The specific reason(s) for not sampling these wells are provided in Table 1. In some cases, alternate wells were identified and sampled as described in Table 1. Overall, groundwater monitoring conducted during the third quarter of 2008 is deemed to have met the objectives of identifying the location of the sulfate plume from the CTSA and providing potentiometric data in the vicinity of the CTSA.

#### **3.1 Hydrogeologic Setting**

Water quality samples have been collected from wells completed in three principal water-bearing units in the area: basin fill, Morita Formation, and Glance Conglomerate. Figure 1 shows that the Morita Formation and Glance Conglomerate outcrop on the east side of the study

area. The Morita Formation consists of red to buff siltstone and sandstone. The Gance Conglomerate is a polymictic conglomerate with a silty to sandy matrix. The Morita Formation and Gance Conglomerate are indurated bedrock. The basin fill unconformably overlies the bedrock units and consists of unconsolidated sand and gravel except in zones of cemented caliche. The bedrock units are believed to be transected by at least two faults; the northeast trending Black Gap fault and the northwest trending Abrigo fault. East of the Black Gap fault the basin fill is largely unsaturated and groundwater occurs in the Morita Formation and Gance Conglomerate. West of the Black Gap fault the basin fill is saturated and comprises a key aquifer overlying the Morita Formation and Gance Conglomerate aquifers. The results of monitoring need to be considered in the context of the hydrogeologic setting of the study area to interpret the apparent spatial distribution of sulfate and the patterns of groundwater elevation. Table 4 includes the well completion depth, screen interval, and screened lithology for wells sampled this quarter.

### **3.2 Sulfate Distribution**

The results of groundwater monitoring show the lateral and vertical extent of the sulfate plume in the study area as defined by the 250 mg/L sulfate concentration contour. The distribution of sulfate concentrations at individual wells within the plume can appear complex in plan maps because some wells that are located near one another have large differences in concentration. These differences occur because the wells may sample different depths and the sulfate plume is three dimensional and plume water can be underlain or overlain by groundwater



with lower sulfate concentrations. The lateral and vertical distributions of sulfate are discussed below.

### 3.2.1 Lateral Distribution of Sulfate

Figure 2 is a contour map showing the areal distribution of sulfate in the third quarter 2008. The sulfate concentration contours on Figure 2 are inferred based on the maximum sulfate concentration at locations where closely spaced wells display different concentrations.

Based on the sulfate concentration data the sulfate plume extends to the southwest from the vicinity of the former evaporation pond to the vicinity of Naco and to the south to the vicinity of Bisbee Junction. The groundwater monitoring data indicate that the sulfate plume extends over an area of approximately 2.8 miles by 3.6 miles and is confined primarily to the basin fill and Morita Formation except near the former evaporation pond where wells in the Gance Conglomerate have sulfate concentrations greater than 1000 mg/L. West of the Black Gap fault the sulfate plume is contained primarily within the basin fill. East of the fault, where the basin fill is largely unsaturated, the sulfate plume is within the Morita Formation and Gance Conglomerate. The overall lateral extent of the sulfate plume has not changed significantly since the second quarter 2008.

### 3.2.2 Vertical Distribution of Sulfate

Evaluation of the vertical distribution of sulfate is based on sampling data for wells located in close proximity but completed at different elevations in the aquifer or in different aquifer units. Two patterns are observed with respect to the vertical distribution of sulfate. First, some wells completed in the uppermost few tens of feet of the basin fill aquifer have lower concentrations than wells completed at deeper portions of the basin fill. Second, the sulfate plume in certain areas is observed to be underlain by groundwater with lower concentrations of sulfate. Examples of the vertical distribution of sulfate are discussed below.

Sulfate stratification between the basin fill and the Morita Formation along Purdy Lane near Naco is displayed between wells FRANCO, HOBAN, and COB MW-1 screened in basin fill and nearby wells GARNER 635, TM-19A, and BMO-2008-7M screened in Morita Formation. Sulfate concentrations in the basin fill wells FRANCO, HOBAN, and COB MW-1 were 680 mg/L, 690 mg/L, and 730 mg/L, respectively (Figure 2). Sulfate concentrations in Morita Formation wells GARNER 635, TM-19A, and BMO-2008-7M were 37.4 mg/L, 55.3 mg/L, and 31.4 mg/L, respectively. These data indicate that the underlying Morita Formation exhibits sulfate concentrations approximately an order of magnitude lower than concentrations in the basin fill at that location. A similar relationship was observed in the first and second quarters of 2008 (HGC, 2008c).

However, about one mile northwest of the aforementioned wells, at co-located wells BMO-2008-6B and BMO-2008-6M on the west end of the study area, sulfate concentrations are

one order of magnitude higher in the Morita Formation than the basin fill. Well BMO-2008-6M screened from 350 to 440 ft bgs completed in the Morita Formation has a sulfate concentration of 182 mg/L and BMO-2008-6B screened from 195 to 255 ft bgs completed in basin fill had a sulfate concentration of 53.3 mg/L. More information on this area will be known when the water quality results of co-located wells BMO-2008-5B and BMO-2008-5M become available.

Stratification of sulfate is also present in wells BF-01 and TM-02A west of the former evaporation pond. Well BF-01 is completed to a depth of 400 ft bgs and is screened across the basin fill, Morita Formation, and Gance Conglomerate; although the water levels collected indicate that the basin fill is probably unsaturated. BF-01 had a sulfate concentration of 1330 mg/L while TM-02A, located approximately 500 feet south of BF-01 and screened from 825 to 925 ft bgs in the Morita Formation and Gance Conglomerate had a sulfate concentration of 14.4 mg/L. The sulfate concentrations in the Gance Conglomerate at TM-02A are approximately two orders of magnitude lower than those in the overlying Morita Formation and Gance Conglomerate at that location. A similar relationship was observed in the first and second quarters of 2008 (HGC, 2008c).

In the third quarter 2008, sulfate also appears to be stratified in the vicinity of co-located wells BMO-2008-10GU and BMO-2008-10GL screened at different depths in the Gance Conglomerate located south of the Abrigo fault and east of the Black Gap fault in the north central portion of the study area. BMO-2008-10GU was completed at a total depth of 449 feet below ground surface (ft bgs) and screened from 239 to 439 ft bgs while BMO-2008-10GL was completed at 820 ft bgs and screened from 700 to 800 ft bgs. Thus, the BMO-2008-10GU

sample represents groundwater approximately 360 feet deeper in the Glance Conglomerate than the BMO-2008-10GL sample. Sulfate concentrations in BMO-2008-10GU and BMO-2008-10GL were 2210 mg/L and 1320 mg/L, respectively, in the third quarter of 2008 (Figure 2). These data indicate that sulfate concentrations were stratified with the lower concentration at greater depths in the Glance Conglomerate at this location.

### **3.3 Groundwater Elevation**

Groundwater elevations are shown on Figure 3. In general, groundwater elevations decrease from north to south east of the Black Gap fault in the region between the Bisbee airport and Bisbee Junction, and from east to west across the central portion of the study area west of the Black Gap fault. Comparison of the third quarter 2008 water elevations with those observed in previous quarters indicates about a 2 foot decrease in groundwater elevations and only minor differences in the apparent groundwater flow directions indicated by water level data.

The water level relationships are relatively complex due to the multiple aquifer units monitored and the complicated structural geology of the area. The apparent hydraulic gradient is steeper east of the Black Gap fault where groundwater is in bedrock units of the Morita Formation and Glance Conglomerate than is the hydraulic gradient west of the fault where groundwater is in basin fill. The higher hydraulic gradient is probably due to a lower average hydraulic conductivity in the bedrock compared to basin fill. The apparent groundwater flow direction east of the Black Gap fault is southerly to the vicinity of Bisbee Junction and then westerly. Convergent groundwater flow is suggested by the V-shaped contours pointed in the

upgradient direction in the vicinity of Bisbee Junction. West of the Black Gap fault, the apparent hydraulic gradient is shallower than east of the fault and the apparent groundwater flow direction is westerly. Several areas along Purdy Lane and near Naco exhibit apparent groundwater depressions, most likely associated with groundwater pumping.

The relationship between water levels east and west of the Black Gap fault is uncertain due to the different apparent hydraulic gradients and groundwater flow directions and the variability of water level data east of the Black Gap fault. The variability of water levels east of the Black Gap fault is indicated by the large differences in water elevation (sometimes up to several hundred feet) between wells in relatively close proximity to one another. This variability in water elevation is particularly evident in the Bisbee Junction area and in the area of the BIMA and NOTEMAN wells east of the former evaporation pond. The variability of water elevations east of the Black Gap fault indicates that the hydraulic properties of the bedrock are heterogeneous and that certain portions of the bedrock may not be hydraulically connected. The heterogeneity in hydraulic properties in bedrock is probably due to the restriction of groundwater flow to permeable features such as permeable beds, bedding planes, or fracture systems within bedrock which are not uniformly distributed throughout the area.

The water level elevations in co-located wells screened at different depths in basin fill and Morita Formation vary by less than seven feet in the west part of the study area. In the northeast part of the study area the water level varies over 200 feet at co-located wells BMO-2008-10GU and BMO-2008-10GL, screened at different depths in the Glance Conglomerate.

Anomalous water elevations are also observed west of the Black Gap fault at the SRC, BURKE, and BMO-2008-11G wells in the northwest portion of the study area. According to well driller logs, SRC and BURKE are screened in a shale bedrock and BMO-2008-11G is screened in the Glance Conglomerate all at depths greater than 600 ft bgs. The water level in SRC, BURKE, and BMO-2008-11G are anomalously low compared to the levels in wells that appear to be in basin fill and/or Morita Formation one mile to the south. The existing data suggest that these wells are within a hydrostratigraphic unit with a poor hydraulic connection to the aquifers to the south.

Although complex, the water level data provide important information on the direction and magnitude of hydraulic gradients which control the direction and movement of the sulfate plume. The results also display the effects of aquifer heterogeneities that need to be accounted for in the site conceptual model. This discussion of water level data is preliminary and will be verified by ongoing monitoring and augmented with data being collected by other Work Plan tasks.

### **3.4 Subsequent Groundwater Monitoring for Task 2.2**

Task 2.2 (Sections 3.3.2 and Appendix F of the Work Plan) called for two semiannual groundwater monitoring events: one in winter and one in summer to characterize any seasonal influences on water quality and groundwater elevation. The winter semiannual sampling was conducted in the first quarter of 2008 (HGC, 2008c). The third quarter 2008 semiannual sampling constitutes the summer event, and completes the semiannual sampling program. Subsequent groundwater monitoring pursuant to Task 2.2 will be quarterly plume monitoring (Table 1). Wells installed for Task 2.3 will be added to the quarterly plume monitoring as they become available.





#### 4. REFERENCES

- Arizona Department of Environmental Quality. 2007. Mitigation Order on Consent, Docket No. P-121-07, In the Matter of: Phelps Dodge Corporation, Copper Queen Branch, located at 36 West Highway 92, Bisbee, Arizona, ADEQ Identification Number 100531. November 14, 2007.
- Hydro Geo Chem, Inc. (HGC). 2008a. 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.
- HGC. 2008b. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 3, 2008.
- HGC. 2008c. First and Second Quarters 2008, Groundwater Monitoring Report, Task 2.2 of Aquifer Characterization Plan, Mitigation Order on Consent Docket No. P-121-07, Cochise County, Arizona. July 30, 2008.



## **TABLES**



**TABLE 1**  
**Summary of Groundwater Monitoring for**  
**Third Quarter 2008**

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q3-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
<b>WELLS FOR QUARTERLY MONITORING</b>							
AWC 03	616585	Arizona Water Company	Plume	269	YES	YES	Water quality sample collected August 2008
AWC 05	590620	Arizona Water Company	Plume	1183	YES	YES	Water quality sample collected August 2008
BF-01	539783	CQB	Plume	400	YES	YES	Water quality sample collected August 2008
BIMA	577927	Bisbee Municipal Airport	Plume	465	YES	YES	Water quality sample collected in July 2008
BULLARD	602134	Bullard	Plume	300	NO	NO	Well not operational; unable to collect water levels due to obstruction
BURKE	212268	Burke	Plume	781	YES	YES	Water quality sample collected in July 2008
COB MW-1	903992	City of Bisbee	Plume	420	YES	YES	Water quality sample collected in July 2008
COB MW-2	903984	City of Bisbee	Plume	170	YES	YES	Water quality sample collected in July 2008
COB WL	593116	City of Bisbee	Plume	150	YES	YES	Water quality sample collected in July 2008
COOPER	623564	Cooper, Teresa	Plume	325	NO	YES	Water quality samples collected in July 2008; unable to collect water level due to obstruction
COOPER C	637069	Cooper, Charles	Plume	220	YES	YES	Water quality sample collected in July 2008
CROWLEY	510298	Crowley	Plume	788	NO	NO	Dry
DODSON	644927	Dodson	Plume	200	YES	YES	Water quality sample collected in July 2008
GARNER 557	558557	Garner	Plume	300	YES	NO	Well identified for water level measurements only
GARNER 635 <sup>1</sup>	587635	Garner	Plume	680	YES	YES	Water quality sample collected in July 2008
GGOOSE 546	628546	Galloping Goose Properties	Plume	800	NO	NO	Well not operational, unable to obtain water levels due to obstruction
GGOOSE 547	628547	Galloping Goose Properties	Plume	800	YES	YES	Water quality sample collected in August 2008
GL-03	539782	CQB	Plume	820	NO	YES	Water quality sample collected in August 2008
GREGG	630852	Gregg	Plume	ND	NO	NO	Dry
HULL 584	606854	Hull	Plume	25	NO	NO	Unable to locate well
MILLER 340	641340	Miller	Plume	200	NO	NO	Dry
MILLER 341	641341	Miller	Plume	100	NO	NO	Dry
NWC 02	562944	Naco Water Company	Plume	312	NO	NO	No Data
NWC 03	203321	Naco Water Company	Plume	312	NO	YES	Naco Water Company provided March 2008 Data
NWC 04 CAP	627685	Naco Water Company	Plume	379	NO	NO	Well Capped
NWC 05	627696	Naco Water Company <sup>2</sup>	Plume	175	ND	ND	No Data
OSBORN	643436	Osborn	Plume	150	NO	YES	Water quality sample collected in July 2008; unable to collect water level due to obstruction

**TABLE 1**  
**Summary of Groundwater Monitoring for**  
**Third Quarter 2008**

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q3-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
PARRA	576415	Parra	Plume	355	NO	YES	Water quality sample collected in July 2008; unable to collect water level due to obstruction
ROGERS 803	641803	Rogers, Ernest D	Plume	140	YES	YES	Water quality sample collected in July 2008
TM-02	522573	CQB	Plume	640	NO	NO	Pump intake above water level; unable to collect water levels due to obstruction
TM-02A	522574	CQB	Plume	925	YES	YES	Water quality sample collected in August 2008
TM-03	522575	CQB	Plume	200	YES	YES	Water quality sample collected in August 2008
TM-06 MILLER	522695	Miller	Plume	200	YES	YES	Water quality sample collected in August 2008
TM-07	522576	CQB	Plume	350	NO	YES	Water quality sample collected in August 2008; unable to collect water level due to obstruction
TM-10 USBP	522696	U.S. Border Patrol	Plume	290	NO	NO	Owner declined participation
TM-11 PIONKE	522815	Pionke	Plume	160	NO	NO	Dry
TM-13 MILLER	522698	Miller	Plume	200	NO	NO	Dry
TM-16	522578	CQB	Plume	115	YES	YES	Water quality sample collected in August 2008
TM-17	522700	CQB	Plume	200	NO	NO	Dry
TM-19	522581	CQB	Plume	210	NO	NO	Dry
TM-19A	522580	CQB	Plume	700	YES	YES	Water quality sample collected in August 2008
TM-41	562555	CQB	Plume	210	NO	NO	Dry <4580 ft amsl
TM-42	562554	CQB	Plume	250	YES	YES	Water quality sample collected in August 2008
TVI 875	568875	Turquoise Valley, Inc.	Plume	330	NO	YES	Water quality sample collected in July 2008, no access to well casing for water level measurements
WEED	544535	Weed	Plume	320	NO	YES	Water quality sample collected in July 2008; no access to well casing for water level measurements
WEISKOPF	641802	Weiskopf	Plume	200	YES	YES	Water quality sample collected in July 2008
<b>MITIGATION ORDER WELLS INSTALLED IN 2008 FOR QUARTERLY MONITORING</b>							
BMO-2008-1G	909474	CQB	Plume	310	YES	YES	Water quality sample collected in August 2008
BMO-2008-3B	909147	CQB	Plume	260	YES	YES	Water quality sample collected in July 2008
BMO-2008-5B	909653	CQB	Plume	290	YES	NO	Water quality sample collected September 30, 2008 after aquifer testing; results will be reported in Q4 08
BMO-2008-5M	909552	CQB	Plume	450	YES	NO	Water quality sample collected October 1, 2008 after aquifer testing; results will be reported in Q4 08
BMO-2008-6B	909146	CQB	Plume	265	YES	YES	Water quality sample collected in July 2008
BMO-2008-6M	909019	CQB	Plume	450	YES	YES	Water quality sample collected in July 2008
BMO-2008-7M	908794	CQB	Plume	670	YES	YES	Water quality sample collected in July 2008
BMO-2008-9M	909255	CQB	Plume	775	YES	YES	Water quality sample collected in August 2008

TABLE 1  
Summary of Groundwater Monitoring for  
Third Quarter 2008

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q3-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
BMO-2008-10GU	909272	CQB	Plume	449	YES	YES	Water quality sample collected in August 2008
BMO-2008-10GL	909435	CQB	Plume	810	YES	YES	Water quality sample collected in August 2008
BMO-2008-11G	909434	CQB	Plume	760	YES	YES	Water quality sample collected in August 2008
WELLS FOR SEMIANNUAL MONITORING							
COB WL ABND	570012	City of Bisbee	Regional	148	NO	NO	Well Abandoned
CONNOR	516399	Connor	Regional	220	NO	NO	Well Abandoned
EAST	599796	East	Regional	125	YES	YES	Water quality sample collected in July 2008
GALLANT	502527	Gallant	Regional	190	YES	YES	Water quality sample collected in July 2008
MILLER 342	641342	Miller	Regional	200	NO	NO	Dry
NSD 02	527587	Naco Sanitary District	Regional	120	NO	YES	Q3 2008 Water quality data provided by Naco Sanitary District
NSD 03	527586	Naco Sanitary District	Regional	100	NO	YES	Q3 2008 Water quality data provided by Naco Sanitary District
NWC 01	627682	Naco Water Company <sup>2</sup>	Regional	215	ND	ND	No data
NWC 06	575700	Naco Water Company	Regional	410	NO	YES	Naco Water Company provided March 2008 Data
PALMER	578819	Palmer	Regional	220	NO	YES	Water quality sample collected in July 2008; no access to well casing for water level measurements
POWER	624535	Power	Regional	100	YES	YES	Water quality sample collected in July 2008
TM-05 MILLER	522694	Miller	Regional	160	NO	NO	Dry
TM-08 SWAN	522817	Swan, George	Regional	817	NO	YES	Water quality sample collected in July 2008; however owner has declined further participation in monitoring program
TM-12 MILLER	522697	Miller	Regional	175	NO	NO	Dry
TM-14 NELSON	522816	Nelson	Regional	215	NO	YES	Dry
TM-15 MILLER	522699	Miller	Regional	325	YES	YES	Water quality sample collected in July 2008
TM-43	564729	CQB	Regional	830	YES	YES	Water quality sample collected in August 2008
TM-43A	564726	CQB	Regional	215	YES	YES	Water quality sample collected in August 2008
TM-43B	565004	CQB	Regional	215	YES	YES	Water quality sample collected in August 2008
TM-45	564728	CQB	Regional	520	NO	NO	Dry
WALKER	200393	Walker	Regional	120	YES	YES	Water quality sample collected in July 2008

**TABLE 1**  
**Summary of Groundwater Monitoring for**  
**Third Quarter 2008**

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q3-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
<b>ADDITIONAL WELLS SAMPLED FOR Q3-08 MONITORING THAT WERE NOT IDENTIFIED IN THE WORK PLAN</b>							
ANDERSON	613396	Anderson	Well Inventory	236	YES	YES	Water quality sample collected in July 2008
AWC 02	616586	Arizona Water Company	Plume	330	YES	YES	Water quality sample collected in August 2008
AWC 04	616584	Arizona Water Company	Plume	250	YES	YES	Water quality sample collected in August 2008
BANKS 986	647986	Banks	Well Inventory	435	NO	YES	Water quality sample collected in July 2008; unable to collect water level measurements due to obstruction
BANKS 987	647987	Banks	Well Inventory	339	YES	NO	Well identified for water level measurements only
BARTON 010	085010	Barton	Plume	300	YES	NO	Well not operational; identified for water level measurements only
BARTON 919	644919	Barton	Plume	130	YES	NO	Well not operational; identified for water level measurements only
BLOMMER	633472	Blommer	Well Inventory	380	NO	YES	Water quality sample collected in July 2008; unable to collect water level measurements due to obstruction
CAMPBELL	215509	Campbell	Well Inventory	350	NO	NO	Well identified for water level measurements only; unable to collect water level measurement due to obstruction
CHAMBERS	629807	Chambers	Well Inventory	245	NO	YES	Water quality samples collected in July 2008; no access to well casing for water level measurements
COB MW-3	906823	City of Bisbee	Plume	269	YES	YES	Water quality sample collected in July 2008
COLLINS <sup>3</sup>	565260	Collins	Well Inventory	320	YES	YES	Water quality sample collected August 2008
DOUGLASS 791	592791	Douglass	Well Inventory	200	YES	NO	Well not operational; identified for water level measurements only
DOUGLASS 792	529792	Douglass	Well Inventory	200	YES	NO	Well not operational; identified for water level measurements only
EPPELE 641	805641	Eppele	Well Inventory	265	YES	YES	Water quality sample collected in July 2008
FRANCO	500101	Franco	Well Inventory	200	NO	YES	Water quality sample collected in July 2008; unable to collect water level measurements due to obstruction
FULTZ	212447	Fultz	Well Inventory	300	NO	YES	Water quality sample collected in July 2008; unable to collect water levels because sounder diameter too large for access port
GOAR RANCH	610695	Goar	Well Inventory	250	YES	NO	Well identified for water level measurement only
HOBAN	805290	Hoban	Well Inventory	316	YES	YES	Water quality sample collected in July 2008
HOWARD	NR	Howard	Well Inventory	200	YES	YES	Water quality sample collected in July 2008
KEEFER	209744	Keefer	Well Inventory	245	YES	YES	Water quality sample collected in July 2008
MCCONNELL 265	539265	McConnell	Well Inventory	216	YES	YES	Water quality sample collected in July 2008
METZLER	35-71891	Metzler	Well Inventory	351	YES	YES	Water quality sample collected in July 2008
MINOR 317	063317	Minor	Well Inventory	155	NO	NO	New owner declined participation
MOORE	538847	Moore	Well Inventory	220	NO	YES	Water quality sample collected in July 2008; unable to collect water levels because sounder diameter too large for access port
NESS	509127	Ness	Well Inventory	812	YES	YES	Water quality sample collected in July 2008



**TABLE 1**  
**Summary of Groundwater Monitoring for**  
**Third Quarter 2008**

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q3-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
NOTEMAN	212483	Noteman	Well Inventory	400	YES	YES	Water quality sample collected in July 2008
NWC 04	551849	Naco Water Company	Well Inventory	462	NO	YES	Naco Water Company provided March 2008 Data
PANAGAKOS	35-76413	Panagakos	Well Inventory	200	NO	YES	Water quality sample collected in July 2008; no access to well casing for water level measurement
PIONKE	613395	Pionke	Well Inventory	300	YES	YES	Water quality sample collected in July 2008
POOL	509518	Pool	Well Inventory	313	YES	YES	Water quality sample collected in July 2008
RAMIREZ	216425	Ramirez	Well Inventory	300	NO	YES	Water quality sample collected in July 2008; no access to well casing for water level measurements
RAY	803772	Ray	Well Inventory	100	YES	YES	Water quality sample collected in July 2008
ROGERS E	216018	Rogers, Ernest M	Well Inventory	290	YES	YES	Water quality sample collected in July 2008
RUIZ	531770	Ruiz	Well Inventory	312	YES	YES	Water quality sample collected in July 2008
SCHWARTZ	210865	Schwartz	Well Inventory	305	YES	YES	Water quality sample collected in July 2008
SRC	211345	Specialty Restaurants Corporation, Inc.	Regional	965	YES	YES	Water quality sample collected in July 2008
STEPHENS	808560	Stephens	Well Inventory	NR	YES	NO	Well identified for water level measurement only
SUNBELT	201531	Sunbelt Marketing, Inc.	Plume	380	NO	NO	Dry
SWAN	NR	Swan, Alan	Well Inventory	NR	YES	YES	Water quality sample collected in July 2008
TVI 236	802236	Turquoise Valley, Inc.	Plume	222	YES	YES	Water quality sample collected in July 2008
TVI 713	567713	Turquoise Valley, Inc.	Well Inventory	200	YES	NO	Well identified for water level measurements only
ZANDER	205126	Zander	Well Inventory	280	YES	YES	Water quality sample collected in July 2008

**Notes:**

*ADWR = Arizona Department of Water Resources*

*AWC = Arizona Water Company*

*BIMA = Bisbee Municipal Airport*

*COB WL = City of Bisbee Warren Lagoon*

*CQB = Freeport-McMoRan Copper Queen Branch*

*ft amsl = feet above mean sea level*

*ND = No Data*

*NR = No Record*

*NSD = Naco Sanitary District*

*SRC = Specialty Restaurants Corporation, Inc.*

*NWC = Naco Water Company*

*TVI = Turquoise Valley Inc.*

*35-71891 = ADWR 35 Database*

<sup>1</sup> *GARNER 635 also known as GW-47*

<sup>2</sup> *Naco Water Company sold well, personnel communication with NWC, 2008*

<sup>2</sup> *formally listed as ENGLUND*

**TABLE 2**  
**Compilation of Groundwater Monitoring Results For**  
**Inorganic Analytes, pH, Temperature, and Specific Conductance**

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180°C	TDS (calculated)	TDS Ratio (measured/calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
ANDERSON	613396	03/20/08	7.25	21.1	1176	431	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON	613396	05/05/08	7.03	21.8	1231	452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON	613396	07/14/08	7.11	21.6	1260	472	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	01/07/08	-	-	-	14	14	-	2.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	03/03/08	-	-	-	16	16	-	2.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	05/05/08	-	-	-	13.3	15.9	-	2.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	08/12/08	7.01	22.3	630	14.3	17.8	0.2	2.42	2.42	<0.01	66.4	9.1	2.1	20.0	181	5	<2	186	280	255	1.10	4.7	5.0	3.1
AWC 03	616585	01/07/08	-	-	-	41	14	-	2.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 03	616585	03/03/08	-	-	-	38	14	-	2.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 03	616585	05/05/08	-	-	-	37.3	12.2	-	2.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 03	616585	08/12/08	7.28	22.4	469	38.8	15.5	0.2	2.28	2.28	<0.01	62.8	8.6	2.1	22.8	156	5	<2	162	290	260	1.12	4.6	4.9	3.2
AWC 04	616584	02/04/08	-	-	-	18	40	-	2.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	04/07/08	-	-	-	18	45	-	2.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	06/02/08	-	-	-	14.3	48	-	2.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	08/12/08	7.08	22.5	458	21.6	47.5	0.1	1.94	1.94	<0.01	88.7	11.6	2.6	22.8	206	<2	<2	206	380	328	1.16	6.0	6.4	3.2
AWC 05	590620	02/04/08	-	-	-	13	15	-	1.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	04/07/08	-	-	-	14	14	-	1.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	06/02/08	-	-	-	14.3	15.6	-	1.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	08/12/08	6.74	23.3	425	14.9	16.1	0.1	2.02	2.02	<0.01	50.6	6.2	2.2	35.6	164	8	<2	172	280	242	1.16	4.3	4.6	3.4
BANKS 986	647986	02/27/08	7.53	21.8	980	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	05/12/08	7.40	22.1	1021	65.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	07/21/08	7.43	22.9	1034	82.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BF-01	539783	03/04/08	6.46	21.9	2745	1320	30.4	<0.1	0.92	0.92	<0.01	621.0	100.0	4.5	60.2	610	<2	<2	610	2850	2510	1.14	40.8	42.0	1.4
BF-01	539783	05/23/08	6.41	18.3	2698	1450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BF-01	539783	08/05/08	6.11	22.4	3095	1330	30	<2	1.09	1.09	<0.01	624	107	4.5	61.3	579	<2	<2	579	2820	2510	1.12	40.4	42.8	2.9
BIMA	577927	02/06/08	6.69	22.2	1335	210	105	0.1	6.80	6.80	<0.01	224.0	48.4	12.4	65.9	510	<2	<2	510	980	1000	0.98	18.0	18.4	1.1
BIMA	577927	04/25/08 <sup>1</sup>	6.37	23.1	1521	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	05/13/08 <sup>1</sup>	6.58	22.7	1489	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	06/23/08 <sup>1</sup>	6.30	23.3	1572	225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA DUP	577927	06/23/08 <sup>1</sup>	6.30	23.3	1572	196	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	07/29/08 <sup>1</sup>	6.44	23.0	1647	204	101	0.1	7.85	7.85	<0.01	209	46.5	12.2	63.6	456	<2	<2	456	1040	945	1.10	16.8	17.4	1.8
BIMA	577927	08/28/08 <sup>1</sup>	M	23.0	1776	256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	09/23/08 <sup>1</sup>	6.29	23.0	1741	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	02/05/08	7.43	20.2	714	206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	04/21/08 <sup>1</sup>	7.06	21.9	753	201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	05/15/08 <sup>1</sup>	7.16	22.2	845	211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	06/23/08 <sup>1</sup>	6.93	21.5	903	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	07/29/08 <sup>1</sup>	7.21	22.2	921	203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	08/27/08 <sup>1</sup>	7.12	22.1	864	189	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	09/23/08 <sup>1</sup>	7.16	22.3	818	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-1G	909474	08/27/08	7.09	24.2	808	107	76.3	0.1	13.5	13.5	<0.01	124	32.2	6.4	35.7	229	9	<2	238	580	588	0.99	10.1	10.6	2.4
BMO-2008-3B	909147	07/18/08	7.35	23.9	615	106	24	0.3	3.68	3.72	0.04	64.5	12.0	2.9	53.6	151	3	<2	154	390	373	1.05	6.2	6.6	3.1
BMO-2008-6B	909146	07/16/08	7.36	24.1	475	53.3	13	0.4	1.97	1.97	<0.01	59.7	10.2	3.0	26.2	151	9	<2	160	300	274	1.09	4.8	5.0	2.0
BMO-2008-6M	909019	07/10/08	NA	22.1	702	182	16	0.3	1.98	1.98	<0.01	104	17.9	3.60	32.5	144	9	<2	153	480	460	1.04	7.4	8.1	4.5
BMO-2008-7M	908794	07/14/08	7.63	25.2	500	31.4	10.4	0.3	1.55	1.55	<0.01	32.4	11.4	2.70	60.8	188	13	<2	201	290	282	1.03	5.1	5.3	1.9
BMO-2008-9M	909255	08/08/08	7.72	25.7	415	47.3	14	0.10	1.90	1.93	0.03	28.0	17.8	3.4	64.6	193	6	<2	199	320	306	1.05	5.5	5.7	1.8
BMO-2008-10GL	909435	08/20/08	6.22	29.5	2924	1320	30.0	<2	<0.02	<0.02	<0.01	579	167	10.5	90.5	870	<2	<2	870	2970	2720	1.09	46.0	46.9	1.0
BMO-2008-10GU	909272	08/04/08	6.41	23.6	3660	2210	60	<2	0.13	0.16	<0.01	649	311	15.3	37.6	984	<2	<2	984	3810	3870	0.98	67.8	60.0	-6.1
BMO-2008-11G	909434	08/22/08	8.02	28.2	359	14.2	2.8	0.2	0.56	0.56	<0.01	10.7	5.1	1.7	64.2	149	14	<2	163	220	205	1.07	3.6	3.8	2.7
BURKE	212268	02/07/08	7.17	23.0	411	29.5	31.8	0.3	1.83	1.83	<0.01	62.3	22.8	2.8	26.0	212	<2	<2	212	360	311	1.16	5.9	6.2	2.5
BURKE	212268	04/22/08	7.13	27.0	423	26	11	0.2	2.88	2.88	<0.01	52.1	22.0	2.3	16.9	191	<2	<2	191	260	-	-	-	-	-
BURKE	212268	08/05/08	7.06	26.8	496	21.9	10	0.2	2.81	2.85	<0.01	52.5	22.3	2.3	16.1	187	<2	<2	187	260	250	1.04	4.6	5.2	6.1



**TABLE 2**  
**Compilation of Groundwater Monitoring Results For**  
**Inorganic Analytes, pH, Temperature, and Specific Conductance**

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180°C	TDS (calculated)	TDS Ratio (measured/calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
HOBAN	805290	02/27/08	6.93	22.1	1359	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	05/07/08	6.88	22.3	1532	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	07/14/08	6.88	23.1	1719	690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	03/04/08	7.06	20.4	1280	571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	05/08/08	6.95	21.0	1494	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	07/14/08	7.00	21.1	1566	610	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	02/06/08	7.70	19.0	378	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	05/06/08	7.19	20.3	512	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	07/16/08	7.21	21.4	539	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	02/20/08	7.21	21.1	1435	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	05/06/08	6.77	21.6	1668	737	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	07/15/08	6.91	22.3	1775	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	03/05/08	7.27	21.6	1055	317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	05/15/08	7.12	22.8	1051	329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	07/31/08	7.16	22.5	1078	317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	02/20/08	7.69	22.2	362	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	05/08/08	7.09	22.4	432	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	07/16/08	7.34	23.0	482	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NESS	509127	07/24/08	7.35	26.5	563	50.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	02/05/08	6.70	19.9	1317	310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	05/13/08	6.67	23.0	1445	272	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	07/24/08	6.68	24.2	1539	274	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NSD 02	527587	02/05/08	-	-	-	43	52.5	0.201	<1.0	-	<0.01	-	-	-	-	-	-	-	-	-	388	-	-	-	-
NSD 02	527587	07/07/08	8.02	21.0	609	44.0	42	0.0431	0.641	-	0.007	-	-	-	-	-	-	-	-	-	369	-	-	-	-
NSD 03	527586	02/05/08	-	-	-	70.7	14.1	0.186	3.2	-	<0.010	-	-	-	-	-	-	-	-	-	396	-	-	-	-
NSD 03	527586	07/07/08	7.64	21.0	570	58.9	11.6	0.041	3.20	-	0.011	-	-	-	-	-	-	-	-	-	372	-	-	-	-
NWC 03	203321	03/04/08	-	-	-	560	30	-	4.64	4.64	<0.1	-	-	-	-	-	-	-	-	-	1050	-	-	-	-
NWC 04	551849	03/04/08	-	-	-	240	41	-	6.33	6.33	<0.1	-	-	-	-	-	-	-	-	-	628	-	-	-	-
NWC 06	575700	03/04/08	-	-	-	7.9	13	-	1.73	1.73	<0.1	-	-	-	-	-	-	-	-	-	241	-	-	-	-
OSBORN	643436	02/25/08	7.35	22.4	508	16.4	18.2	0.3	3.76	3.76	<0.01	84.4	15.4	4.3	25.2	246	29	<2	275	370	357	1.04	6.6	6.7	0.8
OSBORN	643436	05/13/08	7.22	22.2	576	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OSBORN	643436	07/22/08	7.24	22.9	618	17.7	19.7	0.4	4.4	4.4	<0.01	80.3	15.0	4.2	24.7	252	29	<2	281	350	362	0.97	6.8	6.4	-3.0
OSBORN DUP	643436	07/22/08	7.24	22.9	618	17.5	19.6	0.3	4.7	4.7	<0.01	80.9	15.1	4.2	25.0	250	31	<2	281	350	364	0.96	6.8	6.4	-3.0
PALMER	578819	02/14/08	7.91	17.5	435	15.9	11.3	0.4	2.13	2.13	<0.01	31.9	27.1	5.4	50.1	235	15	<2	251	300	308	0.97	5.8	6.1	2.5
PALMER	578819	05/13/08	7.92	22.9	508	16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PALMER	578819	07/22/08	7.64	25.8	548	16.2	11.3	0.4	2.34	2.34	<0.01	30	25.4	5.1	47.9	226	39	<2	265	300	321	0.93	6.1	5.8	-2.5
PANAGAKOS	35-76413	04/21/08	6.80	20.5	1228	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANAGAKOS	35-76413	07/21/08	6.95	21.9	1390	444	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARRA	576415	02/11/08	7.08	21.8	1067	360	33.4	0.1	4.17	< 0.04	<0.01	178	50.4	4.4	31.6	177	<2	<2	177	880	783	1.12	12.3	14.5	8.2
PARRA	576415	05/15/08	7.10	21.8	1200	405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARRA	576415	07/31/08	7.00	22.4	1248	423	33.5	<0.1	4.23	4.23	<0.01	181	49.8	4.5	32.4	213	<2	<2	213	930	871	1.07	14.4	14.7	1.0
PARRA DUP	576415	07/31/08	7.00	22.4	1248	404	33.5	<0.1	4.33	4.33	<0.01	177	48.5	4.3	30.9	212	<2	<2	212	920	845	1.09	14.0	14.3	1.1
PIONKE	613395	02/06/08	7.53	19.9	910	394	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	05/07/08	7.08	21.4	1100	391	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	07/17/08	6.99	21.9	1209	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	02/20/08	7.95	20.9	497	134	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	05/19/08	7.40	22.2	585	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	07/31/08	7.47	22.3	599	117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POWER	624535	02/12/08	7.11	18.9	428	15.5	6.1	0.1	7.00	7.00	<0.01	95	7.6	3.8	7.4	242	<2	<2	242	310	312	0.99	5.8	5.8	0.0
POWER	624535	07/22/08	7.10	21.7	795	20.2	37.8	<0.1	24.1	24.1	<0.01	124	11.0	3.8	13.6	222	29	<2	251	550	479	1.15	8.2	7.8	-2.5
RAMIREZ	216425	02/04/08	7.47	21.7	408	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	05/06/08	7.19	22.7	405	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	07/17/08	7.32	24.5	439	8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**TABLE 2**  
**Compilation of Groundwater Monitoring Results For**  
**Inorganic Analytes, pH, Temperature, and Specific Conductance**

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/ Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180°C	TDS (calculated)	TDS Ratio (measured/calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
RAY	803772	02/15/08	7.30	19.1	1540	159	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	04/21/08 <sup>1</sup>	6.92	21.3	1418	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	05/13/08 <sup>1</sup>	7.05	20.9	1418	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	06/23/08 <sup>1</sup>	6.87	21.1	1593	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	07/29/08 <sup>1</sup>	6.98	21.8	1411	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	08/28/08 <sup>1</sup>	M	21.1	1519	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	09/23/08 <sup>1</sup>	6.90	22.2	1519	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	02/07/08	7.45	18.6	601	125	13.2	0.2	4.69	4.71	0.02	94	11.7	3.0	26.6	148	<2	<2	148	410	383	1.07	6.3	6.9	4.5
ROGERS 803	641803	04/21/08 <sup>1</sup>	7.32	21.4	552	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	05/08/08 <sup>1</sup>	7.14	21.2	622	141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	06/23/08 <sup>1</sup>	7.06	22.9	660	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	07/29/08 <sup>1</sup>	6.78	23.1	339	134	13.1	0.2	4.3	4.3	<0.01	92.5	12.6	3.3	28.7	149	<2	<2	149	430	393	1.09	6.4	7.0	4.5
ROGERS 803	641803	08/28/08 <sup>1</sup>	7.18	21.6	635	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	09/23/08 <sup>1</sup>	7.24	21.9	599	133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	02/04/08	7.40	21.0	435	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	05/07/08	7.18	22.2	415	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	07/17/08	7.28	23.0	446	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	02/05/08	7.73	18.2	445	263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	05/15/08	7.23	25.9	965	265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	07/30/08	6.99	22.1	999	243	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	02/08/08	7.52	21.5	506	158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	04/21/08 <sup>1</sup>	7.23	21.7	563	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	05/19/08 <sup>1</sup>	7.38	22.4	629	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	06/23/08 <sup>1</sup>	7.02	22.1	674	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	07/29/08 <sup>1</sup>	7.25	22.4	955	245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	08/28/08 <sup>1</sup>	M	22.3	669	131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	09/23/08 <sup>1</sup>	7.27	22.2	607	124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SRC	211345	04/23/08	7.57	25.8	380	19.0	10	0.2	3.61	3.61	<0.01	25.8	16.3	2.1	48.2	174	<2	<2	174	230	-	-	-	-	-
SRC	211345	08/05/08	7.40	27.2	452	15.4	10.4	0.2	3.74	3.74	<0.01	26.8	17.8	2.0	44.6	173	<2	<2	173	250	238	1.05	4.3	4.8	5.5
SWAN	NR	02/13/08	7.28	20.7	467	24.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWAN	NR	05/14/08	7.24	21.2	479	23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWAN	NR	07/24/08	7.35	22.4	506	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-02A	522574	03/04/08	8.67	22.6	302	12.3	8.6	0.3	<0.02	0.02	0.02	12.6	5.8	2.2	58.0	146	9	<2	155	190	196	0.97	3.6	3.7	1.4
TM-02A	522574	05/23/08	7.75	22.9	321	14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-02A	522574	08/15/08	7.84	26.4	369	14.4	8.2	0.2	0.3	0.3	<0.01	14.7	5.2	2.4	60.2	143	8	<2	151	190	200	0.95	3.5	3.8	4.1
TM-03	522575	05/20/08	7.51	22.2	778	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-03	522575	08/06/08	7.08	21.6	828	97	40.7	0.2	7.68	7.68	<0.01	94.3	36.6	3.5	27.8	221	<2	<2	221	510	467	1.09	8.1	9.0	5.3
TM-06 MILLER	522695	02/27/08	7.44	19.6	457	13.9	7.1	0.3	0.96	0.96	<0.01	42.2	19.0	1.7	54.3	218	<2	<2	218	310	274	1.13	4.9	6.1	10.9
TM-06 MILLER	522695	05/20/08	7.50	20.7	506	32.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-06 MILLER	522695	08/04/08	7.41	20.7	529	31.3	18.0	0.7	0.89	0.89	<0.01	37.8	19.5	1.9	52.1	210	<2	<2	210	300	291	1.03	5.4	5.8	3.6
TM-07	522576	03/06/08	7.54	20.8	726	22.5	9	0.2	3.04	3.04	<0.01	49	15.8	2.0	22.6	133	9	<2	142	220	223	0.10	3.7	4.7	11.9
TM-07	522576	05/22/08	6.96	20.1	385	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-07	522576	08/06/08	7.04	22.8	519	22.2	8.9	0.2	2.52	2.52	<0.01	45.8	14.7	1.9	20.5	157	<2	<2	159	240	220	1.09	4.0	4.4	4.8
TM-08 SWAN	522817	02/13/08	7.63	25.2	511	12.6	32.1	0.3	5.3	5.3	<0.01	43.4	21.4	4.9	35.5	204	<2	<2	204	310	296	1.1	5.6	5.6	0.0
TM-08 SWAN	522817	05/14/08	7.44	24.4	480	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-08 SWAN	522817	07/23/08	7.76	28.1	522	12.6	14.8	0.3	2.86	2.86	<0.01	<0.02	<0.02	1.1	128	204	11	<2	215	310	303	1.02	5.2	5.6	3.7
TM-14 NELSON	522816	02/08/08	7.64	21.6	319	32.9	12.5	0.3	1.82	1.82	<0.01	56.1	10.0	2.8	23.6	166	<2	<2	166	250	246	1.02	4.5	4.7	2.2
TM-15 MILLER	522699	02/27/08	7.66	21.9	344	14	7.1	0.4	1.56	1.56	<0.01	32.9	18.0	2.0	32.4	181	2	<2	183	220	224	0.98	4.2	4.6	4.5
TM-15 MILLER	522699	05/23/08	7.54	22.1	371	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-15 MILLER	522699	08/05/08	7.42	23.3	413	13.7	7.0	0.3	1.99	1.99	<0.01	29.8	18.9	2.0	32.0	173	-	-	174	210	216	0.97	4.1	4.5	4.7
TM-16	522578	03/05/08	7.17	20.6	1351	497	28.9	<0.1	6.80	6.90	<0.01	225	51.7	13.4	30.7	205	<2	<2	205	1030	1000	1.03	15.8	17.2	4.2
TM-16	522578	05/22/08	7.05	20.5	1304	522	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-16	522578	08/06/08	6.67	20.9	1410	466	28.1	<0.1	8.07	8.07	<0.01	215	52.7	13.3	30.0	191	<2	<2	191	1070	955	1.12	15.0	16.7	5.4
TM-19A	522580	03/06/08	8.02	22.2	240	56.1	15.4	0.1	0.26	0.26	<0.01	37.9	11.6	3.0	57.7	119	19	<2	138	280	273	1.03	4.3	5.4	11.3
TM-19A	522580	05/22/08	7.36	24.0	501	64.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-19A	522580	08/06/08	7.32	22.6	494	55.3	15.4	0.1	0.09	0.09	<0.01	37.3	10.8	2.9	53.0	153	5	-	158	270	272	0.99	4.7	5.1	4.1

**TABLE 2**  
**Compilation of Groundwater Monitoring Results For**  
**Inorganic Analytes, pH, Temperature, and Specific Conductance**

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180°C	TDS (calculated)	TDS Ratio (measured/calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
TM-42	562554	03/05/08	7.10	20.8	1342	482	27	0.2	6.55	6.55	<0.01	185	55.8	10.4	37.9	186	<2	<2	186	980	939	1.04	15.1	15.8	2.3
TM-42	562554	05/22/08	7.05	21.4	1270	483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-42	562554	08/06/08	6.69	22.0	1388	467	27.3	0.2	7.20	7.20	<0.01	191	60.7	10.1	38.7	208	<2	<2	208	1010	952	1.04	15.3	16.5	3.8
TM-43	564729	03/03/08	8.57	21.0	341	2.1	7.7	0.3	0.04	0.04	<0.01	10.1	5.7	2.2	79.4	197	20	<2	217	250	246	1.02	4.6	4.5	-1.1
TM-43	564729	08/04/08	8.14	25.7	436	<5	12.0	<1	0.25	0.25	<0.01	10.4	5.8	2.0	79.7	174	12	<2	186	270	227	1.19	4.0	4.5	5.9
TM-43A	564726	03/03/08	6.17	19.9	2788	1420	31	<0.2	0.99	0.99	<0.01	570	181	4.5	42.1	713	<2	<2	713	3000	2680	1.19	45.0	45.0	0.3
TM-43A	564726	08/04/08	6.03	21.6	3149	1320	30.0	<0.2	1.31	1.31	<0.01	577	188	4.7	40.5	658	<2	<2	658	2950	2560	1.15	41.8	46.2	5.0
TM-43B	565004	03/03/08	6.79	20.6	514	0.7	5	<0.1	0.05	0.06	0.01	54.6	23.8	2.9	47.9	338	<2	<2	338	350	338	1.04	6.9	6.8	-0.7
TM-43B	565004	08/05/08	6.89	21.0	507	31.8	4.7	<0.1	0.03	0.03	<0.01	47.5	21.5	2.6	44.9	231	<2	<2	231	300	292	1.03	5.4	6.1	6.1
TM-43B DUP	565004	08/05/08	6.89	21.0	507	32.5	4.7	<0.1	0.11	0.11	<0.01	47.9	21.7	2.5	44.9	234	<2	<2	234	310	295	1.05	5.5	6.2	6.0
TVI 236	802236	03/20/08	7.48	20.0	488	31.3	26	0.1	3.90	3.93	0.03	70.5	9.3	1.9	25.6	178	<2	<2	178	310	289	1.07	5.2	5.4	1.9
TVI 236	802236	05/07/08	7.13	20.4	494	32.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 236	802236	07/15/08	7.39	21.9	532	37.6	23.5	0.2	3.46	3.46	<0.01	70.4	9.3	1.8	26.3	161	11	<2	173	310	292	1.06	5.1	5.4	2.9
TVI 875	568875	02/21/08	7.28	21.1	739	244	20.1	0.2	2.99	2.99	<0.01	120	16.1	2.9	41.1	161	11	<2	172	630	565	1.12	9.3	9.2	-0.5
TVI 875	568875	05/07/08	7.09	21.2	833	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 875	568875	07/15/08	7.27	22.4	925	274	20.2	0.2	3.0	3.0	<0.01	131	17.4	2.8	39.6	148	11	<2	160	640.0	598	1.07	9.7	9.7	0.0
WALKER	200393	02/13/08	7.05	20.2	650	20	4	0.2	2.26	2.26	<0.01	117	14.4	3.6	14.3	355	<2	<2	355	440	396	1.11	7.8	7.7	-0.6
WALKER	200393	07/23/08	7.25	20.7	740	45.4	37.8	0.3	7.24	7.24	<0.01	89	27.9	2.9	28.6	250	7	<2	257	450	421	1.07	7.6	8.0	2.6
WEED	544535	02/14/08	7.74	21.7	323	11.1	9	-	1.72	1.72	<0.02	35.6	14.5	2.2	30.0	162	5	<2	168	230	212	1.08	3.9	4.3	4.9
WEED	544535	05/15/08	7.22	22.7	365	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEED	544535	07/30/08	7.42	32.0	407	11.5	10.1	0.3	1.92	1.92	<0.01	34.1	13.6	2.2	29.4	163	2	<2	165	230	209	1.10	3.9	4.1	2.5
WEISKOPF	641802	02/15/08	7.48	20.0	1072	500	33.1	0.2	4.74	4.74	<0.01	218	31.4	4.3	35.7	177	<2	<2	177	1010	950	1.06	15.3	15.2	-0.3
WEISKOPF	641802	05/07/08	7.10	21.8	1251	483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEISKOPF	641802	07/16/08	7.07	22.2	1399	560	26.0	0.1	4.29	4.29	<0.01	248	34.3	4.4	38.6	170	3	<2	173	1060	1040	1.0	16.3	17.0	2.1
ZANDER	205126	02/04/08	7.24	19.7	392	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	05/06/08	7.26	21.2	404	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	07/16/08	6.92	22.9	441	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:  
All units are in milligrams per liter (mg/l) unless otherwise noted  
deg C = degrees Celsius  
meq/l = milliequivalent per liter  
M = pH Meter Malfunction  
NR = No Record  
- = Not Analyzed  
ND = No Data  
SC = Specific Conductance  
SU = Standard Units  
TDS = Total Dissolved Solids  
µS/cm = microsiemens per centimeter  
<sup>1</sup> Verified drinking water supply well, sample collected for sulfate trend analysis for interim action evaluation

TABLE 3  
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Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation <sup>1</sup> (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
ANDERSON	613396	3468816.065	601134.729	03/20/08	4580.34	145.46	4434.88
ANDERSON	613396	3468816.065	601134.729	05/05/08	4580.34	145.84	4434.50
ANDERSON	613396	3468816.065	601134.729	07/14/08	4580.34	146.16	4434.18
AWC 02	616586	3468549.357	598907.911	04/08/08 <sup>2</sup>	4541	116	4425.00
AWC 02	616586	3468549.357	598907.911	08/27/08	4547.64	121.12	4426.52
AWC 03	616585	3468681.898	599090.322	04/08/08 <sup>2</sup>	4531	112	4419.00
AWC 03	616585	3468681.898	599090.322	08/27/08	4539.52	119.40	4420.12
AWC 04	616584	3468717.084	598949.929	04/08/08 <sup>2</sup>	4531	108	4423.00
AWC 04	616584	3468717.084	598949.929	08/18/08	4540.48	112.56	4427.92
AWC 05	590620	3468541.692	599269.904	04/08/08 <sup>2</sup>	4548	284	4264.00
AWC 05	590620	3468541.692	599269.904	08/27/08	4542.51	299.65	4242.86
BARTON 010	085010	3469047.469	606201.084	05/12/08	4688.95	227.50	4461.45
BARTON 010	085010	3469047.469	606201.084	07/23/08	4688.95	276.06	4412.89
BARTON 919	644919	3469076.689	606243.850	05/12/08	4692.36	113.71	4578.65
BARTON 919	644919	3469076.689	606243.850	07/23/08	4692.36	113.56	4578.80
BANKS 987	647987	3469206.175	606981.921	02/27/08	4648.18	208.00	4440.18
BANKS 987	647987	3469206.175	606981.921	05/12/08	4648.18	216.30	4431.88
BANKS 987	647987	3469206.175	606981.921	07/21/08	4648.18	228.95	4419.23
BF-01	539783	3472151.593	604169.077	03/04/08	4835.23	348.99	4486.24
BF-01	539783	3472151.593	604169.077	05/23/08	4835.23	348.80	4486.43
BF-01	539783	3472151.593	604169.077	08/05/08	4835.23	348.66	4486.57
BIMA	577927	3471852.804	606001.245	05/13/08	4802.05	367.31	4434.74
BIMA	577927	3471852.804	606001.245	08/18/08	4802.05	370.24	4431.81
BMO-2008-1G	909474	3471723.644	606467.681	08/27/08	4805.10	62.05	4743.05
BMO-2008-3B	909147	3467919.582	602012.923	07/18/08	4583.97	138.05	4445.92
BMO-2008-5B	909653	3468994.395	600449.648	09/11/08	4585.73	145.10	4440.63
BMO-2008-5M	909552	3468993.961	600445.302	09/11/08	4585.63	146.65	4438.98
BMO-2008-6B	909146	3469820.644	600366.523	07/16/08	4627.44	190.13	4437.31
BMO-2008-6M	909019	3469813.885	600367.943	07/10/08	4626.90	191.63	4435.27
BMO-2008-7M	908794	3470029.283	603099.165	07/14/08	4688.33	238.31	4450.02
BMO-2008-9M	909255	3471121.675	604668.669	08/08/08	4762.61	287.17	4475.44
BMO-2008-10GU	909272	3471731.866	605267.551	08/04/08	4793.45	299.28	4494.17
BMO-2008-10GL	909435	3471702.043	605264.072	08/20/08	4792.21	521.75	4270.46
BMO-2008-11G	909434	3472626.482	603800.995	08/22/08	4844.67	577.76	4266.91
BURKE	212268	3473029.816	602230.087	04/22/08	4856.30	606.55	4249.75
BURKE	212268	3473029.816	602230.087	08/05/08	4856.30	605.86	4250.44
CAMPBELL	215509	3469320.340	606420.836	02/05/08	4694.29	180.60	4513.69
CAMPBELL	215509	3469320.340	606420.836	05/13/08	4694.29	181.80	4512.49
COB MW-1	903992	3469889.889	603153.259	02/22/08	4683.26	232.47	4450.79
COB MW-1	903992	3469889.889	603153.259	05/20/08	4683.26	233.12	4450.14
COB MW-1	903992	3469889.889	603153.259	07/30/08	4683.26	233.37	4449.89
COB MW-2	903984	3468114.836	600973.257	02/22/08	4566.21	122.85	4443.36
COB MW-2	903984	3468114.836	600973.257	05/20/08	4566.21	123.00	4443.21
COB MW-2	903984	3468114.836	600973.257	07/30/08	4566.21	123.53	4442.68
COB MW-3	906823	3468726.000	599169.225	02/28/08	4538.63	120.84	4417.79
COB MW-3	906823	3468726.000	599169.225	05/20/08	4538.63	125.00	4413.63
COB MW-3	906823	3468726.000	599169.225	07/30/08	4538.63	118.50	4420.13

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Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation <sup>1</sup> (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
COB WL	593116	3472502.012	606357.506	02/22/08	4832.06	56.50	4775.56
COB WL	593116	3472502.012	606357.506	05/20/08	4832.06	57.50	4774.56
COB WL	593116	3472502.012	606357.506	07/30/08	4832.06	58.64	4773.42
COLLINS	565260	3471341.335	602551.286	02/12/08	4733.72	289.47	4444.25
COLLINS	565260	3471341.335	602551.286	05/29/08	4733.72	288.53	4445.19
COLLINS	565260	3471341.335	602551.286	07/31/08	4733.72	290.08	4443.64
COOPER C	637069	3468913.011	601349.987	03/04/08	4595.06	155.08	4439.98
COOPER C	637069	3468913.011	601349.987	05/05/08	4595.06	155.34	4439.72
COOPER C	637069	3468913.011	601349.987	07/15/08	4595.06	156.01	4439.05
DODSON	644927	3469063.772	605594.560	05/12/08	4686.34	81.38	4604.96
DODSON	644927	3469063.772	605594.560	07/24/08	4686.34	82.20	4604.14
DOUGLASS 791	592791	3470222.677	607632.993	02/13/08	4703.27	22.11	4681.16
DOUGLASS 791	592791	3470222.677	607632.993	05/13/08	4703.27	24.60	4678.67
DOUGLASS 791	592791	3470222.677	607632.993	07/22/08	4703.27	27.00	4676.27
DOUGLASS 792	592792	3469829.115	607607.541	02/13/08	4681.73	87.76	4593.97
DOUGLASS 792	592792	3469829.115	607607.541	05/13/08	4681.73	87.21	4594.52
DOUGLASS 792	592792	3469829.115	607607.541	07/22/08	4681.73	86.90	4594.83
EAST	599796	3468712.215	607076.365	02/08/08	4626.01	50.20	4575.81
EAST	599796	3468712.215	607076.365	05/14/08	4626.01	52.45	4573.56
EAST	599796	3468712.215	607076.365	07/23/08	4626.01	52.16	4573.85
EPPELE 641	805641	3469229.942	607165.354	03/11/08	4642.86	29.52	4613.34
EPPELE 641	805641	3469229.942	607165.354	05/12/08	4642.86	30.64	4612.22
EPPELE 641	805641	3469229.942	607165.354	07/21/08	4642.86	25.59	4617.27
GALLANT	502527	3468524.363	607769.640	02/11/08	4599.58	28.32	4571.26
GALLANT	502527	3468524.363	607769.640	07/23/08	4599.58	33.05	4566.53
GARNER 557	558557	3468962.415	602659.240	02/21/08	4626.44	191.05	4435.39
GARNER 557	558557	3468962.415	602659.240	05/05/08	4626.44	191.28	4435.16
GARNER 557	558557	3468962.415	602659.240	07/15/08	4626.44	191.44	4435.00
GARNER 635	587635	3468967.902	602665.352	02/04/08	4628.29	193.20	4435.09
GARNER 635	587635	3468967.902	602665.352	05/05/08	4628.29	195.90	4432.39
GARNER 635	587635	3468967.902	602665.352	07/15/08	4628.29	193.58	4434.71
GGOOSE 547	628547	3469820.260	606256.657	05/21/08	4717.11	220.91	4496.20
GGOOSE 547	628547	3469820.260	606256.657	08/15/08	4717.11	238.48	4478.63
GL-03	539782	3472738.941	608379.424	05/22/08	4840.37	660.15	4180.22
GL-03	539782	3472738.941	608379.424	08/04/08	4840.37	659.79	4180.58
GOAR RANCH	610695	3468892.471	602454.751	02/21/08	4631.13	183.90	4447.23
GOAR RANCH	610695	3468892.471	602454.751	05/05/08	4631.13	188.11	4443.02
GOAR RANCH	610695	3468892.471	602454.751	07/16/08	4631.13	184.41	4446.72
HOBAN	805290	3468880.329	601705.848	02/27/08	4597.21	163.05	4434.16
HOBAN	805290	3468880.329	601705.848	05/07/08	4597.21	163.28	4433.93
HOBAN	805290	3468880.329	601705.848	07/14/08	4597.21	163.87	4433.34
HOWARD	NR	3468768.622	601281.936	03/04/08	4589.70	150.10	4439.60
HOWARD	NR	3468768.622	601281.936	05/08/08	4589.70	150.70	4439.00
HOWARD	NR	3468768.622	601281.936	07/14/08	4589.70	150.91	4438.79
KEEFER	209744	3468119.015	599879.175	02/06/08	4572.03	134.67	4437.36
KEEFER	209744	3468119.015	599879.175	05/06/08	4572.03	135.28	4436.75
KEEFER	209744	3468119.015	599879.175	07/16/08	4572.03	136.24	4435.79



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Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation <sup>1</sup> (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
MCCONNELL 265	539265	3468840.139	601463.094	02/20/08	4600.70	156.15	4444.55
MCCONNELL 265	539265	3468840.139	601463.094	05/06/08	4600.70	156.40	4444.30
MCCONNELL 265	539265	3468840.139	601463.094	07/15/08	4600.70	157.07	4443.63
METZLER	35-71891	3471381.176	602091.308	03/05/08	4728.53	288.30	4440.23
METZLER	35-71891	3471381.176	602091.308	05/15/08	4728.53	286.53	4442.00
METZLER	35-71891	3471381.176	602091.308	07/31/08	4728.53	286.82	4441.71
MINOR 317	633317	3468568.043	601172.150	02/12/08	4578.86	135.30	4443.56
NESS	509127	3471419.494	607866.391	07/24/08	4761.23	557.90	4203.33
NOTEMAN	212483	3471576.400	606053.800	05/13/08	4800.68	339.77	4460.91
NOTEMAN	212483	3471576.400	606053.800	08/27/08	4800.68	344.34	4456.34
OSBORN	643436	3470270.548	607031.823	05/13/08	4711.95	68.65	4643.30
OSBORN	643436	3470270.548	607031.823	08/05/08	4711.95	69.53	4642.42
PARRA	576415	3471263.549	602170.716	05/15/08	4727.21	279.78	4447.43
PARRA	576415	3471263.549	602170.716	08/18/08	4727.21	280.06	4447.15
PIONKE	613395	3468960.981	601045.471	07/17/08	4592.13	149.88	4442.25
POOL	509518	3470013.823	599683.603	02/20/08	4639.09	204.22	4434.87
POOL	509518	3470013.823	599683.603	05/19/08	4639.09	204.72	4434.37
POOL	509518	3470013.823	599683.603	07/31/08	4639.09	205.56	4433.53
POWER	624535	3472738.941	608379.424	02/12/08	4840.37	42.30	4798.07
POWER	624535	3472738.941	608379.424	07/22/08	4840.37	42.82	4797.55
RAY	803772	3469195.147	607083.422	02/15/08	4647.91	40.85	4607.06
RAY	803772	3469195.147	607083.422	05/13/08	4647.91	43.82	4604.09
RAY	803772	3469195.147	607083.422	07/29/08	4647.91	45.25	4602.66
ROGERS E	216018	3467636.029	600449.648	07/17/08	4590.66	149.65	4441.01
ROGERS 803	641803	3468417.386	600977.690	02/07/08	4579.02	129.85	4449.17
ROGERS 803	641803	3468417.386	600977.690	07/29/08	4579.02	131.86	4447.16
RUIZ	531770	3471424.219	602857.357	02/05/08	4735.18	293.29	4441.89
RUIZ	531770	3471424.219	602857.357	05/15/08	4735.18	293.57	4441.61
RUIZ	531770	3471424.219	602857.357	07/30/08	4735.18	293.86	4441.32
SCHWARTZ	210865	3468268.057	600811.529	02/08/08	4551.58	121.80	4429.78
SCHWARTZ	210865	3468268.057	600811.529	05/19/08	4551.58	123.49	4428.09
SCHWARTZ	210865	3468268.057	600811.529	07/29/08	4551.58	122.64	4428.94
SRC	211345	3472505.400	599723.300	04/23/08	4807.37	541.10	4266.27
SRC	211345	3472505.400	599723.300	08/05/08	4807.37	543.70	4263.67
STEPHENS	808560	3469072.799	606981.766	05/13/08	4651.22	44.94	4606.28
STEPHENS	808560	3469072.799	606981.766	08/05/08	4651.22	46.61	4604.61
SUNBELT	201531	3471735.149	605998.250	02/06/08	4806.52	352.10	4454.42
SUNBELT	201531	3471735.149	605998.250	05/15/08	4806.52	358.97	4447.55
SUNBELT	201531	3471735.149	605998.250	08/05/08	4806.52	Dry	<4426
SWAN	NR	3470648.298	607378.547	02/13/08	4716.59	26.50	4690.09
SWAN	NR	3470648.298	607378.547	05/14/08	4716.59	30.69	4685.90
SWAN	NR	3470648.298	607378.547	07/24/08	4716.59	32.06	4684.53
TM-02A	522574	3472008.794	604152.059	03/04/08	4808.43	346.62	4461.81
TM-02A	522574	3472008.794	604152.059	05/23/08	4808.43	346.16	4462.27
TM-02A	522574	3472008.794	604152.059	08/15/08	4808.43	353.91	4454.52
TM-03	522575	3473711.046	606366.130	03/12/08	4897.85	127.14	4770.71
TM-03	522575	3473711.046	606366.130	05/20/08	4897.85	127.40	4770.45
TM-03	522575	3473711.046	606366.130	08/06/08	4897.85	128.02	4769.83

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Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation <sup>1</sup> (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
TM-06 MILLER	522695	3468376.658	606055.975	02/26/08	4707.88	158.78	4549.10
TM-06 MILLER	522695	3468376.658	606055.975	05/20/08	4707.88	158.76	4549.12
TM-06 MILLER	522695	3468376.658	606055.975	08/04/08	4707.88	158.80	4549.08
TM-14 NELSON	522816	3470111.613	599624.302	02/08/08	4643.48	211.79	4431.69
TM-14 NELSON	522816	3470111.613	599624.302	07/16/08	4643.48	Dry	<4433
TM-15 MILLER	522699	3471427.504	599617.331	02/27/08	4729.26	294.90	4434.36
TM-16	522578	3469842.199	605588.075	03/05/08	4717.71	81.00	4636.71
TM-16	522578	3469842.199	605588.075	05/22/08	4717.71	81.24	4636.47
TM-16	522578	3469842.199	605588.075	08/06/08	4717.71	81.65	4636.06
TM-19A	522580	3469197.426	602458.710	03/06/08	4645.87	199.85	4446.02
TM-19A	522580	3469197.426	602458.710	05/22/08	4645.87	199.50	4446.37
TM-19A	522580	3469197.426	602458.710	08/06/08	4645.87	199.19	4446.68
TM-42	562554	3469104.903	603698.271	03/05/08	4666.67	211.04	4455.63
TM-42	562554	3469104.903	603698.271	05/22/08	4666.67	210.98	4455.69
TM-42	562554	3469104.903	603698.271	08/06/08	4666.67	211.55	4455.12
TM-43	564729	3474670.811	605365.062	03/03/08	4971.44	149.05	4822.39
TM-43	564729	3474670.811	605365.062	08/04/08	4971.44	148.70	4822.74
TM-43A	564726	3474661.168	605358.451	03/03/08	4969.95	133.71	4836.24
TM-43A	564726	3474661.168	605358.451	08/04/08	4969.95	133.71	4836.24
TM-43B	565004	3474379.892	605814.018	03/03/08	4922.18	64.00	4858.18
TM-43B	565004	3474379.892	605814.018	08/05/08	4922.18	65.21	4856.97
TVI 236	802236	3467978.431	600552.215	05/07/08	4561.98	123.30	4438.68
TVI 236	802236	3467978.431	600552.215	07/15/08	4561.98	121.55	4440.43
TVI 713	567713	3468412.946	600729.095	05/07/08	4567.22	127.10	4440.12
TVI 713	567713	3468412.946	600729.095	07/14/08	4567.22	126.30	4440.92
WALKER	200393	3468577.472	607564.689	02/13/08	4601.55	25.20	4576.35
WALKER	200393	3468577.472	607564.689	07/23/08	4601.55	42.65	4558.90
WEISKOPF	641802	3468658.855	601154.951	02/15/08	4586.89	143.31	4443.58
WEISKOPF	641802	3468658.855	601154.951	05/07/08	4586.89	143.90	4442.99
WEISKOPF	641802	3468658.855	601154.951	07/16/08	4586.89	144.22	4442.67
ZANDER	205126	3467998.486	599678.880	02/04/08	4580.94	144.85	4436.09
ZANDER	205126	3467998.486	599678.880	05/06/08	4580.94	145.33	4435.61
ZANDER	205126	3467998.486	599678.880	07/16/08	4580.94	146.40	4434.54

Notes:

<sup>1</sup> Survey Source: Hydro Geo Chem, Inc. (measuring point elevation = top of well casing)

<sup>2</sup> Based on digital elevation model (DEM) AWC, Responses to City of Bisbee's Aquifer Protection Permit P-100983 and AZPDES Permit No. AZ0025275 (2006)

ft amsl = feet above mean sea level

UTM = Universal Transverse Mercator Zone 12 Band R

**TABLE 4**  
Well Completion Depth, Screen Interval,  
and Screened Lithology

Well Name	ADWR 55 Registry No.	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Screened Formation Lithology	Depth to Morita Formation (ft bgs)	Depth to Glance Conglomerate (ft bgs)	Comments
ANDERSON	613396	4580.34	236	ND	QTbf	NA	NA	No Log
AWC 02	616585	4541 <sup>1</sup>	330	100-215	QTbf	NA	NA	Geologic Log
AWC 03	616585	4538 <sup>1</sup>	269	83-269	QTbf	NA	NA	Geologic Log
AWC 04	590620	4531 <sup>1</sup>	250	ND	QTbf	NA	NA	Geologic Log
AWC 05	590620	4548 <sup>1</sup>	1183	163-603 623-1163	Km / Volcanics	400	No Glance	Geologic Log
BANKS 986	647986	ND	445	ND	Km <sup>3</sup>	31	NA	No Log
BANKS 987	647987	4648.18	339	ND	Km <sup>3</sup>	ND	NA	No Log
BARTON 010	085010	4688.95	300	180-300	Km <sup>3,4</sup>	ND	NA	Geologic Log
BARTON 919	644919	4692.36	130	ND	QTbf <sup>3</sup>	NA	NA	Geologic Log
BF-01	539783	4835.23	400	325-385	QTbf / Km / Kg	350	380	Geologic Log
BIMA	577927	4802.05	465	345-465	Km <sup>3,4</sup>	ND	ND	Red Rock, Red Shale
BLOMMER	633472	4735.61	380	ND	Km <sup>2</sup>	245	NA	No Log
BMO-2008-1G	909474	4805.10	310	180-300	Kg	40	170	Geologic Log
BMO-2008-3B	909147	4583.97	260	150-250	QTbf	NA	NA	Geologic Log
BMO-2008-5B	909653	4585.73	290	140-280	QTbf	NA	NA	Geologic Log
BMO-2008-5M	909552	4585.63	450	340-440	Km	290	No Glance	Geologic Log
BMO-2008-6B	909146	4627.44	265	195-255	QTbf	NA	NA	Geologic Log
BMO-2008-6M	909019	4626.90	450	340-440	Km	270	NA	Geologic Log
BMO-2008-7M	908794	4688.33	670	560-660	Km	490	NA	Geologic Log
BMO-2008-9M	909255	4792.21	775	665-765	Km	130	NA	Geologic Log
BMO-2008-10GU	909272	4793.45	449	239-439	Kg	No Morita	100	Geologic Log
BMO-2008-10GL	909435	4792.21	820	700-800	Kg	No Morita	100	Geologic Log
BMO-2008-11G	909434	4844.67	760	650-750	Kg	240	490	Geologic Log
BULLARD	602134	4730 <sup>3</sup>	300	215-300	QTbf	NA	NA	No Log
BURKE	212268	4856.30	781	661-781	Km	150	NA	Red shale
CAMPBELL	215509	4694.29	350	20-350	Km <sup>2,3</sup>	ND	NA	No Log
CHAMBERS	629807	ND	245	ND	QTbf	NA	NA	No Log
COB MW-1	903992	4883.26	420	350-410	QTbf	NA	NA	Geologic Log
COB MW-2	903984	4566.21	170	92-152	QTbf	NA	NA	Geologic Log
COB MW-3	906823	4538.63	269	83-269	QTbf	NA	NA	Geologic Log
COB WL	593116	4832.06	150	90-150	Kg <sup>3,4</sup>	No Morita	36	Geologic Log
COLLINS	565260	4733.72	320	260-320	Km <sup>2</sup>	ND	NA	Conglomerate

TABLE 4  
Well Completion Depth, Screen Interval,  
and Screened Lithology

Well Name	ADWR 55 Registry No.	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Screened Formation Lithology	Depth to Morita Formation (ft bgs)	Depth to Glance Conglomerate (ft bgs)	Comments
COOPER	623564	ND	325	ND	QTbf	NA	NA	No Log
COOPER C	637069	4595.06	220	ND	QTbf	NA	NA	No Log
DODSON	644927	4686.34	200	ND	Km	ND	NA	No Log
DOUGLASS 791	592791	4703.27	200	0-200	Kg <sup>3,4</sup>	No Morita	4	Conglomerate
DOUGLASS 792	529792	4681.73	200	0-200	Kg <sup>3,4</sup>	No Morita	4	Conglomerate
EAST	599796	4626.01	125	85-125	Km <sup>3</sup>	20	NA	Geologic Log
EPPELE 641	805641	4642.86	265	ND	Km <sup>3</sup>	ND	NA	Geologic Log
FRANCO	500101	4620.51 <sup>3</sup>	200	180-200	QTbf	NA	NA	Geologic Log
FULTZ	212447	ND	300	200-300	Km <sup>3,4</sup>	10	NA	Sand, Volcanic
GALLANT	502527	4599.58	190	40-60 80-140	Km <sup>3,4</sup>	5	NA	Brown and Red Sandstone
GARNER 557	558557	4626.44	300	180-300	QTbf	NA	NA	Geologic Log
GARNER 635	587635	4628.29	680	580-660	Km	540	NA	Geologic Log
GGOOSE 546	628546	4700.51 <sup>3</sup>	800	ND	Km <sup>2</sup>	ND	ND	No Log
GGOOSE 547	628547	4717.11	800	ND	Km <sup>2</sup>	ND	ND	No Log
GL-03	539782	4924.31	820	780-820	Kg <sup>4</sup>	No Morita	175	Geologic Log
GOAR RANCH	610695	4631.13	250	ND	QTbf	NA	NA	No Log
HOBAN	805290	4597.21	316	ND	QTbf	NA	NA	No Log
HOWARD	NR	4589.7	200	ND	QTbf	NA	NA	No ADWR Record
KEEFER	209744	4572.03	245	185-245	QTbf	NA	NA	Geologic Log
MCCONNELL 265	539265	4600.7	216	174-216	QTbf	NA	NA	Geologic Log
METZLER	35-71891	4728.53	351	245-345	Km <sup>2</sup>	ND	NA	No Log
MINOR 317	063317	4578.86	155	ND	QTbf	NA	NA	No Log
MOORE	538847	ND	220	180-220	QTbf	NA	NA	Geologic Log
NESS	509127	4761.23	812	20-812 <sup>6</sup>	Km	20	NA	Conglomerate, Limestone, sandstone and shale
NOTEMAN	212483	4800.68	400	0-400	Km <sup>2</sup>	ND	ND	No Log
NSD 02	527587	4527 <sup>5</sup>	120	75-115	QTbf	NA	NA	Geologic Log
NSD 03	527586	4515 <sup>5</sup>	100	55-95	QTbf	NA	NA	Geologic Log
NWC 01	627682	ND	215	ND	QTbf	NA	NA	Geologic Log
NWC 02R	562944	4590 <sup>1</sup>	312	212-312	QTbf	NA	NA	Geologic Log
NWC 03R	203321	ND	312	252-312	QTbf	NA	NA	Geologic Log
NWC 04	551849	4685 <sup>1</sup>	462	322-462	Km	NA	NA	Geologic Log
NWC 05	627696	4687.71 <sup>1</sup>	175	ND	QTbf	NA	NA	Geologic Log

TABLE 4  
Well Completion Depth, Screen Interval,  
and Screened Lithology

Well Name	ADWR 55 Registry No.	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Screened Formation Lithology	Depth to Morita Formation (ft bgs)	Depth to Glance Conglomerate (ft bgs)	Comments
NWC 06	575700	ND	410	180-340	QTbf	NA	NA	Geologic Log
OSBORN	643436	4711.95	150	122-258	Kg	150	NA	Geologic Log
PALMER	578819	ND	220	122-258	Km <sup>3,4</sup>	80	NA	Geologic Log
PANAGAKOS	35-76413	ND	200	141-200	Km <sup>3,4</sup>	NA	NA	Geologic Log
PARRA	576415	4727.21	355	255-355	Km <sup>2</sup>	ND	NA	Gravel, Rock, Sand, Clay
PIONKE	613395	ND	300	ND	QTbf	NA	NA	No Log
POOL	509518	4639.09	313	213-300	QTbf	NA	NA	Geologic Log
POWER	624535	4840.37	100	60-99	Kg <sup>3</sup>	ND	ND	No Log
RAMIREZ	216425	ND	300	250-300	QTbf	NA	NA	No Log
RAY	803772	4647.91	100	ND	Km <sup>3</sup>	ND	NA	No Log
ROGERS 803	641803	4579.02	140	ND	QTbf <sup>2</sup>	NA	NA	No Log
ROGERS E	216018	ND	290	240-285	QTbf <sup>2</sup>	NA	NA	Brown Rock
RUIZ	531770	4735.18	312	252-312	QTbf / Km	265	NA	Reddish Brown Sedimentary
SCHWARTZ	210865	4551.58	305	260-305	QTbf	NA	NA	Geologic Log
SRC	211345	4810.12	965	845-965	Km <sup>2</sup>	500	NA	Red Shale
STEPHENS	808560	4651.22	NR	ND	Km <sup>2</sup>	ND	ND	No ADWR Record
SUNBELT	201531	4806.52	380	300-380	Km / Kg <sup>2</sup>	2	320	Red Clay and Conglomerate
SWAN	NR	4716.59	150	38-110	Kg <sup>2</sup>	ND	ND	No ADWR Record
TM-02A	522574	4808.43	925	825-925	Kg <sup>3</sup>	345	640	Geologic Log
TM-03	522575	4897.85	200	150-200	Kg	NA	32	Geologic Log
TM-05 MILLER	522694	4598.06 <sup>3</sup>	160	120-160	QTbf <sup>4,5</sup>	NA	NA	Geologic Log
TM-06 MILLER	522695	4707.88	200	150-200	Km <sup>4,5</sup>	15	NA	Geologic Log
TM-07	522576	4768.93 <sup>3</sup>	350	259-349	Km <sup>4,5</sup>	195	NA	Geologic Log
TM-08 SWAN	522817	4725.44	817	757-817	Kg <sup>3</sup>	No Morita	60	Geologic Log
TM-11 PIONKE	522815	4573.1 <sup>3</sup>	160	99-159	QTbf <sup>4,5</sup>	NA	NA	Geologic Log
TM-12 MILLER	522697	4589.44 <sup>3</sup>	175	121-171	QTbf <sup>4,5</sup>	NA	NA	Geologic Log
TM-13 MILLER	522698	4617.29 <sup>3</sup>	200	140-200	QTbf <sup>4,5</sup>	NA	NA	Geologic Log
TM-14 NELSON	522816	4643.48	215	165-215	QTbf <sup>4,5</sup>	NA	NA	Geologic Log
TM-15 MILLER	522699	4729.26	325	260-320	Km <sup>4,5</sup>	220	NA	Geologic Log
TM-16	522578	4717.71	115	65-115	Km <sup>3,4,5</sup>	40	NA	Geologic Log
TM-19A	522580	4645.87	700	585-695	Km <sup>3,4</sup>	535	NA	Geologic Log
TM-41	562555	4774.58	210	145-200	Km <sup>4</sup>	95	NA	Geologic Log
TM-42	562554	4666.67	250	180-240	Km <sup>4</sup>	65	NA	Geologic Log

**TABLE 4**  
Well Completion Depth, Screen Interval,  
and Screened Lithology

Well Name	ADWR 55 Registry No.	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Screened Formation Lithology	Depth to Morita Formation (ft bgs)	Depth to Glance Conglomerate (ft bgs)	Comments
TM-43	564729	4971.44	830	720-800	Km <sup>4</sup>	170	NA	Geologic Log
TM-43A	564726	4969.95	215	130-190	QTbf / Km <sup>4</sup>	150	NA	Geologic Log
TM-43B	565004	4922.18	215	150-190	Km <sup>4</sup>	80	NA	Geologic Log
TVI 236	802236	4561.98	222	ND	QTbf	NA	NA	No Log
TVI 713	567713	4567.22	200	80-144	QTbf <sup>2</sup>	NA	NA	Geologic Log
TVI 875	568875	ND	330	166-320	QTbf	NA	NA	Geologic Log
WALKER	200393	4601.55	120	80-100	Km <sup>3,4</sup>	18	NA	Geologic Log
WEED	544535	4675 <sup>3</sup>	320	280-320	Km / Kg	270	317	Geologic Log
WEISKOPF	641802	4586.89	200	ND	QTbf <sup>2</sup>	NA	NA	No Log
ZANDER	205126	4580.94	280	220-260	QTbf	NA	NA	Geologic Log

**Notes:**

*ADWR = Arizona Department of Water Resources*

*ft amsl = feet above mean sea level*

*ft bgs = feet below ground surface*

*QTbf = Quaternary-Tertiary basin fill*

*Km = Cretaceous Morita Formation*

*Kg = Cretaceous Glance Conglomerate*

*ND = No Data*

*NA = Not Applicable*

*NR = No Record*

<sup>1</sup> *Based on USGS topographic map*

<sup>2</sup> *Formation estimated based on well completion depth and lithology of nearby wells*

<sup>3</sup> *Based on Well Depth and Geology Map, Hayes and Landis (1964)*

<sup>4</sup> *Based on Well Drillers Report to ADWR (1994)*

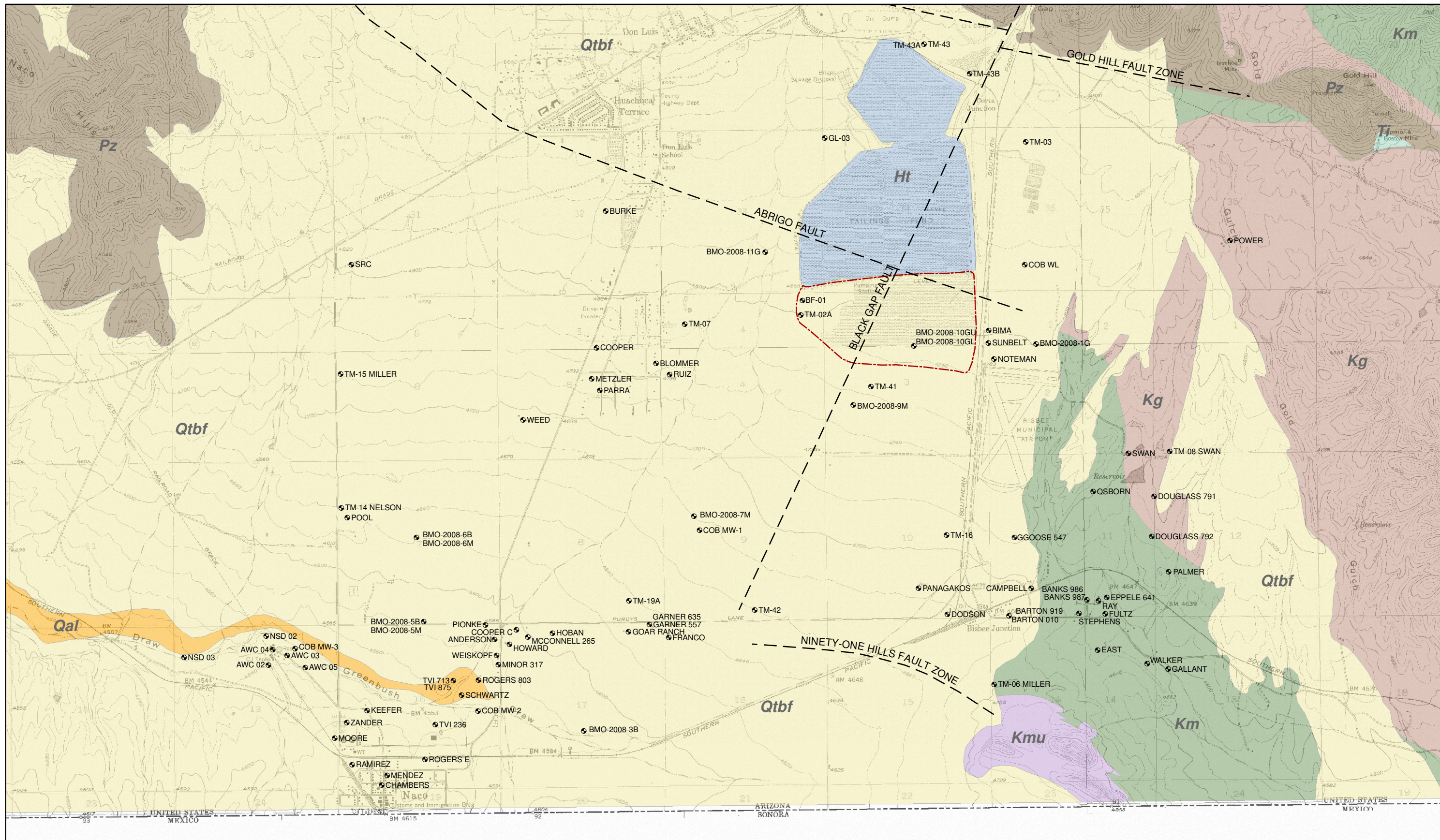
<sup>5</sup> *Based on Geologic Log in Phelps Dodge, Aquifer Protection Permit Application, Cochise County, Arizona. (1990)*

<sup>6</sup> *Open hole*

## FIGURES



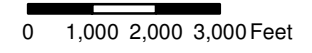




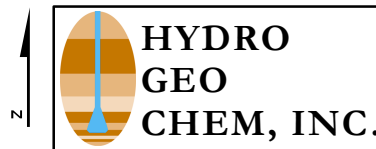
- Legend**
- Well ID
  - Faults
  - ▭ Former Evaporation Ponds

- Recent Alluvium**
- Ht Holocene Tailings
  - Qal Quaternary Alluvium
- Basin Fill**
- Qtbf Quaternary - Tertiary Basin Fill
- Bedrock Complex**
- Ti Tertiary Intrusive

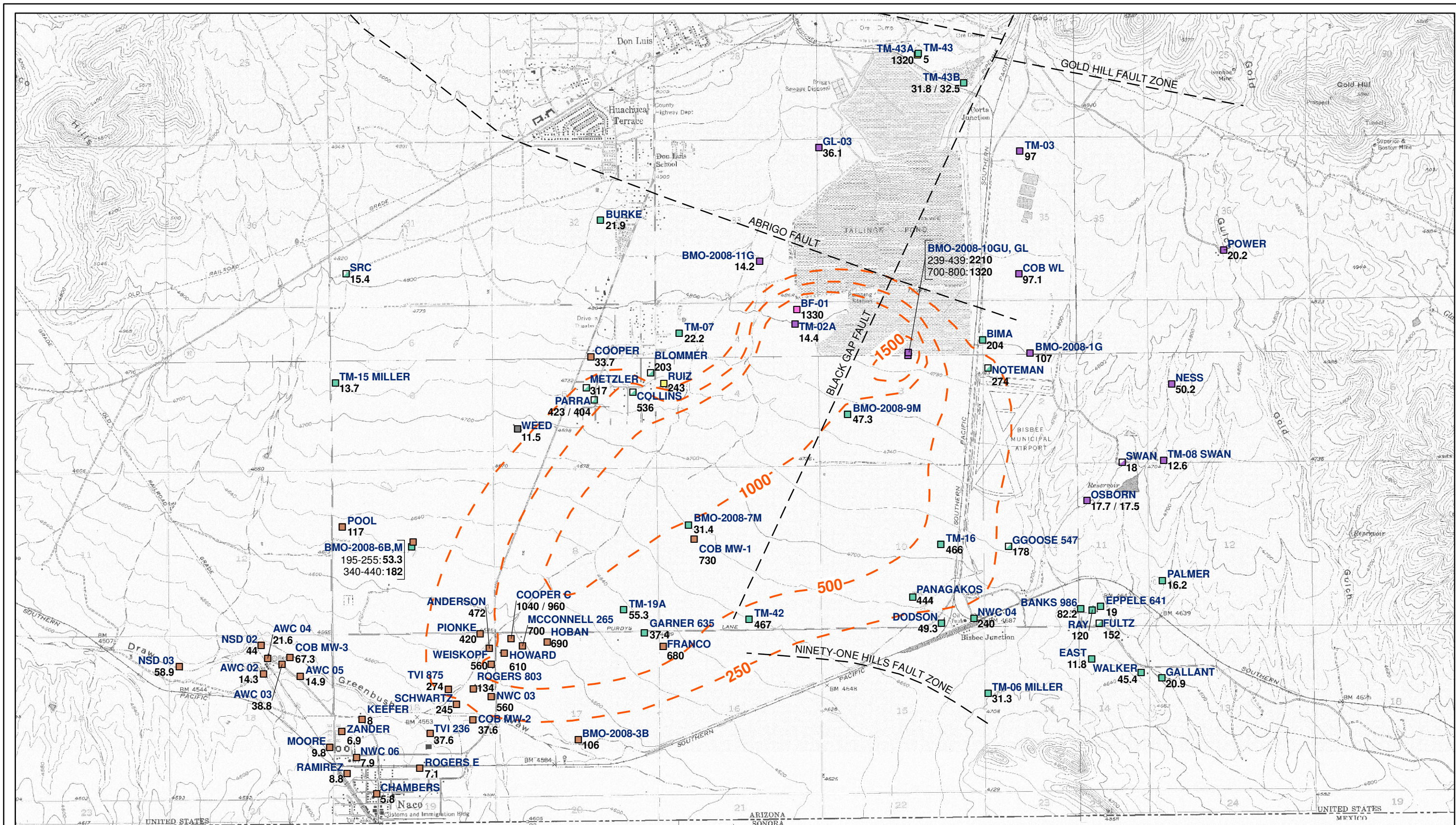
- Cretaceous Bisbee Group**
- Kmu Mural Limestone
  - Km Morita Formation
  - Kg Glance Conglomerate
  - Pz Paleozoic Sedimentary Formations, Undifferentiated



PROJECTION:  
UTM Zone 12N NAD83

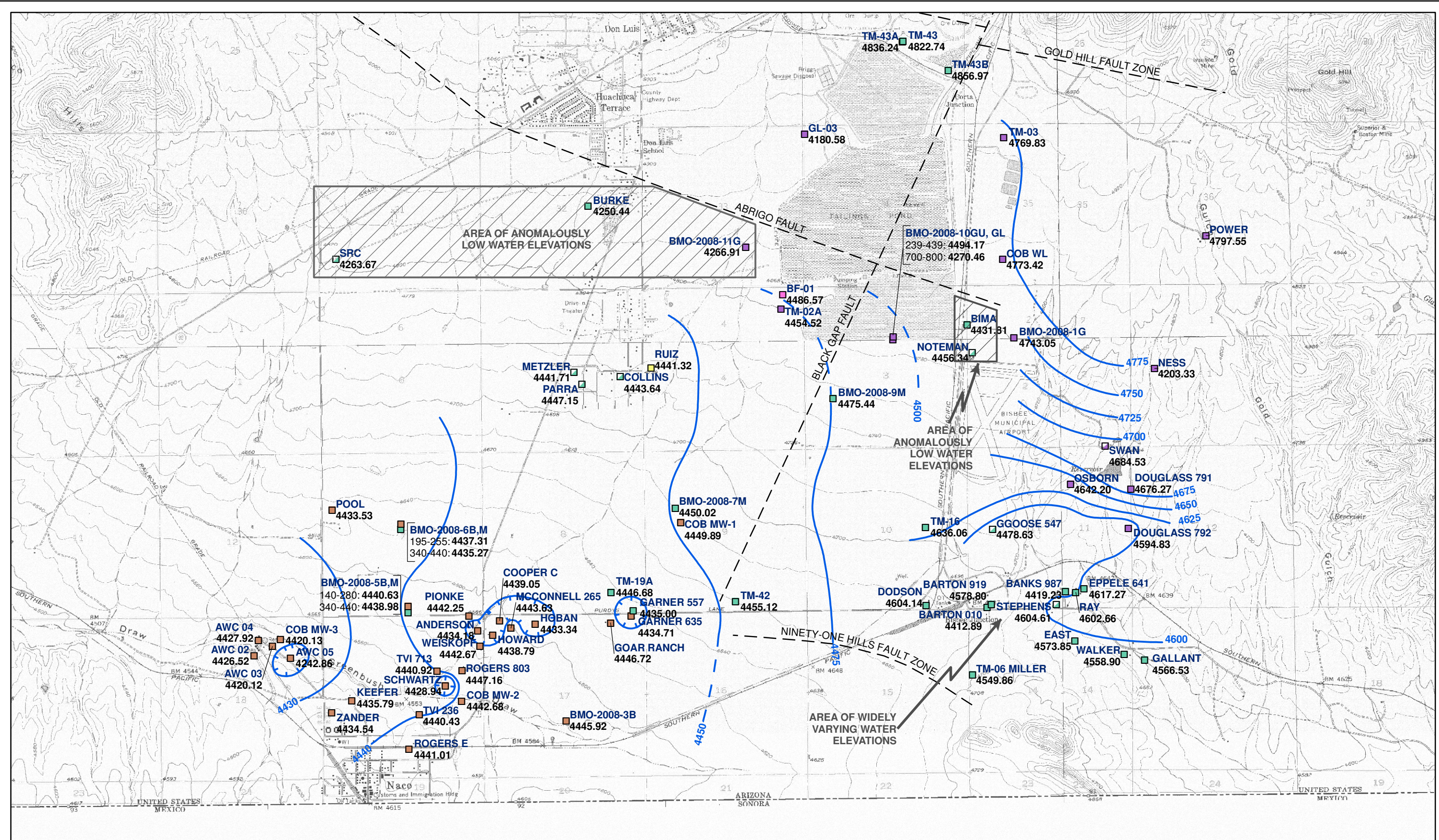


GENERALIZED GEOLOGY AND WELL LOCATIONS					
Approved	Date	Author	Date	File Name	Figure
DRS	10/09/08	RAM	10/09/08	8720107G	1



NOTE: Sulfate results for Naco Water Company (NWC) from March 2008.

<b>Legend</b> ■ <b>TM-19A</b> Well ID 56.1 Sulfate Concentration (mg/L) -250- Sulfate Isohyet (mg/L) --- Faults (inferred)		Co-located Wells ■ Well ID Screen (ft bgs): Sulfate Concentration (mg/L)		Screened Formation ■ Basin Fill ■ Basin Fill and Morita Formation ■ Basin Fill, Morita Formation and Glance Conglomerate ■ Morita Formation		■ Morita Formation- Estimated ■ Morita Formation and Glance Conglomerate ■ Glance Conglomerate ■ Glance Conglomerate-Estimated		0 1,000 2,000 3,000 Feet PROJECTION: UTM Zone 12N NAD83				<b>SULFATE CONCENTRATIONS FOR THIRD QUARTER 2008</b>			
Approved	Date	Author	Date	File Name	Figure										
DRS	10/20/08	RAM	10/20/08	8720102G	2										



<b>Legend</b> TVI-713 Well ID 4440.92 Groundwater Elevation (ft amsl) Groundwater Elevation Contours (dashed where inferred) Groundwater Depression		Faults (inferred) Co-located Wells Well ID Screen (ft bgs): Water Elevation (ft amsl)		<b>Screened Formation</b> Basin Fill Basin Fill and Morita Formation Basin Fill, Morita Formation and Glance Conglomerate Morita Formation		Morita Formation - Estimated Morita Formation and Glance Conglomerate Glance Conglomerate Glance Conglomerate - Estimated		0 1,000 2,000 3,000 Feet PROJECTION: UTM Zone 12N NAD83				<b>GROUNDWATER ELEVATIONS FOR          THIRD QUARTER 2008</b>				
Approved DRS		Date 10/23/08		Author RAM		Date 10/23/08		File Name 8720105G				Figure 3				



**APPENDIX A**

**THIRD QUARTER 2008  
DATA VERIFICATION REPORT**

**APPENDIX A**

**THIRD QUARTER 2008**  
**DATA VERIFICATION REPORT**

Prepared for:

**FREEMPORT-MCMORAN**  
**COPPER QUEEN BRANCH**  
36 West Highway 92  
Bisbee, Arizona 85603

Prepared by:

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October 27, 2008



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### **APPENDIX**

- A.1 Arizona Land Specialists, Inc. Well Survey

## 1. INTRODUCTION

This report summarizes the data verification review of groundwater samples collected and analyzed during the third quarter 2008 (Q3-2008) by Hydro Geo Chem, Inc. (HGC) pursuant to Mitigation Order on Consent Docket No. P-121-07 (MO) (ADEQ, 2007). HGC collected groundwater samples from wells identified in Table 1 of the Work Plan (HGC, 2008a) and groundwater samples collected as part of the well inventory investigation (HGC, 2008b). All analytical results for groundwater samples collected for this project during the third quarter of 2008 were provided to HGC by Naco Sanitary District (NSD), Naco Water Company (NWC) or ACZ Laboratories, Inc. (ACZ) for preparation of the Third Quarter 2008 Groundwater Monitoring Report. Data verification for samples collected and analyzed by others entities and reported by HGC is not provided in this report.

Quality assurance (QA) and quality control (QC) procedures are specified in the *Quality Assurance Project Plan for Aquifer Characterization Plan (QAPP)* (Appendix F of HGC, 2008a) for field sampling, chain-of-custody (COC) documentation, laboratory analysis, and reporting. This report reviews field sampling for samples collected by HGC. Additionally, sample handling and laboratory QA/QC data are evaluated according to the data quality indicators (DQIs) given in the QAPP.

Appendix C of the main text of this report contains laboratory reports for Q3-2008 samples collected by HGC including COC forms, laboratory correspondence, QC summaries, data qualifiers, and any case narratives. The Q3-2008 analytical results for all 102 samples

collected by HGC are contained in 28 reports having the ACZ Project numbers identified in Table A.1.

The results of the internal QA/QC tests performed by ACZ are presented with the laboratory reports included in Appendix C. Based on the results of surrogate spike recoveries, matrix spike/recovery and matrix spike duplicate tests, ACZ did not advise HGC of any modifications that should be made regarding the usability and data validation status of the laboratory test results.

## 2. HGC FIELD OPERATIONS

Field operations for this project consisted of the following for all monitoring wells sampled by HGC:

- Static water level measurement,
- Well purging,
- Collection of water quality field parameters (pH in standard units [SU], specific conductance [SC] in microsiemens per centimeter [ $\mu\text{S}/\text{cm}$ ], and temperature in degrees Celsius [ $^{\circ}\text{C}$ ]),
- Collection of groundwater samples for water quality analysis,
- Collection of groundwater quality assurance and quality control samples, and
- Equipment decontamination.

Documentation of the field activities was evaluated for quality assurance and has been deemed to have met the documentation requirements stated in the QAPP.

### 2.1 Water Level Monitoring

Static water level measurements were attempted at each well that was sampled and at all wells where water level monitoring was conducted by HGC. Water levels were measured while the well pump was off however, it was not always possible to ascertain from the well owners how long the pump had been off. Before measuring the water level at each well, the battery on the water level indicator was checked and the sensitivity level was adjusted, if necessary. Each measurement was collected and verified by measuring the depth to water multiple times in order to obtain a consistent reading and accurate measurement.

## 2.2 Groundwater Sampling

During this monitoring period groundwater samples were collected from wells designated for sampling in the semi-annual regional monitoring schedule and well inventory tasks of the Work Plan. More detailed information regarding the wells sampled for water quality and water level measurements is listed in Table 1 of the main text.

### 2.2.1 Pre-Sampling Field Activities

On each day of sampling, the pH<sup>1</sup> and SC<sup>2</sup> probe was calibrated. In addition, the water level indicator was checked for a signal, which indicates a working meter and sufficient battery strength. On each day where sampling extended for more than half a day, a mid-day calibration check was performed on the pH and SC probe to ensure accurate measurement.

In addition to calibrating the instruments each day, measures were taken to 1) properly decontaminate field equipment, 2) ensure the appropriate storage and transport temperature of the samples, and 3) document activities related to the collection of groundwater samples as part of this project. These objectives were met by 1) replenishing or obtaining supplies of deionized water and ice daily, 2) use of the proper preservative and sample collection containers, 3) properly packing the samples on ice during field activities, 4) using deionized water to properly decontaminate field equipment prior to the start of sampling each day and after sampling at each

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<sup>1</sup> Field pH meter was calibrated using a two point calibration and pH buffers 4 and 7

<sup>2</sup> Field SC meter was calibrated using a standard stock solution of 1413  $\mu\text{S}/\text{cm}$

well, and 5) obtaining the appropriate field notebook in order to document field activities related to the groundwater monitoring program.

### 2.2.2 Well Purging, Field Measurements, and Sample Collection

Ideally, three wetted casing volumes were purged from each well prior to sampling. However, when three casing volumes could not be purged, this information was noted on the groundwater sampling form (Appendix C) at each well for which this was the case. Purge water was discharged to the ground surface.

Field measurements were collected at varying intervals during well purging at each well where a water quality sample was collected. Field parameters were monitored until a consistent measurement was obtained.

During this monitoring period, filtered and unfiltered groundwater samples were collected for analysis from 78 plume monitor wells. Groundwater for filtered and unfiltered samples was collected using a single container to collect an initial sample for separation into bottles for filtered and unfiltered analyses. After collecting the initial sample, the unfiltered sample was collected by pouring a 500 milliliter (mL) aliquot of the initial sample into a non-preserved bottle for alkalinity analysis. Then each filtered sample was collected by filtering the remaining portion of the initial sample into a 250 mL bottle using a clean filtration apparatus and one unused, disposable 0.45-micron filter. All bottles were provided by ACZ. Bottles were

checked for the correct preservative and maintained in a clean and secure work area, until used in the field.

### 2.2.3 Post-Sampling Field Activities

Post sampling field activities consisted of equipment decontamination, sample storage, and sample shipping. Field equipment that comes into contact with the sample was decontaminated using a small amount of Alconox<sup>®</sup> detergent and deionized water. After washing, the equipment was rinsed thoroughly with de-ionized water.

After sample collection, samples from each well were placed into a plastic bag and stored on ice until they could be packed securely for shipping to ACZ. In addition, each set of samples collected from each well was individually bagged (without ice) to prevent the label from getting soaked with water and rubbing off or becoming illegible.

## **2.3 Well Survey**

On August 6 and September 11, 2008, measuring point elevation surveys were completed for wells NESS, PIONKE, ROGERS E, Arizona Water Company (AWC) AWC02, AWC03, AWC04, AWC05, and the newly installed Bisbee Mitigation Order (BMO) wells BMO-2008-1G, BMO-2008-3B, BMO-2008-3M, BMO-2008-5B, BMO-2008-5M, BMO-2008-6B, BMO-2008-6M, BMO-2008-7M, BMO-2008-9M, BMO-2008-10GU, BMO-2008-10GL, and BMO-

2008-11G. The surveys were conducted by Arizona Land Specialists, Inc. (ALS). These data are shown in Table 3 and Figure 2 of the main report.





### 3. SAMPLE HANDLING

All samples collected by HGC were shipped to ACZ for analysis. COC documentation accompanied all samples submitted and included the sample name, collection date and time. COCs contained in laboratory reports included the date and time the samples were received by ACZ. As noted on the analytical data reports from ACZ, all of the sample bottles were received intact, properly preserved, and in good condition.

The temperatures of the following six shipping containers (identified by their laboratory login numbers) exceeded 4 °C upon receipt at the laboratory.

ACZ Project ID	Sample Collection Date	Sample Relinquished Date	Sample Received Date by ACZ	Temperature Upon Receipt (°C)
L70537	07/16/08	07/16/08	07/17/08	4.2
L70589	07/18/08	07/18/08	07/19/08	5
L70744	07/24/08	07/24/08	07/25/08	5
L70761	07/24/08	07/25/08	07/28/08	25.3
L70974	07/31/08	07/31/08	08/06/08	25.5
L71377	08/22/08	08/22/08	08/23/08	4.9

As noted in the above table, the samples were shipped the same day or within one day of sample collection, and the time between sample collection and receipt of samples by ACZ ranged from one to six days. This temperature exceedance is not considered to have a significant impact on the analytical results pertaining to the sulfate analysis for these samples.



## **4. LABORATORY QUALITY CONTROL**

As specified in the QAPP, laboratory QC was maintained for all analysis through proper licensure, the use of approved analytical methods, QC measurements, appropriate turn-around-time for analysis (timeliness), method detection limits (MDLs), and practical quantitation limits (PQLs). Each of these controls is discussed in the following subsections.

The review of laboratory QC included a review to identify any qualified data and an assessment to determine their significance. Additionally, the laboratory QC summaries were reviewed to verify that results met QA criteria.

### **4.1 Licensure**

ACZ is licensed with the Arizona Department of Health Services (license number AZ0102) and is accredited in accordance with the National Environmental Laboratory Accreditation Conference.

### **4.2 Analytical Methods**

The following list identifies the approved U.S. Environmental Protection Agency (EPA) methods that meet the requirements stated in section 5.3 of the QAPP regarding target methods and target MDLs:

- EPA 300.0 (Ion-Chromatography [IC]): sulfate, chloride, fluoride

- EPA 200.7 (Inductively Coupled Plasma [ICP]): calcium, magnesium, potassium, sodium
- EPA 353.2 (Automated Cadmium Reduction [ACR]): nitrate/nitrite
- SM2320B (Titration): alkalinity
- EPA 160.1 (Gravimetric): total dissolved solids

Two of these methods, IC (EPA 300.0) and ICP (EPA 200.7), involve direct injection of the sample into the analytical instrument, which does not require the analysis of preparation blanks. The other methods listed are classical wet chemistry techniques that require the use of preparation blanks under the ACZ quality assurance plan and the QAPP.

#### 4.3 Method Detection Limits (MDLs) and Practical Quantification Limits (PQLs)

The MDLs and PQLs of the analytical methods used by ACZ are shown in the following table. The MDLs for analyses of samples were equal to or less than the target MDLs identified in the QAPP.

Method	MDL (mg/L)	PQL (mg/L)	Target MDL <sup>1</sup> (mg/L)
EPA 300.0 (SO4)	0.5	3	10
EPA 200.7 (Ca and Mg)	0.2	1	0.2
EPA 200.7 (K and Na)	0.3	2	0.3
SM2320B	2	20	2
EPA 300.0 (Cl)	0.5	5	1
EPA 300.0 (F)	0.1	0.5	0.1
EPA 352.2	0.02	0.1	0.02
EPA 160.1	10	20	10

mg/L = milligrams per liter

<sup>1</sup> Target MDL from Table F.2 of QAPP

#### **4.4 Timeliness**

Holding times were derived from the EPA methods utilized and were calculated beginning from the time of sample collection. The majority of samples submitted to the laboratory were analyzed within their recommended method specific holding time except for nitrate/nitrite as N, nitrite, and TDS analyses in the following: Samples collected on July 31, 2008 (FB073108, EQB073108 and DUP073108) and August 4, 2008 (TM-06 MILLER), were qualified with an “HE” flag, indicating analysis performed past the holding time because sample was received with less than half the holding time remaining. One sample collected on July 14, 2008 (BMO-2008-7M) was qualified with an “HC” flag, indicating that the initial analysis was within the holding time however, reanalysis was past the holding time, which was required due to a QC failure during the initial analysis. No data were rejected on the basis of the holding time exceedances and were accepted as usable.

#### **4.5 Quality Control Measurements**

The following QC samples were prepared and analyzed:

- Preparation blanks, calibration blanks, and calibration verification standards
- Analytical spikes and analytical spike duplicates
- Laboratory control samples
- Laboratory duplicate samples
- Field blank samples

#### 4.5.1 Preparation Blanks, Calibration Blanks, and Calibration Verification Standards

Preparation blanks were run with each group of samples submitted for alkalinity and TDS analysis. All preparation blanks were prepared from analyte-free water and treated as routine samples. Analytical results of all of the preparation blanks showed that no target analytes were detected at the indicated MDL.

Results from the analyses of the initial calibration blanks and initial calibration verification standards conducted by EPA Methods 300.0, 200.7, and 353.2 also were reviewed. The results of each initial calibration blank analyzed showed no detections of the target analyte. All analytical results for the initial calibration verification standards and laboratory fortified blanks that were analyzed showed percent recoveries that were within the acceptance criteria specified by the ACZ QA plan and the QAPP.

#### 4.5.2 Analytical Spikes and Analytical Spike Duplicates

Analytical spike and spike duplicate samples were analyzed for the following EPA Methods: 300.0, 200.7, and 353.2. Spike recoveries for most analytes were within the range of acceptability based on the acceptance criteria set by ACZ. Instances in which analytical spike recoveries were either high, low, or unusable were qualified with an “M1”, “M2”, or “M3” flag, respectively. In each case the method control sample recoveries were acceptable. Although some analytical spikes and analytical spike duplicates were outside the acceptance limits and

qualified with an “MA” flag, these recoveries are not considered to affect the overall accuracy of the dataset because the Relative Percent Difference (RPD) was within the acceptance limits.

#### 4.5.3 Laboratory Control Samples

Laboratory control samples were run for each group of samples submitted for alkalinity and total dissolved solids. Recoveries for all laboratory control samples were within the acceptance criteria specified by ACZ.

#### 4.5.4 Laboratory Duplicate Samples

Analyses of laboratory duplicate samples were also reviewed as part of this quality data verification report. Field duplicate samples are discussed in Section 5.1. The RPDs for most laboratory duplicate samples were within 20 percent, which is the tolerance range set by the laboratory. In many instances, the data were qualified with an “RA” flag indicating that the RPD was not used for data validation because the sample concentration was less than ten times the MDL, which is too low for accurate evaluation according to ACZ. In all cases where the RPD could be calculated, the results met QA criteria and demonstrate an appropriate level of precision in laboratory analysis of these samples.



#### 4.5.5 Field Blank Samples

During the third quarter of 2008, eight field blank samples were collected. Four field blank samples using unfiltered deionized water (FB071508, FB072208, FB073108, and FB080508) and four equipment blanks using filtered deionized water (EQB071508, EQB072208, EQB073108, and EQB080508). Samples were collected in the field and submitted along with other samples to evaluate the potential for contaminant introduction under field conditions. As required by Section 4.2.1.5 of the QAPP, a minimum of one field blank and one equipment blank sample were collected for every twenty samples. Analytical results from field blank samples EQB072208, FB073108, and EQB-073108 showed no detections. However, detections in field blank samples EQB-071508 included nitrate and nitrate/nitrite as N, FB071508 included calcium, nitrate, nitrate/nitrite as N, and sulfate, EQB072208 included calcium, bicarbonate as CaCO<sub>3</sub>, alkalinity, nitrate, nitrate/nitrite as N, and sulfate, FB072208 included bicarbonate as CaCO<sub>3</sub> and alkalinity, and EQB080508 included nitrate and nitrate/nitrite as N, and nitrite; all between the MDL and PQL with the exception of FB071508 with calcium detected at 1.2 mg/L and EQB072208 with nitrate and nitrate/nitrite as N both detected at 0.45 mg/L. The low level detections of these analytes are not considered significant given the concentrations of these constituents in the samples.

## 5. DATA QUALITY INDICATORS

The QAPP provides several DQIs for assessing the overall quality of the data. These DQIs include the following:

- Precision
- Bias
- Accuracy
- Representativeness
- Comparability
- Completeness
- Sensitivity

Each of these DQIs is discussed below in relation to the Q3-2008 groundwater sampling and analysis conducted by HGC.

### 5.1 Precision

Precision indicates how well a measurement can be reproduced. Precision is quantified by calculating the RPD between duplicate samples. For the purposes of QA/QC, precision was quantified by calculating the RPDs between duplicates among the following groups of duplicate samples:

- Laboratory duplicate samples
- Field duplicate samples

As discussed in Sections 4.5.2 and 4.5.4, there were no exceedances of RPD QA criteria for any laboratory duplicates. During this monitoring period, a total of four field duplicate samples (DUP071508, DUP072208, DUP073108, and DUP030608) were collected by HGC for filtered and unfiltered analysis. The collection of four duplicate samples meets the QA/QC goal of collecting one duplicate sample for every twenty groundwater samples collected, as stated in Section 4.2.1.5 of the QAPP.

Results for the four duplicate field samples collected are provided in the Table A.2. The range of RPD values was between zero and 8 percent all within the 20 percent acceptance criteria for field duplicates, as stated in Section 3.3.1 of the QAPP. Overall, the DQI for precision is deemed to be met.

## **5.2 Bias**

Bias is a systematic distortion of measurements causing consistent errors in one direction. Bias is managed in this data set by the consistent application of standardized sample collection and analysis procedures.

## **5.3 Accuracy**

Accuracy is a measure of the agreement of a measurement to a known value and is measured using the recoveries from laboratory control samples. As discussed in Sections 4.5.1, 4.5.2, and 4.5.3 respectively, there were no significant exceedances of the recovery QA criteria

for any of the calibration standards, analytical spikes, or laboratory control standards. Based on this information, the overall accuracy of the data is judged sufficient for the purpose of aquifer characterization.

#### **5.4 Representativeness**

All samples were taken from locations specified in the Work Plan (HGC, 2008a) using sampling procedures specified in the QAPP. Therefore, the samples are judged to provide a good representation of groundwater quality at the sampled locations. The analytical data are judged to be representative of groundwater conditions because the analyses used standard procedures and methods that met QA/QC guidelines of the QAPP.

#### **5.5 Comparability**

All samples were collected using standardized procedures (HGC, 2008a) and were analyzed by ACZ using standardized methods. Insofar as standardized sample collection and analytical methods are adhered to, the sample results should be comparable.

## **5.6 Completeness**

All samples collected were subsequently analyzed and reported by ACZ are judged to satisfy the QA/QC criteria for this project and are deemed usable for aquifer characterization. Thus, the completeness of analytical results is 100 percent.

## **5.7 Sensitivity**

The analytical methods used to analyze the samples meet the MDL requirements specified in Table F.2 of the QAPP. Therefore, the analytical sensitivity is considered acceptable for use in aquifer characterization.

## **5.8 Auxiliary Data Quality Indicators**

Auxiliary DQIs are indicators that, although not mentioned in the QAPP, are useful for assessing the reliability of the laboratory analyses. These auxiliary DQIs include the laboratory measured cation-anion balance and the ratio between measured and calculated TDS. Each of these auxiliary indicators is discussed below.

### **5.8.1 Cation-Anion Balance**

The concentration in milliequivalents per liter (meq/L) of cations and of anions in groundwater should theoretically be approximately the same. Therefore, the balance between

anions and cations is one measure of the overall quality of the laboratory measurements. The cation-anion balance can be expressed as the difference between the milliequivalents of cations and the milliequivalents of anions divided by the sum of the milliequivalents of both cations and anions. When computed in this manner, a cation-anion balance of 5 percent is considered good (Scott Habermahl, ACZ project manager, personal communication). The cation-anion balance for all samples is presented in Table 2 and was below 5 percent for all samples except for the samples listed below. Overall, the cation-anion balance for all samples does not indicate any analytical errors. Cation-anion balances outside of 5 percent may indicate the presence of other ions not included in the analysis and ion balance.

<b>Well and Sample ID</b>	<b>Sum of Anions (meq/L)</b>	<b>Sum of Cations (meq/L)</b>	<b>Cation-Anion Balance (%)</b>
BMO-2008-10GU	67.8	60.0	-6.1
BURKE	4.6	5.2	6.1
DODSON	11.2	12.4	5.1
SRC	4.3	4.8	5.5
TM-03	8.1	9.0	5.3
TM-16	15.0	16.7	5.4
TM-43	4.0	4.5	5.9
TM-43B	5.4	6.1	6.1

meq/L = milliequivalents per liter

### 5.8.2 TDS Ratio

The ratio between the measured and computed concentration of TDS is also an indicator of the overall quality of the sample analyses. A TDS ratio between 0.8 and 1.2 is considered good (Scott Habermahl, ACZ project manager, personal communication). The ratios for all samples are presented in Table 2 and fall inside the acceptance criteria specified by ACZ. Overall, the low TDS ratios for all samples indicate no apparent analytical errors.



## 6. REFERENCES

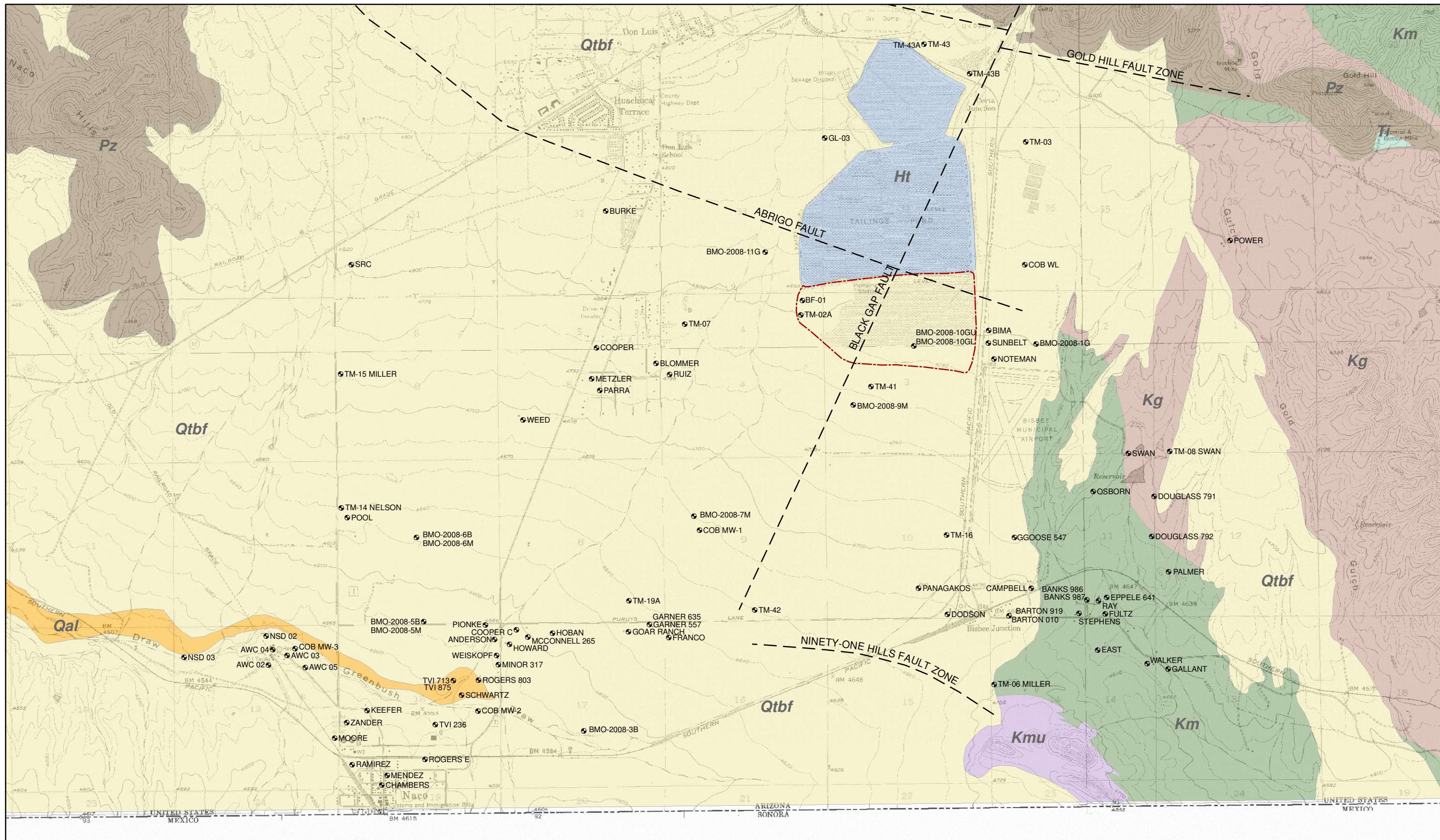
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- Hydro Geo Chem, Inc. (HGC). 2008a. Revision 1, Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.
- HGC. 2008b. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 28, 2008.





## **TABLES**

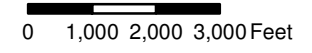




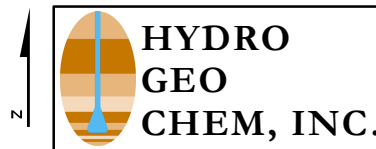
- Legend**
- Well ID
  - - Faults
  - ▭ Former Evaporation Ponds

- Recent Alluvium**
- Ht Holocene Tailings
  - Qal Quaternary Alluvium
- Basin Fill**
- Qtbf Quaternary - Tertiary Basin Fill
- Bedrock Complex**
- Ti Tertiary Intrusive

- Cretaceous Bisbee Group**
- Kmu Mural Limestone
  - Km Morita Formation
  - Kg Glance Conglomerate
  - Pz Paleozoic Sedimentary Formations, Undifferentiated



PROJECTION:  
UTM Zone 12N NAD83



GENERALIZED GEOLOGY AND WELL LOCATIONS					
Approved	Date	Author	Date	File Name	Figure
DRS	10/09/08	RAM	10/09/08	8720107G	1

**TABLE A.1  
ACZ PROJECT ID AND ASSOCIATED WELLS**

<b>ACZ Project ID</b>	<b>Wells Reported</b>
<i>Number of wells sampled: 78</i>	
<i>Number of duplicate samples collected: 4</i>	
<i>Number of field blank samples collected: 8</i>	
L70440	BMO-2008-6M
L70490	BMO-2008-7M
L70502	ANDERSON, HOBAN, CHAMBERS, FRANCO, HOWARD, TVI 236, TVI 875, COOPER C, MCCONNELL 265, GARNER 635, DUP071508, EQB071508, FB071508
L70525	WEISKOPF, MOORE, ZANDER, KEEFER
L70537	BMO-2008-6B
L70567	PIONKE, ROGERS E, RAMIREZ
L70589	BMO-2008-3B
L70659	BANKS 986, PANAGAKOS, EPPELE 641, POWER, PALMER 819, OSBORN, DUP072208, EQB072208, FB072208
L70696	EAST, WALKER, GALLANT, TM-08 SWAN
L70744	DODSON
L70761	NESS, SWAN, NOTEMAN
L70795	BLOMMER, ROGERS 803, SCHWARTZ, BIMA, RAY
L70861	FULTZ, COBMW-1, COBMW-2, COBMW-3, COB-WL, RUIZ, WEED
L70942	TM-43A, TM-43, GL-03
L70943	BMO-2008-10GU
L70959	TM-06 MILLER, TM-43B, BF-01, SRC, BURKE, TM-15 MILLER, DUP080508, EQB080508, FB080508
L70974	COLLINS, , PARRA, METZLER, COOPER, POOL, FB073108, EQB073108, DUP073108
L70992	TM-03, TM-16, TM-42, TM-07, TM-19A
L71042	BMO-2008-9M
L71104	AWC02
L71107	AWC03, AWC04, AWC05
L71205	GGOOSE 547, TM-02A
L71263	BINYON
L71307	BMO-2008-10GL
L71377	BMO-2008-11G
L71448	BMO-2008-1G
L71508	BLOMMER, ROGERS 803, SCHWARTZ, BIMA, RAY, FULTZ
L72036	BLOMMER, ROGERS 803, SCHWARTZ, BIMA, RAY, FULTZ

**TABLE A.2  
RELATIVE PERCENT DIFFERENCE (RPD) OF DUPLICATE SAMPLES**

Well and Sample ID	COOPER C			OSBORN			PARRA			TM-43B		
ACZ Project ID	L70502	L70502		L70659	L70659		L70974	L70974		L70959	L70959	
Parameter	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Sample (mg/L)	Duplicate (mg/L)	RPD (%)
Calcium	386	398	3.06	80.3	80.9	0.74	181	177	2.23	47.5	47.9	0.84
Magnesium	58.8	61.7	4.81	15.0	15.1	0.66	49.8	48.5	2.64	21.5	21.7	0.93
Potassium	5.8	6.1	5.04	4.2	4.2	0.00	4.5	4.3	4.55	2.6	2.5	3.92
Sodium	43.3	46.2	6.48	24.7	25.0	1.21	32.4	30.9	4.74	44.9	44.9	0.00
Bicarbonate as CaO <sub>3</sub>	235	234	0.43	252	250	0.80	213	212	0.47	231	234	1.29
Carbonate as CaCO <sub>3</sub>	<2	<2	*	29	31	6.67	<2	<2	*	<2	<2	*
Hydroxide as CaCO <sub>3</sub>	<2	<2	*	<2	<2	*	<2	<2	*	<2	<2	*
Total Alkalinity	235	234	0.43	281	281	0.00	213	212	0.47	231	234	1.29
Sum of Anions	28.1	26.4	6.24	6.8	6.8	0.00	14.4	14	2.82	5.4	5.5	1.83
Sum of Cations	26.2	27.2	3.75	6.4	6.4	0.00	14.7	14.3	2.76	6.1	6.2	1.63
Chloride	46.5	46.4	0.22	19.7	19.6	0.51	33.5	33.5	0.00	4.7	4.7	0.00
Fluoride	<0.1	0.1	*	0.4	0.3	*	<0.1	<0.1	*	<0.1	<0.1	*
Nitrate	3.24	3.25	0.31	4.38	4.65	5.98	4.23	4.33	2.34	0.03	0.11	*
Nitrate/Nitrite	3.24	3.25	0.31	4.38	4.65	5.98	4.23	4.33	2.34	0.03	0.11	*
Nitrite	<0.01	<0.01	*	<0.01	<0.01	*	<0.01	<0.01	*	<0.01	<0.01	*
TDS	1860	1860	0.00	350	364	3.92	930	920	1.08	300	310	3.28
Sulfate, dissolved	1040	960	8.00	17.7	17.5	1.14	423	404	4.59	31.8	32.5	2.18

ACZ = ACZ Laboratories, Inc.

mg/L = milligrams per liter

\* RPD was not used for data validation; sample concentration too low for accurate evaluation (<10x MDL)

**APPENDIX A.1**

**ARIZONA LAND SPECIALISTS, INC. WELL SURVEY**

**ARIZONA LAND SPECIALISTS, INC.**  
**FREEMPORT-MCMORAN COPPER QUEEN BRANCH MONITOR WELL SURVEY**

ALS POINT No.	DESCRIPTION	ELEVATION (FEET) NAVD88	UTM NAD83 NORTHING	UTM NAD83 EASTING
6900	TINTOWN (PID CF0397)	5070.12	3475060.983	604074.441
6901	RECORDS (CCLDP)	5088.01	3477526.103	605370.569
6902	AMARILLAS (PID DG9433)	4895.67	3473292.330	601929.297
6903	AVANT (CCLDP)	4857.26	3472267.450	607587.441
6953	BMO-2008-10GU	4793.45	3471731.866	605267.551
6954	BMO-2008-10GU PAD	4792.95		
6955	BMO-2008-10GL	4792.21	3471702.043	605264.072
6956	BMO-2008-10GL PAD	4791.69		
6957	BMO-2008-9M	4762.61	3471121.675	604668.669
6958	BMO-2008-9M PAD	4762.13		
6959	BMO-2008-7M	4688.33	3470029.283	603099.165
6960	BMO-2008-7M PAD	4687.86		
6961	NESS	4761.23	3471419.494	607866.391
6963	BMO-2008-6B	4627.44	3469820.644	600366.523
6964	BMO-2008-6B PAD	4626.93		
6965	BMO-2008-6M	4626.90	3469813.885	600367.943
6966	BMO-2008-6M PAD	4626.40		
6967	BMO-2008-3B	4583.97	3467919.582	602012.923
6968	BMO-2008-3B PAD	4583.47		
6969	AWC-05	4542.51	3468541.692	599269.904
6970	AWC-03	4539.52	3468681.898	599090.322
6971	AWC-04	4540.48	3468717.084	598949.929
6972	AWC-02	4547.64	3468549.357	598907.911
6973	ROGERS E	4590.66	3467636.029	600449.648
6980	PIONKE	4592.13	3468960.981	601045.471
6986	BMO-2008-5B	4585.73	3468994.395	600438.375
6987	BMO-2008-5M	4585.63	3468993.961	600445.302
6988	BMO-2008-1G	4805.10	3471723.644	606467.681
6989	BMO-2008-1G PAD	4804.60		
6990	BMO-2008-11G	4844.67	3472626.482	603800.995
6991	BMO-2008-11G PAD	4844.09		

UTM = Universal Transverse Mercator Zone 12, Band R





**APPENDIX B**

**ANALYTICAL REPORTS FROM ACZ LABORATORIES, INC.**



September 15, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L71508

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 29, 2008. This project has been assigned to ACZ's project number, L71508. Please reference this number in all future inquiries.

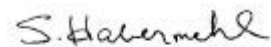
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71508. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 15, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: BLOMMER

ACZ Sample ID: **L71508-01**  
Date Sampled: 08/27/08 16:43  
Date Received: 08/29/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	189		*	mg/L	3	10	09/10/08 16:25	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: ROGERS 803

ACZ Sample ID: **L71508-02**  
Date Sampled: 08/28/08 07:50  
Date Received: 08/29/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	128		*	mg/L	3	10	09/10/08 16:43	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: SCHWARTZ

ACZ Sample ID: **L71508-03**  
Date Sampled: 08/28/08 09:10  
Date Received: 08/29/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	131		*	mg/L	3	10	09/10/08 17:37	aml

**Arizona license number: AZ0102**

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: BIMA

ACZ Sample ID: **L71508-04**

Date Sampled: 08/28/08 09:55

Date Received: 08/29/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	256		*	mg/L	3	10	09/10/08 17:55	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: RAY

ACZ Sample ID: **L71508-05**

Date Sampled: 08/28/08 12:25

Date Received: 08/29/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	129		*	mg/L	3	10	09/10/08 18:13	aml

Arizona license number: AZ0102



**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: FLUTZ

ACZ Sample ID: **L71508-06**

Date Sampled: 08/28/08 10:50

Date Received: 08/29/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	137			mg/L	3	10	09/10/08 18:31	aml

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

<i>B</i>	Analyte concentration detected at a value between MDL and PQL.
<i>H</i>	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
<i>U</i>	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L71508**

Project ID: 8720000

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG251471</b>													
WG251471ICV	ICV	08/11/08 15:32	WI080822-1	50.1		49.34	mg/L	98.5	90	110			
WG251471ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG251471LFB	LFB	09/10/08 14:00	WI080702-9	30		29.02	mg/L	96.7	90	110			
L71404-01DUP	DUP	09/10/08 14:36			67.4	67.4	mg/L				0	20	
L71508-06DUP	DUP	09/10/08 18:49			137	148.3	mg/L				7.9	20	
L71541-01AS	AS	09/10/08 19:26	WI080702-9	30	3	31.25	mg/L	94.2	90	110			
L71422-01AS	AS	09/10/08 23:21	WI080702-9	300	453	717.9	mg/L	88.3	90	110			M2

Hydro Geo Chem, Inc.

ACZ Project ID: **L71508**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71508-01	WG251471	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L71508-02	WG251471	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L71508-03	WG251471	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L71508-04	WG251471	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L71508-05	WG251471	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Hydro Geo Chem, Inc.

ACZ Project ID: **L71508**



No certification qualifiers associated with this analysis

**Hydro Geo Chem, Inc.**  
 8720000

ACZ Project ID: L71508  
 Date Received: 8/29/2008  
 Received By:  
 Date Printed: 8/29/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
1802	3.2	12

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L71508  
 Date Received: 8/29/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L71508-01	BLOMMER									X		<input type="checkbox"/>
L71508-02	ROGERS 803									X		<input type="checkbox"/>
L71508-03	SCHWARTZ									X		<input type="checkbox"/>
L71508-04	BIMA									X		<input type="checkbox"/>
L71508-05	RAY									X		<input type="checkbox"/>
L71508-06	FLUTZ									X		<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_

L71508

**ACZ Laboratories, Inc.**

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**CHAIN OF CUSTODY**

**Report to:**

Name: Dan Simpson	Address: 51 West Wetmore Road
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: dans@hginc.com	Telephone: (520) 293-1500 x 133

**Copy of Report to:**

Name: Jim Norris	E-mail: jimn@hginc.com
Company: Hydro Geo Chem Inc.	Telephone: (520) 293-1500 x 112

**Invoice to:**

Name: Jim Norris	Address: 51 West Wetmore Road
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: jimn@hginc.com	Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?  
 If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES	<input checked="" type="checkbox"/>
NO	<input type="checkbox"/>

**PROJECT INFORMATION**

**ANALYSES REQUESTED (attach list or use quote number)**

Quote #: SO4 IC	# of Containers	504																		
Project/PO #: 8720000																				
Reporting state for compliance testing: AZ																				
Sampler's Name: Mark Arneson																				
Are any samples NRC licensable material? No																				
SAMPLE IDENTIFICATION	DATE:TIME	Matrix																		
BLOMNER	8-27-08: 1643	GW	1	X																
ROGERS 803	8-28-08: 750	GW	1	X																
SCHWARTZ	8-28-08: 910	GW	1	X																
BIMA	8-28-08: 955	GW	1	X																
RAY	8-28-09: 1225	GW	1	X																
FULTZ	8-28-08: 10150	GW	1	X																

Matrix SW (Surface Water) · GW (Ground Water) · VVW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

**REMARKS**

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

REINQUIRED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	8-28-08: 1430		8-29-08: 10:30

FRMAD050.03.05.02

White - Return with sample. Yellow - Retain for your records.



September 16, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

Project ID: 872000, T2.3

ACZ Project ID: L71377

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 23, 2008. This project has been assigned to ACZ's project number, L71377. Please reference this number in all future inquiries.

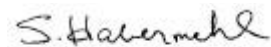
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71377. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 16, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



### Hydro Geo Chem, Inc.

Project ID: 872000, T2.3  
 Sample ID: BMO-2008-11G

ACZ Sample ID: **L71377-01**  
 Date Sampled: 08/22/08 12:30  
 Date Received: 08/23/08  
 Sample Matrix: Ground Water

#### Field Data

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity (Field)	Field Measurement	359			mS/cm			08/22/08 12:30	nb
pH (Field)	Field Measurement	8.0			units			08/22/08 12:30	nb
Temperature (Field)	Field Measurement	28.2		*	C			08/22/08 12:30	nb

#### Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10.7			mg/L	0.2	1	09/03/08 23:39	aeH
Magnesium, dissolved	M200.7 ICP	5.1			mg/L	0.2	1	09/03/08 23:39	aeH
Potassium, dissolved	M200.7 ICP	1.7	B		mg/L	0.3	2	09/05/08 1:21	ear/aeH
Sodium, dissolved	M200.7 ICP	64.2			mg/L	0.3	2	09/03/08 23:39	aeH

#### Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		149			mg/L	2	20	08/26/08 0:00	gkj
Carbonate as CaCO3		14	B		mg/L	2	20	08/26/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/26/08 0:00	gkj
Total Alkalinity		163			mg/L	2	20	08/26/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.7			%			09/15/08 0:00	calc
Sum of Anions		3.6			meq/L	0.1	0.5	09/15/08 0:00	calc
Sum of Cations		3.8			meq/L	0.1	0.5	09/15/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	2.8	B	*	mg/L	0.5	3	08/28/08 8:44	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	09/12/08 22:36	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.56			mg/L	0.02	0.1	09/15/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.56			mg/L	0.02	0.1	08/23/08 17:41	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/23/08 17:41	pjb
Residue, Filterable (TDS) @180C	SM2540C	220			mg/L	10	20	08/28/08 12:16	kah
Sulfate	300.0 - Ion Chromatography	14.2			mg/L	0.5	3	08/28/08 8:44	aml
TDS (calculated)	Calculation	205			mg/L	10	50	09/15/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						09/15/08 0:00	calc

Arizona license number: AZ0102

#### Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

#### QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

#### QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

#### ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

#### Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

#### Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L71377**

Project ID: 872000, T2.3

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250567</b>													
WG250567LCSW2	LCSW	08/25/08 15:31	WC080814-1	820.0001		782.1	mg/L	95.4	90	110			
WG250567PBW2	PBW	08/25/08 18:40				U	mg/L		-20	20			
WG250567LCSW5	LCSW	08/25/08 18:51	WC080814-1	820.0001		775.8	mg/L	94.6	90	110			
WG250567PBW3	PBW	08/25/08 22:13				U	mg/L		-20	20			
WG250567LCSW8	LCSW	08/25/08 22:25	WC080814-1	820.0001		780.9	mg/L	95.2	90	110			
WG250567PBW4	PBW	08/26/08 0:54				U	mg/L		-20	20			
WG250567LCSW11	LCSW	08/26/08 1:06	WC080814-1	820.0001		779.6	mg/L	95.1	90	110			
L71384-01DUP	DUP	08/26/08 3:35			27	25.9	mg/L				4.2	20	
WG250567LCSW14	LCSW	08/26/08 3:48	WC080814-1	820.0001		785.8	mg/L	95.8	90	110			

**Calcium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG251115</b>													
WG251115ICV	ICV	09/03/08 22:04	I1080818-1	100		100.86	mg/L	100.9	95	105			
WG251115ICB	ICB	09/03/08 22:08				U	mg/L		-0.6	0.6			
WG251115LFB	LFB	09/03/08 22:20	I1080828-2	67.97008		70.79	mg/L	104.1	85	115			
L71354-05AS	AS	09/03/08 23:13	I1080828-2	67.97008	6.3	76.2	mg/L	102.8	85	115			
L71354-05ASD	ASD	09/03/08 23:16	I1080828-2	67.97008	6.3	76.17	mg/L	102.8	85	115	0.04	20	

**Chloride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250770</b>													
WG250770ICV	ICV	08/11/08 15:32	WI080822-1	19.98		20.49	mg/L	102.6	90	110			
WG250770ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250770ICV1	ICV	08/27/08 23:41	WI080822-1	19.98		19.96	mg/L	99.9	90	110			
WG250770ICB1	ICB	08/27/08 23:59				U	mg/L		-1.5	1.5			
WG250770ICV1	ICV	09/01/08 15:27	WI080822-1	19.98		19.23	mg/L	96.2	90	110			
WG250770ICB1	ICB	09/01/08 15:45				U	mg/L		-1.5	1.5			
WG250770LFB	LFB	09/01/08 16:03	WI080702-9	30		28.64	mg/L	95.5	90	110			
WG250770ICV1	ICV	09/02/08 4:43	WI080822-1	19.98		20.04	mg/L	100.3	90	110			
L71313-02AS	AS	09/02/08 19:45	WI080702-9	30	2.1	30.04	mg/L	93.1	90	110			
L71313-02DUP	DUP	09/02/08 20:04			2.1	2.12	mg/L				0.9	20	RA

Hydro Geo Chem, Inc.

ACZ Project ID: **L71377**

Project ID: 872000, T2.3

Fluoride													M300.0 - Ion Chromatography	
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
<b>WG249769</b>														
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110				
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3				
<b>WG251636</b>														
WG251636ICV	ICV	08/11/08 15:32	WI080822-1	4		4.07	mg/L	101.8	90	110				
WG251636ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3				
WG251636ICV1	ICV	09/12/08 16:16	WI080822-1	4		3.89	mg/L	97.3	90	110				
WG251636ICB1	ICB	09/12/08 16:34				U	mg/L		-0.3	0.3				
WG251636LFB	LFB	09/12/08 16:52	WI080702-9	1.5		1.41	mg/L	94	90	110				
L71334-03DUP	DUP	09/12/08 21:41			U	U	mg/L				0	20		RA
L71334-04AS	AS	09/12/08 22:18	WI080702-9	30	U	25.6	mg/L	85.3	90	110				M2

Magnesium, dissolved													M200.7 ICP	
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
<b>WG251115</b>														
WG251115ICV	ICV	09/03/08 22:04	I080818-1	100		102.63	mg/L	102.6	95	105				
WG251115ICB	ICB	09/03/08 22:08				U	mg/L		-0.6	0.6				
WG251115LFB	LFB	09/03/08 22:20	I080828-2	49.96908		51.66	mg/L	103.4	85	115				
L71354-05AS	AS	09/03/08 23:13	I080828-2	49.96908	.2	51.44	mg/L	102.5	85	115				
L71354-05ASD	ASD	09/03/08 23:16	I080828-2	49.96908	.2	51.51	mg/L	102.7	85	115	0.14	20		

Nitrate/Nitrite as N, dissolved													M353.2 - Automated Cadmium Reduction	
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
<b>WG250516</b>														
WG250516ICV	ICV	08/23/08 17:38	WI080613-1	2.416		2.472	mg/L	102.3	90	110				
WG250516ICB	ICB	08/23/08 17:39				U	mg/L		-0.06	0.06				
WG250516LFB	LFB	08/23/08 17:40	WI080312-1	2		2.011	mg/L	100.6	90	110				
L71377-01DUP	DUP	08/23/08 17:43			.56	.547	mg/L				2.3	20		
L71377-01AS	AS	08/23/08 17:44	WI080312-1	2	.56	2.666	mg/L	105.3	90	110				

Nitrite as N, dissolved													M353.2 - Automated Cadmium Reduction	
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
<b>WG250516</b>														
WG250516ICV	ICV	08/23/08 17:38	WI080613-1	.609		.625	mg/L	102.6	90	110				
WG250516ICB	ICB	08/23/08 17:39				U	mg/L		-0.03	0.03				
WG250516LFB	LFB	08/23/08 17:40	WI080312-1	1		.982	mg/L	98.2	90	110				
L71377-01DUP	DUP	08/23/08 17:43			U	U	mg/L				0	20		RA
L71377-01AS	AS	08/23/08 17:44	WI080312-1	1	U	1.056	mg/L	105.6	90	110				

Potassium, dissolved													M200.7 ICP	
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
<b>WG251188</b>														
WG251188ICV	ICV	09/04/08 23:58	I080818-1	20		20.13	mg/L	100.7	95	105				
WG251188ICB	ICB	09/05/08 0:02				U	mg/L		-0.9	0.9				
WG251188LFB	LFB	09/05/08 0:16	I080828-2	99.76186		101.81	mg/L	102.1	85	115				
L71377-01AS	AS	09/05/08 1:32	I080828-2	99.76186	1.7	110.92	mg/L	109.5	85	115				
L71377-01ASD	ASD	09/05/08 1:36	I080828-2	99.76186	1.7	111.07	mg/L	109.6	85	115	0.14	20		

Hydro Geo Chem, Inc.

ACZ Project ID: **L71377**

Project ID: 872000, T2.3

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250822</b>													
WG250822PBW	PBW	08/28/08 12:15				10	mg/L		-20	20			
WG250822LCSW	LCSW	08/28/08 12:15	PCN30193	260		268	mg/L	103.1	80	120			
L71404-01DUP	DUP	08/28/08 12:22			430	416	mg/L				3.3	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG251115</b>													
WG251115ICV	ICV	09/03/08 22:04	I1080818-1	100		101.81	mg/L	101.8	95	105			
WG251115ICB	ICB	09/03/08 22:08				U	mg/L		-0.9	0.9			
WG251115LFB	LFB	09/03/08 22:20	I1080828-2	98.21624		100.3	mg/L	102.1	85	115			
L71354-05AS	AS	09/03/08 23:13	I1080828-2	98.21624	10.9	110.04	mg/L	100.9	85	115			
L71354-05ASD	ASD	09/03/08 23:16	I1080828-2	98.21624	10.9	109.61	mg/L	100.5	85	115	0.39	20	

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250770</b>													
WG250770ICV	ICV	08/11/08 15:32	WI080822-1	50.1		49.34	mg/L	98.5	90	110			
WG250770ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250770ICV1	ICV	08/27/08 23:41	WI080822-1	50.1		50.8	mg/L	101.4	90	110			
WG250770ICB1	ICB	08/27/08 23:59				U	mg/L		-1.5	1.5			
WG250770ICV1	ICV	09/01/08 15:27	WI080822-1	50.1		46.54	mg/L	92.9	90	110			
WG250770ICB1	ICB	09/01/08 15:45				U	mg/L		-1.5	1.5			
WG250770LFB	LFB	09/01/08 16:03	WI080702-9	30		27.58	mg/L	91.9	90	110			
L71313-02AS	AS	09/01/08 23:17	WI080702-9	150	141	290.6	mg/L	99.7	90	110			
L71313-02DUP	DUP	09/01/08 23:36			141	139.4	mg/L				1.1	20	
WG250770ICV1	ICV	09/02/08 4:43	WI080822-1	50.1		49.65	mg/L	99.1	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L71377**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L71377-01</b>	WG250770	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG251636	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250516	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

**Hydro Geo Chem, Inc.**

ACZ Project ID: **L71377**

Field Data

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Temperature (Field)

Field Measurement



Hydro Geo Chem, Inc.  
 872000, T2.3

ACZ Project ID: L71377  
 Date Received: 8/23/2008  
 Received By:  
 Date Printed: 8/23/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6769	4.9	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 872000, T2.3

ACZ Project ID: L71377  
 Date Received: 8/23/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L71377-01	RMO-2008-11G		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

L713977

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem, Inc
E-mail: dansehginc.com

Address: 51 W. Wetmore Rd, Ste. 100
Tucson, AZ 85705
Telephone: (520) 293-1500 x.133

Copy of Report to:

Name: N/A
Company:

E-mail: N/A
Telephone:

Invoice to:

Name: Same as above
Company:
E-mail:

Address: Same as above
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCOB-GW
Project/PO #: 872000, T2.3
Reporting state for compliance testing: AZ
Sampler's Name: NJ, Babb
Are any samples NRC licensable material?

Table with columns for # of Containers and analysis results. Row 1: 3, X, FMCOB-GW

Table with columns: SAMPLE IDENTIFICATION, DATE:TIME, Matrix, # of Containers, and analysis results. Row 1: Rmo-2008-11G, 8-22-08/12:30, GW, 3, X, FMCOB-GW

Matrix SW (Surface Water) - GW (Ground Water) - WW (Waste Water) - DW (Drinking Water) - SL (Sludge) - SO (Soil) - OL (Oil) - Other

REMARKS/ SAMPLE DISCLOSURES

Water quality parameters
PH = 8.02
Ms = 359
TC = 28.2

Sample depth = 586.30
pore rate = 1.7 gpm

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Table with columns: RELINQUISHED BY, DATE:TIME, RECEIVED BY, DATE:TIME. Includes signatures and dates for Dan Simpson and MRS.

September 09, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

Project ID: 872000 T2.3

ACZ Project ID: L71307

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 21, 2008. This project has been assigned to ACZ's project number, L71307. Please reference this number in all future inquiries.

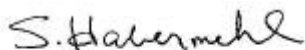
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71307. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 09, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 872000 T2.3  
 Sample ID: BMO-2008-10GL

ACZ Sample ID: **L71307-01**  
 Date Sampled: 08/20/08 13:45  
 Date Received: 08/21/08  
 Sample Matrix: Ground Water

**Field Data**

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity (Field)	Field Measurement	2924			mS/cm			08/20/08 13:45	njb
pH (Field)	Field Measurement	6.2			units			08/20/08 13:45	njb
Temperature (Field)	Field Measurement	29.5		*	C			08/20/08 13:45	njb

**Metals Analysis**

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	579			mg/L	0.4	2	09/03/08 13:42	aeH
Magnesium, dissolved	M200.7 ICP	167			mg/L	0.4	2	09/04/08 14:50	ear
Potassium, dissolved	M200.7 ICP	10.5			mg/L	0.6	3	09/05/08 17:14	aeH
Sodium, dissolved	M200.7 ICP	90.5			mg/L	0.6	3	08/29/08 21:58	aeH

**Wet Chemistry**

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		870			mg/L	2	20	08/25/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	08/25/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/25/08 0:00	gkj
Total Alkalinity		870			mg/L	2	20	08/25/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.0			%			09/09/08 0:00	calc
Sum of Anions		46.0			meq/L	0.1	0.5	09/09/08 0:00	calc
Sum of Cations		46.9			meq/L	0.1	0.5	09/09/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	30	B	*	mg/L	10	50	08/26/08 20:24	ccp
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	2	10	09/02/08 11:04	ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	09/09/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.02	0.1	08/21/08 19:07	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B	*	mg/L	0.01	0.05	08/21/08 19:07	pjb
Residue, Filterable (TDS) @180C	SM2540C	2970		*	mg/L	10	20	08/26/08 14:05	gkj
Sulfate	300.0 - Ion Chromatography	1320		*	mg/L	10	50	09/02/08 11:04	ccp
TDS (calculated)	Calculation	2720			mg/L	10	50	09/09/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.09						09/09/08 0:00	calc

**Arizona license number: AZ0102**

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L71307**

Project ID: 872000 T2.3

**Alkalinity as CaCO3**

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250567</b>													
WG250567LCSW2	LCSW	08/25/08 15:31	WC080814-1	820.0001		782.1	mg/L	95.4	90	110			
WG250567PBW2	PBW	08/25/08 18:40				U	mg/L		-20	20			
WG250567LCSW5	LCSW	08/25/08 18:51	WC080814-1	820.0001		775.8	mg/L	94.6	90	110			
L71329-01DUP	DUP	08/25/08 22:07			113	109.8	mg/L				2.9	20	
WG250567PBW3	PBW	08/25/08 22:13				U	mg/L		-20	20			
WG250567LCSW8	LCSW	08/25/08 22:25	WC080814-1	820.0001		780.9	mg/L	95.2	90	110			
WG250567PBW4	PBW	08/26/08 0:54				U	mg/L		-20	20			
WG250567LCSW11	LCSW	08/26/08 1:06	WC080814-1	820.0001		779.6	mg/L	95.1	90	110			
WG250567LCSW14	LCSW	08/26/08 3:48	WC080814-1	820.0001		785.8	mg/L	95.8	90	110			

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250995</b>													
WG250995ICV	ICV	09/03/08 12:23	I1080818-1	100		100.27	mg/L	100.3	95	105			
WG250995ICB	ICB	09/03/08 12:27				U	mg/L		-0.6	0.6			
WG250995LFB	LFB	09/03/08 12:39	I1080828-2	67.97008		75.01	mg/L	110.4	85	115			
L71305-03AS	AS	09/03/08 13:29	I1080828-2	67.97008	74.3	145.72	mg/L	105.1	85	115			
L71305-03ASD	ASD	09/03/08 13:32	I1080828-2	67.97008	74.3	145.32	mg/L	104.5	85	115	0.27	20	

**Chloride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250459</b>													
WG250459ICV	ICV	08/11/08 15:32	WI080822-1	19.98		20.49	mg/L	102.6	90	110			
WG250459ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250459ICV1	ICV	08/26/08 11:20	WI080822-1	19.98		19.76	mg/L	98.9	90	110			
WG250459ICB1	ICB	08/26/08 11:38				U	mg/L		-1.5	1.5			
WG250459LFB	LFB	08/26/08 11:57	WI080702-9	30		29.85	mg/L	99.5	90	110			
L71151-01AS	AS	08/26/08 16:46	WI080702-9	30	9	39.14	mg/L	100.5	90	110			
L71151-01DUP	DUP	08/26/08 17:04			9	9.02	mg/L				0.2	20	
WG250459ICV1	ICV	08/27/08 21:16	WI080822-1	19.98		19.69	mg/L	98.5	90	110			
WG250459ICB1	ICB	08/27/08 21:34				U	mg/L		-1.5	1.5			

**Fluoride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
<b>WG250973</b>													
WG250973ICV	ICV	09/02/08 8:21	WI080822-1	4		3.91	mg/L	97.8	90	110			
WG250973ICB	ICB	09/02/08 8:39				U	mg/L		-0.3	0.3			
WG250973LFB	LFB	09/02/08 8:57	WI080702-9	1.5		1.41	mg/L	94	90	110			
L71205-01DUP	DUP	09/02/08 9:33			.1	.13	mg/L				26.1	20	RA
L71205-02AS	AS	09/02/08 10:09	WI080702-9	1.5	.2	1.68	mg/L	98.7	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L71307**

Project ID: 872000 T2.3

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG251181</b>													
WG251181ICV	ICV	09/04/08 13:33	I1080818-1	100		99.89	mg/L	99.9	95	105			
WG251181ICB	ICB	09/04/08 13:37				U	mg/L		-0.6	0.6			
WG251181LFB	LFB	09/04/08 13:49	I1080828-2	49.96908		50.37	mg/L	100.8	85	115			
L71305-03AS	AS	09/04/08 14:38	I1080828-2	49.96908	20.9	70.06	mg/L	98.4	85	115			
L71305-03ASD	ASD	09/04/08 14:41	I1080828-2	49.96908	20.9	69.92	mg/L	98.1	85	115	0.2	20	

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250416</b>													
WG250416ICV	ICV	08/21/08 18:27	WI080613-1	2.416		2.277	mg/L	94.2	90	110			
WG250416ICB	ICB	08/21/08 18:28				.033	mg/L		-0.06	0.06			
WG250416LFB1	LFB	08/21/08 18:32	WI080312-1	2		1.899	mg/L	95	90	110			
L71297-08AS	AS	08/21/08 18:53	WI080312-1	2	.84	2.683	mg/L	92.2	90	110			
WG250416LFB2	LFB	08/21/08 19:11	WI080312-1	2		1.818	mg/L	90.9	90	110			
L71297-09DUP	DUP	08/21/08 19:48			4.66	4.691	mg/L				0.7	20	

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250416</b>													
WG250416ICV	ICV	08/21/08 18:27	WI080613-1	.609		.621	mg/L	102	90	110			
WG250416ICB	ICB	08/21/08 18:28				U	mg/L		-0.03	0.03			
WG250416LFB1	LFB	08/21/08 18:32	WI080312-1	1		1.031	mg/L	103.1	90	110			
L71297-08AS	AS	08/21/08 18:53	WI080312-1	1		.973	mg/L	97.3	90	110			
L71297-09DUP	DUP	08/21/08 18:56				U	mg/L				0	20	RA
WG250416LFB2	LFB	08/21/08 19:11	WI080312-1	1		.979	mg/L	97.9	90	110			

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG251303</b>													
WG251303ICV	ICV	09/05/08 15:51	I1080818-1	20		20.01	mg/L	100.1	95	105			
WG251303ICB	ICB	09/05/08 15:55				U	mg/L		-0.9	0.9			
WG251303LFB	LFB	09/05/08 16:07	I1080828-2	99.76186		101.85	mg/L	102.1	85	115			
L71305-03AS	AS	09/05/08 17:01	I1080828-2	99.76186	2.7	106.14	mg/L	103.7	85	115			
L71305-03ASD	ASD	09/05/08 17:04	I1080828-2	99.76186	2.7	105.79	mg/L	103.3	85	115	0.33	20	

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250624</b>													
WG250624PBW	PBW	08/26/08 13:40				U	mg/L		-20	20			
WG250624LCSW	LCSW	08/26/08 13:41	PCN30193	260		260	mg/L	100	80	120			
L71394-06DUP	DUP	08/26/08 14:14				U	10	mg/L			0	20	RA



Hydro Geo Chem, Inc.

ACZ Project ID: **L71307**

Project ID: 872000 T2.3

**Sodium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250920</b>													
WG250920ICV	ICV	08/29/08 20:16	I1080818-1	100		104.73	mg/L	104.7	95	105			
WG250920ICB	ICB	08/29/08 20:20				U	mg/L		-0.9	0.9			
WG250920LFB	LFB	08/29/08 20:33	I1080828-2	98.21624		102.88	mg/L	104.7	85	115			
L71305-01AS	AS	08/29/08 21:32	I1080828-2	98.21624	2.8	107.08	mg/L	106.2	85	115			
L71305-01ASD	ASD	08/29/08 21:36	I1080828-2	98.21624	2.8	106.52	mg/L	105.6	85	115	0.52	20	

**Sulfate**

300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250973</b>													
WG250973ICV	ICV	09/02/08 8:21	WI080822-1	50.1		50.12	mg/L	100	90	110			
WG250973ICB	ICB	09/02/08 8:39				U	mg/L		-1.5	1.5			
WG250973LFB	LFB	09/02/08 8:57	WI080702-9	30		30.27	mg/L	100.9	90	110			
L71205-02AS	AS	09/02/08 10:09	WI080702-9	30	14.4	43.62	mg/L	97.4	90	110			
L71205-01DUP	DUP	09/02/08 11:40			178	174.6	mg/L				1.9	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71307**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71307-01	WG250459	Chloride	M300.0 - Ion Chromatography	DD	Sample required dilution due to matrix color or odor.
	WG250973	Fluoride	M300.0 - Ion Chromatography	DD	Sample required dilution due to matrix color or odor.
			M300.0 - Ion Chromatography	DF	Sample required dilution due to high sediment.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250416	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250624	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250973	Sulfate	300.0 - Ion Chromatography	DD	Sample required dilution due to matrix color or odor.
			300.0 - Ion Chromatography	DF	Sample required dilution due to high sediment.

**Hydro Geo Chem, Inc.**

ACZ Project ID: **L71307**

Field Data

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Temperature (Field)

Field Measurement

Hydro Geo Chem, Inc.  
 872000 T2.3

ACZ Project ID: L71307  
 Date Received: 8/21/2008  
 Received By:  
 Date Printed: 8/21/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6753	2.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**



Laboratories, Inc.

L71307

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: HGC, INC.
E-mail: dans@hgcinc.com

Address: 51 W. Wetmore Rd., Ste. 100
Tucson, AZ 85705
Telephone:

Copy of Report to:

Name:
Company: N/A

E-mail:
Telephone: N/A

Invoice to:

Name: Same as above
Company:
E-mail:

Address: Same as above
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES [ ]
NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO"

is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FM CAB-6W
Project/PO #: 872000, T 2.3
Reporting state for compliance testing: AZ
Sampler's Name: N.J. Bobb
Are any samples NRC licensable material?

# of Containers

FM CAB-6W

SAMPLE IDENTIFICATION DATE:TIME Matrix

Table with columns for Sample Identification, Date:Time, Matrix, and # of Containers. Row 1: Bmo-2008-10GL, 8-20-08/13:45, GW, 3, X

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

H2O quality parameters:
pH = 6.22
Mg = 29.24
TC = 29.5

Sample depth = 576.57'
to H2O
purge volume = 353.5-gals
C ~ 1.19pm

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:

DATE:TIME

RECEIVED BY:

DATE:TIME

N.J. Bobb

8-20-08/14:50

WJK

8-21-08/1:07

September 09, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L71263

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 20, 2008. This project has been assigned to ACZ's project number, L71263. Please reference this number in all future inquiries.

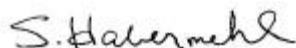
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71263. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 09, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: BINYON

ACZ Sample ID: **L71263-01**

Date Sampled: 08/18/08 13:30

Date Received: 08/20/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	13.0			mg/L	0.5	3	09/02/08 10:46	ccp

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

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- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
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**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.



Hydro Geo Chem, Inc.

ACZ Project ID: **L71263**

Project ID: 8720000

Sulfate												300.0 - Ion Chromatography	
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250973</b>													
WG250973ICV	ICV	09/02/08 8:21	WI080822-1	50.1		50.12	mg/L	100	90	110			
WG250973ICB	ICB	09/02/08 8:39				U	mg/L		-1.5	1.5			
WG250973LFB	LFB	09/02/08 8:57	WI080702-9	30		30.27	mg/L	100.9	90	110			
L71205-02AS	AS	09/02/08 10:09	WI080702-9	30	14.4	43.62	mg/L	97.4	90	110			
L71205-01DUP	DUP	09/02/08 11:40			178	174.6	mg/L				1.9	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71263**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
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No extended qualifiers associated with this analysis

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Hydro Geo Chem, Inc.

ACZ Project ID: **L71263**

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No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L71263  
 Date Received: 8/20/2008  
 Received By:  
 Date Printed: 8/20/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6736	1.6	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L71263  
 Date Received: 8/20/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L71263-01	BINYON									X		<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_

L71263

**ACZ Laboratories, Inc.** **CHAIN of CUSTODY**  
 2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**Report to:**

<b>Name:</b> Dan Simpson	<b>Address:</b> 51 West Wetmore Road
<b>Company:</b> Hydro Geo Chem Inc.	Tucson, AZ 85705
<b>E-mail:</b> dans@hgclnc.com	<b>Telephone:</b> (520) 293-1500 x 133

**Copy of Report to:**

<b>Name:</b> Jim Norris	<b>E-mail:</b> jimn@hgclnc.com
<b>Company:</b> Hydro Geo Chem Inc.	<b>Telephone:</b> (520) 293-1500 x 112

**Invoice to:**

<b>Name:</b> Jim Norris	<b>Address:</b> 51 West Wetmore Road
<b>Company:</b> Hydro Geo Chem Inc.	Tucson, AZ 85705
<b>E-mail:</b> jimn@hgclnc.com	<b>Telephone:</b> (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES    
 If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified. NO

**PROJECT INFORMATION** **ANALYSES REQUESTED (attach list or use quote number)**

Quote #: SO4 IC		# of Containers SO4													
Project/PO #: 8720000															
Reporting state for compliance testing: AZ															
Sampler's Name: Mark Arneson															
Are any samples NRC licensable material? NO															

SAMPLE IDENTIFICATION	DATE:TIME	Matrix																	
BINYON	6-18-08! 1330	GW	1	X															

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

**REMARKS**

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	6/19/08! 1500		8:20 08 927

September 15, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Rebecca Sawyer

Project ID: 8720000

ACZ Project ID: L71205

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 16, 2008. This project has been assigned to ACZ's project number, L71205. Please reference this number in all future inquiries.

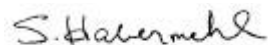
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71205. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 15, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



Hydro Geo Chem, Inc.

September 15, 2008

Project ID: 8720000

ACZ Project ID: L71205

**Sample Receipt**

ACZ Laboratories, Inc. (ACZ) received 2 ground water samples from Hydro Geo Chem, Inc. on August 16, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L71205. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

**Holding Times**

All analyses were performed within EPA recommended holding times.

**Sample Analysis**

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. The Alkalinity on L71205-02 has been qualified with the N1 flag on extended qual report. The chemist noted that the sample required to be centrifuged prior to analysis.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: GGOOSE 547

ACZ Sample ID: **L71205-01**  
Date Sampled: 08/15/08 11:50  
Date Received: 08/16/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	117			mg/L	0.2	1	08/27/08 2:52	aeh
Magnesium, dissolved	M200.7 ICP	32.4			mg/L	0.2	1	08/27/08 2:52	aeh
Potassium, dissolved	M200.7 ICP	5.6			mg/L	0.3	2	08/27/08 18:30	aeh
Sodium, dissolved	M200.7 ICP	25.4			mg/L	0.3	2	08/27/08 2:52	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		187			mg/L	2	20	08/21/08 0:00	jif
Carbonate as CaCO3			U		mg/L	2	20	08/21/08 0:00	jif
Hydroxide as CaCO3			U		mg/L	2	20	08/21/08 0:00	jif
Total Alkalinity		187			mg/L	2	20	08/21/08 0:00	jif
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.2			%			09/09/08 0:00	calc
Sum of Anions		9.1			meq/L	0.1	0.5	09/09/08 0:00	calc
Sum of Cations		9.7			meq/L	0.1	0.5	09/09/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	35.4			mg/L	0.5	3	08/26/08 19:11	ccp
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	09/02/08 9:15	ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	8.90			mg/L	0.08	0.4	09/09/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	8.90			mg/L	0.08	0.4	08/16/08 16:32	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/16/08 15:41	pjb
Residue, Filterable (TDS) @180C	SM2540C	590			mg/L	10	20	08/20/08 13:04	kah
Sulfate	300.0 - Ion Chromatography	178			mg/L	3	10	09/02/08 11:22	ccp
TDS (calculated)	Calculation	545			mg/L	10	50	09/09/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.08						09/09/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: TM-02A

ACZ Sample ID: **L71205-02**  
Date Sampled: 08/15/08 15:30  
Date Received: 08/16/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	14.7			mg/L	0.2	1	08/27/08 3:02	aeH
Magnesium, dissolved	M200.7 ICP	5.2			mg/L	0.2	1	08/27/08 3:02	aeH
Potassium, dissolved	M200.7 ICP	2.4			mg/L	0.3	2	08/27/08 18:33	aeH
Sodium, dissolved	M200.7 ICP	60.2			mg/L	0.3	2	08/27/08 3:02	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		143			mg/L	2	20	08/21/08 0:00	jif
Carbonate as CaCO3		8	B		mg/L	2	20	08/21/08 0:00	jif
Hydroxide as CaCO3			U		mg/L	2	20	08/21/08 0:00	jif
Total Alkalinity		151		*	mg/L	2	20	08/21/08 0:00	jif
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.1			%			09/09/08 0:00	calc
Sum of Anions		3.5			meq/L	0.1	0.5	09/09/08 0:00	calc
Sum of Cations		3.8			meq/L	0.1	0.5	09/09/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	8.2			mg/L	0.5	3	08/26/08 19:29	ccp
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	09/02/08 9:51	ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.25			mg/L	0.02	0.1	09/09/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.25			mg/L	0.02	0.1	08/16/08 15:42	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/16/08 15:42	pjb
Residue, Filterable (TDS) @180C	SM2540C	190			mg/L	10	20	08/20/08 13:05	kah
Sulfate	300.0 - Ion Chromatography	14.4			mg/L	0.5	3	09/02/08 9:51	ccp
TDS (calculated)	Calculation	200			mg/L	10	50	09/09/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.95						09/09/08 0:00	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

<i>B</i>	Analyte concentration detected at a value between MDL and PQL.
<i>H</i>	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
<i>U</i>	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L71205**

Project ID: 8720000

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250396</b>													
WG250396PBW1	PBW	08/21/08 17:18				15.1	mg/L		-20	20			
WG250396LCSW2	LCSW	08/21/08 17:30	WC080814-1	820.0001		803.4	mg/L	98	90	110			
WG250396PBW2	PBW	08/21/08 20:21				U	mg/L		-20	20			
WG250396LCSW5	LCSW	08/21/08 20:34	WC080814-1	820.0001		808.9	mg/L	98.6	90	110			
L71212-01DUP	DUP	08/21/08 22:02			250	248.5	mg/L				0.6	20	
WG250396PBW3	PBW	08/21/08 23:52				U	mg/L		-20	20			
WG250396LCSW8	LCSW	08/22/08 0:03	WC080814-1	820.0001		779.2	mg/L	95	90	110			
WG250396PBW4	PBW	08/22/08 3:11				U	mg/L		-20	20			
WG250396LCSW11	LCSW	08/22/08 3:24	WC080814-1	820.0001		822.6	mg/L	100.3	90	110			
WG250396LCSW14	LCSW	08/22/08 6:28	WC080814-1	820.0001		822.5	mg/L	100.3	90	110			

**Calcium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250638</b>													
WG250638ICV	ICV	08/27/08 2:05	I080818-1	100		99.76	mg/L	99.8	95	105			
WG250638ICB	ICB	08/27/08 2:09				U	mg/L		-0.6	0.6			
WG250638LFB	LFB	08/27/08 2:22	I080811-3	67.97008		71.49	mg/L	105.2	85	115			
L71043-01AS	AS	08/27/08 2:28	I080811-3	67.97008	66.7	132.63	mg/L	97	85	115			
L71043-01ASD	ASD	08/27/08 2:32	I080811-3	67.97008	66.7	131.48	mg/L	95.3	85	115	0.87	20	

**Chloride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250459</b>													
WG250459ICV	ICV	08/11/08 15:32	WI080822-1	19.98		20.49	mg/L	102.6	90	110			
WG250459ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250459ICV1	ICV	08/26/08 11:20	WI080822-1	19.98		19.76	mg/L	98.9	90	110			
WG250459ICB1	ICB	08/26/08 11:38				U	mg/L		-1.5	1.5			
WG250459LFB	LFB	08/26/08 11:57	WI080702-9	30		29.85	mg/L	99.5	90	110			
L71151-01AS	AS	08/26/08 16:46	WI080702-9	30	9	39.14	mg/L	100.5	90	110			
L71151-01DUP	DUP	08/26/08 17:04			9	9.02	mg/L				0.2	20	
WG250459ICV1	ICV	08/27/08 21:16	WI080822-1	19.98		19.69	mg/L	98.5	90	110			
WG250459ICB1	ICB	08/27/08 21:34				U	mg/L		-1.5	1.5			

Hydro Geo Chem, Inc.

ACZ Project ID: **L71205**

Project ID: 8720000

**Fluoride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
<b>WG250973</b>													
WG250973ICV	ICV	09/02/08 8:21	WI080822-1	4		3.91	mg/L	97.8	90	110			
WG250973ICB	ICB	09/02/08 8:39				U	mg/L		-0.3	0.3			
WG250973LFB	LFB	09/02/08 8:57	WI080702-9	1.5		1.41	mg/L	94	90	110			
L71205-01DUP	DUP	09/02/08 9:33			.1	.13	mg/L				26.1	20	RA
L71205-02AS	AS	09/02/08 10:09	WI080702-9	1.5	.2	1.68	mg/L	98.7	90	110			

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250638</b>													
WG250638ICV	ICV	08/27/08 2:05	I1080818-1	100		99.98	mg/L	100	95	105			
WG250638ICB	ICB	08/27/08 2:09				U	mg/L		-0.6	0.6			
WG250638LFB	LFB	08/27/08 2:22	I1080811-3	49.96908		51.58	mg/L	103.2	85	115			
L71043-01AS	AS	08/27/08 2:28	I1080811-3	49.96908	18.6	70.01	mg/L	102.9	85	115			
L71043-01ASD	ASD	08/27/08 2:32	I1080811-3	49.96908	18.6	69.63	mg/L	102.1	85	115	0.54	20	

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250118</b>													
WG250118ICV	ICV	08/16/08 15:23	WI080613-1	2.416		2.439	mg/L	101	90	110			
WG250118ICB	ICB	08/16/08 15:24				U	mg/L		-0.06	0.06			
WG250118LFB	LFB	08/16/08 15:28	WI080312-1	2		2.01	mg/L	100.5	90	110			
L71203-02DUP	DUP	08/16/08 15:33			2.16	2.146	mg/L				0.7	20	
L71203-01AS	AS	08/16/08 15:57	WI080312-1	10	3.6	14.17	mg/L	105.7	90	110			

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250118</b>													
WG250118ICV	ICV	08/16/08 15:23	WI080613-1	.609		.631	mg/L	103.6	90	110			
WG250118ICB	ICB	08/16/08 15:24				U	mg/L		-0.03	0.03			
WG250118LFB	LFB	08/16/08 15:28	WI080312-1	1		1.01	mg/L	101	90	110			
L71203-01AS	AS	08/16/08 15:30	WI080312-1	1	.06	1.128	mg/L	106.8	90	110			
L71203-02DUP	DUP	08/16/08 15:33				U	mg/L				0	20	RA

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250731</b>													
WG250731ICV	ICV	08/27/08 17:35	I1080818-1	20		20.37	mg/L	101.9	95	105			
WG250731ICB	ICB	08/27/08 17:39				U	mg/L		-0.9	0.9			
WG250731LFB	LFB	08/27/08 17:53	I1080811-3	99.76186		105.46	mg/L	105.7	85	115			
L71043-01AS	AS	08/27/08 18:01	I1080811-3	99.76186	3.1	115.16	mg/L	112.3	85	115			
L71043-01ASD	ASD	08/27/08 18:04	I1080811-3	99.76186	3.1	111.73	mg/L	108.9	85	115	3.02	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71205**

Project ID: 8720000

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250297</b>													
WG250297PBW	PBW	08/20/08 13:00				U	mg/L		-20	20			
WG250297LCSW	LCSW	08/20/08 13:01	PCN30192	260		264	mg/L	101.5	80	120			
L71226-05DUP	DUP	08/20/08 13:13			6520	6506	mg/L				0.2	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250638</b>													
WG250638ICV	ICV	08/27/08 2:05	I1080818-1	100		100.53	mg/L	100.5	95	105			
WG250638ICB	ICB	08/27/08 2:09				U	mg/L		-0.9	0.9			
WG250638LFB	LFB	08/27/08 2:22	I1080811-3	98.21624		101.22	mg/L	103.1	85	115			
L71043-01AS	AS	08/27/08 2:28	I1080811-3	98.21624	53.2	150.2	mg/L	98.8	85	115			
L71043-01ASD	ASD	08/27/08 2:32	I1080811-3	98.21624	53.2	149.12	mg/L	97.7	85	115	0.72	20	

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250973</b>													
WG250973ICV	ICV	09/02/08 8:21	WI080822-1	50.1		50.12	mg/L	100	90	110			
WG250973ICB	ICB	09/02/08 8:39				U	mg/L		-1.5	1.5			
WG250973LFB	LFB	09/02/08 8:57	WI080702-9	30		30.27	mg/L	100.9	90	110			
L71205-02AS	AS	09/02/08 10:09	WI080702-9	30	14.4	43.62	mg/L	97.4	90	110			
L71205-01DUP	DUP	09/02/08 11:40			178	174.6	mg/L				1.9	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71205**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L71205-01</b>	WG250973	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250118	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L71205-02</b>	WG250973	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250118	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250396	Total Alkalinity	SM2320B - Titration	N1	See Case Narrative.

Hydro Geo Chem, Inc.

ACZ Project ID: **L71205**



No certification qualifiers associated with this analysis



Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L71205  
 Date Received: 8/16/2008  
 Received By:  
 Date Printed: 8/16/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
2098	2.1	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L71205  
 Date Received: 8/16/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L71205-01	GGOOSE 547		Y									<input type="checkbox"/>
L71205-02	TM-02A		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_

L971205

<b>ACZ Laboratories, Inc.</b>				<b>CHAIN of CUSTODY</b>														
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493																		
<b>Report to:</b>																		
Name: Dan Simpson				Address: 51 West Wetmore Road, Suite 101														
Company: Hydro Geo Chem, Inc.				Tucson, Arizona 85705														
E-mail: dans@hgcinc.com				Telephone: 520-293-1500 x133														
<b>Copy of Report to:</b>																		
Name: Rebecca Sawyer				E-mail: Rebecca_Sawyer@fmi.com														
Company: Freeport-McMoRan Copper Queen Branch				Telephone: 520-432-6206														
<b>Invoice to:</b>																		
Name: Jim Norris				Address: 51 West Wetmore Road, Suite 101														
Company: Hydro Geo Chem, Inc.				Tucson, Arizona 85705														
E-mail: jimn@hgcinc.com				Telephone: 520-293-1500 x112														
If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?							YES <input checked="" type="checkbox"/>											
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.							NO <input type="checkbox"/>											
<b>PROJECT INFORMATION</b> ANALYSES REQUESTED (attach list or use quote number)																		
Quote #: FMCQB-GW		Project/PO #: 8720000		# of Containers FMCQB-GW														
Reporting state for compliance testing: Arizona		Sampler's Name: Mark Arneson																
Are any samples NRC licensable material? No																		
<b>SAMPLE IDENTIFICATION</b>		<b>DATE:TIME</b>		<b>Matrix</b>														
GGOOSE 547		08/15/08: 11:50		GW 3		X												
TM-02A		08/15/08: 15:30		GW 3		X												
Matrix		SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)																
<b>REMARKS</b>																		
Please refer to ACZ's terms & conditions located on the reverse side of this COC.																		
<b>REINQUISHED BY:</b>				<b>DATE:TIME</b>				<b>RECEIVED BY:</b>				<b>DATE:TIME</b>						
[Signature]				8/16/08 14:30				MSS				8-16-08 11:09						

FRMAD050.03.05.02

White - Return with sample. Yellow - Retain for your records.

September 05, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L71107

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 13, 2008. This project has been assigned to ACZ's project number, L71107. Please reference this number in all future inquiries.

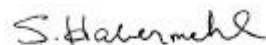
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71107. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: AWC-03

ACZ Sample ID: **L71107-01**  
Date Sampled: 08/12/08 09:45  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/21/08 20:07	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/22/08 22:29	ear/aeH
Barium, dissolved	M200.7 ICP	0.345			mg/L	0.003	0.02	08/22/08 22:29	ear/aeH
Boron, dissolved	M200.7 ICP	0.04	B		mg/L	0.01	0.05	08/22/08 22:29	ear/aeH
Calcium, dissolved	M200.7 ICP	62.8		*	mg/L	0.2	1	08/22/08 22:29	ear/aeH
Iron, dissolved	M200.7 ICP		U		mg/L	0.02	0.05	08/22/08 22:29	ear/aeH
Iron, total	M200.7 ICP	0.02	B		mg/L	0.02	0.05	08/26/08 17:33	ear/aeH
Magnesium, dissolved	M200.7 ICP	8.6			mg/L	0.2	1	08/22/08 22:29	ear/aeH
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/22/08 22:29	ear/aeH
Manganese, total	M200.7 ICP		U		mg/L	0.005	0.03	08/26/08 17:33	ear/aeH
Potassium, dissolved	M200.7 ICP	2.1			mg/L	0.3	2	08/22/08 22:29	ear/aeH
Silica, total	M200.7 ICP	34.7			mg/L	0.4	2	08/26/08 17:33	ear/aeH
Sodium, dissolved	M200.7 ICP	22.8			mg/L	0.3	2	08/22/08 22:29	ear/aeH
Strontium, dissolved	M200.7 ICP	0.59			mg/L	0.01	0.05	08/22/08 22:29	ear/aeH

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: AWC-03

ACZ Sample ID: **L71107-01**  
Date Sampled: 08/12/08 09:45  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		156			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3		5	B		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		162			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	5		*	mg/L	1	5	08/19/08 19:04	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.2			%			09/04/08 0:00	calc
Sum of Anions		4.6			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		4.9			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	15.5		*	mg/L	0.5	3	08/21/08 6:26	aml
Coliforms, fecal	SM9222D - Membrane Filter	0	H	*	#/100ml	1	5	08/13/08 13:20	kah
Conductivity @25C	SM2510B	463			umhos/cm	1	10	08/14/08 22:10	tbd
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/21/08 6:26	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.28			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.28		*	mg/L	0.02	0.1	08/13/08 20:21	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:21	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	09/03/08 14:11	ccp
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.05		*	mg/L	0.01	0.05	08/13/08 21:55	pjb
Residue, Filterable (TDS) @180C	SM2540C	290			mg/L	10	20	08/14/08 17:07	tbd
Residue, Non-Filterable (TSS) @105C	SM2540D		U	*	mg/L	5	20	08/18/08 14:52	gkj
Sulfate	300.0 - Ion Chromatography	38.8			mg/L	0.5	3	08/21/08 6:26	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 13:08	kah
TDS (calculated)	Calculation	260			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.12						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	0.2	B		NTU	0.1	0.5	08/13/08 16:24	tbd

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: AWC-04

ACZ Sample ID: **L71107-02**  
Date Sampled: 08/12/08 10:20  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/21/08 20:23	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/25/08 22:09	ear/aeH
Barium, dissolved	M200.7 ICP	0.551			mg/L	0.003	0.02	08/25/08 22:09	ear/aeH
Boron, dissolved	M200.7 ICP	0.04	B		mg/L	0.01	0.05	08/25/08 22:09	ear/aeH
Calcium, dissolved	M200.7 ICP	88.7			mg/L	0.2	1	08/25/08 22:09	ear/aeH
Iron, dissolved	M200.7 ICP		U		mg/L	0.02	0.05	08/25/08 22:09	ear/aeH
Iron, total	M200.7 ICP	0.05	B		mg/L	0.02	0.05	08/26/08 17:44	ear/aeH
Magnesium, dissolved	M200.7 ICP	11.6			mg/L	0.2	1	08/25/08 22:09	ear/aeH
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/25/08 22:09	ear/aeH
Manganese, total	M200.7 ICP		U		mg/L	0.005	0.03	08/26/08 17:44	ear/aeH
Potassium, dissolved	M200.7 ICP	2.6			mg/L	0.3	2	08/26/08 13:36	aeH
Silica, total	M200.7 ICP	35.3			mg/L	0.4	2	08/26/08 17:44	ear/aeH
Sodium, dissolved	M200.7 ICP	22.8			mg/L	0.3	2	08/25/08 22:09	ear/aeH
Strontium, dissolved	M200.7 ICP	0.66			mg/L	0.01	0.05	08/25/08 22:09	ear/aeH

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: AWC-04

ACZ Sample ID: **L71107-02**  
Date Sampled: 08/12/08 10:20  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		206			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		206			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	7		*	mg/L	1	5	08/19/08 19:33	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.2			%			09/04/08 0:00	calc
Sum of Anions		6.0			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	47.5		*	mg/L	0.5	3	08/21/08 7:20	aml
Coliforms, fecal	SM9222D - Membrane Filter	0	H	*	#/100ml	1	5	08/13/08 13:30	kah
Conductivity @25C	SM2510B	614			umhos/cm	1	10	08/14/08 22:18	tbd
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/21/08 7:20	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.94			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.94		*	mg/L	0.02	0.1	08/13/08 20:22	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:22	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	09/03/08 14:12	ccp
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.06		*	mg/L	0.01	0.05	08/13/08 21:52	pjb
Residue, Filterable (TDS) @180C	SM2540C	380			mg/L	10	20	08/14/08 17:08	tbd
Residue, Non-Filterable (TSS) @105C	SM2540D		U	*	mg/L	5	20	08/18/08 14:54	gkj
Sulfate	300.0 - Ion Chromatography	21.6			mg/L	0.5	3	08/21/08 7:20	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 13:14	kah
TDS (calculated)	Calculation	328			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.16						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	0.3	B		NTU	0.1	0.5	08/13/08 16:25	tbd

Arizona license number: AZ0102



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: AWC-05

ACZ Sample ID: **L71107-03**  
Date Sampled: 08/12/08 09:40  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/21/08 20:39	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/25/08 22:19	ear/aeH
Barium, dissolved	M200.7 ICP	0.306			mg/L	0.003	0.02	08/25/08 22:19	ear/aeH
Boron, dissolved	M200.7 ICP	0.07			mg/L	0.01	0.05	08/25/08 22:19	ear/aeH
Calcium, dissolved	M200.7 ICP	50.6			mg/L	0.2	1	08/25/08 22:19	ear/aeH
Iron, dissolved	M200.7 ICP		U		mg/L	0.02	0.05	08/25/08 22:19	ear/aeH
Iron, total	M200.7 ICP		U		mg/L	0.02	0.05	08/26/08 17:48	ear/aeH
Magnesium, dissolved	M200.7 ICP	6.2			mg/L	0.2	1	08/25/08 22:19	ear/aeH
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/25/08 22:19	ear/aeH
Manganese, total	M200.7 ICP		U		mg/L	0.005	0.03	08/26/08 17:48	ear/aeH
Potassium, dissolved	M200.7 ICP	2.2			mg/L	0.3	2	08/26/08 13:46	aeH
Silica, total	M200.7 ICP	37.7			mg/L	0.4	2	08/26/08 17:48	ear/aeH
Sodium, dissolved	M200.7 ICP	35.6			mg/L	0.3	2	08/25/08 22:19	ear/aeH
Strontium, dissolved	M200.7 ICP	0.62			mg/L	0.01	0.05	08/25/08 22:19	ear/aeH

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: AWC-05

ACZ Sample ID: **L71107-03**  
Date Sampled: 08/12/08 09:40  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		164			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3		8	B		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		172			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	5		*	mg/L	1	5	08/19/08 19:47	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.4			%			09/04/08 0:00	calc
Sum of Anions		4.3			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		4.6			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	16.1		*	mg/L	0.5	3	08/21/08 7:39	aml
Coliforms, fecal	SM9222D - Membrane Filter	0	H	*	#/100ml	1	5	08/13/08 13:40	kah
Conductivity @25C	SM2510B	434			umhos/cm	1	10	08/14/08 22:26	tbd
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/21/08 7:39	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.02			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.02		*	mg/L	0.02	0.1	08/13/08 20:23	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:23	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	09/03/08 14:13	ccp
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.06		*	mg/L	0.01	0.05	08/13/08 21:54	pjb
Residue, Filterable (TDS) @180C	SM2540C	280			mg/L	10	20	08/15/08 14:32	jlf
Residue, Non-Filterable (TSS) @105C	SM2540D		U	*	mg/L	5	20	08/18/08 14:55	gkj
Sulfate	300.0 - Ion Chromatography	14.9			mg/L	0.5	3	08/21/08 7:39	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 13:21	kah
TDS (calculated)	Calculation	242			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.16						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	0.2	B		NTU	0.1	0.5	08/13/08 16:26	tbd

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L71107**

Project ID: 8720000

### Alkalinity as CaCO3

### SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249962</b>													
WG249962PBW2	PBW	08/14/08 15:05				U	mg/L		-20	20			
WG249962LCSW5	LCSW	08/14/08 15:16	WC080814-1	820.0001		776.2	mg/L	94.7	90	110			
WG249962PBW3	PBW	08/14/08 18:05				U	mg/L		-20	20			
WG249962LCSW8	LCSW	08/14/08 18:16	WC080814-1	820.0001		780	mg/L	95.1	90	110			
WG249962PBW4	PBW	08/14/08 21:17				U	mg/L		-20	20			
WG249962LCSW11	LCSW	08/14/08 21:29	WC080814-1	820.0001		780.8	mg/L	95.2	90	110			
L71110-01DUP	DUP	08/14/08 22:55			60	61.3	mg/L				2.1	20	
WG249962LCSW14	LCSW	08/15/08 0:29	WC080814-1	820.0001		783	mg/L	95.5	90	110			

### Aluminum, dissolved

### M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		2.031	mg/L	101.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.09	0.09			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	1		1.031	mg/L	103.1	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	1	.05	1.087	mg/L	103.7	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	1	.05	1.078	mg/L	102.8	85	115	0.83	20	
<b>WG250461</b>													
WG250461ICV	ICV	08/25/08 21:49	I1080818-1	2		1.998	mg/L	99.9	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.09	0.09			
WG250461LFB	LFB	08/25/08 22:06	I1080811-3	1		1.011	mg/L	101.1	85	115			
L71107-02AS	AS	08/25/08 22:13	I1080811-3	1	U	1.018	mg/L	101.8	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I1080811-3	1	U	1.011	mg/L	101.1	85	115	0.69	20	

### Barium, dissolved

### M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		2.0795	mg/L	104	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.009	0.009			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	.5		.5308	mg/L	106.2	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	.5	.125	.6424	mg/L	103.5	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	.5	.125	.6382	mg/L	102.6	85	115	0.66	20	
<b>WG250461</b>													
WG250461ICV	ICV	08/25/08 21:49	I1080818-1	2		2.0197	mg/L	101	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.009	0.009			
WG250461LFB	LFB	08/25/08 22:06	I1080811-3	.5		.5197	mg/L	103.9	85	115			
L71107-02AS	AS	08/25/08 22:13	I1080811-3	.5	.551	1.0524	mg/L	100.3	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I1080811-3	.5	.551	1.0512	mg/L	100	85	115	0.11	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71107**

Project ID: 8720000

**Boron, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		1.947	mg/L	97.4	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.03	0.03			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	.5005		.522	mg/L	104.3	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	.5005	.06	.577	mg/L	103.3	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	.5005	.06	.577	mg/L	103.3	85	115	0	20	
<b>WG250461</b>													
WG250461ICV	ICV	08/25/08 21:49	I1080818-1	2		2.008	mg/L	100.4	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.03	0.03			
WG250461LFB	LFB	08/25/08 22:06	I1080811-3	.5005		.544	mg/L	108.7	85	115			
L71107-02AS	AS	08/25/08 22:13	I1080811-3	.5005	.04	.584	mg/L	108.7	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I1080811-3	.5005	.04	.58	mg/L	107.9	85	115	0.69	20	

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	100		96.57	mg/L	96.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.6	0.6			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	67.97008		68.2	mg/L	100.3	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	67.97008	209	262.8	mg/L	79.2	85	115			M1
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	67.97008	209	262.95	mg/L	79.4	85	115	0.06	20	M1
<b>WG250461</b>													
WG250461ICV	ICV	08/25/08 21:49	I1080818-1	100		100.39	mg/L	100.4	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.6	0.6			
WG250461LFB	LFB	08/25/08 22:06	I1080811-3	67.97008		71.5	mg/L	105.2	85	115			
L71107-02AS	AS	08/25/08 22:13	I1080811-3	67.97008	88.7	151.03	mg/L	91.7	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I1080811-3	67.97008	88.7	151.21	mg/L	92	85	115	0.12	20	

**Carbon, total organic (TOC)**

SM5310B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250195</b>													
WG250195ICV	ICV	08/19/08 14:34	WI080718-3	75		74.1	mg/L	98.8	90	110			
WG250195ICB	ICB	08/19/08 14:48				U	mg/L		-3	3			
WG250195LFB1	LFB	08/19/08 15:02	WI080714-2	50		46.2	mg/L	92.4	90	110			
L71104-03AS	AS	08/19/08 18:50	WI080714-2	50	10	58.7	mg/L	97.4	90	110			
L71107-01DUP	DUP	08/19/08 19:18			5	4.1	mg/L				19.8	20	RA
WG250195LFB2	LFB	08/20/08 12:12	WI080714-2	50		47	mg/L	94	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L71107**

Project ID: 8720000

Chloride													M300.0 - Ion Chromatography	
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
<b>WG249769</b>														
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110				
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5				
<b>WG250293</b>														
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110				
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5				
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	19.98		20.29	mg/L	101.6	90	110				
WG250293ICB1	ICB	08/20/08 23:48				U	mg/L		-1.5	1.5				
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	30		28.81	mg/L	96	90	110				
L71074-05AS	AS	08/21/08 4:56	WI080702-9	300	47	381.1	mg/L	111.4	90	110				M1
L71074-05DUP	DUP	08/21/08 5:14			47	47.3	mg/L				0.6	20		RA

Conductivity @25C													SM2510B	
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
<b>WG249962</b>														
WG249962LCSW1	LCSW	08/14/08 12:06	PCN29501	1408.8		1439	µmhos/cm	102.1	90	110				
WG249962LCSW4	LCSW	08/14/08 15:06	PCN29501	1408.8		1425	µmhos/cm	101.1	90	110				
WG249962LCSW7	LCSW	08/14/08 18:07	PCN29501	1408.8		1421	µmhos/cm	100.9	90	110				
WG249962LCSW10	LCSW	08/14/08 21:18	PCN29501	1408.8		1423	µmhos/cm	101	90	110				
L71110-01DUP	DUP	08/14/08 22:55			554	550	µmhos/cm				0.7	20		
WG249962LCSW13	LCSW	08/15/08 0:18	PCN29501	1408.8		1428	µmhos/cm	101.4	90	110				

Fluoride													M300.0 - Ion Chromatography	
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual	
<b>WG249769</b>														
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110				
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3				
<b>WG250293</b>														
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110				
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3				
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	4		4.12	mg/L	103	90	110				
WG250293ICB1	ICB	08/20/08 23:48				.18	mg/L		-0.3	0.3				
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	1.5		1.44	mg/L	96	90	110				
L71074-05AS	AS	08/21/08 4:56	WI080702-9	15	1	16.8	mg/L	105.3	90	110				
L71074-05DUP	DUP	08/21/08 5:14			1	1.3	mg/L				26.1	20		RA

Hydro Geo Chem, Inc.

ACZ Project ID: L71107

Project ID: 8720000

**Iron, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		1.945	mg/L	97.3	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.06	0.06			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	1		1.052	mg/L	105.2	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	1	U	1.06	mg/L	106	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	1	U	1.034	mg/L	103.4	85	115	2.48	20	
<b>WG250461</b>													
WG250461ICV	ICV	08/25/08 21:49	I1080818-1	2		1.975	mg/L	98.8	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.06	0.06			
WG250461LFB	LFB	08/25/08 22:06	I1080811-3	1		1.078	mg/L	107.8	85	115			
L71107-02AS	AS	08/25/08 22:13	I1080811-3	1	U	1.091	mg/L	109.1	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I1080811-3	1	U	1.085	mg/L	108.5	85	115	0.55	20	

**Iron, total**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250628</b>													
WG250628ICV	ICV	08/26/08 16:53	I1080820-1	2		1.925	mg/L	96.3	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-0.06	0.06			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.044	0.044			
WG250403LFB	LFB	08/26/08 17:15	I1080811-3	1		1.082	mg/L	108.2	85	115			
L71104-02LFM	LFM	08/26/08 17:22	I1080811-3	1	2.78	3.704	mg/L	92.4	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	I1080811-3	1	2.78	3.748	mg/L	96.8	70	130	1.18	20	
L71113-03LFM	LFM	08/26/08 18:49	I1080811-3	1	.14	1.156	mg/L	101.6	70	130			
L71113-03LFMD	LFMD	08/26/08 18:53	I1080811-3	1	.14	1.189	mg/L	104.9	70	130	2.81	20	

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	100		99.56	mg/L	99.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.6	0.6			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	49.96908		51.22	mg/L	102.5	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	49.96908	50.7	99.45	mg/L	97.6	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	49.96908	50.7	98.93	mg/L	96.5	85	115	0.52	20	
<b>WG250461</b>													
WG250461ICV	ICV	08/25/08 21:49	I1080818-1	100		101.47	mg/L	101.5	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.6	0.6			
WG250461LFB	LFB	08/25/08 22:06	I1080811-3	49.96908		52.02	mg/L	104.1	85	115			
L71107-02AS	AS	08/25/08 22:13	I1080811-3	49.96908	11.6	62.87	mg/L	102.6	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I1080811-3	49.96908	11.6	62.44	mg/L	101.7	85	115	0.69	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71107**

Project ID: 8720000

**Manganese, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		1.9549	mg/L	97.7	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.015	0.015			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	.5		.5377	mg/L	107.5	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	.5	.441	.9455	mg/L	100.9	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	.5	.441	.9385	mg/L	99.5	85	115	0.74	20	

**WG250461**

WG250461ICV	ICV	08/25/08 21:49	I1080818-1	2		1.9924	mg/L	99.6	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.015	0.015			
WG250461LFB	LFB	08/25/08 22:06	I1080811-3	.5		.5604	mg/L	112.1	85	115			
L71107-02AS	AS	08/25/08 22:13	I1080811-3	.5	U	.5688	mg/L	113.8	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I1080811-3	.5	U	.5666	mg/L	113.3	85	115	0.39	20	

**Manganese, total**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250628</b>													
WG250628ICV	ICV	08/26/08 16:53	I1080820-1	2		1.949	mg/L	97.5	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-0.015	0.015			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.011	0.011			
WG250403LFB	LFB	08/26/08 17:15	I1080811-3	.5		.5621	mg/L	112.4	85	115			
L71104-02LFM	LFM	08/26/08 17:22	I1080811-3	.5	.057	.5919	mg/L	107	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	I1080811-3	.5	.057	.5963	mg/L	107.9	70	130	0.74	20	
L71113-03LFM	LFM	08/26/08 18:49	I1080811-3	.5	U	.5257	mg/L	105.1	70	130			
L71113-03LFMD	LFMD	08/26/08 18:53	I1080811-3	.5	U	.5248	mg/L	105	70	130	0.17	20	

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249944</b>													
WG249944ICV	ICV	08/13/08 20:02	WI080613-1	2.416		2.432	mg/L	100.7	90	110			
WG249944ICB	ICB	08/13/08 20:03				U	mg/L		-0.06	0.06			
WG249944LFB1	LFB	08/13/08 20:06	WI080312-1	2		1.931	mg/L	96.6	90	110			
L71095-01AS	AS	08/13/08 20:08	WI080312-1	2	.03	1.974	mg/L	97.2	90	110			
L71095-02DUP	DUP	08/13/08 20:10			.04	.039	mg/L				2.5	20	RA
WG249944LFB2	LFB	08/13/08 20:42	WI080312-1	2		1.967	mg/L	98.4	90	110			

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249944</b>													
WG249944ICV	ICV	08/13/08 20:02	WI080613-1	.609		.628	mg/L	103.1	90	110			
WG249944ICB	ICB	08/13/08 20:03				U	mg/L		-0.03	0.03			
WG249944LFB1	LFB	08/13/08 20:06	WI080312-1	1		.977	mg/L	97.7	90	110			
L71095-01AS	AS	08/13/08 20:08	WI080312-1	1		.962	mg/L	96.2	90	110			
L71095-02DUP	DUP	08/13/08 20:10				U	mg/L				0	20	RA
WG249944LFB2	LFB	08/13/08 20:42	WI080312-1	1		1.009	mg/L	100.9	90	110			



Hydro Geo Chem, Inc.

ACZ Project ID: L71107

Project ID: 8720000

**Nitrogen, ammonia**

M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG251099</b>													
WG251099ICV	ICV	09/03/08 14:01	WI080903-3	.999		.984	mg/L	98.5	90	110			
WG251099ICB	ICB	09/03/08 14:02				U	mg/L		-0.15	0.15			
WG251099LFB	LFB	09/03/08 14:03	WI080903-5	3		2.971	mg/L	99	90	110			
L70958-08DUP	DUP	09/03/08 14:07			.13	.138	mg/L				6	20	RA
WG251099ICV1	ICV	09/03/08 14:43	WI080903-3	.999		.977	mg/L	97.8	90	110			
WG251099ICB1	ICB	09/03/08 14:44				U	mg/L		-0.15	0.15			
L70958-06AS	AS	09/03/08 14:46	WI080903-5	3	U	3.021	mg/L	100.7	90	110			

**Phosphorus, ortho dissolved**

M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249947</b>													
WG249947ICV	ICV	08/13/08 21:42	WI080401-4	.65228		.65	mg/L	99.7	90	110			
WG249947ICB	ICB	08/13/08 21:43				U	mg/L		-0.03	0.03			
WG249947LFB	LFB	08/13/08 21:45	WI080730-3	.5		.507	mg/L	101.4	90	110			
L71104-01AS	AS	08/13/08 21:47	WI080730-3	.5	.05	.585	mg/L	107	90	110			
L71104-02DUP	DUP	08/13/08 21:49			.06	.062	mg/L				3.3	20	RA

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I080818-1	20		20.61	mg/L	103.1	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.9	0.9			
WG250458LFB	LFB	08/22/08 20:45	I080811-3	99.76186		105.88	mg/L	106.1	85	115			
L71074-01AS	AS	08/22/08 21:44	I080811-3	99.76186	6.3	114.34	mg/L	108.3	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I080811-3	99.76186	6.3	112.84	mg/L	106.8	85	115	1.32	20	
<b>WG250548</b>													
WG250548ICV	ICV	08/26/08 11:25	I080818-1	20		20.53	mg/L	102.7	95	105			
WG250548ICB	ICB	08/26/08 11:28				U	mg/L		-0.9	0.9			
<b>WG250611</b>													
WG250611LFB	LFB	08/26/08 13:33	I080811-3	99.76186		107.19	mg/L	107.4	85	115			
L71107-02AS	AS	08/26/08 13:39	I080811-3	99.76186	2.6	114.46	mg/L	112.1	85	115			
L71107-02ASD	ASD	08/26/08 13:43	I080811-3	99.76186	2.6	114.45	mg/L	112.1	85	115	0.01	20	

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250005</b>													
WG250005PBW	PBW	08/14/08 16:45				U	mg/L		-20	20			
WG250005LCSW	LCSW	08/14/08 16:46	PCN30201	260		272	mg/L	104.6	80	120			
L71165-01DUP	DUP	08/14/08 17:14			930	922	mg/L				0.9	20	
<b>WG250081</b>													
WG250081PBW	PBW	08/15/08 14:30				U	mg/L		-20	20			
WG250081LCSW	LCSW	08/15/08 14:31	PCN30201	260		278	mg/L	106.9	80	120			
L71113-01DUP	DUP	08/15/08 14:45			1390	1416	mg/L				1.9	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71107**

Project ID: 8720000

**Residue, Non-Filterable (TSS) @105C** SM2540D

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250162</b>													
WG250162PBW	PBW	08/18/08 14:45				U	mg/L		-15	15			
WG250162LCSW	LCSW	08/18/08 14:46	PCN30192	160		143	mg/L	89.4	80	120			
L71113-04DUP	DUP	08/18/08 15:03			U	U	mg/L				0	20	RA

**Silica, total** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250628</b>													
WG250628ICV	ICV	08/26/08 16:53	I1080820-1	42.8		44.47	mg/L	103.9	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-1.2	1.2			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.88	0.88			
WG250403LFB	LFB	08/26/08 17:15	I1080811-3	21.4		24.45	mg/L	114.3	85	115			
L71104-02LFM	LFM	08/26/08 17:22	I1080811-3	21.4	37.1	52.48	mg/L	71.9	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	I1080811-3	21.4	37.1	55.45	mg/L	85.7	70	130	5.5	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	100		102.68	mg/L	102.7	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.9	0.9			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	98.21624		104.19	mg/L	106.1	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	98.21624	45.3	147.69	mg/L	104.2	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	98.21624	45.3	146.56	mg/L	103.1	85	115	0.77	20	
<b>WG250461</b>													
WG250461ICV	ICV	08/25/08 21:49	I1080818-1	100		101.31	mg/L	101.3	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.9	0.9			
WG250461LFB	LFB	08/25/08 22:06	I1080811-3	98.21624		100.69	mg/L	102.5	85	115			
L71107-02AS	AS	08/25/08 22:13	I1080811-3	98.21624	22.8	121.36	mg/L	100.4	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I1080811-3	98.21624	22.8	120.5	mg/L	99.5	85	115	0.71	20	

**Strontium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		2.106	mg/L	105.3	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.03	0.03			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	.5		.545	mg/L	109	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	.5	.8	1.28	mg/L	96	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	.5	.8	1.275	mg/L	95	85	115	0.39	20	
<b>WG250461</b>													
WG250461ICV	ICV	08/25/08 21:49	I1080818-1	2		2.077	mg/L	103.9	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.03	0.03			
WG250461LFB	LFB	08/25/08 22:06	I1080811-3	.5		.548	mg/L	109.6	85	115			
L71107-02AS	AS	08/25/08 22:13	I1080811-3	.5	.66	1.179	mg/L	103.8	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I1080811-3	.5	.66	1.171	mg/L	102.2	85	115	0.68	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71107**

Project ID: 8720000

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250293</b>													
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	50.1		49	mg/L	97.8	90	110			
WG250293ICB1	ICB	08/20/08 23:48				.91	mg/L		-1.5	1.5			
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	30		27.86	mg/L	92.9	90	110			
L71074-05AS	AS	08/21/08 17:53	WI080702-9	600	1160	1764	mg/L	100.7	90	110			
L71074-05DUP	DUP	08/21/08 18:11			1160	1148	mg/L				1	20	

**Sulfide as S** 376.2 - Methylene Blue

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249966</b>													
WG249966ICV	ICV	08/14/08 10:59	WC080814-7	.388		.355	mg/L	91.5	90	110			
WG249966ICB	ICB	08/14/08 11:05				U	mg/L		-0.06	0.06			
WG249966LFB	LFB	08/14/08 11:11	WC080814-9	.3191067		.36	mg/L	112.8	80	120			
L71107-03AS	AS	08/14/08 13:27	WC080814-9	.3191067	U	.231	mg/L	72.4	75	125			M2
L71107-03DUP	DUP	08/14/08 13:47			U	U	mg/L				0	20	RA

**Turbidity** M180.1 - Nephelometric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249940</b>													
WG249940ICV	ICV	08/13/08 16:20	PCN29103	180		184	NTU	102.2	90	110			
WG249940ICB	ICB	08/13/08 16:20				U	NTU		-0.3	0.3			
L71113-04DUP	DUP	08/13/08 16:33			1.5	1.68	NTU				11.3	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71107**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L71107-01</b>	WG250458	Calcium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
			SM9222D - Membrane Filter	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG250293	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG251099	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			376.2 - Methylene Blue	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L71107**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L71107-02</b>	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
			SM9222D - Membrane Filter	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG250293	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG251099	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			376.2 - Methylene Blue	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L71107**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L71107-03</b>	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
			SM9222D - Membrane Filter	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG250293	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG251099	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			376.2 - Methylene Blue	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L71107**

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Coliforms, fecal	SM9222D - Membrane Filter
Residue, Non-Filterable (TSS) @105C	SM2540D
Sulfide as S	376.2 - Methylene Blue

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L71107  
 Date Received: 8/13/2008  
 Received By:  
 Date Printed: 8/13/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?		X	
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

Some Holddates are past including Fecal Coliforms.

**Contact (For any discrepancies, the client must be contacted)**

The client was not contacted.

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
2032	0.5	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**



Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L71107  
 Date Received: 8/13/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L71107-01	AWC-03	Y	Y			Y			Y			<input type="checkbox"/>
L71107-02	AWC-04	Y	Y			Y			Y			<input type="checkbox"/>
L71107-03	AWC-05	Y	Y			Y			Y			<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_

September 05, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L71104

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 13, 2008. This project has been assigned to ACZ's project number, L71104. Please reference this number in all future inquiries.

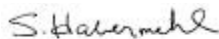
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71104. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: AWC-02

ACZ Sample ID: **L71104-01**  
Date Sampled: 08/12/08 10:40  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/19/08 1:05	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/22/08 22:18	ear/aeH
Barium, dissolved	M200.7 ICP	0.494			mg/L	0.003	0.02	08/22/08 22:18	ear/aeH
Boron, dissolved	M200.7 ICP	0.03	B		mg/L	0.01	0.05	08/22/08 22:18	ear/aeH
Calcium, dissolved	M200.7 ICP	66.4		*	mg/L	0.2	1	08/22/08 22:18	ear/aeH
Iron, dissolved	M200.7 ICP		U		mg/L	0.02	0.05	08/22/08 22:18	ear/aeH
Iron, total	M200.7 ICP		U		mg/L	0.02	0.05	08/21/08 22:12	aeH
Magnesium, dissolved	M200.7 ICP	9.1			mg/L	0.2	1	08/22/08 22:18	ear/aeH
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/22/08 22:18	ear/aeH
Manganese, total	M200.7 ICP		U		mg/L	0.005	0.03	08/21/08 22:12	aeH
Potassium, dissolved	M200.7 ICP	2.1			mg/L	0.3	2	08/22/08 22:18	ear/aeH
Silica, total	M200.7 ICP	32.4		*	mg/L	0.4	2	08/21/08 22:12	aeH
Sodium, dissolved	M200.7 ICP	20.0			mg/L	0.3	2	08/22/08 22:18	ear/aeH
Strontium, dissolved	M200.7 ICP	0.59			mg/L	0.01	0.05	08/22/08 22:18	ear/aeH

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: AWC-02

ACZ Sample ID: **L71104-01**  
Date Sampled: 08/12/08 10:40  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		181			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3		5	B		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		186			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	6		*	mg/L	1	5	08/19/08 18:07	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.1			%			09/04/08 0:00	calc
Sum of Anions		4.7			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		5.0			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	17.8		*	mg/L	0.5	3	08/21/08 5:32	aml
Coliforms, fecal	SM9222D - Membrane Filter	0	H	*	#/100ml	1	5	08/13/08 12:51	kah
Conductivity @25C	SM2510B	461			umhos/cm	1	10	08/14/08 21:02	tbd
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/21/08 5:32	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.42			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.42		*	mg/L	0.02	0.1	08/13/08 20:14	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:14	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	08/22/08 19:24	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.05	B	*	mg/L	0.01	0.05	08/13/08 21:46	pjb
Residue, Filterable (TDS) @180C	SM2540C	280			mg/L	10	20	08/14/08 17:03	tbd
Residue, Non-Filterable (TSS) @105C	SM2540D		U	*	mg/L	5	20	08/18/08 14:48	gkj
Sulfate	300.0 - Ion Chromatography	14.3			mg/L	0.5	3	08/21/08 5:32	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 12:29	kah
TDS (calculated)	Calculation	255			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.10						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	0.4	B		NTU	0.1	0.5	08/13/08 16:21	tbd

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: PIONKE

ACZ Sample ID: **L71104-02**  
Date Sampled: 08/12/08 14:00  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/21/08 19:02	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/22/08 22:22	ear/aeH
Barium, dissolved	M200.7 ICP	0.038			mg/L	0.003	0.02	08/22/08 22:22	ear/aeH
Boron, dissolved	M200.7 ICP	0.07			mg/L	0.01	0.05	08/22/08 22:22	ear/aeH
Calcium, dissolved	M200.7 ICP	193		*	mg/L	0.2	1	08/22/08 22:22	ear/aeH
Iron, dissolved	M200.7 ICP	0.02	B		mg/L	0.02	0.05	08/22/08 22:22	ear/aeH
Iron, total	M200.7 ICP	2.78			mg/L	0.02	0.05	08/26/08 17:19	ear/aeH
Magnesium, dissolved	M200.7 ICP	30.3			mg/L	0.2	1	08/22/08 22:22	ear/aeH
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/22/08 22:22	ear/aeH
Manganese, total	M200.7 ICP	0.057			mg/L	0.005	0.03	08/26/08 17:19	ear/aeH
Potassium, dissolved	M200.7 ICP	4.1			mg/L	0.3	2	08/22/08 22:22	ear/aeH
Silica, total	M200.7 ICP	37.1			mg/L	0.4	2	08/26/08 17:19	ear/aeH
Sodium, dissolved	M200.7 ICP	32.7			mg/L	0.3	2	08/22/08 22:22	ear/aeH
Strontium, dissolved	M200.7 ICP	1.83			mg/L	0.01	0.05	08/22/08 22:22	ear/aeH

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: PIONKE

ACZ Sample ID: **L71104-02**  
Date Sampled: 08/12/08 14:00  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		189			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		189			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	5	B	*	mg/L	1	5	08/19/08 18:22	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.1			%			09/04/08 0:00	calc
Sum of Anions		13.4			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		13.7			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	19	B	*	mg/L	5	30	08/21/08 5:50	aml
Coliforms, fecal	SM9222D - Membrane Filter	0		*	#/100ml	1	5	08/13/08 13:01	kah
Conductivity @25C	SM2510B	1160			umhos/cm	1	10	08/14/08 21:41	tbd
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	1	5	08/21/08 5:50	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.50			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.50		*	mg/L	0.02	0.1	08/13/08 20:15	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:15	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.5	5	08/22/08 19:41	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.06		*	mg/L	0.01	0.05	08/13/08 21:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	880			mg/L	10	20	08/14/08 17:04	tbd
Residue, Non-Filterable (TSS) @105C	SM2540D	5	B	*	mg/L	5	20	08/18/08 14:49	gkj
Sulfate	300.0 - Ion Chromatography	423		*	mg/L	5	30	08/21/08 5:50	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 12:48	kah
TDS (calculated)	Calculation	833			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.06						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	31.0			NTU	0.1	0.5	08/13/08 16:22	tbd

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: MCCONNELL265

ACZ Sample ID: **L71104-03**  
Date Sampled: 08/12/08 14:50  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/21/08 19:51	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/22/08 22:25	ear/aeH
Barium, dissolved	M200.7 ICP	0.035			mg/L	0.003	0.02	08/22/08 22:25	ear/aeH
Boron, dissolved	M200.7 ICP	0.11			mg/L	0.01	0.05	08/22/08 22:25	ear/aeH
Calcium, dissolved	M200.7 ICP	306		*	mg/L	0.2	1	08/22/08 22:25	ear/aeH
Iron, dissolved	M200.7 ICP	0.04	B		mg/L	0.02	0.05	08/22/08 22:25	ear/aeH
Iron, total	M200.7 ICP	0.53			mg/L	0.02	0.05	08/26/08 17:30	ear/aeH
Magnesium, dissolved	M200.7 ICP	51.3			mg/L	0.2	1	08/22/08 22:25	ear/aeH
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/22/08 22:25	ear/aeH
Manganese, total	M200.7 ICP	0.007	B		mg/L	0.005	0.03	08/26/08 17:30	ear/aeH
Potassium, dissolved	M200.7 ICP	5.9			mg/L	0.3	2	08/22/08 22:25	ear/aeH
Silica, total	M200.7 ICP	37.1			mg/L	0.4	2	08/26/08 17:30	ear/aeH
Sodium, dissolved	M200.7 ICP	43.8			mg/L	0.3	2	08/22/08 22:25	ear/aeH
Strontium, dissolved	M200.7 ICP	2.65			mg/L	0.01	0.05	08/22/08 22:25	ear/aeH

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: MCCONNELL265

ACZ Sample ID: **L71104-03**  
Date Sampled: 08/12/08 14:50  
Date Received: 08/13/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		257			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		257			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	10		*	mg/L	1	5	08/19/08 18:36	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.4			%			09/04/08 0:00	calc
Sum of Anions		21.1			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		21.7			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	21	B	*	mg/L	5	30	08/21/08 6:08	aml
Coliforms, fecal	SM9222D - Membrane Filter	0		*	#/100ml	1	5	08/13/08 13:11	kah
Conductivity @25C	SM2510B	1720			umhos/cm	1	10	08/14/08 21:49	tbd
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	1	5	08/21/08 6:08	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.74			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.74		*	mg/L	0.02	0.1	08/13/08 20:20	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:20	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	09/03/08 14:10	ccp
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.03	B	*	mg/L	0.01	0.05	08/13/08 21:50	pjb
Residue, Filterable (TDS) @180C	SM2540C	1430			mg/L	10	20	08/14/08 17:05	tbd
Residue, Non-Filterable (TSS) @105C	SM2540D		U	*	mg/L	5	20	08/18/08 14:51	gkj
Sulfate	300.0 - Ion Chromatography	725		*	mg/L	5	30	08/21/08 6:08	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 12:55	kah
TDS (calculated)	Calculation	1320			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.08						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	3.4			NTU	0.1	0.5	08/13/08 16:23	tbd

Arizona license number: AZ0102



**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L71104**

Project ID: 8720000

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249962</b>													
WG249962PBW2	PBW	08/14/08 15:05				U	mg/L		-20	20			
WG249962LCSW5	LCSW	08/14/08 15:16	WC080814-1	820.0001		776.2	mg/L	94.7	90	110			
WG249962PBW3	PBW	08/14/08 18:05				U	mg/L		-20	20			
WG249962LCSW8	LCSW	08/14/08 18:16	WC080814-1	820.0001		780	mg/L	95.1	90	110			
L71104-01DUP	DUP	08/14/08 21:11			186	183.2	mg/L				1.5	20	
WG249962PBW4	PBW	08/14/08 21:17				U	mg/L		-20	20			
WG249962LCSW11	LCSW	08/14/08 21:29	WC080814-1	820.0001		780.8	mg/L	95.2	90	110			
L71110-01DUP	DUP	08/14/08 22:55			60	61.3	mg/L				2.1	20	
WG249962LCSW14	LCSW	08/15/08 0:29	WC080814-1	820.0001		783	mg/L	95.5	90	110			

**Aluminum, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		2.031	mg/L	101.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.09	0.09			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	1		1.031	mg/L	103.1	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	1	.05	1.087	mg/L	103.7	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	1	.05	1.078	mg/L	102.8	85	115	0.83	20	

**Barium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		2.0795	mg/L	104	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.009	0.009			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	.5		.5308	mg/L	106.2	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	.5	.125	.6424	mg/L	103.5	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	.5	.125	.6382	mg/L	102.6	85	115	0.66	20	

**Boron, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		1.947	mg/L	97.4	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.03	0.03			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	.5005		.522	mg/L	104.3	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	.5005	.06	.577	mg/L	103.3	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	.5005	.06	.577	mg/L	103.3	85	115	0	20	

**Calcium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	100		96.57	mg/L	96.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.6	0.6			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	67.97008		68.2	mg/L	100.3	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	67.97008	209	262.8	mg/L	79.2	85	115			M1
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	67.97008	209	262.95	mg/L	79.4	85	115	0.06	20	M1

Hydro Geo Chem, Inc.

ACZ Project ID: **L71104**

Project ID: 8720000

**Carbon, total organic (TOC) SM5310B**

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250195</b>													
WG250195ICV	ICV	08/19/08 14:34	WI080718-3	75		74.1	mg/L	98.8	90	110			
WG250195ICB	ICB	08/19/08 14:48				U	mg/L		-3	3			
WG250195LFB1	LFB	08/19/08 15:02	WI080714-2	50		46.2	mg/L	92.4	90	110			
L71074-01AS	AS	08/19/08 15:31	WI080714-2	50	8	55.8	mg/L	95.6	90	110			
L71074-02DUP	DUP	08/19/08 15:59			3	3	mg/L				0	20	RA
L71104-03AS	AS	08/19/08 18:50	WI080714-2	50	10	58.7	mg/L	97.4	90	110			
L71107-01DUP	DUP	08/19/08 19:18			5	4.1	mg/L				19.8	20	RA
WG250195LFB2	LFB	08/20/08 12:12	WI080714-2	50		47	mg/L	94	90	110			

**Chloride M300.0 - Ion Chromatography**

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250293</b>													
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	19.98		20.29	mg/L	101.6	90	110			
WG250293ICB1	ICB	08/20/08 23:48				U	mg/L		-1.5	1.5			
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	30		28.81	mg/L	96	90	110			
L71074-05AS	AS	08/21/08 4:56	WI080702-9	300	47	381.1	mg/L	111.4	90	110			M1
L71074-05DUP	DUP	08/21/08 5:14			47	47.3	mg/L				0.6	20	RA

**Conductivity @25C SM2510B**

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249962</b>													
WG249962LCSW1	LCSW	08/14/08 12:06	PCN29501	1408.8		1439	µmhos/cm	102.1	90	110			
WG249962LCSW4	LCSW	08/14/08 15:06	PCN29501	1408.8		1425	µmhos/cm	101.1	90	110			
WG249962LCSW7	LCSW	08/14/08 18:07	PCN29501	1408.8		1421	µmhos/cm	100.9	90	110			
L71104-01DUP	DUP	08/14/08 21:11			461	459	µmhos/cm				0.4	20	
WG249962LCSW10	LCSW	08/14/08 21:18	PCN29501	1408.8		1423	µmhos/cm	101	90	110			
L71110-01DUP	DUP	08/14/08 22:55			554	550	µmhos/cm				0.7	20	
WG249962LCSW13	LCSW	08/15/08 0:18	PCN29501	1408.8		1428	µmhos/cm	101.4	90	110			

Hydro Geo Chem, Inc.  
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Fluoride													M300.0 - Ion Chromatography		
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual		
<b>WG249769</b>															
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110					
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3					
<b>WG250293</b>															
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110					
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3					
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	4		4.12	mg/L	103	90	110					
WG250293ICB1	ICB	08/20/08 23:48				.18	mg/L		-0.3	0.3					
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	1.5		1.44	mg/L	96	90	110					
L71074-05AS	AS	08/21/08 4:56	WI080702-9	15	1	16.8	mg/L	105.3	90	110					
L71074-05DUP	DUP	08/21/08 5:14			1	1.3	mg/L				26.1	20		RA	

Iron, dissolved													M200.7 ICP		
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual		
<b>WG250458</b>															
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		1.945	mg/L	97.3	95	105					
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.06	0.06					
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	1		1.052	mg/L	105.2	85	115					
L71074-01AS	AS	08/22/08 21:44	I1080811-3	1	U	1.06	mg/L	106	85	115					
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	1	U	1.034	mg/L	103.4	85	115	2.48	20			

Iron, total													M200.7 ICP		
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual		
<b>WG250382</b>															
WG250382ICV	ICV	08/21/08 20:14	I1080820-1	2		1.928	mg/L	96.4	95	105					
WG250382ICB	ICB	08/21/08 20:18				U	mg/L		-0.06	0.06					
WG250176LRB	LRB	08/21/08 20:32				U	mg/L		-0.044	0.044					
WG250176LFB	LFB	08/21/08 20:36	I1080811-3	1		.998	mg/L	99.8	85	115					
L71096-04LFM	LFM	08/21/08 21:31	I1080811-3	1	.39	1.452	mg/L	106.2	70	130					
L71096-04LFMD	LFMD	08/21/08 21:34	I1080811-3	1	.39	1.401	mg/L	101.1	70	130	3.58	20			
<b>WG250628</b>															
WG250628ICV	ICV	08/26/08 16:53	I1080820-1	2		1.925	mg/L	96.3	95	105					
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-0.06	0.06					
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.044	0.044					
WG250403LFB	LFB	08/26/08 17:15	I1080811-3	1		1.082	mg/L	108.2	85	115					
L71104-02LFM	LFM	08/26/08 17:22	I1080811-3	1	2.78	3.704	mg/L	92.4	70	130					
L71104-02LFMD	LFMD	08/26/08 17:26	I1080811-3	1	2.78	3.748	mg/L	96.8	70	130	1.18	20			
L71113-03LFM	LFM	08/26/08 18:49	I1080811-3	1	.14	1.156	mg/L	101.6	70	130					
L71113-03LFMD	LFMD	08/26/08 18:53	I1080811-3	1	.14	1.189	mg/L	104.9	70	130	2.81	20			

Hydro Geo Chem, Inc.

ACZ Project ID: **L71104**

Project ID: 8720000

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	100		99.56	mg/L	99.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.6	0.6			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	49.96908		51.22	mg/L	102.5	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	49.96908	50.7	99.45	mg/L	97.6	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	49.96908	50.7	98.93	mg/L	96.5	85	115	0.52	20	

**Manganese, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		1.9549	mg/L	97.7	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.015	0.015			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	.5		.5377	mg/L	107.5	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	.5	.441	.9455	mg/L	100.9	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	.5	.441	.9385	mg/L	99.5	85	115	0.74	20	

**Manganese, total**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250382</b>													
WG250382ICV	ICV	08/21/08 20:14	I1080820-1	2		1.9932	mg/L	99.7	95	105			
WG250382ICB	ICB	08/21/08 20:18				U	mg/L		-0.015	0.015			
WG250176LRB	LRB	08/21/08 20:32				U	mg/L		-0.011	0.011			
WG250176LFB	LFB	08/21/08 20:36	I1080811-3	.5		.5347	mg/L	106.9	85	115			
L71096-04LFM	LFM	08/21/08 21:31	I1080811-3	.5	.112	.674	mg/L	112.4	70	130			
L71096-04LFMD	LFMD	08/21/08 21:34	I1080811-3	.5	.112	.6709	mg/L	111.8	70	130	0.46	20	
<b>WG250628</b>													
WG250628ICV	ICV	08/26/08 16:53	I1080820-1	2		1.949	mg/L	97.5	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-0.015	0.015			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.011	0.011			
WG250403LFB	LFB	08/26/08 17:15	I1080811-3	.5		.5621	mg/L	112.4	85	115			
L71104-02LFM	LFM	08/26/08 17:22	I1080811-3	.5	.057	.5919	mg/L	107	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	I1080811-3	.5	.057	.5963	mg/L	107.9	70	130	0.74	20	
L71113-03LFM	LFM	08/26/08 18:49	I1080811-3	.5	U	.5257	mg/L	105.1	70	130			
L71113-03LFMD	LFMD	08/26/08 18:53	I1080811-3	.5	U	.5248	mg/L	105	70	130	0.17	20	

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249944</b>													
WG249944ICV	ICV	08/13/08 20:02	WI080613-1	2.416		2.432	mg/L	100.7	90	110			
WG249944ICB	ICB	08/13/08 20:03				U	mg/L		-0.06	0.06			
WG249944LFB1	LFB	08/13/08 20:06	WI080312-1	2		1.931	mg/L	96.6	90	110			
L71095-01AS	AS	08/13/08 20:08	WI080312-1	2	.03	1.974	mg/L	97.2	90	110			
L71095-02DUP	DUP	08/13/08 20:10			.04	.039	mg/L				2.5	20	RA
WG249944LFB2	LFB	08/13/08 20:42	WI080312-1	2		1.967	mg/L	98.4	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L71104**

Project ID: 8720000

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249944</b>													
WG249944ICV	ICV	08/13/08 20:02	WI080613-1	.609		.628	mg/L	103.1	90	110			
WG249944ICB	ICB	08/13/08 20:03				U	mg/L		-0.03	0.03			
WG249944LFB1	LFB	08/13/08 20:06	WI080312-1	1		.977	mg/L	97.7	90	110			
L71095-01AS	AS	08/13/08 20:08	WI080312-1	1		.962	mg/L	96.2	90	110			
L71095-02DUP	DUP	08/13/08 20:10				U	mg/L				0	20	RA
WG249944LFB2	LFB	08/13/08 20:42	WI080312-1	1		1.009	mg/L	100.9	90	110			

**Nitrogen, ammonia**

M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250362</b>													
WG250362ICV	ICV	08/22/08 17:28	WI080723-1	11.988		12.51	mg/L	104.4	90	110			
WG250362ICB	ICB	08/22/08 17:30				U	mg/L		-0.15	0.15			
<b>WG250496</b>													
WG250496ICV	ICV	08/22/08 18:52	WI080723-1	11.988		11.902	mg/L	99.3	90	110			
WG250496ICB	ICB	08/22/08 18:53				U	mg/L		-0.15	0.15			
WG250496LFB1	LFB	08/22/08 18:54	WI080603-3	10		10.008	mg/L	100.1	90	110			
L70929-01AS	AS	08/22/08 18:56	WI080603-3	10		.32	10.438	mg/L	101.2	90	110		
L71027-01DUP	DUP	08/22/08 18:58				U	U	mg/L			0	20	RA
L71064-01AS	AS	08/22/08 19:11	WI080603-3	10		U	9.738	mg/L	97.4	90	110		
L71064-02DUP	DUP	08/22/08 19:14				U	U	mg/L			0	20	RA
WG250496LFB2	LFB	08/22/08 19:26	WI080603-3	10		9.883	mg/L	98.8	90	110			
<b>WG251099</b>													
WG251099ICV	ICV	09/03/08 14:01	WI080903-3	.999		.984	mg/L	98.5	90	110			
WG251099ICB	ICB	09/03/08 14:02				U	mg/L		-0.15	0.15			
WG251099LFB	LFB	09/03/08 14:03	WI080903-5	3		2.971	mg/L	99	90	110			
L70958-08DUP	DUP	09/03/08 14:07				.13	.138	mg/L			6	20	RA
WG251099ICV1	ICV	09/03/08 14:43	WI080903-3	.999		.977	mg/L	97.8	90	110			
WG251099ICB1	ICB	09/03/08 14:44				U	mg/L		-0.15	0.15			
L70958-06AS	AS	09/03/08 14:46	WI080903-5	3		U	3.021	mg/L	100.7	90	110		

**Phosphorus, ortho dissolved**

M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249947</b>													
WG249947ICV	ICV	08/13/08 21:42	WI080401-4	.65228		.65	mg/L	99.7	90	110			
WG249947ICB	ICB	08/13/08 21:43				U	mg/L		-0.03	0.03			
WG249947LFB	LFB	08/13/08 21:45	WI080730-3	.5		.507	mg/L	101.4	90	110			
L71104-01AS	AS	08/13/08 21:47	WI080730-3	.5		.05	.585	mg/L	107	90	110		
L71104-02DUP	DUP	08/13/08 21:49				.06	.062	mg/L			3.3	20	RA

Hydro Geo Chem, Inc.

ACZ Project ID: **L71104**

Project ID: 8720000

**Potassium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	20		20.61	mg/L	103.1	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.9	0.9			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	99.76186		105.88	mg/L	106.1	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	99.76186	6.3	114.34	mg/L	108.3	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	99.76186	6.3	112.84	mg/L	106.8	85	115	1.32	20	

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250005</b>													
WG250005PBW	PBW	08/14/08 16:45				U	mg/L		-20	20			
WG250005LCSW	LCSW	08/14/08 16:46	PCN30201	260		272	mg/L	104.6	80	120			
L71165-01DUP	DUP	08/14/08 17:14			930	922	mg/L				0.9	20	

**Residue, Non-Filterable (TSS) @105C** SM2540D

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250162</b>													
WG250162PBW	PBW	08/18/08 14:45				U	mg/L		-15	15			
WG250162LCSW	LCSW	08/18/08 14:46	PCN30192	160		143	mg/L	89.4	80	120			
L71113-04DUP	DUP	08/18/08 15:03			U	U	mg/L				0	20	RA

**Silica, total** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250382</b>													
WG250382ICV	ICV	08/21/08 20:14	I1080820-1	42.8		42.13	mg/L	98.4	95	105			
WG250382ICB	ICB	08/21/08 20:18				U	mg/L		-1.2	1.2			
WG250176LRB	LRB	08/21/08 20:32				U	mg/L		-0.88	0.88			
WG250176LFB	LFB	08/21/08 20:36	I1080811-3	21.4		21.2	mg/L	99.1	85	115			
L71096-04LFM	LFM	08/21/08 21:31	I1080811-3	21.4	27.3	43.21	mg/L	74.3	70	130			
L71096-04LFMD	LFMD	08/21/08 21:34	I1080811-3	21.4	27.3	36.33	mg/L	42.2	70	130	17.3	20	MA
<b>WG250628</b>													
WG250628ICV	ICV	08/26/08 16:53	I1080820-1	42.8		44.47	mg/L	103.9	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-1.2	1.2			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.88	0.88			
WG250403LFB	LFB	08/26/08 17:15	I1080811-3	21.4		24.45	mg/L	114.3	85	115			
L71104-02LFM	LFM	08/26/08 17:22	I1080811-3	21.4	37.1	52.48	mg/L	71.9	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	I1080811-3	21.4	37.1	55.45	mg/L	85.7	70	130	5.5	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	100		102.68	mg/L	102.7	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.9	0.9			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	98.21624		104.19	mg/L	106.1	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	98.21624	45.3	147.69	mg/L	104.2	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	98.21624	45.3	146.56	mg/L	103.1	85	115	0.77	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71104**

Project ID: 8720000

**Strontium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250458</b>													
WG250458ICV	ICV	08/22/08 20:27	I1080818-1	2		2.106	mg/L	105.3	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.03	0.03			
WG250458LFB	LFB	08/22/08 20:45	I1080811-3	.5		.545	mg/L	109	85	115			
L71074-01AS	AS	08/22/08 21:44	I1080811-3	.5	.8	1.28	mg/L	96	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I1080811-3	.5	.8	1.275	mg/L	95	85	115	0.39	20	

**Sulfate**

300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250293</b>													
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	50.1		49	mg/L	97.8	90	110			
WG250293ICB1	ICB	08/20/08 23:48				.91	mg/L		-1.5	1.5			
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	30		27.86	mg/L	92.9	90	110			
L71074-05AS	AS	08/21/08 17:53	WI080702-9	600	1160	1764	mg/L	100.7	90	110			
L71074-05DUP	DUP	08/21/08 18:11			1160	1148	mg/L				1	20	

**Sulfide as S**

376.2 - Methylene Blue

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249966</b>													
WG249966ICV	ICV	08/14/08 10:59	WC080814-7	.388		.355	mg/L	91.5	90	110			
WG249966ICB	ICB	08/14/08 11:05				U	mg/L		-0.06	0.06			
WG249966LFB	LFB	08/14/08 11:11	WC080814-9	.3191067		.36	mg/L	112.8	80	120			
L71104-01AS	AS	08/14/08 12:36	WC080814-9	.3191067	U	.097	mg/L	30.4	75	125			M2
L71104-01DUP	DUP	08/14/08 12:42			U	U	mg/L				0	20	RA

**Turbidity**

M180.1 - Nephelometric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249940</b>													
WG249940ICV	ICV	08/13/08 16:20	PCN29103	180		184	NTU	102.2	90	110			
WG249940ICB	ICB	08/13/08 16:20				U	NTU		-0.3	0.3			
L71113-04DUP	DUP	08/13/08 16:33			1.5	1.68	NTU				11.3	20	



Hydro Geo Chem, Inc.

ACZ Project ID: **L71104**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L71104-01</b>	WG250458	Calcium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250382	Silica, total	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
			SM9222D - Membrane Filter	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG250293	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250496	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
376.2 - Methylene Blue			RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71104**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L71104-02</b>	WG250458	Calcium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
			M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
	WG250293	Fluoride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250496	Nitrogen, ammonia	M350.1 - Automated Phenate	DB	Sample required dilution due to low bias result.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Sulfate	300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
376.2 - Methylene Blue			RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71104**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L71104-03</b>	WG250458	Calcium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
			M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
	WG250293	Fluoride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG251099	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Sulfate	300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
376.2 - Methylene Blue			RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	

**Hydro Geo Chem, Inc.**

ACZ Project ID: **L71104**

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Coliforms, fecal	SM9222D - Membrane Filter
Residue, Non-Filterable (TSS) @105C	SM2540D
Sulfide as S	376.2 - Methylene Blue

**Sample Receipt**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L71104  
 Date Received: 8/13/2008  
 Received By:  
 Date Printed: 8/13/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?		X	
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

Some Holddates are past, including Fecal Coliform.

**Contact (For any discrepancies, the client must be contacted)**

The client was not contacted.

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6687	0.3	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L71104  
 Date Received: 8/13/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L71104-01	AWC-02	Y	Y			Y						<input type="checkbox"/>
L71104-02	PIONKE	Y	Y			Y						<input type="checkbox"/>
L71104-03	MCCONNELL265	Y	Y			Y						<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

71104

CHAIN OF CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Ben Simpson  
Company: Hydro Geo Chem Inc.  
E-mail: ben@hgcinc.com

Address: 51 W Weymouth Rd

Telephone: Tucson AZ 85705

Telephone: 520)293-1500 x133

Copy of Report to:

Name: Jim Morris  
Company: HGC Inc.

E-mail: Jim@hgcinc.com

Telephone: 520)293-1500 x112

Invoice to:

Name: Jim Norris  
Company: HGC Inc.  
E-mail: Jim@hgcinc.com

Address: 51 W. Weymouth Rd

Telephone: Tucson AZ 85705

Telephone: 520)293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?  
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES   
NO

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMQAB-WT  
Project/PO #: 26720000

Reporting state for compliance testing: AZ

Sampler's Name: Mark Harrison

Are any samples NRC licensable material? NO

SAMPLE IDENTIFICATION	DATE/TIME	Matrix	# of Containers
<u>AUL-O2</u>	<u>8/12/08: 1040</u>	<u>GW</u>	<u>7 X FMQAB-WT</u>
<u>PIBANK</u>	<u>8/12/08: 1400</u>	<u>GW</u>	<u>7 X</u>
<u>MCCONNELL 265</u>	<u>8/12/08: 1450</u>	<u>GW</u>	<u>7 X</u>

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other  
REMARKS/ SAMPLE DISCLOSURES

Matrix  
Please refer to ACZ's terms & conditions located on the reverse side of this COC.  
RELINQUISHED BY: \_\_\_\_\_ DATE/TIME: 8/12/08 1530  
RECEIVED BY: [Signature] DATE/TIME: 8-13-08 1058

PAGE 1 of 1

August 21, 2008

Report to:  
Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

Bill to:  
Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000 T2.3  
ACZ Project ID: L71042

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 09, 2008. This project has been assigned to ACZ's project number, L71042. Please reference this number in all future inquiries.

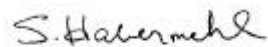
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71042. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.





**Hydro Geo Chem, Inc.**

Project ID: 8720000 T2.3  
Sample ID: BMO-2008-9M

ACZ Sample ID: **L71042-01**  
Date Sampled: 08/08/08 13:45  
Date Received: 08/09/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	28.0			mg/L	0.2	1	08/19/08 3:17	aeH
Magnesium, dissolved	M200.7 ICP	17.8			mg/L	0.2	1	08/19/08 3:17	aeH
Potassium, dissolved	M200.7 ICP	3.4			mg/L	0.3	2	08/21/08 10:51	ear/aeH
Sodium, dissolved	M200.7 ICP	64.6		*	mg/L	0.3	2	08/19/08 3:17	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		193			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3		6	B		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		199			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.8			%			08/21/08 15:50	calc
Sum of Anions		5.5			meq/L	0.1	0.5	08/21/08 15:50	calc
Sum of Cations		5.7			meq/L	0.1	0.5	08/21/08 15:50	calc
Chloride	M300.0 - Ion Chromatography	14.2		*	mg/L	0.5	3	08/18/08 5:34	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/18/08 5:34	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.90			mg/L	0.02	0.1	08/21/08 15:50	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.93			mg/L	0.02	0.1	08/09/08 16:39	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.03	B	*	mg/L	0.01	0.05	08/09/08 16:39	pjb
Residue, Filterable (TDS) @180C	SM2540C	320			mg/L	10	20	08/12/08 16:54	tbd
Sulfate	300.0 - Ion Chromatography	47.3			mg/L	0.5	3	08/18/08 5:34	aml
TDS (calculated)	Calculation	306			mg/L	10	50	08/21/08 15:50	calc
TDS (ratio - measured/calculated)	Calculation	1.05						08/21/08 15:50	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L71042**

Project ID: 8720000 T2.3

**Alkalinity as CaCO3**

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249881</b>													
WG249881PBW1	PBW	08/13/08 11:02				13.9	mg/L		-20	20			
WG249881LCSW2	LCSW	08/13/08 11:14	WC080722-2	820		785.5	mg/L	95.8	90	110			
WG249881PBW2	PBW	08/13/08 14:09				U	mg/L		-20	20			
WG249881LCSW5	LCSW	08/13/08 14:21	WC080722-2	820		785.2	mg/L	95.8	90	110			
WG249881PBW3	PBW	08/13/08 17:32				U	mg/L		-20	20			
WG249881LCSW8	LCSW	08/13/08 17:45	WC080722-2	820		788.6	mg/L	96.2	90	110			
L71042-01DUP	DUP	08/13/08 19:05			199	199.1	mg/L				0.1	20	
WG249881PBW4	PBW	08/13/08 20:37				U	mg/L		-20	20			
WG249881LCSW11	LCSW	08/13/08 20:47	WC080722-2	820		789.9	mg/L	96.3	90	110			
WG249881LCSW14	LCSW	08/13/08 23:49	WC080722-2	820		792.4	mg/L	96.6	90	110			

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250186</b>													
WG250186ICV	ICV	08/19/08 2:13	I1080717-3	100		100.18	mg/L	100.2	95	105			
WG250186ICB	ICB	08/19/08 2:17				U	mg/L		-0.6	0.6			
WG250186LFB	LFB	08/19/08 2:30	I1080811-3	67.97008		70.67	mg/L	104	85	115			
L70890-01AS	AS	08/19/08 2:37	I1080811-3	67.97008	109	169.78	mg/L	89.4	85	115			
L70890-01ASD	ASD	08/19/08 2:40	I1080811-3	67.97008	109	172.05	mg/L	92.8	85	115	1.33	20	

**Chloride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250125</b>													
WG250125ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250125ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	19.98		20.2	mg/L	101.1	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-1.5	1.5			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	30		31.73	mg/L	105.8	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	150	6	152.1	mg/L	97.4	90	110			
L70895-01DUP	DUP	08/18/08 2:33			6	6.6	mg/L				9.5	20	RA
WG250125LFB2	LFB	08/18/08 6:10	WI080702-9	30		28.38	mg/L	94.6	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L71042**

Project ID: 8720000 T2.3

**Fluoride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
<b>WG250125</b>													
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	4		4.06	mg/L	101.5	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-0.3	0.3			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	1.5		1.52	mg/L	101.3	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	7.5	2.5	9.91	mg/L	98.8	90	110			
L70895-01DUP	DUP	08/18/08 2:33			2.5	2.81	mg/L				11.7	20	RA
WG250125LFB2	LFB	08/19/08 22:49	WI080702-9	1.5		1.36	mg/L	90.7	90	110			

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250186</b>													
WG250186ICV	ICV	08/19/08 2:13	I080717-3	100		101.58	mg/L	101.6	95	105			
WG250186ICB	ICB	08/19/08 2:17				U	mg/L		-0.6	0.6			
WG250186LFB	LFB	08/19/08 2:30	I080811-3	49.96908		51.41	mg/L	102.9	85	115			
L70890-01AS	AS	08/19/08 2:37	I080811-3	49.96908	108	154.25	mg/L	92.6	85	115			
L70890-01ASD	ASD	08/19/08 2:40	I080811-3	49.96908	108	157.33	mg/L	98.7	85	115	1.98	20	

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249722</b>													
WG249722ICV	ICV	08/09/08 16:33	WI080613-1	2.416		2.422	mg/L	100.2	90	110			
WG249722ICB	ICB	08/09/08 16:34				U	mg/L		-0.06	0.06			
WG249722LFB	LFB	08/09/08 16:38	WI080312-1	2		1.934	mg/L	96.7	90	110			
L71042-01DUP	DUP	08/09/08 16:40			1.93	1.942	mg/L				0.6	20	
L71042-01AS	AS	08/09/08 16:42	WI080312-1	2	1.93	3.777	mg/L	92.4	90	110			

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249722</b>													
WG249722ICV	ICV	08/09/08 16:33	WI080613-1	.609		.626	mg/L	102.8	90	110			
WG249722ICB	ICB	08/09/08 16:34				U	mg/L		-0.03	0.03			
WG249722LFB	LFB	08/09/08 16:38	WI080312-1	1		.975	mg/L	97.5	90	110			
L71042-01DUP	DUP	08/09/08 16:40			.03	.022	mg/L				30.8	20	RA
L71042-01AS	AS	08/09/08 16:42	WI080312-1	1	.03	.958	mg/L	92.8	90	110			

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250354</b>													
WG250354ICV	ICV	08/21/08 10:05	I080818-1	20		20.07	mg/L	100.4	95	105			
WG250354ICB	ICB	08/21/08 10:08				U	mg/L		-0.9	0.9			
WG250354LFB	LFB	08/21/08 10:22	I080811-3	99.76186		101.94	mg/L	102.2	85	115			
L71042-01AS	AS	08/21/08 10:54	I080811-3	99.76186	3.4	109.71	mg/L	106.6	85	115			
L71042-01ASD	ASD	08/21/08 10:58	I080811-3	99.76186	3.4	108.08	mg/L	104.9	85	115	1.5	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L71042**

Project ID: 8720000 T2.3

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249859</b>													
WG249859PBW	PBW	08/12/08 16:50				U	mg/L		-20	20			
WG249859LCSW	LCSW	08/12/08 16:51	PCN30201	260		276	mg/L	106.2	80	120			
L71073-01DUP	DUP	08/12/08 17:06			2400	2408	mg/L				0.3	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250186</b>													
WG250186ICV	ICV	08/19/08 2:13	I1080717-3	100		101.1	mg/L	101.1	95	105			
WG250186ICB	ICB	08/19/08 2:17				U	mg/L		-0.9	0.9			
WG250186LFB	LFB	08/19/08 2:30	I1080811-3	98.21624		100.6	mg/L	102.4	85	115			
L70890-01AS	AS	08/19/08 2:37	I1080811-3	98.21624	261	335.58	mg/L	75.9	85	115			M2
L70890-01ASD	ASD	08/19/08 2:40	I1080811-3	98.21624	261	335.63	mg/L	76	85	115	0.01	20	M2

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250125</b>													
WG250125ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250125ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	50.1		50.63	mg/L	101.1	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-1.5	1.5			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	30		32.21	mg/L	107.4	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	150	201	352.8	mg/L	101.2	90	110			
L70895-01DUP	DUP	08/18/08 2:33			201	230.5	mg/L				13.7	20	
WG250125LFB2	LFB	08/18/08 6:10	WI080702-9	30		28.75	mg/L	95.8	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L71042**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L71042-01</b>	WG250186	Sodium, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249722	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L71042**



No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000 T2.3

ACZ Project ID: L71042  
 Date Received: 8/9/2008  
 Received By:  
 Date Printed: 8/9/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6654	2.8	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**



**Hydro Geo Chem, Inc.**  
 8720000 T2.3

ACZ Project ID: L71042  
 Date Received: 8/9/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L71042-01	BMO-2008-9M		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

L71042

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: HydroGeo Chem Inc
E-mail: dans@hgcinc.com

Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: Hydro Geo Chem

E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com

Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 8720000 T23
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

Table with columns for # of Containers, FMCQB-GW, and multiple empty columns for analysis requests.

Table with columns: SAMPLE IDENTIFICATION, DATE:TIME, Matrix. Row 1: BMO-2008-9M, 8/8/08-13:45, GW.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY: [Signature] DATE:TIME: 8/8/08-15:30 RECEIVED BY: [Signature] DATE:TIME: 8.9.08 11:22

August 21, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L70992

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 07, 2008. This project has been assigned to ACZ's project number, L70992. Please reference this number in all future inquiries.

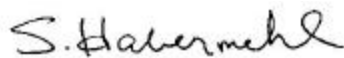
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70992. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: TM-03

ACZ Sample ID: **L70992-01**  
Date Sampled: 08/06/08 07:20  
Date Received: 08/07/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	94.3			mg/L	0.2	1	08/19/08 0:46	ear/aeH
Magnesium, dissolved	M200.7 ICP	36.6			mg/L	0.2	1	08/19/08 0:46	ear/aeH
Potassium, dissolved	M200.7 ICP	3.5			mg/L	0.3	2	08/19/08 18:40	aeH
Sodium, dissolved	M200.7 ICP	27.8			mg/L	0.3	2	08/19/08 0:46	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		221			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		221			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.3			%			08/21/08 12:16	calc
Sum of Anions		8.1			meq/L	0.1	0.5	08/21/08 12:16	calc
Sum of Cations		9.0			meq/L	0.1	0.5	08/21/08 12:16	calc
Chloride	M300.0 - Ion Chromatography	40.7		*	mg/L	0.5	3	08/18/08 3:28	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/18/08 3:28	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	7.68			mg/L	0.08	0.4	08/21/08 12:16	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	7.68			mg/L	0.08	0.4	08/07/08 20:23	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/07/08 20:09	pjb
Residue, Filterable (TDS) @180C	SM2540C	510		*	mg/L	10	20	08/11/08 9:46	gkj
Sulfate	300.0 - Ion Chromatography	97			mg/L	3	10	08/19/08 21:18	aml
TDS (calculated)	Calculation	467			mg/L	10	50	08/21/08 12:16	calc
TDS (ratio - measured/calculated)	Calculation	1.09						08/21/08 12:16	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: TM-16

ACZ Sample ID: **L70992-02**  
Date Sampled: 08/06/08 08:10  
Date Received: 08/07/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	215			mg/L	0.2	1	08/19/08 0:49	ear/aeH
Magnesium, dissolved	M200.7 ICP	52.7			mg/L	0.2	1	08/19/08 0:49	ear/aeH
Potassium, dissolved	M200.7 ICP	13.3			mg/L	0.3	2	08/19/08 18:43	aeH
Sodium, dissolved	M200.7 ICP	30.0			mg/L	0.3	2	08/19/08 0:49	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		191			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		191			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.4			%			08/21/08 12:16	calc
Sum of Anions		15.0			meq/L	0.1	0.5	08/21/08 12:16	calc
Sum of Cations		16.7			meq/L	0.1	0.5	08/21/08 12:16	calc
Chloride	M300.0 - Ion Chromatography	28.1		*	mg/L	0.5	3	08/18/08 3:46	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/18/08 3:46	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	8.07			mg/L	0.08	0.4	08/21/08 12:16	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	8.07			mg/L	0.08	0.4	08/07/08 20:25	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/07/08 20:12	pjb
Residue, Filterable (TDS) @180C	SM2540C	1070		*	mg/L	10	20	08/11/08 9:48	gkj
Sulfate	300.0 - Ion Chromatography	466			mg/L	5	30	08/19/08 21:36	aml
TDS (calculated)	Calculation	955			mg/L	10	50	08/21/08 12:16	calc
TDS (ratio - measured/calculated)	Calculation	1.12						08/21/08 12:16	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
 Sample ID: TM-42

ACZ Sample ID: **L70992-03**  
 Date Sampled: 08/06/08 08:53  
 Date Received: 08/07/08  
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	191			mg/L	0.2	1	08/19/08 0:59	ear/aeH
Magnesium, dissolved	M200.7 ICP	60.7			mg/L	0.2	1	08/19/08 0:59	ear/aeH
Potassium, dissolved	M200.7 ICP	10.1			mg/L	0.3	2	08/19/08 18:46	aeH
Sodium, dissolved	M200.7 ICP	38.7			mg/L	0.3	2	08/19/08 0:59	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		208			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		208			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.8			%			08/21/08 12:16	calc
Sum of Anions		15.3			meq/L	0.1	0.5	08/21/08 12:16	calc
Sum of Cations		16.5			meq/L	0.1	0.5	08/21/08 12:16	calc
Chloride	M300.0 - Ion Chromatography	27.3		*	mg/L	0.5	3	08/18/08 4:40	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/18/08 4:40	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	7.20			mg/L	0.08	0.4	08/21/08 12:16	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	7.20			mg/L	0.08	0.4	08/07/08 20:27	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/07/08 20:17	pjb
Residue, Filterable (TDS) @180C	SM2540C	1010		*	mg/L	10	20	08/11/08 9:50	gkj
Sulfate	300.0 - Ion Chromatography	467			mg/L	5	30	08/19/08 22:30	aml
TDS (calculated)	Calculation	952			mg/L	10	50	08/21/08 12:16	calc
TDS (ratio - measured/calculated)	Calculation	1.06						08/21/08 12:16	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: TM-07

ACZ Sample ID: **L70992-04**  
Date Sampled: 08/06/08 10:50  
Date Received: 08/07/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	45.8			mg/L	0.2	1	08/19/08 1:02	ear/aeH
Magnesium, dissolved	M200.7 ICP	14.7			mg/L	0.2	1	08/19/08 1:02	ear/aeH
Potassium, dissolved	M200.7 ICP	1.9	B		mg/L	0.3	2	08/19/08 18:50	aeH
Sodium, dissolved	M200.7 ICP	20.5			mg/L	0.3	2	08/19/08 1:02	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		157			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		159			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.8			%			08/21/08 12:16	calc
Sum of Anions		4.0			meq/L	0.1	0.5	08/21/08 12:16	calc
Sum of Cations		4.4			meq/L	0.1	0.5	08/21/08 12:16	calc
Chloride	M300.0 - Ion Chromatography	8.9		*	mg/L	0.5	3	08/18/08 4:58	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/18/08 4:58	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.52			mg/L	0.02	0.1	08/21/08 12:16	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.52			mg/L	0.02	0.1	08/07/08 20:18	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/07/08 20:18	pjb
Residue, Filterable (TDS) @180C	SM2540C	240		*	mg/L	10	20	08/11/08 9:52	gkj
Sulfate	300.0 - Ion Chromatography	22.2			mg/L	0.5	3	08/18/08 4:58	aml
TDS (calculated)	Calculation	220			mg/L	10	50	08/21/08 12:16	calc
TDS (ratio - measured/calculated)	Calculation	1.09						08/21/08 12:16	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: TM-19A

ACZ Sample ID: **L70992-05**  
Date Sampled: 08/06/08 09:40  
Date Received: 08/07/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	37.3			mg/L	0.2	1	08/19/08 1:06	ear/aeH
Magnesium, dissolved	M200.7 ICP	10.8			mg/L	0.2	1	08/19/08 1:06	ear/aeH
Potassium, dissolved	M200.7 ICP	2.9			mg/L	0.3	2	08/19/08 18:53	aeH
Sodium, dissolved	M200.7 ICP	53.0			mg/L	0.3	2	08/19/08 1:06	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		153			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3		5	B		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		158			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.1			%			08/21/08 12:16	calc
Sum of Anions		4.7			meq/L	0.1	0.5	08/21/08 12:16	calc
Sum of Cations		5.1			meq/L	0.1	0.5	08/21/08 12:16	calc
Chloride	M300.0 - Ion Chromatography	15.4		*	mg/L	0.5	3	08/18/08 5:16	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/18/08 5:16	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.09	B		mg/L	0.02	0.1	08/21/08 12:16	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.09	B		mg/L	0.02	0.1	08/07/08 20:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/07/08 20:19	pjb
Residue, Filterable (TDS) @180C	SM2540C	270		*	mg/L	10	20	08/11/08 9:53	gkj
Sulfate	300.0 - Ion Chromatography	55.3			mg/L	0.5	3	08/18/08 5:16	aml
TDS (calculated)	Calculation	272			mg/L	10	50	08/21/08 12:16	calc
TDS (ratio - measured/calculated)	Calculation	0.99						08/21/08 12:16	calc

Arizona license number: AZ0102



**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70992**

Project ID: 8720000

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249881</b>													
WG249881PBW1	PBW	08/13/08 11:02				13.9	mg/L		-20	20			
WG249881LCSW2	LCSW	08/13/08 11:14	WC080722-2	820		785.5	mg/L	95.8	90	110			
L70999-01DUP	DUP	08/13/08 12:37			23	23.7	mg/L				3	20	
WG249881PBW2	PBW	08/13/08 14:09				U	mg/L		-20	20			
WG249881LCSW5	LCSW	08/13/08 14:21	WC080722-2	820		785.2	mg/L	95.8	90	110			
WG249881PBW3	PBW	08/13/08 17:32				U	mg/L		-20	20			
WG249881LCSW8	LCSW	08/13/08 17:45	WC080722-2	820		788.6	mg/L	96.2	90	110			
WG249881PBW4	PBW	08/13/08 20:37				U	mg/L		-20	20			
WG249881LCSW11	LCSW	08/13/08 20:47	WC080722-2	820		789.9	mg/L	96.3	90	110			
WG249881LCSW14	LCSW	08/13/08 23:49	WC080722-2	820		792.4	mg/L	96.6	90	110			

**Calcium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250168</b>													
WG250168ICV	ICV	08/19/08 0:03	I1080717-3	100		99.96	mg/L	100	95	105			
WG250168ICB	ICB	08/19/08 0:07				U	mg/L		-0.6	0.6			
WG250168LFB	LFB	08/19/08 0:19	I1080811-3	67.97008		70.82	mg/L	104.2	85	115			
L70987-02AS	AS	08/19/08 0:26	I1080811-3	67.97008	215	276.1	mg/L	89.9	85	115			
L70987-02ASD	ASD	08/19/08 0:29	I1080811-3	67.97008	215	276.72	mg/L	90.8	85	115	0.22	20	

**Chloride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250125</b>													
WG250125ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250125ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	19.98		20.2	mg/L	101.1	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-1.5	1.5			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	30		31.73	mg/L	105.8	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	150	6	152.1	mg/L	97.4	90	110			
L70895-01DUP	DUP	08/18/08 2:33			6	6.6	mg/L				9.5	20	RA
WG250125LFB2	LFB	08/18/08 6:10	WI080702-9	30		28.38	mg/L	94.6	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70992**

Project ID: 8720000

**Fluoride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
<b>WG250125</b>													
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	4		4.06	mg/L	101.5	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-0.3	0.3			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	1.5		1.52	mg/L	101.3	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	7.5	2.5	9.91	mg/L	98.8	90	110			
L70895-01DUP	DUP	08/18/08 2:33			2.5	2.81	mg/L				11.7	20	RA
WG250125LFB2	LFB	08/19/08 22:49	WI080702-9	1.5		1.36	mg/L	90.7	90	110			

**Magnesium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250168</b>													
WG250168ICV	ICV	08/19/08 0:03	I080717-3	100		101.39	mg/L	101.4	95	105			
WG250168ICB	ICB	08/19/08 0:07				U	mg/L		-0.6	0.6			
WG250168LFB	LFB	08/19/08 0:19	I080811-3	49.96908		51.49	mg/L	103	85	115			
L70987-02AS	AS	08/19/08 0:26	I080811-3	49.96908	32.3	85.47	mg/L	106.4	85	115			
L70987-02ASD	ASD	08/19/08 0:29	I080811-3	49.96908	32.3	86.52	mg/L	108.5	85	115	1.22	20	

**Nitrate/Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249641</b>													
WG249641ICV	ICV	08/07/08 19:41	WI080613-1	2.416		2.443	mg/L	101.1	90	110			
WG249641ICB	ICB	08/07/08 19:42				U	mg/L		-0.06	0.06			
WG249641LFB	LFB	08/07/08 19:46	WI080312-1	2		2.019	mg/L	101	90	110			
L70985-03AS	AS	08/07/08 20:08	WI080312-1	2	.04	2.102	mg/L	103.1	90	110			
L70992-01DUP	DUP	08/07/08 20:24			7.68	7.702	mg/L				0.3	20	

**Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249641</b>													
WG249641ICV	ICV	08/07/08 19:41	WI080613-1	.609		.626	mg/L	102.8	90	110			
WG249641ICB	ICB	08/07/08 19:42				U	mg/L		-0.03	0.03			
WG249641LFB	LFB	08/07/08 19:46	WI080312-1	1		1.011	mg/L	101.1	90	110			
L70985-03AS	AS	08/07/08 20:08	WI080312-1	1		.977	mg/L	97.7	90	110			
L70992-01DUP	DUP	08/07/08 20:10			U	U	mg/L				0	20	RA

**Potassium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250226</b>													
WG250226ICV	ICV	08/19/08 17:54	I080818-1	20		20.19	mg/L	101	95	105			
WG250226ICB	ICB	08/19/08 17:57				U	mg/L		-0.9	0.9			
WG250226LFB	LFB	08/19/08 18:10	I080811-3	99.76186		105.81	mg/L	106.1	85	115			
L70890-01AS	AS	08/19/08 18:17	I080811-3	99.76186	1.6	112.04	mg/L	110.7	85	115			
L70890-01ASD	ASD	08/19/08 18:20	I080811-3	99.76186	1.6	111.47	mg/L	110.1	85	115	0.51	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70992**

Project ID: 8720000

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249740</b>													
WG249740PBW	PBW	08/11/08 9:40				U	mg/L		-20	20			
WG249740LCSW	LCSW	08/11/08 9:41	PCN30201	260		276	mg/L	106.2	80	120			
L71007-01DUP	DUP	08/11/08 10:00			20	36	mg/L				57.1	20	RA

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250168</b>													
WG250168ICV	ICV	08/19/08 0:03	I1080717-3	100		101.16	mg/L	101.2	95	105			
WG250168ICB	ICB	08/19/08 0:07				U	mg/L		-0.9	0.9			
WG250168LFB	LFB	08/19/08 0:19	I1080811-3	98.21624		100.38	mg/L	102.2	85	115			
L70987-02AS	AS	08/19/08 0:26	I1080811-3	98.21624	23.1	121.74	mg/L	100.4	85	115			
L70987-02ASD	ASD	08/19/08 0:29	I1080811-3	98.21624	23.1	120.81	mg/L	99.5	85	115	0.77	20	

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250125</b>													
WG250125ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250125ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	50.1		50.63	mg/L	101.1	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-1.5	1.5			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	30		32.21	mg/L	107.4	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	150	201	352.8	mg/L	101.2	90	110			
L70895-01DUP	DUP	08/18/08 2:33			201	230.5	mg/L				13.7	20	
WG250125LFB2	LFB	08/18/08 6:10	WI080702-9	30		28.75	mg/L	95.8	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70992**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70992-01</b>	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249641	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249740	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70992-02</b>	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249641	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249740	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70992-03</b>	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249641	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249740	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70992-04</b>	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249641	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249740	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70992-05</b>	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249641	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249740	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L70992**



No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70992  
 Date Received: 8/7/2008  
 Received By:  
 Date Printed: 8/7/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6645	0.3	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

**Hydro Geo Chem, Inc.**  
 8720000

ACZ Project ID: L70992  
 Date Received: 8/7/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70992-01	TM-03		Y									<input type="checkbox"/>
L70992-02	TM-16		Y									<input type="checkbox"/>
L70992-03	TM-42		Y									<input type="checkbox"/>
L70992-04	TM-07		Y									<input type="checkbox"/>
L70992-05	TM-19A		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_





Laboratories, Inc. L70992

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Jan Simpson  
 Company: Hydro Geo Chem Inc  
 E-mail: dan.s@hgcinc.com

Address: 51 W. Weymore Rd  
Tucson AZ 85705  
 Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris  
 Company: HGC Inc.

E-mail: Jimn@hgcinc.com  
 Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris  
 Company: HGC Inc.  
 E-mail: Jimn@hgcinc.com

Address: 51 W. Weymore Rd.  
Tucson, AZ 85705  
 Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES  NO   
 If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMICQB-GW  
 Project/PO #: 8720000  
 Reporting state for compliance testing: AZ  
 Sampler's Name: Mark Arneson  
 Are any samples NRC licensable material? AZ

# of Containers	FMICQB-GW								
3	X								
3	X								
3	X								
3	X								
3	X								

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMICQB-GW					
TM-03	8/6/08: 7:20	GW	3	X					
TM-16	8/6/08: 8:10	GW	3	X					
TM-42	8/6/08: 8:53	GW	3	X					
TM-07	8/6/08: 10:50	GW	3	X					
TM-19A	8/6/08: 9:40	GW	3	X					

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

Blank area for remarks and disclosures.

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
<u>[Signature]</u>	<u>8/6/08: 12:45</u>	<u>[Signature]</u>	<u>8-7-08 11:40</u>

August 21, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L70974

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 06, 2008. This project has been assigned to ACZ's project number, L70974. Please reference this number in all future inquiries.

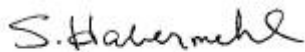
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70974. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



Hydro Geo Chem, Inc.

August 21, 2008

Project ID: 8720000

ACZ Project ID: L70974

**Sample Receipt**

ACZ Laboratories, Inc. (ACZ) received 8 ground water samples from Hydro Geo Chem, Inc. on August 6, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L70974. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Samples were received outside the EPA recommended temperature of 0-6 degrees C.

**Holding Times**

All analyses were performed within EPA recommended holding times.

**Sample Analysis**

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures.

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: COLLINS

ACZ Sample ID: **L70974-01**  
Date Sampled: 07/31/08 07:46  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	536			mg/L	5	30	08/17/08 14:47	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: FB073108

ACZ Sample ID: **L70974-02**  
Date Sampled: 07/31/08 08:45  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/19/08 2:52	ear/aeH
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/19/08 2:52	ear/aeH
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/19/08 2:52	ear/aeH
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/19/08 2:52	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity			U		mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/20/08 15:01	calc
Sum of Anions		N/A			meq/L	0.1	0.5	08/20/08 15:01	calc
Sum of Cations			U		meq/L	0.1	0.5	08/20/08 15:01	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	08/17/08 0:15	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/17/08 0:15	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	08/20/08 15:01	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.02	0.1	08/06/08 19:45	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:45	pjb
Residue, Filterable (TDS) @180C	SM2540C		HU	*	mg/L	10	20	08/11/08 16:48	tbd
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	08/17/08 0:15	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/20/08 15:01	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/20/08 15:01	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: EQB073108

ACZ Sample ID: **L70974-03**  
Date Sampled: 07/31/08 08:53  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/19/08 3:03	ear/aeH
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/19/08 3:03	ear/aeH
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/19/08 3:03	ear/aeH
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/19/08 3:03	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity			U		mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/20/08 15:01	calc
Sum of Anions		N/A			meq/L	0.1	0.5	08/20/08 15:01	calc
Sum of Cations			U		meq/L	0.1	0.5	08/20/08 15:01	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	08/17/08 0:33	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/17/08 0:33	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	08/20/08 15:01	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.02	0.1	08/06/08 19:46	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:46	pjb
Residue, Filterable (TDS) @180C	SM2540C		HU	*	mg/L	10	20	08/11/08 16:50	tbd
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	08/17/08 0:33	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/20/08 15:01	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/20/08 15:01	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: PARRA

ACZ Sample ID: **L70974-04**  
Date Sampled: 07/31/08 09:07  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	181			mg/L	0.2	1	08/19/08 3:14	ear/aeH
Magnesium, dissolved	M200.7 ICP	49.8			mg/L	0.2	1	08/19/08 3:14	ear/aeH
Potassium, dissolved	M200.7 ICP	4.5			mg/L	0.3	2	08/19/08 3:14	ear/aeH
Sodium, dissolved	M200.7 ICP	32.4			mg/L	0.3	2	08/19/08 3:14	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		213			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		213			mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.0			%			08/20/08 15:01	calc
Sum of Anions		14.4			meq/L	0.1	0.5	08/20/08 15:01	calc
Sum of Cations		14.7			meq/L	0.1	0.5	08/20/08 15:01	calc
Chloride	M300.0 - Ion Chromatography	33.5			mg/L	0.5	3	08/17/08 0:51	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/17/08 0:51	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.23			mg/L	0.04	0.2	08/20/08 15:01	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.23			mg/L	0.04	0.2	08/06/08 20:10	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:47	pjb
Residue, Filterable (TDS) @180C	SM2540C	930			mg/L	10	20	08/11/08 16:52	tbd
Sulfate	300.0 - Ion Chromatography	423			mg/L	5	30	08/17/08 15:05	aml
TDS (calculated)	Calculation	871			mg/L	10	50	08/20/08 15:01	calc
TDS (ratio - measured/calculated)	Calculation	1.07						08/20/08 15:01	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: DUP073108

ACZ Sample ID: **L70974-05**  
Date Sampled: 07/31/08 00:00  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	177			mg/L	0.2	1	08/19/08 3:18	ear/aeH
Magnesium, dissolved	M200.7 ICP	48.5			mg/L	0.2	1	08/19/08 3:18	ear/aeH
Potassium, dissolved	M200.7 ICP	4.3			mg/L	0.3	2	08/19/08 3:18	ear/aeH
Sodium, dissolved	M200.7 ICP	30.9			mg/L	0.3	2	08/19/08 3:18	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		212			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		212			mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.1			%			08/20/08 15:01	calc
Sum of Anions		14.0			meq/L	0.1	0.5	08/20/08 15:01	calc
Sum of Cations		14.3			meq/L	0.1	0.5	08/20/08 15:01	calc
Chloride	M300.0 - Ion Chromatography	33.5		*	mg/L	0.5	3	08/17/08 2:04	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/17/08 2:04	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.33			mg/L	0.04	0.2	08/20/08 15:01	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.33			mg/L	0.04	0.2	08/06/08 20:12	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	920	H	*	mg/L	10	20	08/11/08 16:54	tbd
Sulfate	300.0 - Ion Chromatography	404			mg/L	5	30	08/17/08 16:18	aml
TDS (calculated)	Calculation	845			mg/L	10	50	08/20/08 15:01	calc
TDS (ratio - measured/calculated)	Calculation	1.09						08/20/08 15:01	calc

Arizona license number: AZ0102



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: METZLER

ACZ Sample ID: **L70974-06**  
Date Sampled: 07/31/08 10:30  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	317			mg/L	5	30	08/17/08 16:36	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
 Sample ID: COOPER

ACZ Sample ID: **L70974-07**  
 Date Sampled: 07/31/08 11:15  
 Date Received: 08/06/08  
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	48.9			mg/L	0.2	1	08/19/08 3:21	ear/aeH
Magnesium, dissolved	M200.7 ICP	13.3			mg/L	0.2	1	08/19/08 3:21	ear/aeH
Potassium, dissolved	M200.7 ICP	2.1			mg/L	0.3	2	08/19/08 3:21	ear/aeH
Sodium, dissolved	M200.7 ICP	24.6			mg/L	0.3	2	08/19/08 3:21	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		150			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3		7	B		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		157			mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.1			%			08/20/08 15:01	calc
Sum of Anions		4.5			meq/L	0.1	0.5	08/20/08 15:01	calc
Sum of Cations		4.6			meq/L	0.1	0.5	08/20/08 15:01	calc
Chloride	M300.0 - Ion Chromatography	16.9			mg/L	0.5	3	08/17/08 2:40	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/17/08 2:40	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.68			mg/L	0.02	0.1	08/20/08 15:01	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.68			mg/L	0.02	0.1	08/06/08 19:50	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:50	pjb
Residue, Filterable (TDS) @180C	SM2540C	260			mg/L	10	20	08/11/08 16:56	tbd
Sulfate	300.0 - Ion Chromatography	33.7			mg/L	0.5	3	08/17/08 2:40	aml
TDS (calculated)	Calculation	249			mg/L	10	50	08/20/08 15:01	calc
TDS (ratio - measured/calculated)	Calculation	1.04						08/20/08 15:01	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: POOL

ACZ Sample ID: **L70974-08**

Date Sampled: 07/31/08 12:30

Date Received: 08/06/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	117			mg/L	3	10	08/17/08 16:54	aml

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70974**

Project ID: 8720000

**Alkalinity as CaCO3**

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249610</b>													
WG249610PBW1	PBW	08/07/08 16:15				12.1	mg/L		-20	20			
WG249610LCSW2	LCSW	08/07/08 16:27	WC080722-2	820		781	mg/L	95.2	90	110			
WG249610PBW2	PBW	08/07/08 19:00				U	mg/L		-20	20			
WG249610LCSW5	LCSW	08/07/08 19:12	WC080722-2	820		786.3	mg/L	95.9	90	110			
WG249610PBW3	PBW	08/07/08 22:06				U	mg/L		-20	20			
WG249610LCSW8	LCSW	08/07/08 22:19	WC080722-2	820		782.6	mg/L	95.4	90	110			
WG249610PBW4	PBW	08/08/08 1:09				U	mg/L		-20	20			
WG249610LCSW11	LCSW	08/08/08 1:20	WC080722-2	820		787.9	mg/L	96.1	90	110			
L70979-02DUP	DUP	08/08/08 3:00			623	642.2	mg/L				3	20	
WG249610LCSW14	LCSW	08/08/08 4:39	WC080722-2	820		789.3	mg/L	96.3	90	110			

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250165</b>													
WG250165ICV	ICV	08/19/08 1:40	I1080717-3	100		97.37	mg/L	97.4	95	105			
WG250165ICB	ICB	08/19/08 1:43				U	mg/L		-0.6	0.6			
WG250165LFB	LFB	08/19/08 1:58	I1080811-3	67.97008		66.33	mg/L	97.6	85	115			
L70974-02AS	AS	08/19/08 2:56	I1080811-3	67.97008	U	69.33	mg/L	102	85	115			
L70974-02ASD	ASD	08/19/08 3:00	I1080811-3	67.97008	U	70.29	mg/L	103.4	85	115	1.38	20	

**Chloride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250049</b>													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	30		32.68	mg/L	108.9	90	110			
L70974-04AS	AS	08/17/08 1:09	WI080702-9	30	33.5	62.68	mg/L	97.3	90	110			
L70974-04DUP	DUP	08/17/08 1:27			33.5	33.5	mg/L				0	20	
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		28.44	mg/L	94.8	90	110			
L70981-06AS	AS	08/17/08 5:41	WI080702-9	30	.9	30.62	mg/L	99.1	90	110			
L70981-06DUP	DUP	08/17/08 5:59			.9	.85	mg/L				5.7	20	RA

Hydro Geo Chem, Inc.  
Project ID: 8720000

ACZ Project ID: L70974

**Fluoride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
<b>WG250049</b>													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	1.5		1.55	mg/L	103.3	90	110			
L70974-04AS	AS	08/17/08 1:09	WI080702-9	1.5	U	1.51	mg/L	100.7	90	110			
L70974-04DUP	DUP	08/17/08 1:27			U	U	mg/L				0	20	RA
L70981-06AS	AS	08/17/08 5:41	WI080702-9	1.5	U	1.5	mg/L	100	90	110			
L70981-06DUP	DUP	08/17/08 5:59			U	U	mg/L				0	20	RA
WG250049LFB2	LFB	08/17/08 15:59	WI080702-9	1.5		1.49	mg/L	99.3	90	110			

**Magnesium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250165</b>													
WG250165ICV	ICV	08/19/08 1:40	I080717-3	100		97.33	mg/L	97.3	95	105			
WG250165ICB	ICB	08/19/08 1:43				U	mg/L		-0.6	0.6			
WG250165LFB	LFB	08/19/08 1:58	I080811-3	49.96908		48.27	mg/L	96.6	85	115			
L70974-02AS	AS	08/19/08 2:56	I080811-3	49.96908	U	51.12	mg/L	102.3	85	115			
L70974-02ASD	ASD	08/19/08 3:00	I080811-3	49.96908	U	51.3	mg/L	102.7	85	115	0.35	20	

**Nitrate/Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249553</b>													
WG249553ICV	ICV	08/06/08 19:08	WI080613-1	2.416		2.422	mg/L	100.2	90	110			
WG249553ICB	ICB	08/06/08 19:10				U	mg/L		-0.06	0.06			
WG249553LFB1	LFB	08/06/08 19:12	WI080312-1	2		2	mg/L	100	90	110			
L70967-01AS	AS	08/06/08 19:33	WI080312-1	2	U	2.083	mg/L	104.2	90	110			
L70967-02DUP	DUP	08/06/08 19:36			.39	.386	mg/L				1	20	
WG249553LFB2	LFB	08/06/08 19:51	WI080312-1	2		2.057	mg/L	102.9	90	110			

**Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249553</b>													
WG249553ICV	ICV	08/06/08 19:08	WI080613-1	.609		.601	mg/L	98.7	90	110			
WG249553ICB	ICB	08/06/08 19:10				U	mg/L		-0.03	0.03			
WG249553LFB1	LFB	08/06/08 19:12	WI080312-1	1		.992	mg/L	99.2	90	110			
L70967-01AS	AS	08/06/08 19:33	WI080312-1	1	U	.999	mg/L	99.9	90	110			
L70967-02DUP	DUP	08/06/08 19:36			U	U	mg/L				0	20	RA
WG249553LFB2	LFB	08/06/08 19:51	WI080312-1	1		.994	mg/L	99.4	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70974**

Project ID: 8720000

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250165</b>													
WG250165ICV	ICV	08/19/08 1:40	I1080717-3	20		20.34	mg/L	101.7	95	105			
WG250165ICB	ICB	08/19/08 1:43				U	mg/L		-0.9	0.9			
WG250165LFB	LFB	08/19/08 1:58	I1080811-3	99.76186		100.96	mg/L	101.2	85	115			
L70974-02AS	AS	08/19/08 2:56	I1080811-3	99.76186	U	106.47	mg/L	106.7	85	115			
L70974-02ASD	ASD	08/19/08 3:00	I1080811-3	99.76186	U	107.51	mg/L	107.8	85	115	0.97	20	

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249794</b>													
WG249794PBW	PBW	08/11/08 16:45				U	mg/L		-20	20			
WG249794LCSW	LCSW	08/11/08 16:46	PCN30201	260		254	mg/L	97.7	80	120			
L71037-03DUP	DUP	08/11/08 17:08			570	558	mg/L				2.1	20	

**Sodium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250165</b>													
WG250165ICV	ICV	08/19/08 1:40	I1080717-3	100		101.3	mg/L	101.3	95	105			
WG250165ICV	ICV	08/19/08 1:40	I1080717-3	100		102.21	mg/L	102.2	95	105			
WG250165ICB	ICB	08/19/08 1:43				U	mg/L		-6	6			
WG250165ICB	ICB	08/19/08 1:43				U	mg/L		-0.9	0.9			
WG250165LFB	LFB	08/19/08 1:58	I1080811-3	98.21624		99.93	mg/L	101.7	85	115			
WG250165LFB	LFB	08/19/08 1:58	I1080811-3	98.21624		98.4	mg/L	100.2	85	115			
L70974-02AS	AS	08/19/08 2:56	I1080811-3	98.21624	U	105.36	mg/L	107.3	85	115			
L70974-02ASD	ASD	08/19/08 3:00	I1080811-3	98.21624	U	105.96	mg/L	107.9	85	115	0.57	20	

**Sulfate**

300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250049</b>													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		30.01	mg/L	100	90	110			
L70974-04AS	AS	08/17/08 15:23	WI080702-9	300	423	712.7	mg/L	96.6	90	110			
L70974-04DUP	DUP	08/17/08 15:41			423	446.2	mg/L				5.3	20	
L70981-06AS	AS	08/17/08 19:37	WI080702-9	150	174	320.3	mg/L	97.5	90	110			
L70981-06DUP	DUP	08/17/08 19:55			174	181.4	mg/L				4.2	20	
WG250049LFB1	LFB	08/19/08 17:22	WI080702-9	30		30.63	mg/L	102.1	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70974**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70974-02</b>	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249794	Residue, Filterable (TDS) @180C	SM2540C	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
<b>L70974-03</b>	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249794	Residue, Filterable (TDS) @180C	SM2540C	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
<b>L70974-04</b>	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70974-05</b>	WG250049	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249794	Residue, Filterable (TDS) @180C	SM2540C	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
<b>L70974-07</b>	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).



Hydro Geo Chem, Inc.

ACZ Project ID: **L70974**



No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70974  
 Date Received: 8/6/2008  
 Received By:  
 Date Printed: 8/6/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6630	25.5	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70974  
 Date Received: 8/6/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70974-01	COLLINS									X		<input type="checkbox"/>
L70974-02	FB		Y									<input type="checkbox"/>
L70974-03	EQB		Y									<input type="checkbox"/>
L70974-04	PARRA		Y									<input type="checkbox"/>
L70974-05	DUP		Y									<input type="checkbox"/>
L70974-06	METZLER									X		<input type="checkbox"/>
L70974-07	COOPER		Y									<input type="checkbox"/>
L70974-08	POOL									X		<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH_Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_

August 21, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L70959

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 06, 2008. This project has been assigned to ACZ's project number, L70959. Please reference this number in all future inquiries.

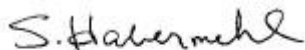
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70959. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: TM-06 MILLER

ACZ Sample ID: **L70959-01**  
Date Sampled: 08/04/08 16:00  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	37.8			mg/L	0.2	1	08/18/08 18:36	aeH
Magnesium, dissolved	M200.7 ICP	19.5			mg/L	0.2	1	08/18/08 18:36	aeH
Potassium, dissolved	M200.7 ICP	1.9	B		mg/L	0.3	2	08/19/08 14:07	aeH
Sodium, dissolved	M200.7 ICP	52.1			mg/L	0.3	2	08/18/08 18:36	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		210			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		210			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.6			%			08/21/08 15:27	calc
Sum of Anions		5.4			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		5.8			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	18.0		*	mg/L	0.5	3	08/16/08 19:25	aml
Fluoride	M300.0 - Ion Chromatography	0.7		*	mg/L	0.1	0.5	08/16/08 19:25	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.89			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.89	H	*	mg/L	0.02	0.1	08/06/08 19:14	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		HU	*	mg/L	0.01	0.05	08/06/08 19:14	pjb
Residue, Filterable (TDS) @180C	SM2540C	300			mg/L	10	20	08/07/08 16:26	tbd
Sulfate	300.0 - Ion Chromatography	31.3			mg/L	0.5	3	08/16/08 19:25	aml
TDS (calculated)	Calculation	291			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.03						08/21/08 15:27	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: TM-43B

ACZ Sample ID: **L70959-02**  
Date Sampled: 08/05/08 08:10  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	47.5			mg/L	0.2	1	08/18/08 18:47	aeH
Magnesium, dissolved	M200.7 ICP	21.5			mg/L	0.2	1	08/18/08 18:47	aeH
Potassium, dissolved	M200.7 ICP	2.6			mg/L	0.3	2	08/19/08 14:17	aeH
Sodium, dissolved	M200.7 ICP	44.9			mg/L	0.3	2	08/18/08 18:47	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		231			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		231			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		6.1			%			08/21/08 15:27	calc
Sum of Anions		5.4			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		6.1			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	4.7		*	mg/L	0.5	3	08/16/08 19:43	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/16/08 19:43	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.03	B		mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.03	B	*	mg/L	0.02	0.1	08/06/08 19:16	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:16	pjb
Residue, Filterable (TDS) @180C	SM2540C	300			mg/L	10	20	08/07/08 16:27	tbd
Sulfate	300.0 - Ion Chromatography	31.8			mg/L	0.5	3	08/16/08 19:43	aml
TDS (calculated)	Calculation	292			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.03						08/21/08 15:27	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: BF-01

ACZ Sample ID: **L70959-03**

Date Sampled: 08/05/08 09:20

Date Received: 08/06/08

Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	624			mg/L	0.4	2	08/18/08 18:50	aeH
Magnesium, dissolved	M200.7 ICP	107			mg/L	0.4	2	08/18/08 18:50	aeH
Potassium, dissolved	M200.7 ICP	4.5			mg/L	0.6	3	08/19/08 14:20	aeH
Sodium, dissolved	M200.7 ICP	61.3			mg/L	0.6	3	08/18/08 18:50	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		579			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		579			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.9			%			08/21/08 15:27	calc
Sum of Anions		40.4			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		42.8			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	30	B	*	mg/L	10	50	08/16/08 20:38	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	2	10	08/16/08 20:38	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.09			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.09		*	mg/L	0.02	0.1	08/06/08 19:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:19	pjb
Residue, Filterable (TDS) @180C	SM2540C	2820			mg/L	10	20	08/07/08 16:29	tbd
Sulfate	300.0 - Ion Chromatography	1330		*	mg/L	10	50	08/16/08 20:38	aml
TDS (calculated)	Calculation	2510			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.12						08/21/08 15:27	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: SRC

ACZ Sample ID: **L70959-04**  
Date Sampled: 08/05/08 11:10  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	26.8			mg/L	0.2	1	08/18/08 18:53	aeH
Magnesium, dissolved	M200.7 ICP	17.8			mg/L	0.2	1	08/18/08 18:53	aeH
Potassium, dissolved	M200.7 ICP	2.0			mg/L	0.3	2	08/21/08 10:25	ear/aeH
Sodium, dissolved	M200.7 ICP	44.6			mg/L	0.3	2	08/18/08 18:53	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		173			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		173		*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.5			%			08/21/08 15:27	calc
Sum of Anions		4.3			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		4.8			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	10.4			mg/L	0.5	3	08/16/08 21:32	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/16/08 21:32	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.74			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.74		*	mg/L	0.02	0.1	08/06/08 19:20	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:20	pjb
Residue, Filterable (TDS) @180C	SM2540C	250			mg/L	10	20	08/07/08 16:30	tbd
Sulfate	300.0 - Ion Chromatography	15.4			mg/L	0.5	3	08/16/08 21:32	aml
TDS (calculated)	Calculation	238			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.05						08/21/08 15:27	calc

Arizona license number: AZ0102



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
 Sample ID: BURKE

ACZ Sample ID: **L70959-05**  
 Date Sampled: 08/05/08 12:25  
 Date Received: 08/06/08  
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	52.5			mg/L	0.2	1	08/18/08 18:57	aeH
Magnesium, dissolved	M200.7 ICP	22.3			mg/L	0.2	1	08/18/08 18:57	aeH
Potassium, dissolved	M200.7 ICP	2.3			mg/L	0.3	2	08/21/08 10:28	ear/aeH
Sodium, dissolved	M200.7 ICP	16.1			mg/L	0.3	2	08/18/08 18:57	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		187			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		187		*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		6.1			%			08/21/08 15:27	calc
Sum of Anions		4.6			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		5.2			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	9.9			mg/L	0.5	3	08/16/08 21:50	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/16/08 21:50	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.81			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.85		*	mg/L	0.02	0.1	08/06/08 19:21	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.04	B	*	mg/L	0.01	0.05	08/06/08 19:21	pjb
Residue, Filterable (TDS) @180C	SM2540C	260			mg/L	10	20	08/07/08 16:31	tbd
Sulfate	300.0 - Ion Chromatography	21.9			mg/L	0.5	3	08/16/08 21:50	aml
TDS (calculated)	Calculation	250			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.04						08/21/08 15:27	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: TM-15 MILLER

ACZ Sample ID: **L70959-06**  
Date Sampled: 08/05/08 13:10  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	29.8			mg/L	0.2	1	08/18/08 19:06	aeH
Magnesium, dissolved	M200.7 ICP	18.9			mg/L	0.2	1	08/18/08 19:06	aeH
Potassium, dissolved	M200.7 ICP	2.0			mg/L	0.3	2	08/21/08 10:31	ear/aeH
Sodium, dissolved	M200.7 ICP	32.0			mg/L	0.3	2	08/18/08 19:06	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		173			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		174		*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.7			%			08/21/08 15:27	calc
Sum of Anions		4.1			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		4.5			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	7.0			mg/L	0.5	3	08/16/08 22:08	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	08/16/08 22:08	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.99			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.99		*	mg/L	0.02	0.1	08/06/08 19:22	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:22	pjb
Residue, Filterable (TDS) @180C	SM2540C	210			mg/L	10	20	08/07/08 16:33	tbd
Sulfate	300.0 - Ion Chromatography	13.7			mg/L	0.5	3	08/16/08 22:08	aml
TDS (calculated)	Calculation	216			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	0.97						08/21/08 15:27	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
 Sample ID: DUP080508

ACZ Sample ID: **L70959-07**  
 Date Sampled: 08/05/08 00:00  
 Date Received: 08/06/08  
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	47.9			mg/L	0.2	1	08/18/08 19:10	aeH
Magnesium, dissolved	M200.7 ICP	21.7			mg/L	0.2	1	08/18/08 19:10	aeH
Potassium, dissolved	M200.7 ICP	2.5			mg/L	0.3	2	08/21/08 10:35	ear/aeH
Sodium, dissolved	M200.7 ICP	44.9			mg/L	0.3	2	08/18/08 19:10	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		234			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		234		*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		6.0			%			08/21/08 15:27	calc
Sum of Anions		5.5			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		6.2			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	4.7			mg/L	0.5	3	08/16/08 22:26	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/16/08 22:26	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.11			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.11		*	mg/L	0.02	0.1	08/06/08 19:27	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:27	pjb
Residue, Filterable (TDS) @180C	SM2540C	310			mg/L	10	20	08/07/08 16:35	tbd
Sulfate	300.0 - Ion Chromatography	32.5			mg/L	0.5	3	08/16/08 22:26	aml
TDS (calculated)	Calculation	295			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.05						08/21/08 15:27	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
 Sample ID: EQB080508

ACZ Sample ID: **L70959-08**  
 Date Sampled: 08/05/08 00:00  
 Date Received: 08/06/08  
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/18/08 19:13	aeH
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/18/08 19:13	aeH
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/21/08 10:38	ear/aeH
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/18/08 19:13	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity			U	*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/21/08 15:27	calc
Sum of Anions			U		meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations			U		meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	08/16/08 22:44	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/16/08 22:44	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.03	B		mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.04	B	*	mg/L	0.02	0.1	08/06/08 19:28	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.01	B	*	mg/L	0.01	0.05	08/06/08 19:28	pjb
Residue, Filterable (TDS) @180C	SM2540C		U	*	mg/L	10	20	08/07/08 16:36	tbd
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	08/16/08 22:44	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/21/08 15:27	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: FB080508

ACZ Sample ID: **L70959-09**  
Date Sampled: 08/05/08 00:00  
Date Received: 08/06/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/18/08 19:16	aeH
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/18/08 19:16	aeH
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/21/08 10:41	ear/aeH
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/18/08 19:16	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity			U	*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/21/08 15:27	calc
Sum of Anions		N/A			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations			U		meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	08/16/08 23:02	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/16/08 23:02	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.02	0.1	08/06/08 19:30	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:30	pjb
Residue, Filterable (TDS) @180C	SM2540C		U	*	mg/L	10	20	08/07/08 16:38	tbd
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	08/16/08 23:02	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/21/08 15:27	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70959**

Project ID: 8720000

**Alkalinity as CaCO3**

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249610</b>													
WG249610PBW1	PBW	08/07/08 16:15				12.1	mg/L		-20	20			
WG249610LCSW2	LCSW	08/07/08 16:27	WC080722-2	820		781	mg/L	95.2	90	110			
WG249610PBW2	PBW	08/07/08 19:00				U	mg/L		-20	20			
WG249610LCSW5	LCSW	08/07/08 19:12	WC080722-2	820		786.3	mg/L	95.9	90	110			
WG249610PBW3	PBW	08/07/08 22:06				U	mg/L		-20	20			
WG249610LCSW8	LCSW	08/07/08 22:19	WC080722-2	820		782.6	mg/L	95.4	90	110			
L70959-03DUP	DUP	08/07/08 23:53			579	579.9	mg/L				0.2	20	
L70968-01DUP	DUP	08/08/08 1:03			6	5.5	mg/L				8.7	20	RA
WG249610PBW4	PBW	08/08/08 1:09				U	mg/L		-20	20			
WG249610LCSW11	LCSW	08/08/08 1:20	WC080722-2	820		787.9	mg/L	96.1	90	110			
WG249610LCSW14	LCSW	08/08/08 4:39	WC080722-2	820		789.3	mg/L	96.3	90	110			

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250159</b>													
WG250159ICV	ICV	08/18/08 17:30	I080717-3	100		99.65	mg/L	99.7	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	I080811-3	67.97008		69.38	mg/L	102.1	85	115			
L70959-01AS	AS	08/18/08 18:40	I080811-3	67.97008	37.8	104.81	mg/L	98.6	85	115			
L70959-01ASD	ASD	08/18/08 18:43	I080811-3	67.97008	37.8	106.29	mg/L	100.8	85	115	1.4	20	

**Chloride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250049</b>													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	30		32.68	mg/L	108.9	90	110			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	600	30	626	mg/L	99.3	90	110			
L70959-03DUP	DUP	08/16/08 21:14			30	32	mg/L				6.5	20	RA
L70974-04AS	AS	08/17/08 1:09	WI080702-9	30	33.5	62.68	mg/L	97.3	90	110			
L70974-04DUP	DUP	08/17/08 1:27			33.5	33.5	mg/L				0	20	
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		28.44	mg/L	94.8	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70959**

Project ID: 8720000

**Fluoride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
<b>WG250049</b>													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	1.5		1.55	mg/L	103.3	90	110			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	30	U	27.7	mg/L	92.3	90	110			
L70959-03DUP	DUP	08/16/08 21:14			U	U	mg/L				0	20	RA
L70974-04AS	AS	08/17/08 1:09	WI080702-9	1.5	U	1.51	mg/L	100.7	90	110			
L70974-04DUP	DUP	08/17/08 1:27			U	U	mg/L				0	20	RA
WG250049LFB2	LFB	08/17/08 15:59	WI080702-9	1.5		1.49	mg/L	99.3	90	110			

**Magnesium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250159</b>													
WG250159ICV	ICV	08/18/08 17:30	I080717-3	100		101.54	mg/L	101.5	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	I080811-3	49.96908		50.49	mg/L	101	85	115			
L70959-01AS	AS	08/18/08 18:40	I080811-3	49.96908	19.5	71.86	mg/L	104.8	85	115			
L70959-01ASD	ASD	08/18/08 18:43	I080811-3	49.96908	19.5	72.84	mg/L	106.7	85	115	1.35	20	

**Nitrate/Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249553</b>													
WG249553ICV	ICV	08/06/08 19:08	WI080613-1	2.416		2.422	mg/L	100.2	90	110			
WG249553ICB	ICB	08/06/08 19:10				U	mg/L		-0.06	0.06			
WG249553LFB1	LFB	08/06/08 19:12	WI080312-1	2		2	mg/L	100	90	110			
L70959-01AS	AS	08/06/08 19:15	WI080312-1	2	.89	2.914	mg/L	101.2	90	110			
L70959-02DUP	DUP	08/06/08 19:17			.03	.037	mg/L				20.9	20	RA
WG249553LFB2	LFB	08/06/08 19:51	WI080312-1	2		2.057	mg/L	102.9	90	110			

**Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249553</b>													
WG249553ICV	ICV	08/06/08 19:08	WI080613-1	.609		.601	mg/L	98.7	90	110			
WG249553ICB	ICB	08/06/08 19:10				U	mg/L		-0.03	0.03			
WG249553LFB1	LFB	08/06/08 19:12	WI080312-1	1		.992	mg/L	99.2	90	110			
L70959-01AS	AS	08/06/08 19:15	WI080312-1	1		1.012	mg/L	101.2	90	110			
L70959-02DUP	DUP	08/06/08 19:17			U	U	mg/L				0	20	RA
WG249553LFB2	LFB	08/06/08 19:51	WI080312-1	1		.994	mg/L	99.4	90	110			



Hydro Geo Chem, Inc.

ACZ Project ID: **L70959**

Project ID: 8720000

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250208</b>													
WG250208ICV	ICV	08/19/08 11:02	I1080818-1	20		20.56	mg/L	102.8	95	105			
WG250208ICB	ICB	08/19/08 11:05				U	mg/L		-0.9	0.9			
<b>WG250227</b>													
WG250227LFB	LFB	08/19/08 13:21	I1080811-3	99.76186		100.71	mg/L	101	85	115			
L70959-01AS	AS	08/19/08 14:10	I1080811-3	99.76186	1.9	111.53	mg/L	109.9	85	115			
L70959-01ASD	ASD	08/19/08 14:13	I1080811-3	99.76186	1.9	111.52	mg/L	109.9	85	115	0.01	20	
<b>WG250354</b>													
WG250354ICV	ICV	08/21/08 10:05	I1080818-1	20		20.07	mg/L	100.4	95	105			
WG250354ICB	ICB	08/21/08 10:08				U	mg/L		-0.9	0.9			
WG250354LFB	LFB	08/21/08 10:22	I1080811-3	99.76186		101.94	mg/L	102.2	85	115			
L71042-01AS	AS	08/21/08 10:54	I1080811-3	99.76186	3.4	109.71	mg/L	106.6	85	115			
L71042-01ASD	ASD	08/21/08 10:58	I1080811-3	99.76186	3.4	108.08	mg/L	104.9	85	115	1.5	20	

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249625</b>													
WG249625PBW	PBW	08/07/08 16:20				U	mg/L		-20	20			
WG249625LCSW	LCSW	08/07/08 16:21	PCN30201	260		262	mg/L	100.8	80	120			
L70959-06DUP	DUP	08/07/08 16:34			210	224	mg/L				6.5	20	
L70999-07DUP	DUP	08/07/08 16:49			U	U	mg/L				0	20	RA

**Sodium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250159</b>													
WG250159ICV	ICV	08/18/08 17:30	I1080717-3	100		100.05	mg/L	100.1	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.9	0.9			
WG250159LFB	LFB	08/18/08 17:46	I1080811-3	98.21624		98.42	mg/L	100.2	85	115			
L70959-01AS	AS	08/18/08 18:40	I1080811-3	98.21624	52.1	142.59	mg/L	92.1	85	115			
L70959-01ASD	ASD	08/18/08 18:43	I1080811-3	98.21624	52.1	144.5	mg/L	94.1	85	115	1.33	20	

**Sulfate**

300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250049</b>													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	600	1330	1921	mg/L	98.5	90	110			
L70959-03DUP	DUP	08/16/08 21:14			1330	1455	mg/L				9	20	
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		30.01	mg/L	100	90	110			
L70974-04AS	AS	08/17/08 15:23	WI080702-9	300	423	712.7	mg/L	96.6	90	110			
L70974-04DUP	DUP	08/17/08 15:41			423	446.2	mg/L				5.3	20	
WG250049LFB1	LFB	08/19/08 17:22	WI080702-9	30		30.63	mg/L	102.1	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70959**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70959-01</b>	WG250049	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70959-02</b>	WG250049	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70959-03</b>	WG250049	Chloride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Fluoride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250049	Sulfate	300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
<b>L70959-04</b>	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L70959**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70959-05</b>	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70959-06</b>	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70959-07</b>	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70959-08</b>	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249625	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L70959**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70959-09</b>	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249625	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L70959**



No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70959  
 Date Received: 8/6/2008  
 Received By:  
 Date Printed: 8/6/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6628	3.7	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70959  
 Date Received: 8/6/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70959-01	TM-06 MILLER		Y									<input type="checkbox"/>
L70959-02	TM-43B		Y									<input type="checkbox"/>
L70959-03	BF-01		Y									<input type="checkbox"/>
L70959-04	SRC		Y									<input type="checkbox"/>
L70959-05	BURKE		Y									<input type="checkbox"/>
L70959-06	TM-15 MILLER		Y									<input type="checkbox"/>
L70959-07	DUP080508		Y									<input type="checkbox"/>
L70959-08	EQB080508		Y									<input type="checkbox"/>
L70959-09	FB080508		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH_Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_

August 25, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000T2.3

ACZ Project ID: L70943

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 05, 2008. This project has been assigned to ACZ's project number, L70943. Please reference this number in all future inquiries.

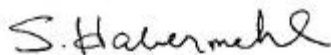
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70943. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 25, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.





**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.3  
Sample ID: BMO-2008-10GU

ACZ Sample ID: **L70943-01**  
Date Sampled: 08/04/08 14:45  
Date Received: 08/05/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	649		*	mg/L	0.4	2	08/18/08 18:30	aeH
Magnesium, dissolved	M200.7 ICP	311			mg/L	0.4	2	08/18/08 18:30	aeH
Potassium, dissolved	M200.7 ICP	15.3		*	mg/L	0.6	3	08/19/08 14:03	aeH
Sodium, dissolved	M200.7 ICP	37.6			mg/L	0.6	3	08/18/08 18:30	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		984			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		984			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-6.1			%			08/25/08 10:47	calc
Sum of Anions		67.8			meq/L	0.1	0.5	08/25/08 10:47	calc
Sum of Cations		60.0			meq/L	0.1	0.5	08/25/08 10:47	calc
Chloride	M300.0 - Ion Chromatography	60		*	mg/L	10	50	08/16/08 19:07	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	2	10	08/16/08 19:07	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.13			mg/L	0.02	0.1	08/25/08 10:47	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.16		*	mg/L	0.02	0.1	08/05/08 21:21	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.03	B	*	mg/L	0.01	0.05	08/05/08 21:21	pjb
Residue, Filterable (TDS) @180C	SM2540C	3810			mg/L	10	20	08/07/08 16:23	tbd
Sulfate	300.0 - Ion Chromatography	2210		*	mg/L	30	100	08/21/08 15:10	aml
TDS (calculated)	Calculation	3870			mg/L	10	50	08/25/08 10:47	calc
TDS (ratio - measured/calculated)	Calculation	0.98						08/25/08 10:47	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

<i>B</i>	Analyte concentration detected at a value between MDL and PQL.
<i>H</i>	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
<i>U</i>	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70943**

Project ID: 8720000T2.3

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249610</b>													
WG249610PBW1	PBW	08/07/08 16:15				12.1	mg/L		-20	20			
WG249610LCSW2	LCSW	08/07/08 16:27	WC080722-2	820		781	mg/L	95.2	90	110			
WG249610PBW2	PBW	08/07/08 19:00				U	mg/L		-20	20			
WG249610LCSW5	LCSW	08/07/08 19:12	WC080722-2	820		786.3	mg/L	95.9	90	110			
WG249610PBW3	PBW	08/07/08 22:06				U	mg/L		-20	20			
WG249610LCSW8	LCSW	08/07/08 22:19	WC080722-2	820		782.6	mg/L	95.4	90	110			
L70959-03DUP	DUP	08/07/08 23:53			579	579.9	mg/L				0.2	20	
WG249610PBW4	PBW	08/08/08 1:09				U	mg/L		-20	20			
WG249610LCSW11	LCSW	08/08/08 1:20	WC080722-2	820		787.9	mg/L	96.1	90	110			
WG249610LCSW14	LCSW	08/08/08 4:39	WC080722-2	820		789.3	mg/L	96.3	90	110			

**Calcium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250159</b>													
WG250159ICV	ICV	08/18/08 17:30	I1080717-3	100		99.65	mg/L	99.7	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	I1080811-3	67.97008		69.38	mg/L	102.1	85	115			
L70941-04AS	AS	08/18/08 18:03	I1080811-3	67.97008	477	528.33	mg/L	75.5	85	115			M3
L70941-04ASD	ASD	08/18/08 18:07	I1080811-3	67.97008	477	531.45	mg/L	80.1	85	115	0.59	20	M3

**Chloride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250049</b>													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	30		32.68	mg/L	108.9	90	110			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	600	30	626	mg/L	99.3	90	110			
L70959-03DUP	DUP	08/16/08 21:14			30	32	mg/L				6.5	20	RA
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		28.44	mg/L	94.8	90	110			

**Fluoride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
<b>WG250049</b>													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	1.5		1.55	mg/L	103.3	90	110			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	30	U	27.7	mg/L	92.3	90	110			
L70959-03DUP	DUP	08/16/08 21:14			U	U	mg/L				0	20	RA
WG250049LFB2	LFB	08/17/08 15:59	WI080702-9	1.5		1.49	mg/L	99.3	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70943**

Project ID: 8720000T2.3

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250159</b>													
WG250159ICV	ICV	08/18/08 17:30	I1080717-3	100		101.54	mg/L	101.5	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	I1080811-3	49.96908		50.49	mg/L	101	85	115			
L70941-04AS	AS	08/18/08 18:03	I1080811-3	49.96908	63.9	119.22	mg/L	110.7	85	115			
L70941-04ASD	ASD	08/18/08 18:07	I1080811-3	49.96908	63.9	120.76	mg/L	113.8	85	115	1.28	20	

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249473</b>													
WG249473ICV	ICV	08/05/08 20:59	WI080613-1	2.416		2.38	mg/L	98.5	90	110			
WG249473ICB	ICB	08/05/08 21:00				U	mg/L		-0.06	0.06			
WG249473LFB	LFB	08/05/08 21:04	WI080312-1	2		1.923	mg/L	96.2	90	110			
L70919-01AS	AS	08/05/08 21:06	WI080312-1	2	.4	2.3	mg/L	95	90	110			
L70925-01DUP	DUP	08/05/08 21:09			U	U	mg/L				0	20	RA

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249473</b>													
WG249473ICV	ICV	08/05/08 20:59	WI080613-1	.609		.611	mg/L	100.3	90	110			
WG249473ICB	ICB	08/05/08 21:00				U	mg/L		-0.03	0.03			
WG249473LFB	LFB	08/05/08 21:04	WI080312-1	1		.97	mg/L	97	90	110			
L70919-01AS	AS	08/05/08 21:06	WI080312-1	1	U	.943	mg/L	94.3	90	110			
L70925-01DUP	DUP	08/05/08 21:09			U	U	mg/L				0	20	RA

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250208</b>													
WG250208ICV	ICV	08/19/08 11:02	I1080818-1	20		20.56	mg/L	102.8	95	105			
WG250208ICB	ICB	08/19/08 11:05				U	mg/L		-0.9	0.9			
<b>WG250227</b>													
WG250227LFB	LFB	08/19/08 13:21	I1080811-3	99.76186		100.71	mg/L	101	85	115			
L70941-04AS	AS	08/19/08 13:37	I1080811-3	99.76186	13.1	126.15	mg/L	113.3	85	115			
L70941-04ASD	ASD	08/19/08 13:40	I1080811-3	99.76186	13.1	128.48	mg/L	115.7	85	115	1.83	20	MA

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249625</b>													
WG249625PBW	PBW	08/07/08 16:20				U	mg/L		-20	20			
WG249625LCSW	LCSW	08/07/08 16:21	PCN30201	260		262	mg/L	100.8	80	120			
L70959-06DUP	DUP	08/07/08 16:34			210	224	mg/L				6.5	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70943**

Project ID: 8720000T2.3

**Sodium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250159</b>													
WG250159ICV	ICV	08/18/08 17:30	I1080717-3	100		100.05	mg/L	100.1	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.9	0.9			
WG250159LFB	LFB	08/18/08 17:46	I1080811-3	98.21624		98.42	mg/L	100.2	85	115			
L70941-04AS	AS	08/18/08 18:03	I1080811-3	98.21624	59.6	152.17	mg/L	94.3	85	115			
L70941-04ASD	ASD	08/18/08 18:07	I1080811-3	98.21624	59.6	152.36	mg/L	94.4	85	115	0.12	20	

**Sulfate**

300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250381</b>													
WG250381ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250381ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250381LFB	LFB	08/21/08 14:16	WI080702-9	30		28.14	mg/L	93.8	90	110			
L70800-06DUP	DUP	08/21/08 14:52			1560	1620	mg/L				3.8	20	
L70943-01AS	AS	08/21/08 15:28	WI080702-9	1500	2210	3152	mg/L	62.8	90	110			M2

Hydro Geo Chem, Inc.

ACZ Project ID: **L70943**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70943-01	WG250159	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250227	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG250049	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value. RA Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249473	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250381	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70943**



No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000T2.3

ACZ Project ID: L70943  
 Date Received: 8/5/2008  
 Received By:  
 Date Printed: 8/5/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6622	3.2	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Telephone extension changed in Report to section.



**Hydro Geo Chem, Inc.**  
 8720000T2.3

ACZ Project ID: L70943  
 Date Received: 8/5/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70943-01	WELL 10 GU		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc. L70943

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com

Address: 51 W Wetmore Rd
Tucson, AZ 85705
Telephone: (520) 293-1500 x113

Copy of Report to:

Name: Jim Norris
Company: HGC Inc

E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com

Address: 51 W. Wetmore Rd.
Tucson, AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 8720000 T2.3
Reporting state for compliance testing: AZ
Sampler's Name:
Are any samples NRC licensable material? No

Table with columns for # of Containers and Matrix. Row 1: 3 containers, Matrix GW, with an 'X' in the FMCQB-GW column.

Table with columns for SAMPLE IDENTIFICATION, DATE:TIME, and Matrix. Row 1: WELL 10 GU, 8-4-08/14:45, GW.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

Blank area for remarks and disclosures.

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Table for RELINQUISHED BY, DATE:TIME, RECEIVED BY, DATE:TIME. Includes signatures and dates like 8-4-08/15:30 and 8-5-08/10:30.

August 21, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L70942

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 05, 2008. This project has been assigned to ACZ's project number, L70942. Please reference this number in all future inquiries.

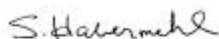
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70942. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: TM-43A

ACZ Sample ID: **L70942-01**  
Date Sampled: 08/04/08 09:44  
Date Received: 08/05/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	577		*	mg/L	0.4	2	08/18/08 18:13	aeH
Magnesium, dissolved	M200.7 ICP	188			mg/L	0.4	2	08/18/08 18:13	aeH
Potassium, dissolved	M200.7 ICP	4.7		*	mg/L	0.6	3	08/19/08 13:54	aeH
Sodium, dissolved	M200.7 ICP	40.5			mg/L	0.6	3	08/18/08 18:13	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		658			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		658			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.0			%			08/20/08 0:00	calc
Sum of Anions		41.8			meq/L	0.1	0.5	08/20/08 0:00	calc
Sum of Cations		46.2			meq/L	0.1	0.5	08/20/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	30		*	mg/L	1	5	08/14/08 8:43	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.2	1	08/14/08 8:43	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.31			mg/L	0.02	0.1	08/20/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.31		*	mg/L	0.02	0.1	08/05/08 21:17	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/05/08 21:17	pjb
Residue, Filterable (TDS) @180C	SM2540C	2950			mg/L	10	20	08/07/08 13:32	kah
Sulfate	300.0 - Ion Chromatography	1320			mg/L	30	100	08/16/08 0:18	aml
TDS (calculated)	Calculation	2560			mg/L	10	50	08/20/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.15						08/20/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: TM-43

ACZ Sample ID: **L70942-02**

Date Sampled: 08/04/08 13:00

Date Received: 08/05/08

Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10.4		*	mg/L	0.2	1	08/18/08 18:17	aeH
Magnesium, dissolved	M200.7 ICP	5.8			mg/L	0.2	1	08/18/08 18:17	aeH
Potassium, dissolved	M200.7 ICP	2.0		*	mg/L	0.3	2	08/19/08 13:57	aeH
Sodium, dissolved	M200.7 ICP	79.7			mg/L	0.3	2	08/18/08 18:17	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		174			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3		12	B		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		186			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.9			%			08/20/08 0:00	calc
Sum of Anions		4.0			meq/L	0.1	0.5	08/20/08 0:00	calc
Sum of Cations		4.5			meq/L	0.1	0.5	08/20/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	12	B	*	mg/L	5	30	08/14/08 9:02	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	1	5	08/14/08 9:02	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.25			mg/L	0.02	0.1	08/20/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.25		*	mg/L	0.02	0.1	08/05/08 21:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/05/08 21:19	pjb
Residue, Filterable (TDS) @180C	SM2540C	270			mg/L	10	20	08/07/08 13:33	kah
Sulfate	300.0 - Ion Chromatography		U	*	mg/L	5	30	08/16/08 0:36	aml
TDS (calculated)	Calculation	227			mg/L	10	50	08/20/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.19						08/20/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: GL-03

ACZ Sample ID: **L70942-03**  
Date Sampled: 08/04/08 14:55  
Date Received: 08/05/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	68.7		*	mg/L	0.2	1	08/18/08 18:26	aeH
Magnesium, dissolved	M200.7 ICP	38.9			mg/L	0.2	1	08/18/08 18:26	aeH
Potassium, dissolved	M200.7 ICP	3.4		*	mg/L	0.3	2	08/19/08 14:00	aeH
Sodium, dissolved	M200.7 ICP	19.5			mg/L	0.3	2	08/18/08 18:26	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		278			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		278			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.2			%			08/20/08 0:00	calc
Sum of Anions		6.9			meq/L	0.1	0.5	08/20/08 0:00	calc
Sum of Cations		7.5			meq/L	0.1	0.5	08/20/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	21.4			mg/L	0.5	3	08/14/08 9:20	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/14/08 9:20	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.60			mg/L	0.02	0.1	08/20/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.62		*	mg/L	0.02	0.1	08/05/08 21:20	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B	*	mg/L	0.01	0.05	08/05/08 21:20	pjb
Residue, Filterable (TDS) @180C	SM2540C	400			mg/L	10	20	08/07/08 13:34	kah
Sulfate	300.0 - Ion Chromatography	36.1			mg/L	0.5	3	08/14/08 9:20	aml
TDS (calculated)	Calculation	358			mg/L	10	50	08/20/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.12						08/20/08 0:00	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70942**

Project ID: 8720000

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249610</b>													
WG249610PBW1	PBW	08/07/08 16:15				12.1	mg/L		-20	20			
WG249610LCSW2	LCSW	08/07/08 16:27	WC080722-2	820		781	mg/L	95.2	90	110			
WG249610PBW2	PBW	08/07/08 19:00				U	mg/L		-20	20			
WG249610LCSW5	LCSW	08/07/08 19:12	WC080722-2	820		786.3	mg/L	95.9	90	110			
WG249610PBW3	PBW	08/07/08 22:06				U	mg/L		-20	20			
WG249610LCSW8	LCSW	08/07/08 22:19	WC080722-2	820		782.6	mg/L	95.4	90	110			
L70959-03DUP	DUP	08/07/08 23:53			579	579.9	mg/L				0.2	20	
WG249610PBW4	PBW	08/08/08 1:09				U	mg/L		-20	20			
WG249610LCSW11	LCSW	08/08/08 1:20	WC080722-2	820		787.9	mg/L	96.1	90	110			
WG249610LCSW14	LCSW	08/08/08 4:39	WC080722-2	820		789.3	mg/L	96.3	90	110			

**Calcium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250159</b>													
WG250159ICV	ICV	08/18/08 17:30	I1080717-3	100		99.65	mg/L	99.7	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	I1080811-3	67.97008		69.38	mg/L	102.1	85	115			
L70941-04AS	AS	08/18/08 18:03	I1080811-3	67.97008	477	528.33	mg/L	75.5	85	115			M3
L70941-04ASD	ASD	08/18/08 18:07	I1080811-3	67.97008	477	531.45	mg/L	80.1	85	115	0.59	20	M3

**Chloride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG249905</b>													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	30		28.83	mg/L	96.1	90	110			
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	30		29.43	mg/L	98.1	90	110			
L70933-03AS	AS	08/14/08 5:42	WI080702-9	60	99	157	mg/L	96.7	90	110			
L70933-03DUP	DUP	08/14/08 6:01			99	105.1	mg/L				6	20	

**Fluoride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
<b>WG249905</b>													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	1.5		1.38	mg/L	92	90	110			
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	1.5		1.35	mg/L	90	90	110			
L70933-03AS	AS	08/14/08 5:42	WI080702-9	3	U	2.86	mg/L	95.3	90	110			
L70933-03DUP	DUP	08/14/08 6:01			U	U	mg/L				0	20	RA



Hydro Geo Chem, Inc.

ACZ Project ID: **L70942**

Project ID: 8720000

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250159</b>													
WG250159ICV	ICV	08/18/08 17:30	I1080717-3	100		101.54	mg/L	101.5	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	I1080811-3	49.96908		50.49	mg/L	101	85	115			
L70941-04AS	AS	08/18/08 18:03	I1080811-3	49.96908	63.9	119.22	mg/L	110.7	85	115			
L70941-04ASD	ASD	08/18/08 18:07	I1080811-3	49.96908	63.9	120.76	mg/L	113.8	85	115	1.28	20	

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249473</b>													
WG249473ICV	ICV	08/05/08 20:59	WI080613-1	2.416		2.38	mg/L	98.5	90	110			
WG249473ICB	ICB	08/05/08 21:00				U	mg/L		-0.06	0.06			
WG249473LFB	LFB	08/05/08 21:04	WI080312-1	2		1.923	mg/L	96.2	90	110			
L70919-01AS	AS	08/05/08 21:06	WI080312-1	2	.4	2.3	mg/L	95	90	110			
L70925-01DUP	DUP	08/05/08 21:09			U	U	mg/L				0	20	RA

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249473</b>													
WG249473ICV	ICV	08/05/08 20:59	WI080613-1	.609		.611	mg/L	100.3	90	110			
WG249473ICB	ICB	08/05/08 21:00				U	mg/L		-0.03	0.03			
WG249473LFB	LFB	08/05/08 21:04	WI080312-1	1		.97	mg/L	97	90	110			
L70919-01AS	AS	08/05/08 21:06	WI080312-1	1	U	.943	mg/L	94.3	90	110			
L70925-01DUP	DUP	08/05/08 21:09			U	U	mg/L				0	20	RA

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250208</b>													
WG250208ICV	ICV	08/19/08 11:02	I1080818-1	20		20.56	mg/L	102.8	95	105			
WG250208ICB	ICB	08/19/08 11:05				U	mg/L		-0.9	0.9			
<b>WG250227</b>													
WG250227LFB	LFB	08/19/08 13:21	I1080811-3	99.76186		100.71	mg/L	101	85	115			
L70941-04AS	AS	08/19/08 13:37	I1080811-3	99.76186	13.1	126.15	mg/L	113.3	85	115			
L70941-04ASD	ASD	08/19/08 13:40	I1080811-3	99.76186	13.1	128.48	mg/L	115.7	85	115	1.83	20	MA

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249600</b>													
WG249600PBW	PBW	08/07/08 13:15				U	mg/L		-20	20			
WG249600LCSW	LCSW	08/07/08 13:15	PCN30201	260		268	mg/L	103.1	80	120			
L70942-03DUP	DUP	08/07/08 13:34			400	390	mg/L				2.5	20	

Hydro Geo Chem, Inc.  
Project ID: 8720000

ACZ Project ID: **L70942**

**Sodium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG250159</b>													
WG250159ICV	ICV	08/18/08 17:30	I1080717-3	100		100.05	mg/L	100.1	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.9	0.9			
WG250159LFB	LFB	08/18/08 17:46	I1080811-3	98.21624		98.42	mg/L	100.2	85	115			
L70941-04AS	AS	08/18/08 18:03	I1080811-3	98.21624	59.6	152.17	mg/L	94.3	85	115			
L70941-04ASD	ASD	08/18/08 18:07	I1080811-3	98.21624	59.6	152.36	mg/L	94.4	85	115	0.12	20	

**Sulfate**

300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG249905</b>													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	30		30.06	mg/L	100.2	90	110			
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	30		29.86	mg/L	99.5	90	110			
L70933-03AS	AS	08/15/08 21:17	WI080702-9	1500	1350	2769	mg/L	94.6	90	110			
L70933-03DUP	DUP	08/15/08 21:35			1350	1342	mg/L				0.6	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70942**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70942-01</b>	WG250159	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250227	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG249905	Chloride Fluoride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
			M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
	WG249473	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	
<b>L70942-02</b>	WG250159	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250227	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG249905	Chloride Fluoride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
			M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
	WG249473	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	
<b>L70942-03</b>	WG250159	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250227	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG249905	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249473	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L70942**

No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70942  
 Date Received: 8/5/2008  
 Received By:  
 Date Printed: 8/5/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
2119	1.5	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70942  
 Date Received: 8/5/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70942-01	TM-43A		Y									<input type="checkbox"/>
L70942-02	TM-43		Y									<input type="checkbox"/>
L70942-03	GL-03		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_

L70142

**ACZ Laboratories, Inc.**

**CHAIN of CUSTODY**

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**Report to:**

Name: Dan Simpson  
 Company: Hydro Geo Chem Inc  
 E-mail: dans@hgcinc.com

Address: 51 W. Wetmore Rd  
Tucson AZ 85705  
 Telephone: 520) 293-1500 x133

**Copy of Report to:**

Name: Jim Norris  
 Company: HGC Inc

E-mail: jinna@hgcinc.com  
 Telephone: 520) 293-1500 x112

**Invoice to:**

Name: Jim Norris  
 Company: HGC Inc  
 E-mail: jinna@hgcinc.com

Address: 51 W. Wetmore Rd.  
Tucson, AZ 85705  
 Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES  NO   
 If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

**PROJECT INFORMATION** ANALYSES REQUESTED (attach list or use quote number)

Quote #: <u>FMQB-GW</u>																			
Project/PO #: <u>8720000</u>																			
Reporting state for compliance testing: <u>AZ</u>																			
Sampler's Name: <u>Mark Arneson</u>																			
Are any samples NRC licensable material? <u>No</u>																			
SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMQB-GW															
<u>TM-43A</u>	<u>8-4-08: 9:44</u>	<u>GW</u>	<u>3</u>	<u>X</u>															
<u>TM-43</u>	<u>8-4-08: 13:00</u>	<u>GW</u>	<u>3</u>	<u>X</u>															
<u>GL-03</u>	<u>8-4-08: 14:55</u>	<u>GW</u>	<u>3</u>	<u>X</u>															

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

**REMARKS/ SAMPLE DISCLOSURES**

PAGE  
1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY: <u>[Signature]</u>	DATE:TIME: <u>8-4-08 1520</u>	RECEIVED BY: <u>[Signature]</u>	DATE:TIME: <u>8-5-08 10:46</u>

August 18, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L70861

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 31, 2008. This project has been assigned to ACZ's project number, L70861. Please reference this number in all future inquiries.

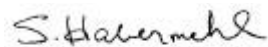
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70861. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 18, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.





**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: FULTZ

ACZ Sample ID: **L70861-01**

Date Sampled: 07/29/08 16:40

Date Received: 07/31/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	152			mg/L	1	5	08/13/08 18:14	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: COB MW-1

ACZ Sample ID: **L70861-02**  
Date Sampled: 07/30/08 08:00  
Date Received: 07/31/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	273			mg/L	0.2	1	08/14/08 20:45	ear/aeH
Magnesium, dissolved	M200.7 ICP	69.3			mg/L	0.2	1	08/14/08 20:45	ear/aeH
Potassium, dissolved	M200.7 ICP	8.0			mg/L	0.3	2	08/14/08 20:45	ear/aeH
Sodium, dissolved	M200.7 ICP	58.9			mg/L	0.3	2	08/14/08 20:45	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		223			mg/L	2	20	08/04/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Total Alkalinity		223			mg/L	2	20	08/04/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.8			%			08/18/08 14:42	calc
Sum of Anions		20.5			meq/L	0.1	0.5	08/18/08 14:42	calc
Sum of Cations		22.1			meq/L	0.1	0.5	08/18/08 14:42	calc
Chloride	M300.0 - Ion Chromatography	19.8		*	mg/L	0.5	3	08/12/08 3:11	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/12/08 3:11	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.50			mg/L	0.02	0.1	08/18/08 14:42	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.50			mg/L	0.02	0.1	07/31/08 19:38	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	07/31/08 19:38	pjb
Residue, Filterable (TDS) @180C	SM2540C	1500			mg/L	10	20	08/04/08 13:33	tbd
Sulfate	300.0 - Ion Chromatography	730			mg/L	10	50	08/13/08 18:32	aml
TDS (calculated)	Calculation	1300			mg/L	10	50	08/18/08 14:42	calc
TDS (ratio - measured/calculated)	Calculation	1.15						08/18/08 14:42	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: COB WL

ACZ Sample ID: **L70861-03**  
Date Sampled: 07/30/08 09:17  
Date Received: 07/31/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	130			mg/L	0.2	1	08/14/08 20:49	ear/aeH
Magnesium, dissolved	M200.7 ICP	35.0			mg/L	0.2	1	08/14/08 20:49	ear/aeH
Potassium, dissolved	M200.7 ICP	7.5			mg/L	0.3	2	08/14/08 20:49	ear/aeH
Sodium, dissolved	M200.7 ICP	51.5			mg/L	0.3	2	08/14/08 20:49	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		274			mg/L	2	20	08/04/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Total Alkalinity		274			mg/L	2	20	08/04/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.0			%			08/18/08 14:42	calc
Sum of Anions		10.9			meq/L	0.1	0.5	08/18/08 14:42	calc
Sum of Cations		11.8			meq/L	0.1	0.5	08/18/08 14:42	calc
Chloride	M300.0 - Ion Chromatography	110		*	mg/L	1	5	08/13/08 18:50	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/12/08 3:30	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.02			mg/L	0.06	0.3	08/18/08 14:42	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.02			mg/L	0.06	0.3	07/31/08 20:00	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	07/31/08 19:39	pjb
Residue, Filterable (TDS) @180C	SM2540C	700			mg/L	10	20	08/04/08 13:34	tbd
Sulfate	300.0 - Ion Chromatography	97.1			mg/L	0.5	3	08/12/08 3:30	aml
TDS (calculated)	Calculation	613			mg/L	10	50	08/18/08 14:42	calc
TDS (ratio - measured/calculated)	Calculation	1.14						08/18/08 14:42	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: COB MW-2

ACZ Sample ID: **L70861-04**  
Date Sampled: 07/30/08 10:20  
Date Received: 07/31/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	66.3			mg/L	0.2	1	08/14/08 20:53	ear/aeH
Magnesium, dissolved	M200.7 ICP	9.0			mg/L	0.2	1	08/14/08 20:53	ear/aeH
Potassium, dissolved	M200.7 ICP	2.1			mg/L	0.3	2	08/14/08 20:53	ear/aeH
Sodium, dissolved	M200.7 ICP	26.6			mg/L	0.3	2	08/14/08 20:53	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		158			mg/L	2	20	08/04/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Total Alkalinity		158			mg/L	2	20	08/04/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.0			%			08/18/08 14:42	calc
Sum of Anions		4.9			meq/L	0.1	0.5	08/18/08 14:42	calc
Sum of Cations		5.2			meq/L	0.1	0.5	08/18/08 14:42	calc
Chloride	M300.0 - Ion Chromatography	19.9		*	mg/L	0.5	3	08/14/08 2:23	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/14/08 2:23	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.80			mg/L	0.06	0.3	08/18/08 14:42	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.80	H		mg/L	0.06	0.3	08/01/08 19:57	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	07/31/08 19:40	pjb
Residue, Filterable (TDS) @180C	SM2540C	330			mg/L	10	20	08/04/08 13:36	tbd
Sulfate	300.0 - Ion Chromatography	37.6		*	mg/L	0.5	3	08/14/08 2:23	aml
TDS (calculated)	Calculation	286			mg/L	10	50	08/18/08 14:42	calc
TDS (ratio - measured/calculated)	Calculation	1.15						08/18/08 14:42	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: COB MW-3

ACZ Sample ID: **L70861-05**  
Date Sampled: 07/30/08 11:27  
Date Received: 07/31/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	66.1			mg/L	0.2	1	08/14/08 21:04	ear/aeh
Magnesium, dissolved	M200.7 ICP	9.2			mg/L	0.2	1	08/14/08 21:04	ear/aeh
Potassium, dissolved	M200.7 ICP	2.4			mg/L	0.3	2	08/14/08 21:04	ear/aeh
Sodium, dissolved	M200.7 ICP	26.5			mg/L	0.3	2	08/14/08 21:04	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		149			mg/L	2	20	08/04/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Total Alkalinity		149		*	mg/L	2	20	08/04/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.0			%			08/18/08 14:43	calc
Sum of Anions		5.0			meq/L	0.1	0.5	08/18/08 14:43	calc
Sum of Cations		5.2			meq/L	0.1	0.5	08/18/08 14:43	calc
Chloride	M300.0 - Ion Chromatography	16.1		*	mg/L	0.5	3	08/14/08 2:41	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/14/08 2:41	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.41			mg/L	0.02	0.1	08/18/08 14:43	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.41			mg/L	0.02	0.1	07/31/08 19:41	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	07/31/08 19:41	pjb
Residue, Filterable (TDS) @180C	SM2540C	320			mg/L	10	20	08/04/08 13:37	tbd
Sulfate	300.0 - Ion Chromatography	67.3		*	mg/L	0.5	3	08/14/08 2:41	aml
TDS (calculated)	Calculation	288			mg/L	10	50	08/18/08 14:43	calc
TDS (ratio - measured/calculated)	Calculation	1.11						08/18/08 14:43	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: RUIZ

ACZ Sample ID: **L70861-06**

Date Sampled: 07/30/08 12:35

Date Received: 07/31/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	243		*	mg/L	5	30	08/15/08 20:22	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: WEED

ACZ Sample ID: **L70861-07**  
Date Sampled: 07/30/08 13:15  
Date Received: 07/31/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	34.1			mg/L	0.2	1	08/14/08 21:07	ear/aeH
Magnesium, dissolved	M200.7 ICP	13.6			mg/L	0.2	1	08/14/08 21:07	ear/aeH
Potassium, dissolved	M200.7 ICP	2.2			mg/L	0.3	2	08/14/08 21:07	ear/aeH
Sodium, dissolved	M200.7 ICP	29.4			mg/L	0.3	2	08/14/08 21:07	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		163			mg/L	2	20	08/04/08 0:00	gkj
Carbonate as CaCO3		2	B		mg/L	2	20	08/04/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Total Alkalinity		165		*	mg/L	2	20	08/04/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.5			%			08/18/08 14:43	calc
Sum of Anions		3.9			meq/L	0.1	0.5	08/18/08 14:43	calc
Sum of Cations		4.1			meq/L	0.1	0.5	08/18/08 14:43	calc
Chloride	M300.0 - Ion Chromatography	10.1		*	mg/L	0.5	3	08/14/08 3:54	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	08/14/08 3:54	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.92			mg/L	0.02	0.1	08/18/08 14:43	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.92			mg/L	0.02	0.1	07/31/08 19:44	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/31/08 19:44	pjb
Residue, Filterable (TDS) @180C	SM2540C	230			mg/L	10	20	08/04/08 13:38	tbd
Sulfate	300.0 - Ion Chromatography	11.5		*	mg/L	0.5	3	08/14/08 3:54	aml
TDS (calculated)	Calculation	209			mg/L	10	50	08/18/08 14:43	calc
TDS (ratio - measured/calculated)	Calculation	1.10						08/18/08 14:43	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.



Hydro Geo Chem, Inc.

ACZ Project ID: **L70861**

Project ID: 8720000

**Alkalinity as CaCO3**

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249346</b>													
WG249346PBW1	PBW	08/04/08 15:10				3.1	mg/L		-20	20			
WG249346LCSW2	LCSW	08/04/08 15:21	WC080722-2	820		782.1	mg/L	95.4	90	110			
L70861-04DUP	DUP	08/04/08 17:59			158	158.6	mg/L				0.4	20	
WG249346PBW2	PBW	08/04/08 18:05				U	mg/L		-20	20			
WG249346LCSW5	LCSW	08/04/08 18:18	WC080722-2	820		788	mg/L	96.1	90	110			
L70878-06DUP	DUP	08/04/08 19:44			12	12.4	mg/L				3.3	20	RA
WG249346PBW3	PBW	08/04/08 21:15				U	mg/L		-20	20			
WG249346LCSW8	LCSW	08/04/08 21:27	WC080722-2	820		787.9	mg/L	96.1	90	110			
WG249346PBW4	PBW	08/05/08 1:34				U	mg/L		-20	20			
WG249346LCSW11	LCSW	08/05/08 1:47	WC080722-2	820		796	mg/L	97.1	90	110			
WG249346LCSW14	LCSW	08/05/08 4:20	WC080722-2	820		793.9	mg/L	96.8	90	110			

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249973</b>													
WG249973ICV	ICV	08/14/08 20:13	I080717-3	100		95.07	mg/L	95.1	95	105			
WG249973ICB	ICB	08/14/08 20:17				U	mg/L		-0.6	0.6			
WG249973LFB	LFB	08/14/08 20:31	I080811-3	67.97008		65.04	mg/L	95.7	85	115			
L70729-01AS	AS	08/14/08 20:38	I080811-3	67.97008	2.1	70.03	mg/L	99.9	85	115			
L70729-01ASD	ASD	08/14/08 20:42	I080811-3	67.97008	2.1	71.34	mg/L	101.9	85	115	1.85	20	

**Chloride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249769LFB	LFB	08/11/08 19:02	WI080702-9	30		30.35	mg/L	101.2	90	110			
L70800-05AS	AS	08/11/08 23:52	WI080702-9	30	1.9	31.23	mg/L	97.8	90	110			
L70800-05DUP	DUP	08/12/08 0:10			1.9	1.95	mg/L				2.6	20	RA
<b>WG249905</b>													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	30		28.83	mg/L	96.1	90	110			
L70755-09AS	AS	08/14/08 1:11	WI080702-9	30	U	30.65	mg/L	102.2	90	110			
L70755-09DUP	DUP	08/14/08 1:29			U	U	mg/L				0	20	RA
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	30		29.43	mg/L	98.1	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70861**

Project ID: 8720000

**Fluoride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG249769LFB	LFB	08/11/08 19:02	WI080702-9	1.5		1.45	mg/L	96.7	90	110			
L70800-05AS	AS	08/11/08 23:52	WI080702-9	1.5	U	1.83	mg/L	122	90	110			M1
L70800-05DUP	DUP	08/12/08 0:10			U	U	mg/L				0	20	RA
<b>WG249905</b>													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	1.5		1.38	mg/L	92	90	110			
L70755-09AS	AS	08/14/08 1:11	WI080702-9	1.5	U	1.38	mg/L	92	90	110			
L70755-09DUP	DUP	08/14/08 1:29			U	U	mg/L				0	20	RA
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	1.5		1.35	mg/L	90	90	110			

**Magnesium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249973</b>													
WG249973ICV	ICV	08/14/08 20:13	I080717-3	100		96.19	mg/L	96.2	95	105			
WG249973ICB	ICB	08/14/08 20:17				U	mg/L		-0.6	0.6			
WG249973LFB	LFB	08/14/08 20:31	I080811-3	49.96908		47.61	mg/L	95.3	85	115			
L70729-01AS	AS	08/14/08 20:38	I080811-3	49.96908	1.9	51.58	mg/L	99.4	85	115			
L70729-01ASD	ASD	08/14/08 20:42	I080811-3	49.96908	1.9	52.63	mg/L	101.5	85	115	2.02	20	

**Nitrate/Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249221</b>													
WG249221ICV	ICV	07/31/08 19:02	WI080613-1	2.416		2.383	mg/L	98.6	90	110			
WG249221ICB	ICB	07/31/08 19:03				U	mg/L		-0.06	0.06			
WG249221LFB1	LFB	07/31/08 19:06	WI080312-1	2		1.961	mg/L	98.1	90	110			
L70847-04DUP	DUP	07/31/08 19:29			1.12	1.137	mg/L				1.5	20	
WG249221LFB2	LFB	07/31/08 19:43	WI080312-1	2		1.987	mg/L	99.4	90	110			
L70861-07DUP	DUP	07/31/08 19:45			1.92	1.886	mg/L				1.8	20	
L70861-07AS	AS	07/31/08 19:50	WI080312-1	2	1.92	3.926	mg/L	100.3	90	110			
L70847-03AS	AS	07/31/08 19:59	WI080312-1	10	4.2	14.87	mg/L	106.7	90	110			
<b>WG249291</b>													
WG249291ICV	ICV	08/01/08 19:14	WI080613-1	2.416		2.441	mg/L	101	90	110			
WG249291ICB	ICB	08/01/08 19:15				U	mg/L		-0.06	0.06			
WG249291LFB	LFB	08/01/08 19:19	WI080312-1	2		2.021	mg/L	101.1	90	110			
L70868-01AS	AS	08/01/08 19:23	WI080312-1	2	.1	2.136	mg/L	101.8	90	110			
L70883-01DUP	DUP	08/01/08 20:00			12.8	12.84	mg/L				0.3	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70861**

Project ID: 8720000

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249221</b>													
WG249221ICV	ICV	07/31/08 19:02	WI080613-1	.609		.614	mg/L	100.8	90	110			
WG249221ICB	ICB	07/31/08 19:03				U	mg/L		-0.03	0.03			
WG249221LFB1	LFB	07/31/08 19:06	WI080312-1	1		.983	mg/L	98.3	90	110			
L70847-03AS	AS	07/31/08 19:26	WI080312-1	1	.63	1.563	mg/L	93.3	90	110			
L70847-04DUP	DUP	07/31/08 19:29			.15	.149	mg/L				0.7	20	
WG249221LFB2	LFB	07/31/08 19:43	WI080312-1	1		.98	mg/L	98	90	110			
L70861-07DUP	DUP	07/31/08 19:45				U	mg/L				0	20	RA
L70861-07AS	AS	07/31/08 19:50	WI080312-1	1	U	1.009	mg/L	100.9	90	110			

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249973</b>													
WG249973ICV	ICV	08/14/08 20:13	I080717-3	20		20.42	mg/L	102.1	95	105			
WG249973ICB	ICB	08/14/08 20:17				U	mg/L		-0.9	0.9			
WG249973LFB	LFB	08/14/08 20:31	I080811-3	99.76186		99.86	mg/L	100.1	85	115			
L70729-01AS	AS	08/14/08 20:38	I080811-3	99.76186	1.8	110.05	mg/L	108.5	85	115			
L70729-01ASD	ASD	08/14/08 20:42	I080811-3	99.76186	1.8	113.12	mg/L	111.6	85	115	2.75	20	

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249358</b>													
WG249358PBW	PBW	08/04/08 13:10				U	mg/L		-20	20			
WG249358LCSW	LCSW	08/04/08 13:11	PCN30200	260		278	mg/L	106.9	80	120			
L70861-07DUP	DUP	08/04/08 13:39			230	230	mg/L				0	20	

**Sodium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249973</b>													
WG249973ICV	ICV	08/14/08 20:13	I080717-3	100		101.37	mg/L	101.4	95	105			
WG249973ICB	ICB	08/14/08 20:17				U	mg/L		-0.9	0.9			
WG249973LFB	LFB	08/14/08 20:31	I080811-3	98.21624		98.55	mg/L	100.3	85	115			
L70729-01AS	AS	08/14/08 20:38	I080811-3	98.21624	253	343.89	mg/L	92.5	85	115			
L70729-01ASD	ASD	08/14/08 20:42	I080811-3	98.21624	253	348.77	mg/L	97.5	85	115	1.41	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70861**

Project ID: 8720000

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249769LFB	LFB	08/11/08 19:02	WI080702-9	30		29.9	mg/L	99.7	90	110			
L70800-05AS	AS	08/11/08 23:52	WI080702-9	30	11.3	41.78	mg/L	101.6	90	110			
L70800-05DUP	DUP	08/12/08 0:10			11.3	11.77	mg/L				4.1	20	
<b>WG249905</b>													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	30		30.06	mg/L	100.2	90	110			
L70755-09AS	AS	08/14/08 1:11	WI080702-9	30	U	31.15	mg/L	103.8	90	110			
L70755-09DUP	DUP	08/14/08 1:29			U	U	mg/L				0	20	RA
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	30		29.86	mg/L	99.5	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70861**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70861-02	WG249769	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70861-03	WG249769	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70861-04	WG249905	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70861-05	WG249905	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249346	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70861-06	WG249905	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70861-07	WG249905	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249221	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249905	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249346	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L70861**

No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70861  
 Date Received: 7/31/2008  
 Received By:  
 Date Printed: 7/31/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6572	1	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Line 3 time changed.

**Hydro Geo Chem, Inc.**  
 8720000

ACZ Project ID: L70861  
 Date Received: 7/31/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70861-01	FULTZ									X		<input type="checkbox"/>
L70861-02	COB MW-1		Y									<input type="checkbox"/>
L70861-03	COB WL		Y									<input type="checkbox"/>
L70861-04	COB MW-2		Y									<input type="checkbox"/>
L70861-05	COB MW-3		Y									<input type="checkbox"/>
L70861-06	RUIZ									X		<input type="checkbox"/>
L70861-07	WEED		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH_Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_





Laboratories, Inc. L70861

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc
E-mail: dans@hginc.com

Address: 51 W. Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: Hydro Geo Chem

E-mail: jimn@hginc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: Hydro Geo Chem
E-mail: jimn@hginc.com

Address: 51 W. Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

Table with columns for Matrix, # of Containers, and various sample types (FMCQB-GW, etc.)

Table with columns for SAMPLE IDENTIFICATION, DATE:TIME, and Matrix

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

Blank area for remarks and disclosures

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Table with columns for RELINQUISHED BY, DATE:TIME, RECEIVED BY, DATE:TIME

August 21, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L70795

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 30, 2008. This project has been assigned to ACZ's project number, L70795. Please reference this number in all future inquiries.

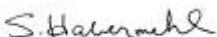
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70795. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: BLOMMER

ACZ Sample ID: **L70795-01**  
Date Sampled: 07/29/08 09:38  
Date Received: 07/30/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	203			mg/L	3	10	08/12/08 13:09	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: ROGERS 803

ACZ Sample ID: **L70795-02**  
Date Sampled: 07/29/08 10:15  
Date Received: 07/30/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	92.5			mg/L	0.2	1	08/11/08 23:54	ear/aeH
Magnesium, dissolved	M200.7 ICP	12.6			mg/L	0.2	1	08/09/08 19:41	ear/aeH
Potassium, dissolved	M200.7 ICP	3.3			mg/L	0.3	2	08/09/08 19:41	ear/aeH
Sodium, dissolved	M200.7 ICP	28.7			mg/L	0.3	2	08/09/08 19:41	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		149			mg/L	2	20	07/31/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/31/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/31/08 0:00	gkj
Total Alkalinity		149			mg/L	2	20	07/31/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.5			%			08/21/08 0:00	calc
Sum of Anions		6.4			meq/L	0.1	0.5	08/21/08 0:00	calc
Sum of Cations		7.0			meq/L	0.1	0.5	08/21/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	13.1			mg/L	0.5	3	08/05/08 10:18	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/05/08 10:18	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.3			mg/L	0.1	0.5	08/21/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.3		*	mg/L	0.1	0.5	07/30/08 20:21	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/30/08 18:53	pjb
Residue, Filterable (TDS) @180C	SM2540C	430			mg/L	10	20	08/01/08 16:46	tbd
Sulfate	300.0 - Ion Chromatography	134			mg/L	3	10	08/12/08 13:27	aml
TDS (calculated)	Calculation	393			mg/L	10	50	08/21/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.09						08/21/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: SCHWARZ

ACZ Sample ID: **L70795-03**  
Date Sampled: 07/29/08 11:55  
Date Received: 07/30/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	245			mg/L	5	30	08/12/08 13:45	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: BIMA

ACZ Sample ID: **L70795-04**

Date Sampled: 07/29/08 12:50

Date Received: 07/30/08

Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	209			mg/L	0.2	1	08/11/08 23:57	ear/aeH
Magnesium, dissolved	M200.7 ICP	46.5			mg/L	0.2	1	08/09/08 19:44	ear/aeH
Potassium, dissolved	M200.7 ICP	12.2			mg/L	0.3	2	08/09/08 19:44	ear/aeH
Sodium, dissolved	M200.7 ICP	63.6			mg/L	0.3	2	08/09/08 19:44	ear/aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		456			mg/L	2	20	07/31/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/31/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/31/08 0:00	gkj
Total Alkalinity		456			mg/L	2	20	07/31/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.8			%			08/21/08 0:00	calc
Sum of Anions		16.8			meq/L	0.1	0.5	08/21/08 0:00	calc
Sum of Cations		17.4			meq/L	0.1	0.5	08/21/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	101			mg/L	0.5	3	08/05/08 10:54	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/05/08 10:54	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	7.85			mg/L	0.08	0.4	08/21/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	7.85		*	mg/L	0.08	0.4	07/30/08 20:27	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/30/08 18:55	pjb
Residue, Filterable (TDS) @180C	SM2540C	1040			mg/L	10	20	08/01/08 16:47	tbd
Sulfate	300.0 - Ion Chromatography	204			mg/L	3	10	08/12/08 14:03	aml
TDS (calculated)	Calculation	945			mg/L	10	50	08/21/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.10						08/21/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: RAY

ACZ Sample ID: **L70795-05**

Date Sampled: 07/29/08 13:55

Date Received: 07/30/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	120			mg/L	3	10	08/12/08 14:21	aml

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.



Hydro Geo Chem, Inc.

ACZ Project ID: **L70795**

Project ID: 8720000

### Alkalinity as CaCO3

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249121</b>													
WG249121PBW2	PBW	07/30/08 22:35				U	mg/L		-20	20			
WG249121LCSW5	LCSW	07/30/08 22:47	WC080722-2	820		788.9	mg/L	96.2	90	110			
WG249121PBW3	PBW	07/31/08 2:22				U	mg/L		-20	20			
WG249121LCSW8	LCSW	07/31/08 2:34	WC080722-2	820		789.8	mg/L	96.3	90	110			
L70796-01DUP	DUP	07/31/08 4:33			2030	2039	mg/L				0.4	20	
WG249121PBW4	PBW	07/31/08 6:00				U	mg/L		-20	20			
WG249121LCSW11	LCSW	07/31/08 6:12	WC080722-2	820		793.4	mg/L	96.8	90	110			
WG249121LCSW14	LCSW	07/31/08 8:24	WC080722-2	820		797.8	mg/L	97.3	90	110			

### Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249747</b>													
WG249747ICV	ICV	08/11/08 23:05	I1080717-3	100		94.76	mg/L	94.8	95	105			
WG249747ICB	ICB	08/11/08 23:08				U	mg/L		-0.6	0.6			
WG249747LFB	LFB	08/11/08 23:21	I1080730-2	67.97008		66.84	mg/L	98.3	85	115			
L70784-01AS	AS	08/11/08 23:28	I1080730-2	679.7008	471	1119.5	mg/L	95.4	85	115			
L70784-01ASD	ASD	08/11/08 23:31	I1080730-2	679.7008	471	1074.2	mg/L	88.7	85	115	4.13	20	

### Chloride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249370</b>													
WG249370ICV1	ICV	07/10/08 13:41	WI080521-1	19.98		20.35	mg/L	101.9	90	110			
WG249370ICB1	ICB	07/10/08 13:59				U	mg/L		-1.5	1.5			
WG249370ICV	ICV	08/05/08 2:27	WI080521-1	19.98		20.23	mg/L	101.3	90	110			
WG249370ICB	ICB	08/05/08 2:46				U	mg/L		-1.5	1.5			
WG249370LFB	LFB	08/05/08 3:04	WI080702-9	30		28.98	mg/L	96.6	90	110			
L70781-18AS	AS	08/05/08 7:53	WI080702-9	30	11	39.64	mg/L	95.5	90	110			
L70781-18DUP	DUP	08/05/08 8:11			11	10.97	mg/L				0.3	20	

### Fluoride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249370</b>													
WG249370ICV1	ICV	07/10/08 13:41	WI080521-1	4		4.11	mg/L	102.8	90	110			
WG249370ICB1	ICB	07/10/08 13:59				U	mg/L		-0.3	0.3			
WG249370ICV	ICV	08/05/08 2:27	WI080521-1	4		4.04	mg/L	101	90	110			
WG249370ICB	ICB	08/05/08 2:46				U	mg/L		-0.3	0.3			
WG249370LFB	LFB	08/05/08 3:04	WI080702-9	1.5		1.45	mg/L	96.7	90	110			
L70781-18AS	AS	08/05/08 7:53	WI080702-9	1.5	.5	1.89	mg/L	92.7	90	110			
L70781-18DUP	DUP	08/05/08 8:11			.5	.5	mg/L				0	20	RA

Hydro Geo Chem, Inc.

ACZ Project ID: **L70795**

Project ID: 8720000

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249678</b>													
WG249678ICV	ICV	08/09/08 18:51	I1080717-3	100		95.35	mg/L	95.4	95	105			
WG249678ICB	ICB	08/09/08 18:54				U	mg/L		-0.6	0.6			
WG249678LFB	LFB	08/09/08 19:08	I1080730-2	49.96908		51.45	mg/L	103	85	115			
L70784-01AS	AS	08/09/08 19:14	I1080730-2	499.6908	1050	1538	mg/L	97.7	85	115			
L70784-01ASD	ASD	08/09/08 19:18	I1080730-2	499.6908	1050	1493.6	mg/L	88.8	85	115	2.93	20	

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249125</b>													
WG249125ICV	ICV	07/30/08 18:28	WI080613-1	2.416		2.402	mg/L	99.4	90	110			
WG249125ICB	ICB	07/30/08 18:29				U	mg/L		-0.06	0.06			
<b>WG249127</b>													
WG249127ICV	ICV	07/30/08 18:48	WI080613-1	2.416		2.441	mg/L	101	90	110			
WG249127ICB	ICB	07/30/08 18:49				U	mg/L		-0.06	0.06			
WG249127LFB1	LFB	07/30/08 18:52	WI080312-1	2		2.019	mg/L	101	90	110			
WG249127LFB2	LFB	07/30/08 20:02	WI080312-1	2		2.085	mg/L	104.3	90	110			
L70795-02AS	AS	07/30/08 20:25	WI080312-1	10	4.3	15.58	mg/L	112.8	90	110			M1
L70795-04DUP	DUP	07/30/08 20:28			7.85	7.786	mg/L				0.8	20	

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249125</b>													
WG249125ICV	ICV	07/30/08 18:28	WI080613-1	.609		.607	mg/L	99.7	90	110			
WG249125ICB	ICB	07/30/08 18:29				U	mg/L		-0.03	0.03			
<b>WG249127</b>													
WG249127ICV	ICV	07/30/08 18:48	WI080613-1	.609		.609	mg/L	100	90	110			
WG249127ICB	ICB	07/30/08 18:49				U	mg/L		-0.03	0.03			
WG249127LFB1	LFB	07/30/08 18:52	WI080312-1	1		.982	mg/L	98.2	90	110			
L70795-02AS	AS	07/30/08 18:54	WI080312-1	1	U	.974	mg/L	97.4	90	110			
L70795-04DUP	DUP	07/30/08 18:57			U	U	mg/L				0	20	RA
WG249127LFB2	LFB	07/30/08 20:02	WI080312-1	1		.982	mg/L	98.2	90	110			

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249678</b>													
WG249678ICV	ICV	08/09/08 18:51	I1080717-3	20		20.01	mg/L	100.1	95	105			
WG249678ICB	ICB	08/09/08 18:54				U	mg/L		-0.9	0.9			
WG249678LFB	LFB	08/09/08 19:08	I1080730-2	99.76186		107.02	mg/L	107.3	85	115			
L70784-01AS	AS	08/09/08 19:14	I1080730-2	997.6186	12	1073.6	mg/L	106.4	85	115			
L70784-01ASD	ASD	08/09/08 19:18	I1080730-2	997.6186	12	1047.2	mg/L	103.8	85	115	2.49	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70795**

Project ID: 8720000

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249285</b>													
WG249285PBW	PBW	08/01/08 16:40				U	mg/L		-20	20			
WG249285LCSW	LCSW	08/01/08 16:41	PCN30200	260		260	mg/L	100	80	120			
L70810-06DUP	DUP	08/01/08 16:58			440	440	mg/L				0	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249678</b>													
WG249678ICV	ICV	08/09/08 18:51	I1080717-3	100		99.88	mg/L	99.9	95	105			
WG249678ICB	ICB	08/09/08 18:54				U	mg/L		-0.9	0.9			
WG249678LFB	LFB	08/09/08 19:08	I1080730-2	98.21624		106	mg/L	107.9	85	115			
L70784-01AS	AS	08/09/08 19:14	I1080730-2	982.1624	198	1242	mg/L	106.3	85	115			
L70784-01ASD	ASD	08/09/08 19:18	I1080730-2	982.1624	198	1209.4	mg/L	103	85	115	2.66	20	

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249655</b>													
WG249655ICV	ICV	08/07/08 18:07	WI080521-1	50.1		50.33	mg/L	100.5	90	110			
WG249655ICB	ICB	08/07/08 18:25				U	mg/L		-1.5	1.5			
<b>WG249663</b>													
WG249663ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG249663ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
L70781-14AS	AS	08/12/08 10:44	WI080702-9	30	35.1	62.52	mg/L	91.4	90	110			
L70781-14DUP	DUP	08/12/08 11:02			35.1	34.94	mg/L				0.5	20	
WG249663LFB1	LFB	08/12/08 14:40	WI080702-9	30		30.95	mg/L	103.2	90	110			
WG249663LFB2	LFB	08/13/08 15:49	WI080702-9	30		30.43	mg/L	101.4	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70795**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70795-02</b>	WG249370	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249127	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70795-04</b>	WG249370	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249127	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L70795**

No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70795  
 Date Received: 7/30/2008  
 Received By:  
 Date Printed: 7/30/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6561	3.1	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70795  
 Date Received: 7/30/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70795-01	BLOMMER									X		<input type="checkbox"/>
L70795-02	ROGERS 803		Y									<input type="checkbox"/>
L70795-03	SCHWARZ									X		<input type="checkbox"/>
L70795-04	BIMA		Y									<input type="checkbox"/>
L70795-05	RAY									X		<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

L70715

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc
E-mail: dans@hgc-inc.com

Address: 51 W. Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: Hydro Geo Chem

E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: Hydro Geo Chem
E-mail: jimn@hgcinc.com

Address: 51 W. Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

Table with columns for # of Containers, FMCQB-GW, and 504. Contains handwritten 'X' marks in the second and third columns.

Table with columns for SAMPLE IDENTIFICATION, DATE:TIME, and Matrix. Contains handwritten entries for Blommer, Rogers 803, Schwarz, BIMA, and RAY.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

Blank area for remarks and disclosures.

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY: [Signature] DATE:TIME 7/29/08-15:30 RECEIVED BY: [Signature] DATE:TIME 7-30-08 9:56



August 21, 2008

Report to:  
Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

Bill to:  
Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872000 T2.2  
ACZ Project ID: L70761

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 28, 2008. This project has been assigned to ACZ's project number, L70761. Please reference this number in all future inquiries.

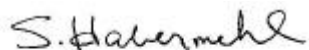
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70761. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



Hydro Geo Chem, Inc.

August 21, 2008

Project ID: 872000 T2.2

ACZ Project ID: L70761

**Sample Receipt**

ACZ Laboratories, Inc. (ACZ) received 3 ground water samples from Hydro Geo Chem, Inc. on July 28, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L70761. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Samples were received outside the EPA recommended temperature of 0-6 degrees C.

**Holding Times**

All analyses were performed within EPA recommended holding times.

**Sample Analysis**

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures.

**Hydro Geo Chem, Inc.**

Project ID: 872000 T2.2

Sample ID: NESS

ACZ Sample ID: **L70761-01**

Date Sampled: 07/24/08 09:30

Date Received: 07/28/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	50.2		*	mg/L	0.5	3	08/04/08 19:12	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 872000 T2.2

Sample ID: SWAN

ACZ Sample ID: **L70761-02**

Date Sampled: 07/24/08 13:53

Date Received: 07/28/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	220			mg/L	30	100	08/16/08 17:18	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 872000 T2.2

Sample ID: NOTEMAN

ACZ Sample ID: **L70761-03**

Date Sampled: 07/24/08 16:25

Date Received: 07/28/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	274		*	mg/L	5	30	08/08/08 22:27	aml

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70761**

Project ID: 872000 T2.2

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249363</b>													
WG249363ICV	ICV	08/04/08 16:30	WI080521-1	50.1		49.97	mg/L	99.7	90	110			
WG249363ICB	ICB	08/04/08 16:48				U	mg/L		-1.5	1.5			
WG249363LFB	LFB	08/04/08 17:06	WI080702-9	30		30.81	mg/L	102.7	90	110			
L70666-01AS	AS	08/04/08 17:42	WI080702-9	60	119	159	mg/L	66.7	90	110			M2
L70666-01DUP	DUP	08/04/08 18:00			119	129.9	mg/L				8.8	20	
<b>WG249655</b>													
WG249655ICV	ICV	08/07/08 18:07	WI080521-1	50.1		50.33	mg/L	100.5	90	110			
WG249655ICB	ICB	08/07/08 18:25				U	mg/L		-1.5	1.5			
<b>WG249663</b>													
L70666-03AS	AS	08/08/08 21:33	WI080702-9	60	108	157.7	mg/L	82.8	90	110			M2
L70666-03DUP	DUP	08/08/08 21:51			108	110.7	mg/L				2.5	20	
WG249663ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG249663ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249663LFB1	LFB	08/12/08 14:40	WI080702-9	30		30.95	mg/L	103.2	90	110			
WG249663LFB2	LFB	08/13/08 15:49	WI080702-9	30		30.43	mg/L	101.4	90	110			
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG250049</b>													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	600	1330	1921	mg/L	98.5	90	110			
L70959-03DUP	DUP	08/16/08 21:14			1330	1455	mg/L				9	20	
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		30.01	mg/L	100	90	110			
WG250049LFB1	LFB	08/19/08 17:22	WI080702-9	30		30.63	mg/L	102.1	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70761**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70761-01	WG249363	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L70761-03	WG249663	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.



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Hydro Geo Chem, Inc.

ACZ Project ID: **L70761**

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No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 872000 T2.2

ACZ Project ID: L70761  
 Date Received: 7/28/2008  
 Received By:  
 Date Printed: 7/28/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6548	25.3	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 872000 T2.2

ACZ Project ID: L70761  
 Date Received: 7/28/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70761-01	NESS									X		<input type="checkbox"/>
L70761-02	SWAN									X		<input type="checkbox"/>
L70761-03	NOTEMAN									X		<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

L70761

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc
E-mail: dans@hgcinc.com

Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: Hydro Geo Chem Inc

E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: Hydro Geo Chem Inc
E-mail: jimn@hgcinc.com

Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 872000 T22
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? no

Table with columns for # of Containers and analyses requested. Row 1: FMCQB-GW, 1 container, X.

Table with columns: SAMPLE IDENTIFICATION, DATE:TIME, Matrix, # of Containers, and analyses requested. Rows include NESS, SWAN, and Noteman.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY: DATE:TIME RECEIVED BY: DATE:TIME

Handwritten signatures and dates: 7/25/08-13:00 and 7/28/08 10:40

August 08, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L70744

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 25, 2008. This project has been assigned to ACZ's project number, L70744. Please reference this number in all future inquiries.

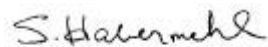
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70744. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 08, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: DODSON

ACZ Sample ID: **L70744-01**  
Date Sampled: 07/24/08 12:30  
Date Received: 07/25/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	124			mg/L	0.2	1	08/06/08 19:24	nek/aeh
Magnesium, dissolved	M200.7 ICP	43.3			mg/L	0.2	1	08/06/08 19:24	nek/aeh
Potassium, dissolved	M200.7 ICP	13.7			mg/L	0.3	2	08/06/08 19:24	nek/aeh
Sodium, dissolved	M200.7 ICP	51.3			mg/L	0.3	2	08/06/08 19:24	nek/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		223			mg/L	2	20	07/30/08 0:00	gkj
Carbonate as CaCO3		12	B		mg/L	2	20	07/30/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/30/08 0:00	gkj
Total Alkalinity		235		*	mg/L	2	20	07/30/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.1			%			08/08/08 0:00	calc
Sum of Anions		11.2			meq/L	0.1	0.5	08/08/08 0:00	calc
Sum of Cations		12.4			meq/L	0.1	0.5	08/08/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	160			mg/L	5	30	07/31/08 18:34	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	07/30/08 1:43	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	13.1			mg/L	0.2	1	08/08/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	13.1			mg/L	0.2	1	07/25/08 21:52	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/25/08 21:35	pjb
Residue, Filterable (TDS) @180C	SM2540C	740			mg/L	10	20	07/30/08 8:59	tbd
Sulfate	300.0 - Ion Chromatography	49.3			mg/L	0.5	3	07/30/08 1:43	aml
TDS (calculated)	Calculation	646			mg/L	10	50	08/08/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.15						08/08/08 0:00	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70744**

Project ID: 8720000

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249121</b>													
WG249121PBW1	PBW	07/30/08 19:19				24.8	mg/L		-20	20			B4
WG249121LCSW2	LCSW	07/30/08 19:31	WC080722-2	820		793.4	mg/L	96.8	90	110			
L70755-03DUP	DUP	07/30/08 22:20			148	148.7	mg/L				0.5	20	
WG249121PBW2	PBW	07/30/08 22:35				U	mg/L		-20	20			
WG249121LCSW5	LCSW	07/30/08 22:47	WC080722-2	820		788.9	mg/L	96.2	90	110			
WG249121PBW3	PBW	07/31/08 2:22				U	mg/L		-20	20			
WG249121LCSW8	LCSW	07/31/08 2:34	WC080722-2	820		789.8	mg/L	96.3	90	110			
WG249121PBW4	PBW	07/31/08 6:00				U	mg/L		-20	20			
WG249121LCSW11	LCSW	07/31/08 6:12	WC080722-2	820		793.4	mg/L	96.8	90	110			
WG249121LCSW14	LCSW	07/31/08 8:24	WC080722-2	820		797.8	mg/L	97.3	90	110			

**Calcium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249490</b>													
WG249490ICV	ICV	08/06/08 17:35	I1080717-3	100		97.88	mg/L	97.9	95	105			
WG249490ICB	ICB	08/06/08 17:39				U	mg/L		-0.6	0.6			
WG249490LFB	LFB	08/06/08 17:52	I1080730-2	67.97008		70.68	mg/L	104	85	115			
L70727-02AS	AS	08/06/08 18:48	I1080730-2	67.97008	118	183.61	mg/L	96.5	85	115			
L70727-02ASD	ASD	08/06/08 18:51	I1080730-2	67.97008	118	178.17	mg/L	88.5	85	115	3.01	20	

**Chloride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248969</b>													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		27.55	mg/L	91.8	90	110			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	19.7	48.38	mg/L	95.6	90	110			
L70659-06DUP	DUP	07/29/08 22:24			19.7	19.71	mg/L				0.1	20	

**Fluoride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248969</b>													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	4		3.97	mg/L	99.3	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-0.3	0.3			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	1.5	.4	1.74	mg/L	89.3	90	110			M2
L70659-06DUP	DUP	07/29/08 22:24			.4	.35	mg/L				13.3	20	RA
WG248969LFB	LFB	07/31/08 17:58	WI080702-9	1.5		1.47	mg/L	98	90	110			

**Magnesium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249490</b>													
WG249490ICV	ICV	08/06/08 17:35	I1080717-3	100		100.6	mg/L	100.6	95	105			
WG249490ICB	ICB	08/06/08 17:39				U	mg/L		-0.6	0.6			
WG249490LFB	LFB	08/06/08 17:52	I1080730-2	49.96908		52.33	mg/L	104.7	85	115			
L70727-02AS	AS	08/06/08 18:48	I1080730-2	49.96908	61.2	110.43	mg/L	98.5	85	115			
L70727-02ASD	ASD	08/06/08 18:51	I1080730-2	49.96908	61.2	110.02	mg/L	97.7	85	115	0.37	20	



Hydro Geo Chem, Inc.

ACZ Project ID: **L70744**

Project ID: 8720000

**Nitrate/Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248841</b>													
WG248841ICV	ICV	07/25/08 20:54	WI080613-1	2.416		2.448	mg/L	101.3	90	110			
WG248841ICB	ICB	07/25/08 20:55				U	mg/L		-0.06	0.06			
WG248841LFB	LFB	07/25/08 20:59	WI080312-1	2		2.085	mg/L	104.3	90	110			
L70723-02AS	AS	07/25/08 21:20	WI080312-1	2	.03	2.131	mg/L	105.1	90	110			
L70723-03DUP	DUP	07/25/08 21:23			.29	.3	mg/L				3.4	20	

**Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248841</b>													
WG248841ICV	ICV	07/25/08 20:54	WI080613-1	.609		.624	mg/L	102.5	90	110			
WG248841ICB	ICB	07/25/08 20:55				U	mg/L		-0.03	0.03			
WG248841LFB	LFB	07/25/08 20:59	WI080312-1	1		1.01	mg/L	101	90	110			
L70723-02AS	AS	07/25/08 21:20	WI080312-1	1		.988	mg/L	98.8	90	110			
L70723-03DUP	DUP	07/25/08 21:23				U	mg/L				0	20	RA

**Potassium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249490</b>													
WG249490ICV	ICV	08/06/08 17:35	I1080717-3	20		20.39	mg/L	102	95	105			
WG249490ICB	ICB	08/06/08 17:39				U	mg/L		-0.9	0.9			
WG249490LFB	LFB	08/06/08 17:52	I1080730-2	99.76186		105.09	mg/L	105.3	85	115			
L70727-02AS	AS	08/06/08 18:48	I1080730-2	99.76186	.6	108.29	mg/L	107.9	85	115			
L70727-02ASD	ASD	08/06/08 18:51	I1080730-2	99.76186	.6	109.44	mg/L	109.1	85	115	1.06	20	

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249033</b>													
WG249033PBW	PBW	07/30/08 8:40				U	mg/L		-20	20			
WG249033LCSW	LCSW	07/30/08 8:41	PCN30200	260		262	mg/L	100.8	80	120			
L70744-01DUP	DUP	07/30/08 9:00			740	738	mg/L				0.3	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249490</b>													
WG249490ICV	ICV	08/06/08 17:35	I1080717-3	100		101.66	mg/L	101.7	95	105			
WG249490ICB	ICB	08/06/08 17:39				U	mg/L		-0.9	0.9			
WG249490LFB	LFB	08/06/08 17:52	I1080730-2	98.21624		103.51	mg/L	105.4	85	115			
L70727-02AS	AS	08/06/08 18:48	I1080730-2	98.21624	90.4	188.7	mg/L	100.1	85	115			
L70727-02ASD	ASD	08/06/08 18:51	I1080730-2	98.21624	90.4	189.95	mg/L	101.4	85	115	0.66	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70744**

Project ID: 8720000

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248969</b>													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	50.1		52.89	mg/L	105.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		29.5	mg/L	98.3	90	110			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	17.7	45.45	mg/L	92.5	90	110			
L70659-06DUP	DUP	07/29/08 22:24			17.7	17.69	mg/L				0.1	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70744**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70744-01	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248841	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249121	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70744**



No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70744  
 Date Received: 7/25/2008  
 Received By:  
 Date Printed: 7/25/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?			
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6537	5	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70744  
 Date Received: 7/25/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70744-01	DODSON		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

L70744

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: HydroGeoChem Inc
E-mail: dans@hgcinc.com

Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HydroGeo Chem

E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HydroGeo Chem Inc
E-mail: jimn@hgcinc.com

Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? A

Table with columns for # of Containers and ANALYSES REQUESTED. Contains handwritten entry 'FMCQB-GW' in the # of Containers column.

Table with columns: SAMPLE IDENTIFICATION, DATE:TIME, Matrix, # of Containers, and ANALYSES REQUESTED. Row 1: DORSON, 7-24-08 12:30, GW, 3, FMCQB-GW.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

Empty box for remarks and disclosures.

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY: [Signature] DATE:TIME 7-24-08/3:10 RECEIVED BY: [Signature] DATE:TIME 7-25-08 10:35

August 05, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L70696

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 24, 2008. This project has been assigned to ACZ's project number, L70696. Please reference this number in all future inquiries.

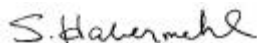
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70696. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.





**Hydro Geo Chem, Inc.**

Project ID: 8720000  
 Sample ID: EAST

ACZ Sample ID: **L70696-01**  
 Date Sampled: 07/23/08 08:48  
 Date Received: 07/24/08  
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	59.5			mg/L	0.2	1	07/30/08 17:53	aeh
Magnesium, dissolved	M200.7 ICP	24.4			mg/L	0.2	1	07/30/08 17:53	aeh
Potassium, dissolved	M200.7 ICP	2.4			mg/L	0.3	2	07/30/08 17:53	aeh
Sodium, dissolved	M200.7 ICP	31.4			mg/L	0.3	2	07/30/08 17:53	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		217			mg/L	2	20	07/25/08 0:00	jif
Carbonate as CaCO3		6	B		mg/L	2	20	07/25/08 0:00	jif
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	jif
Total Alkalinity		223			mg/L	2	20	07/25/08 0:00	jif
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.2			%			08/05/08 0:00	calc
Sum of Anions		6.0			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	33.3			mg/L	0.5	3	07/29/08 23:36	aml
Fluoride	M300.0 - Ion Chromatography	0.4	B	*	mg/L	0.1	0.5	07/29/08 23:36	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.10			mg/L	0.06	0.3	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.10		*	mg/L	0.06	0.3	07/24/08 19:04	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/24/08 18:52	pjb
Residue, Filterable (TDS) @180C	SM2540C	350			mg/L	10	20	07/28/08 9:32	tbd
Sulfate	300.0 - Ion Chromatography	11.8			mg/L	0.5	3	07/29/08 23:36	aml
TDS (calculated)	Calculation	326			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						08/05/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: WALKER

ACZ Sample ID: **L70696-02**  
Date Sampled: 07/23/08 09:38  
Date Received: 07/24/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	88.7			mg/L	0.2	1	07/30/08 17:56	aeh
Magnesium, dissolved	M200.7 ICP	27.9			mg/L	0.2	1	07/30/08 17:56	aeh
Potassium, dissolved	M200.7 ICP	2.9			mg/L	0.3	2	07/30/08 17:56	aeh
Sodium, dissolved	M200.7 ICP	28.6			mg/L	0.3	2	07/30/08 17:56	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		250			mg/L	2	20	07/25/08 0:00	jif
Carbonate as CaCO3		7	B		mg/L	2	20	07/25/08 0:00	jif
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	jif
Total Alkalinity		257			mg/L	2	20	07/25/08 0:00	jif
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.6			%			08/05/08 0:00	calc
Sum of Anions		7.6			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		8.0			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	37.8			mg/L	0.5	3	07/30/08 0:31	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	07/30/08 0:31	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	7.24			mg/L	0.08	0.4	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	7.24		*	mg/L	0.08	0.4	07/24/08 19:05	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/24/08 18:53	pjb
Residue, Filterable (TDS) @180C	SM2540C	450			mg/L	10	20	07/28/08 9:34	tbd
Sulfate	300.0 - Ion Chromatography	45.4			mg/L	0.5	3	07/30/08 0:31	aml
TDS (calculated)	Calculation	421			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						08/05/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: GALLANT

ACZ Sample ID: **L70696-03**  
Date Sampled: 07/23/08 10:50  
Date Received: 07/24/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	138			mg/L	0.2	1	07/30/08 18:06	aeh
Magnesium, dissolved	M200.7 ICP	19.8			mg/L	0.2	1	07/30/08 18:06	aeh
Potassium, dissolved	M200.7 ICP	4.8			mg/L	0.3	2	07/30/08 18:06	aeh
Sodium, dissolved	M200.7 ICP	29.6			mg/L	0.3	2	07/30/08 18:06	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		303			mg/L	2	20	07/25/08 0:00	jif
Carbonate as CaCO3			U		mg/L	2	20	07/25/08 0:00	jif
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	jif
Total Alkalinity		303			mg/L	2	20	07/25/08 0:00	jif
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.6			%			08/05/08 0:00	calc
Sum of Anions		9.4			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		9.9			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	56.9			mg/L	0.5	3	07/30/08 0:49	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	07/30/08 0:49	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	19.2			mg/L	0.3	2	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	19.2		*	mg/L	0.3	2	07/24/08 19:06	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/24/08 18:58	pjb
Residue, Filterable (TDS) @180C	SM2540C	560			mg/L	10	20	07/28/08 9:35	tbd
Sulfate	300.0 - Ion Chromatography	20.9			mg/L	0.5	3	07/30/08 0:49	aml
TDS (calculated)	Calculation	537			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						08/05/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: SWAN TM08

ACZ Sample ID: **L70696-04**  
Date Sampled: 07/23/08 14:37  
Date Received: 07/24/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/30/08 18:09	aeh
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/30/08 18:09	aeh
Potassium, dissolved	M200.7 ICP	1.1	B		mg/L	0.3	2	07/30/08 18:09	aeh
Sodium, dissolved	M200.7 ICP	128			mg/L	0.3	2	07/30/08 18:09	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		204			mg/L	2	20	07/25/08 0:00	jif
Carbonate as CaCO3		11	B		mg/L	2	20	07/25/08 0:00	jif
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	jif
Total Alkalinity		215			mg/L	2	20	07/25/08 0:00	jif
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.7			%			08/05/08 0:00	calc
Sum of Anions		5.2			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		5.6			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	14.8			mg/L	0.5	3	07/30/08 1:07	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	07/30/08 1:07	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.86			mg/L	0.02	0.1	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.86		*	mg/L	0.02	0.1	07/24/08 18:59	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/24/08 18:59	pjb
Residue, Filterable (TDS) @180C	SM2540C	310			mg/L	10	20	07/28/08 9:37	tbd
Sulfate	300.0 - Ion Chromatography	12.6			mg/L	0.5	3	07/30/08 1:07	aml
TDS (calculated)	Calculation	303			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.02						08/05/08 0:00	calc

Arizona license number: AZ0102

#### Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

#### QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

#### QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

#### ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

#### Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

#### Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70696**

Project ID: 8720000

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248834</b>													
WG248834PBW2	PBW	07/25/08 19:25				U	mg/L		-20	20			
WG248834LCSW5	LCSW	07/25/08 19:38	WC080722-2	820		789.7	mg/L	96.3	90	110			
WG248834PBW3	PBW	07/25/08 21:25				U	mg/L		-20	20			
WG248834LCSW8	LCSW	07/25/08 21:38	WC080722-2	820		793.1	mg/L	96.7	90	110			
L70697-06DUP	DUP	07/26/08 0:02			36	35.5	mg/L				1.4	20	
WG248834PBW4	PBW	07/26/08 0:09				U	mg/L		-20	20			
WG248834LCSW11	LCSW	07/26/08 0:20	WC080722-2	820		791.8	mg/L	96.6	90	110			
WG248834LCSW14	LCSW	07/26/08 3:39	WC080722-2	820		802.7	mg/L	97.9	90	110			

**Calcium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249104</b>													
WG249104ICV	ICV	07/30/08 17:11	I1080717-3	100		100.51	mg/L	100.5	95	105			
WG249104ICB	ICB	07/30/08 17:15				U	mg/L		-0.6	0.6			
WG249104LFB	LFB	07/30/08 17:28	I1080730-2	67.97008		71.88	mg/L	105.8	85	115			
L70694-06AS	AS	07/30/08 17:37	I1080730-2	67.97008	U	70.65	mg/L	103.9	85	115			
L70694-06ASD	ASD	07/30/08 17:40	I1080730-2	67.97008	U	70.88	mg/L	104.3	85	115	0.33	20	

**Chloride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248969</b>													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		27.55	mg/L	91.8	90	110			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	19.7	48.38	mg/L	95.6	90	110			
L70659-06DUP	DUP	07/29/08 22:24			19.7	19.71	mg/L				0.1	20	

**Fluoride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248969</b>													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	4		3.97	mg/L	99.3	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-0.3	0.3			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	1.5	.4	1.74	mg/L	89.3	90	110			M2
L70659-06DUP	DUP	07/29/08 22:24			.4	.35	mg/L				13.3	20	RA
WG248969LFB	LFB	07/31/08 17:58	WI080702-9	1.5		1.47	mg/L	98	90	110			

**Magnesium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249104</b>													
WG249104ICV	ICV	07/30/08 17:11	I1080717-3	100		100.22	mg/L	100.2	95	105			
WG249104ICB	ICB	07/30/08 17:15				U	mg/L		-0.6	0.6			
WG249104LFB	LFB	07/30/08 17:28	I1080730-2	49.96908		53.43	mg/L	106.9	85	115			
L70694-06AS	AS	07/30/08 17:37	I1080730-2	49.96908	U	52.77	mg/L	105.6	85	115			
L70694-06ASD	ASD	07/30/08 17:40	I1080730-2	49.96908	U	52.66	mg/L	105.4	85	115	0.21	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70696**

Project ID: 8720000

**Nitrate/Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248761</b>													
WG248761ICV	ICV	07/24/08 18:39	WI080613-1	2.416		2.449	mg/L	101.4	90	110			
WG248761ICB	ICB	07/24/08 18:40				U	mg/L		-0.06	0.06			
WG248761LFB	LFB	07/24/08 18:45	WI080312-1	2		1.975	mg/L	98.8	90	110			
L70693-01DUP	DUP	07/24/08 18:50			.05	.056	mg/L				11.3	20	RA
L70692-01AS	AS	07/24/08 19:03	WI080312-1	10	4.4	15.2	mg/L	108	90	110			

**Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248761</b>													
WG248761ICV	ICV	07/24/08 18:39	WI080613-1	.609		.631	mg/L	103.6	90	110			
WG248761ICB	ICB	07/24/08 18:40				U	mg/L		-0.03	0.03			
WG248761LFB	LFB	07/24/08 18:45	WI080312-1	1		.989	mg/L	98.9	90	110			
L70692-01AS	AS	07/24/08 18:48	WI080312-1	1	U	.981	mg/L	98.1	90	110			
L70693-01DUP	DUP	07/24/08 18:50			U	U	mg/L				0	20	RA

**Potassium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249104</b>													
WG249104ICV	ICV	07/30/08 17:11	I1080717-3	20		20.52	mg/L	102.6	95	105			
WG249104ICB	ICB	07/30/08 17:15				U	mg/L		-0.9	0.9			
WG249104LFB	LFB	07/30/08 17:28	I1080730-2	99.76186		105.56	mg/L	105.8	85	115			
L70694-06AS	AS	07/30/08 17:37	I1080730-2	99.76186	U	104.03	mg/L	104.3	85	115			
L70694-06ASD	ASD	07/30/08 17:40	I1080730-2	99.76186	U	104.15	mg/L	104.4	85	115	0.12	20	

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248891</b>													
WG248891PBW	PBW	07/28/08 9:25				U	mg/L		-20	20			
WG248891LCSW	LCSW	07/28/08 9:26	PCN30199	260		280	mg/L	107.7	80	120			
L70723-01DUP	DUP	07/28/08 9:43			180	176	mg/L				2.2	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249104</b>													
WG249104ICV	ICV	07/30/08 17:11	I1080717-3	100		100.31	mg/L	100.3	95	105			
WG249104ICB	ICB	07/30/08 17:15				U	mg/L		-0.9	0.9			
WG249104LFB	LFB	07/30/08 17:28	I1080730-2	98.21624		102.84	mg/L	104.7	85	115			
L70694-06AS	AS	07/30/08 17:37	I1080730-2	98.21624	U	101.4	mg/L	103.2	85	115			
L70694-06ASD	ASD	07/30/08 17:40	I1080730-2	98.21624	U	101.47	mg/L	103.3	85	115	0.07	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70696**

Project ID: 8720000

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248969</b>													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	50.1		52.89	mg/L	105.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		29.5	mg/L	98.3	90	110			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	17.7	45.45	mg/L	92.5	90	110			
L70659-06DUP	DUP	07/29/08 22:24			17.7	17.69	mg/L				0.1	20	



Hydro Geo Chem, Inc.

ACZ Project ID: **L70696**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70696-01</b>	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248761	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70696-02</b>	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248761	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70696-03</b>	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248761	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70696-04</b>	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248761	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L70696**

No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70696  
 Date Received: 7/24/2008  
 Received By:  
 Date Printed: 7/24/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6520	1.6	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70696  
 Date Received: 7/24/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70696-01	EAST		Y									<input type="checkbox"/>
L70696-02	WALKER		Y									<input type="checkbox"/>
L70696-03	GALLANT		Y									<input type="checkbox"/>
L70696-04	SWAN TM08		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L706910

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HydroGeo Chem Inc
E-mail: dans@hgcinc.com

Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HydroGeo Chem, Inc

E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com

Address: 51 West Wetmore
Tucson AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

Table with columns for # of Containers, FMCQB-GW, and analysis results. Includes handwritten entries for 3 containers for each of four samples.

Table with columns for SAMPLE IDENTIFICATION, DATE:TIME, and Matrix. Includes handwritten entries for East, Walker, Gallant, and SWAN TMØ8.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY: [Signature] DATE:TIME 7-23-08 13:30 RECEIVED BY: [Signature] DATE:TIME 7-24-08 10:33

August 05, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L70659

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 23, 2008. This project has been assigned to ACZ's project number, L70659. Please reference this number in all future inquiries.

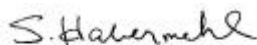
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70659. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: BANKS 986

ACZ Sample ID: **L70659-01**  
Date Sampled: 07/21/08 12:05  
Date Received: 07/23/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	82.2			mg/L	0.5	3	07/29/08 19:41	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: PANAGAKOS

ACZ Sample ID: **L70659-02**  
Date Sampled: 07/21/08 15:55  
Date Received: 07/23/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	444			mg/L	5	30	07/31/08 18:16	aml

Arizona license number: AZ0102



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: EPPELE 641

ACZ Sample ID: **L70659-03**  
Date Sampled: 07/21/08 16:15  
Date Received: 07/23/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	19.0			mg/L	0.5	3	07/29/08 20:53	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: POWER

ACZ Sample ID: **L70659-04**  
Date Sampled: 07/22/08 10:35  
Date Received: 07/23/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	124			mg/L	0.2	1	07/29/08 19:14	aeH
Magnesium, dissolved	M200.7 ICP	11.0			mg/L	0.2	1	07/29/08 19:14	aeH
Potassium, dissolved	M200.7 ICP	3.8		*	mg/L	0.3	2	07/29/08 19:14	aeH
Sodium, dissolved	M200.7 ICP	13.6		*	mg/L	0.3	2	07/29/08 19:14	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		222			mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3		29			mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		251		*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-2.5			%			08/05/08 0:00	calc
Sum of Anions		8.2			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		7.8			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	37.8			mg/L	0.5	3	07/29/08 21:11	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/29/08 21:11	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	24.1			mg/L	0.4	2	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	24.1		*	mg/L	0.4	2	07/23/08 20:43	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/23/08 20:12	pjb
Residue, Filterable (TDS) @180C	SM2540C	550			mg/L	10	20	07/25/08 16:02	gkj
Sulfate	300.0 - Ion Chromatography	20.2			mg/L	0.5	3	07/29/08 21:11	aml
TDS (calculated)	Calculation	479			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.15						08/05/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: PALMER 819

ACZ Sample ID: **L70659-05**  
Date Sampled: 07/22/08 12:35  
Date Received: 07/23/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	30.0			mg/L	0.2	1	07/29/08 19:17	aeH
Magnesium, dissolved	M200.7 ICP	25.4			mg/L	0.2	1	07/29/08 19:17	aeH
Potassium, dissolved	M200.7 ICP	5.1		*	mg/L	0.3	2	07/29/08 19:17	aeH
Sodium, dissolved	M200.7 ICP	47.9		*	mg/L	0.3	2	07/29/08 19:17	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		226			mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3		39			mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		265		*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-2.5			%			08/05/08 0:00	calc
Sum of Anions		6.1			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		5.8			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	11.3			mg/L	0.5	3	07/29/08 21:29	aml
Fluoride	M300.0 - Ion Chromatography	0.4	B	*	mg/L	0.1	0.5	07/29/08 21:29	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.34			mg/L	0.02	0.1	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.34		*	mg/L	0.02	0.1	07/23/08 20:13	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/23/08 20:13	pjb
Residue, Filterable (TDS) @180C	SM2540C	300			mg/L	10	20	07/25/08 16:03	gkj
Sulfate	300.0 - Ion Chromatography	16.2			mg/L	0.5	3	07/29/08 21:29	aml
TDS (calculated)	Calculation	321			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.93						08/05/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: OSBORN

ACZ Sample ID: **L70659-06**  
Date Sampled: 07/22/08 13:42  
Date Received: 07/23/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	80.3			mg/L	0.2	1	07/29/08 19:21	aeH
Magnesium, dissolved	M200.7 ICP	15.0			mg/L	0.2	1	07/29/08 19:21	aeH
Potassium, dissolved	M200.7 ICP	4.2		*	mg/L	0.3	2	07/29/08 19:21	aeH
Sodium, dissolved	M200.7 ICP	24.7		*	mg/L	0.3	2	07/29/08 19:21	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		252			mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3		29			mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		281		*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-3.0			%			08/05/08 0:00	calc
Sum of Anions		6.8			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	19.7			mg/L	0.5	3	07/29/08 21:48	aml
Fluoride	M300.0 - Ion Chromatography	0.4	B	*	mg/L	0.1	0.5	07/29/08 21:48	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.38			mg/L	0.06	0.3	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.38		*	mg/L	0.06	0.3	07/23/08 20:44	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/23/08 20:14	pjb
Residue, Filterable (TDS) @180C	SM2540C	350			mg/L	10	20	07/25/08 16:05	gkj
Sulfate	300.0 - Ion Chromatography	17.7			mg/L	0.5	3	07/29/08 21:48	aml
TDS (calculated)	Calculation	362			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.97						08/05/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: DUP072208

ACZ Sample ID: **L70659-07**  
Date Sampled: 07/22/08 00:00  
Date Received: 07/23/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	80.9			mg/L	0.2	1	07/29/08 19:25	aeH
Magnesium, dissolved	M200.7 ICP	15.1			mg/L	0.2	1	07/29/08 19:25	aeH
Potassium, dissolved	M200.7 ICP	4.2			mg/L	0.3	2	07/29/08 19:25	aeH
Sodium, dissolved	M200.7 ICP	25.0			mg/L	0.3	2	07/29/08 19:25	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		250			mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3		31			mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		281		*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-3.0			%			08/05/08 0:00	calc
Sum of Anions		6.8			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	19.6			mg/L	0.5	3	07/29/08 22:42	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	07/29/08 22:42	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.65			mg/L	0.06	0.3	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.65		*	mg/L	0.06	0.3	07/23/08 20:46	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/23/08 20:16	pjb
Residue, Filterable (TDS) @180C	SM2540C	350			mg/L	10	20	07/25/08 16:06	gkj
Sulfate	300.0 - Ion Chromatography	17.5			mg/L	0.5	3	07/29/08 22:42	aml
TDS (calculated)	Calculation	364			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.96						08/05/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
 Sample ID: EQB-72208

ACZ Sample ID: **L70659-08**  
 Date Sampled: 07/22/08 00:00  
 Date Received: 07/23/08  
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	0.2	B		mg/L	0.2	1	07/29/08 19:35	aeH
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/29/08 19:35	aeH
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/29/08 19:35	aeH
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/29/08 19:35	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		3	B		mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		3	B	*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/05/08 0:00	calc
Sum of Anions		0.1	B		meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations			U		meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	07/29/08 23:00	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/29/08 23:00	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.45			mg/L	0.02	0.1	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.45		*	mg/L	0.02	0.1	07/23/08 20:17	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	07/23/08 20:17	pjb
Residue, Filterable (TDS) @180C	SM2540C		U		mg/L	10	20	07/25/08 16:07	gkj
Sulfate	300.0 - Ion Chromatography	0.5	B		mg/L	0.5	3	07/29/08 23:00	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/05/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: FB072208

ACZ Sample ID: **L70659-09**  
Date Sampled: 07/22/08 00:00  
Date Received: 07/23/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/29/08 19:46	aeH
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/29/08 19:46	aeH
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/29/08 19:46	aeH
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/29/08 19:46	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		5	B		mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		5	B	*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/05/08 0:00	calc
Sum of Anions		0.1	B		meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations			U		meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	07/29/08 23:18	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/29/08 23:18	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.02	0.1	07/23/08 20:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/23/08 20:19	pjb
Residue, Filterable (TDS) @180C	SM2540C		U		mg/L	10	20	07/25/08 16:09	gkj
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	07/29/08 23:18	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/05/08 0:00	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.



Hydro Geo Chem, Inc.

ACZ Project ID: **L70659**

Project ID: 8720000

### Alkalinity as CaCO3

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248727</b>													
WG248727PBW2	PBW	07/24/08 18:27				2.9	mg/L		-20	20			
WG248727LCSW5	LCSW	07/24/08 18:40	WC080722-2	820		828.5	mg/L	101	90	110			
WG248727PBW3	PBW	07/24/08 21:35				2.3	mg/L		-20	20			
WG248727LCSW8	LCSW	07/24/08 21:48	WC080722-2	820		827	mg/L	100.9	90	110			
L70659-09DUP	DUP	07/25/08 0:44			5	U	mg/L				200	20	RA
WG248727PBW4	PBW	07/25/08 0:50				2.5	mg/L		-20	20			
WG248727LCSW11	LCSW	07/25/08 1:03	WC080722-2	820		822.5	mg/L	100.3	90	110			
WG248727LCSW14	LCSW	07/25/08 4:16	WC080722-2	820		829.4	mg/L	101.1	90	110			

### Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248991</b>													
WG248991ICV	ICV	07/29/08 18:12	I1080717-3	100		96.63	mg/L	96.6	95	105			
WG248991ICB	ICB	07/29/08 18:16				U	mg/L		-0.6	0.6			
WG248991LFB	LFB	07/29/08 18:30	I1080724-3	67.97008		62.32	mg/L	91.7	85	115			
L70658-01AS	AS	07/29/08 18:37	I1080724-3	67.97008	7.2	83.62	mg/L	112.4	85	115			
L70658-01ASD	ASD	07/29/08 18:41	I1080724-3	67.97008	7.2	81.41	mg/L	109.2	85	115	2.68	20	
L70659-07AS	AS	07/29/08 19:28	I1080724-3	67.97008	80.9	147.86	mg/L	98.5	85	115			
L70659-07ASD	ASD	07/29/08 19:32	I1080724-3	67.97008	80.9	147.51	mg/L	98	85	115	0.24	20	

### Chloride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248969</b>													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		27.55	mg/L	91.8	90	110			
L70472-01AS	AS	07/29/08 17:52	WI080702-9	30	17.1	45.4	mg/L	94.3	90	110			
L70472-01DUP	DUP	07/29/08 18:10			17.1	17.16	mg/L				0.4	20	
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	19.7	48.38	mg/L	95.6	90	110			
L70659-06DUP	DUP	07/29/08 22:24			19.7	19.71	mg/L				0.1	20	

### Fluoride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248969</b>													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	4		3.97	mg/L	99.3	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-0.3	0.3			
L70472-01AS	AS	07/29/08 17:52	WI080702-9	1.5	.2	1.62	mg/L	94.7	90	110			
L70472-01DUP	DUP	07/29/08 18:10			.2	.24	mg/L				18.2	20	RA
L70659-06AS	AS	07/29/08 22:06	WI080702-9	1.5	.4	1.74	mg/L	89.3	90	110			M2
L70659-06DUP	DUP	07/29/08 22:24			.4	.35	mg/L				13.3	20	RA
WG248969LFB	LFB	07/31/08 17:58	WI080702-9	1.5		1.47	mg/L	98	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70659**

Project ID: 8720000

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248991</b>													
WG248991ICV	ICV	07/29/08 18:12	I1080717-3	100		98.44	mg/L	98.4	95	105			
WG248991ICB	ICB	07/29/08 18:16				U	mg/L		-0.6	0.6			
WG248991LFB	LFB	07/29/08 18:30	I1080724-3	49.96908		46.48	mg/L	93	85	115			
L70658-01AS	AS	07/29/08 18:37	I1080724-3	49.96908	1.3	57.93	mg/L	113.3	85	115			
L70658-01ASD	ASD	07/29/08 18:41	I1080724-3	49.96908	1.3	56.86	mg/L	111.2	85	115	1.86	20	
L70659-07AS	AS	07/29/08 19:28	I1080724-3	49.96908	15.1	67.99	mg/L	105.8	85	115			
L70659-07ASD	ASD	07/29/08 19:32	I1080724-3	49.96908	15.1	68.29	mg/L	106.4	85	115	0.44	20	

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248685</b>													
WG248685ICV	ICV	07/23/08 19:51	WI080613-1	2.416		2.414	mg/L	99.9	90	110			
WG248685ICB	ICB	07/23/08 19:52				U	mg/L		-0.06	0.06			
WG248685LFB	LFB	07/23/08 19:57	WI080312-1	2		1.954	mg/L	97.7	90	110			
L70645-01DUP	DUP	07/23/08 20:02			.15	.152	mg/L				1.3	20	RA
L70659-08AS	AS	07/23/08 20:18	WI080312-1	2	.45	1.959	mg/L	75.5	90	110			M2
L70659-09DUP	DUP	07/23/08 20:21			U	.026	mg/L				200	20	RA
L70644-01AS	AS	07/23/08 20:36	WI080312-1	10	5.1	15.41	mg/L	103.1	90	110			

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248685</b>													
WG248685ICV	ICV	07/23/08 19:51	WI080613-1	.609		.56	mg/L	92	90	110			
WG248685ICB	ICB	07/23/08 19:52				U	mg/L		-0.03	0.03			
WG248685LFB	LFB	07/23/08 19:57	WI080312-1	1		.977	mg/L	97.7	90	110			
L70644-01AS	AS	07/23/08 20:00	WI080312-1	1	.19	1.151	mg/L	96.1	90	110			
L70645-01DUP	DUP	07/23/08 20:02			U	U	mg/L				0	20	RA
L70659-08AS	AS	07/23/08 20:18	WI080312-1	1	U	.938	mg/L	93.8	90	110			
L70659-09DUP	DUP	07/23/08 20:21			U	U	mg/L				0	20	RA

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248991</b>													
WG248991ICV	ICV	07/29/08 18:12	I1080717-3	20		20.43	mg/L	102.2	95	105			
WG248991ICB	ICB	07/29/08 18:16				U	mg/L		-0.9	0.9			
WG248991LFB	LFB	07/29/08 18:30	I1080724-3	99.76186		94.9	mg/L	95.1	85	115			
L70658-01AS	AS	07/29/08 18:37	I1080724-3	99.76186	.7	116.77	mg/L	116.3	85	115			MA
L70658-01ASD	ASD	07/29/08 18:41	I1080724-3	99.76186	.7	115.03	mg/L	114.6	85	115	1.5	20	
L70659-07AS	AS	07/29/08 19:28	I1080724-3	99.76186	4.2	115.37	mg/L	111.4	85	115			
L70659-07ASD	ASD	07/29/08 19:32	I1080724-3	99.76186	4.2	116.22	mg/L	112.3	85	115	0.73	20	

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248837</b>													
WG248837PBW	PBW	07/25/08 16:00				U	mg/L		-20	20			
WG248837LCSW	LCSW	07/25/08 16:01	PCN30199	260		268	mg/L	103.1	80	120			
L70689-01DUP	DUP	07/25/08 16:15			4550	4562	mg/L				0.3	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70659**

Project ID: 8720000

**Sodium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248991</b>													
WG248991ICV	ICV	07/29/08 18:12	I1080717-3	100		101.61	mg/L	101.6	95	105			
WG248991ICB	ICB	07/29/08 18:16				U	mg/L		-0.9	0.9			
WG248991LFB	LFB	07/29/08 18:30	I1080724-3	98.21624		93.97	mg/L	95.7	85	115			
L70658-01AS	AS	07/29/08 18:37	I1080724-3	98.21624	2.5	115.92	mg/L	115.5	85	115			MA
L70658-01ASD	ASD	07/29/08 18:41	I1080724-3	98.21624	2.5	113.88	mg/L	113.4	85	115	1.78	20	
L70659-07AS	AS	07/29/08 19:28	I1080724-3	98.21624	25	131.93	mg/L	108.9	85	115			
L70659-07ASD	ASD	07/29/08 19:32	I1080724-3	98.21624	25	132.46	mg/L	109.4	85	115	0.4	20	

**Sulfate**

300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248969</b>													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	50.1		52.89	mg/L	105.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		29.5	mg/L	98.3	90	110			
L70472-01AS	AS	07/29/08 17:52	WI080702-9	30	5.9	33.89	mg/L	93.3	90	110			
L70472-01DUP	DUP	07/29/08 18:10			5.9	5.91	mg/L				0.2	20	
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	17.7	45.45	mg/L	92.5	90	110			
L70659-06DUP	DUP	07/29/08 22:24			17.7	17.69	mg/L				0.1	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70659**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70659-04</b>	WG248991	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248969	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70659-05</b>	WG248991	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248969	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70659-06</b>	WG248991	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
				RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70659**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70659-07</b>	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA
	WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70659-08</b>	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70659-09</b>	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	

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Hydro Geo Chem, Inc.

ACZ Project ID: **L70659**

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No certification qualifiers associated with this analysis

**Hydro Geo Chem, Inc.**  
 8720000

ACZ Project ID: L70659  
 Date Received: 7/23/2008  
 Received By:  
 Date Printed: 7/24/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?		X	
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

The following items were not in agreement: number of containers. Only 1 container was received for samples 1 thru 3. The chain of custody indicated that three containers were sent for these samples.

**Contact (For any discrepancies, the client must be contacted)**

The client was not contacted.

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
566	1.2	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70659  
 Date Received: 7/23/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70659-01	BANKS 986									X		<input type="checkbox"/>
L70659-02	PANAGAKOS 413									X		<input type="checkbox"/>
L70659-03	EPPELE 641									X		<input type="checkbox"/>
L70659-04	POWER 535		Y									<input type="checkbox"/>
L70659-05	PALMER 819		Y									<input type="checkbox"/>
L70659-06	OSBURN 436		Y									<input type="checkbox"/>
L70659-07	DUP		Y									<input type="checkbox"/>
L70659-08	EQB		Y									<input type="checkbox"/>
L70659-09	FB		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH_Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_





Laboratories, Inc.

170659

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc
E-mail: dans@hgcinc.com

Address: 51 West Wetmore Rd
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc

E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC In
E-mail: jimn@hgcinc.com

Address: 51 W. Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES [X]
NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO"

is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

Table with columns for # of Containers, Matrix, and analysis results. Includes handwritten entries for '504' and 'FMCQB-GW'.

Table with columns: SAMPLE IDENTIFICATION, DATE:TIME, Matrix. Contains handwritten entries for various samples like BANKS 986, Pangalos 413, etc.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

REL INQUIRED BY:

DATE:TIME

RECEIVED BY:

DATE:TIME

[Signature]

7/23/08 15:05

[Signature]

7-23-08 10:33

July 30, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

Project ID: 8720000

ACZ Project ID: L70589

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 19, 2008. This project has been assigned to ACZ's project number, L70589. Please reference this number in all future inquiries.

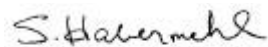
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70589. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 30, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
 Sample ID: BM0-2008-3B

ACZ Sample ID: **L70589-01**  
 Date Sampled: 07/18/08 11:25  
 Date Received: 07/19/08  
 Sample Matrix: Ground Water

**Field Data**

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity (Field)	Field Measurement	615			mS/cm			07/18/08 11:25	nb
pH (Field)	Field Measurement	7.4			units			07/18/08 11:25	nb
Temperature (Field)	Field Measurement	23.9		*	C			07/18/08 11:25	nb

**Metals Analysis**

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	64.5			mg/L	0.2	1	07/26/08 19:55	aeH
Magnesium, dissolved	M200.7 ICP	12.0			mg/L	0.2	1	07/26/08 19:55	aeH
Potassium, dissolved	M200.7 ICP	2.9		*	mg/L	0.3	2	07/26/08 19:55	aeH
Sodium, dissolved	M200.7 ICP	53.6		*	mg/L	0.3	2	07/26/08 19:55	aeH

**Wet Chemistry**

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		151			mg/L	2	20	07/22/08 0:00	ear
Carbonate as CaCO3		3	B		mg/L	2	20	07/22/08 0:00	ear
Hydroxide as CaCO3			U		mg/L	2	20	07/22/08 0:00	ear
Total Alkalinity		154		*	mg/L	2	20	07/22/08 0:00	ear
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.1			%			07/30/08 0:00	calc
Sum of Anions		6.2			meq/L	0.1	0.5	07/30/08 0:00	calc
Sum of Cations		6.6			meq/L	0.1	0.5	07/30/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	23.8			mg/L	0.5	3	07/28/08 5:37	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	07/28/08 5:37	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.68			mg/L	0.06	0.3	07/30/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.72			mg/L	0.06	0.3	07/19/08 15:00	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.04	B	*	mg/L	0.01	0.05	07/19/08 14:36	pjb
Residue, Filterable (TDS) @180C	SM2540C	390			mg/L	10	20	07/22/08 15:10	tbd
Sulfate	300.0 - Ion Chromatography	106			mg/L	3	10	07/28/08 17:19	aml
TDS (calculated)	Calculation	373			mg/L	10	50	07/30/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.05						07/30/08 0:00	calc

**Arizona license number: AZ0102**

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70589**

Project ID: 8720000

**Alkalinity as CaCO3**

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248569</b>													
WG248569PBW1	PBW	07/22/08 15:55				20.6	mg/L		-20	20			B4
WG248569LCSW2	LCSW	07/22/08 16:06	WC080722-2	820		788.5	mg/L	96.2	90	110			
L70595-02DUP	DUP	07/22/08 17:30			44	44.4	mg/L				0.9	20	
WG248569PBW2	PBW	07/22/08 18:29				U	mg/L		-20	20			
WG248569LCSW5	LCSW	07/22/08 18:42	WC080722-2	820		787.1	mg/L	96	90	110			
WG248569PBW3	PBW	07/22/08 20:37				U	mg/L		-20	20			
WG248569LCSW8	LCSW	07/22/08 20:49	WC080722-2	820		786.4	mg/L	95.9	90	110			
WG248569PBW4	PBW	07/22/08 23:10				U	mg/L		-20	20			
WG248569LCSW11	LCSW	07/22/08 23:22	WC080722-2	820		787.1	mg/L	96	90	110			
WG248569LCSW17	LCSW	07/23/08 11:50	WC080722-2	820		794.1	mg/L	96.8	90	110			

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248849</b>													
WG248849ICV	ICV	07/26/08 18:06	I1080717-3	100		96.3	mg/L	96.3	95	105			
WG248849ICB	ICB	07/26/08 18:09				U	mg/L		-0.6	0.6			
WG248849LFB	LFB	07/26/08 18:23	I1080724-3	67.97008		70.63	mg/L	103.9	85	115			
L70452-01AS	AS	07/26/08 19:15	I1080724-3	67.97008	342	418.89	mg/L	113.1	85	115			
L70452-01ASD	ASD	07/26/08 19:19	I1080724-3	67.97008	342	401.03	mg/L	86.8	85	115	4.36	20	

**Chloride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248877</b>													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	19.98		20.63	mg/L	103.3	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-1.5	1.5			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	30		30.09	mg/L	100.3	90	110			
L70537-01DUP	DUP	07/28/08 5:19			13.3	13.68	mg/L				2.8	20	
L70589-01AS	AS	07/28/08 5:56	WI080702-9	30	23.8	51.45	mg/L	92.2	90	110			

**Fluoride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248877</b>													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	4		4	mg/L	100	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-0.3	0.3			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	1.5		1.44	mg/L	96	90	110			
L70537-01DUP	DUP	07/28/08 5:19			.4	.35	mg/L				13.3	20	RA
L70589-01AS	AS	07/28/08 5:56	WI080702-9	1.5	.3	1.65	mg/L	90	90	110			

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248849</b>													
WG248849ICV	ICV	07/26/08 18:06	I1080717-3	100		99.05	mg/L	99.1	95	105			
WG248849ICB	ICB	07/26/08 18:09				U	mg/L		-0.6	0.6			
WG248849LFB	LFB	07/26/08 18:23	I1080724-3	49.96908		52.7	mg/L	105.5	85	115			
L70452-01AS	AS	07/26/08 19:15	I1080724-3	49.96908	48.1	105.37	mg/L	114.6	85	115			
L70452-01ASD	ASD	07/26/08 19:19	I1080724-3	49.96908	48.1	99.14	mg/L	102.1	85	115	6.09	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70589**

Project ID: 8720000

**Nitrate/Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248425</b>													
WG248425ICV	ICV	07/19/08 14:30	WI080613-1	2.416		2.473	mg/L	102.4	90	110			
WG248425ICB	ICB	07/19/08 14:31				U	mg/L		-0.06	0.06			
WG248425LFB	LFB	07/19/08 14:35	WI080312-1	2		2.077	mg/L	103.9	90	110			
WG248425ICV1	ICV	07/19/08 14:58	WI080613-1	2.416		2.535	mg/L	104.9	90	110			
WG248425ICB1	ICB	07/19/08 14:59				U	mg/L		-0.06	0.06			
L70589-01DUP	DUP	07/19/08 15:02			3.72	3.882	mg/L				4.3	20	
L70589-01AS	AS	07/19/08 15:03	WI080312-1	6	3.72	10.19	mg/L	107.8	90	110			

**Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248425</b>													
WG248425ICV	ICV	07/19/08 14:30	WI080613-1	.609		.567	mg/L	93.1	90	110			
WG248425ICB	ICB	07/19/08 14:31				U	mg/L		-0.03	0.03			
WG248425LFB	LFB	07/19/08 14:35	WI080312-1	1		1.038	mg/L	103.8	90	110			
L70589-01DUP	DUP	07/19/08 14:38			.04	.038	mg/L				5.1	20	RA
L70589-01AS	AS	07/19/08 14:39	WI080312-1	1	.04	1.101	mg/L	106.1	90	110			
WG248425ICV1	ICV	07/19/08 14:58	WI080613-1	.609		.578	mg/L	94.9	90	110			
WG248425ICB1	ICB	07/19/08 14:59				U	mg/L		-0.03	0.03			

**Potassium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248849</b>													
WG248849ICV	ICV	07/26/08 18:06	I1080717-3	20		20.86	mg/L	104.3	95	105			
WG248849ICB	ICB	07/26/08 18:09				U	mg/L		-0.9	0.9			
WG248849LFB	LFB	07/26/08 18:23	I1080724-3	99.76186		109.28	mg/L	109.5	85	115			
L70452-01AS	AS	07/26/08 19:15	I1080724-3	99.76186	3.4	125.58	mg/L	122.5	85	115			MA
L70452-01ASD	ASD	07/26/08 19:19	I1080724-3	99.76186	3.4	116.82	mg/L	113.7	85	115	7.23	20	

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248578</b>													
WG248578PBW	PBW	07/22/08 15:05				U	mg/L		-20	20			
WG248578LCSW	LCSW	07/22/08 15:06	PCN30199	260		258	mg/L	99.2	80	120			
L70604-03DUP	DUP	07/22/08 15:28			370	368	mg/L				0.5	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248849</b>													
WG248849ICV	ICV	07/26/08 18:06	I1080717-3	100		104.08	mg/L	104.1	95	105			
WG248849ICB	ICB	07/26/08 18:09				U	mg/L		-0.9	0.9			
WG248849LFB	LFB	07/26/08 18:23	I1080724-3	98.21624		108.81	mg/L	110.8	85	115			
L70452-01AS	AS	07/26/08 19:15	I1080724-3	98.21624	46.4	165.31	mg/L	121.1	85	115			MA
L70452-01ASD	ASD	07/26/08 19:19	I1080724-3	98.21624	46.4	153.64	mg/L	109.2	85	115	7.32	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70589**

Project ID: 8720000

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248877</b>													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	50.1		53.46	mg/L	106.7	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-1.5	1.5			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	30		31.99	mg/L	106.6	90	110			
L70537-01DUP	DUP	07/28/08 5:19			53.3	53.82	mg/L				1	20	
L70589-01AS	AS	07/28/08 17:37	WI080702-9	150	106	244.9	mg/L	92.6	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70589**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70589-01</b>	WG248849	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248877	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248425	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248569	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.



**Hydro Geo Chem, Inc.**

ACZ Project ID: **L70589**

Field Data

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Temperature (Field)

Field Measurement

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70589  
 Date Received: 7/19/2008  
 Received By:  
 Date Printed: 7/19/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6490	5	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

**Hydro Geo Chem, Inc.**  
 8720000

ACZ Project ID: L70589  
 Date Received: 7/19/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70589-01	BM0-2008-3B		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

L70589

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: HGC, Inc.
E-mail: danscheinc.

Address: 51 W. Wetmore Rd, ste. 100
Tucson, AZ 85705
Telephone: (520) 293-1500

Copy of Report to:

Name:
Company:

E-mail:
Telephone:

Invoice to:

Name:
Company:
E-mail:

Address:
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCOB-GW
Project/PO #: 872000
Reporting state for compliance testing: AZ
Sampler's Name: NS Babb
Are any samples NRC licensable material?

Table with columns for # of Containers and FMCOB-GW

Table with columns: SAMPLE IDENTIFICATION, DATE:TIME, Matrix, # of Containers, FMCOB-GW

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

pH = 7.35 DTW = 14854
Temp = 75°F
MS = 615

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY: DATE:TIME RECEIVED BY: DATE:TIME

Handwritten signatures and dates for relinquished and received by.

August 04, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000

ACZ Project ID: L70576

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 18, 2008. This project has been assigned to ACZ's project number, L70576. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70576. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 04, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: PIONKE

ACZ Sample ID: **L70576-01**

Date Sampled: 07/17/08 09:15

Date Received: 07/18/08

Sample Matrix: *Ground Water*

## Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	420		*	mg/L	5	30	07/29/08 13:02	aml

**Arizona license number: AZ0102**

**Hydro Geo Chem, Inc.**Project ID: 8720000  
Sample ID: ROGERS EACZ Sample ID: **L70576-02**  
Date Sampled: 07/17/08 10:36  
Date Received: 07/18/08  
Sample Matrix: Ground Water

## Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.1		*	mg/L	0.5	3	07/28/08 23:03	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**Project ID: 8720000  
Sample ID: RAMIREZACZ Sample ID: **L70576-03**  
Date Sampled: 07/17/08 11:35  
Date Received: 07/18/08  
Sample Matrix: Ground Water

## Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	8.8		*	mg/L	0.5	3	07/28/08 23:21	aml

Arizona license number: AZ0102



**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70576**

Project ID: 8720000

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248915</b>													
WG248915ICV	ICV	07/28/08 18:31	WI080521-1	50.1		54.03	mg/L	107.8	90	110			
WG248915ICB	ICB	07/28/08 18:50				.71	mg/L		-1.5	1.5			
WG248915LFB	LFB	07/28/08 19:08	WI080702-9	30		29.5	mg/L	98.3	90	110			
L70469-01DUP	DUP	07/28/08 19:44			4310	4541	mg/L				5.2	20	
L70469-02AS	AS	07/29/08 12:26	WI080702-9	600	750	1249	mg/L	83.2	90	110			M2

Hydro Geo Chem, Inc.

ACZ Project ID: **L70576**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70576-01	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L70576-02	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L70576-03	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70576**

No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70576  
 Date Received: 7/18/2008  
 Received By:  
 Date Printed: 7/18/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6481	1.2	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70576  
 Date Received: 7/18/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70576-01	PIONKE									X		<input type="checkbox"/>
L70576-02	ROGERS E									X		<input type="checkbox"/>
L70576-03	RAMIREZ									X		<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

L70576

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com

Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.

E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com

Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES X
NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO"

is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? NO

Table with columns for # of Containers, Matrix, and analysis results. Includes handwritten '504' in the # of Containers column.

Table with columns for SAMPLE IDENTIFICATION, DATE:TIME, and Matrix. Includes rows for PIONKE, ROGERS E, and RAMIREZ.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

Empty box for remarks and disclosures.

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Table for RELINQUISHED BY, DATE:TIME, RECEIVED BY, and DATE:TIME. Includes handwritten signatures and dates.

July 30, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

Project ID: 8720000

ACZ Project ID: L70537

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 17, 2008. This project has been assigned to ACZ's project number, L70537. Please reference this number in all future inquiries.

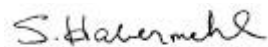
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70537. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 30, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.





**Hydro Geo Chem, Inc.**

Project ID: 8720000  
 Sample ID: BMO-2008-6B

ACZ Sample ID: **L70537-01**  
 Date Sampled: 07/16/08 12:00  
 Date Received: 07/17/08  
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	59.7			mg/L	0.2	1	07/26/08 16:07	aeH
Magnesium, dissolved	M200.7 ICP	10.2			mg/L	0.2	1	07/26/08 16:07	aeH
Potassium, dissolved	M200.7 ICP	3.0			mg/L	0.3	2	07/29/08 12:20	aeH
Sodium, dissolved	M200.7 ICP	26.2			mg/L	0.3	2	07/26/08 16:07	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		151			mg/L	2	20	07/21/08 0:00	tbd
Carbonate as CaCO3		9	B		mg/L	2	20	07/21/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/21/08 0:00	tbd
Total Alkalinity		160			mg/L	2	20	07/21/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.0			%			07/30/08 0:00	calc
Sum of Anions		4.8			meq/L	0.1	0.5	07/30/08 0:00	calc
Sum of Cations		5.0			meq/L	0.1	0.5	07/30/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	13.3			mg/L	0.5	3	07/28/08 4:25	aml
Fluoride	M300.0 - Ion Chromatography	0.4	B	*	mg/L	0.1	0.5	07/28/08 4:25	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.97			mg/L	0.02	0.1	07/30/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.97		*	mg/L	0.02	0.1	07/17/08 19:37	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/17/08 19:37	pjb
Residue, Filterable (TDS) @180C	SM2540C	300			mg/L	10	20	07/18/08 14:15	tbd
Sulfate	300.0 - Ion Chromatography	53.3			mg/L	0.5	3	07/28/08 4:25	aml
TDS (calculated)	Calculation	274			mg/L	10	50	07/30/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.09						07/30/08 0:00	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70537**

Project ID: 8720000

**Alkalinity as CaCO3**

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248454</b>													
WG248454PBW2	PBW	07/21/08 17:31				U	mg/L		-20	20			
WG248454LCSW5	LCSW	07/21/08 17:44	WC080702-8	820		789.7	mg/L	96.3	90	110			
WG248454PBW3	PBW	07/21/08 20:42				U	mg/L		-20	20			
WG248454LCSW8	LCSW	07/21/08 20:55	WC080702-8	820		789.2	mg/L	96.2	90	110			
L70551-02DUP	DUP	07/21/08 22:29			20	20.7	mg/L				3.4	20	
WG248454PBW4	PBW	07/22/08 0:15				U	mg/L		-20	20			
WG248454LCSW11	LCSW	07/22/08 0:27	WC080702-8	820		796.8	mg/L	97.2	90	110			
WG248454LCSW14	LCSW	07/22/08 3:39	WC080702-8	820		798.5	mg/L	97.4	90	110			

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248821</b>													
WG248821ICV	ICV	07/26/08 15:35	I1080717-3	100		99.13	mg/L	99.1	95	105			
WG248821ICB	ICB	07/26/08 15:39				U	mg/L		-0.6	0.6			
WG248821LFB	LFB	07/26/08 15:51	I1080724-3	67.97008		74.17	mg/L	109.1	85	115			
L70531-06AS	AS	07/26/08 15:57	I1080724-3	67.97008	90.9	158.53	mg/L	99.5	85	115			
L70531-06ASD	ASD	07/26/08 16:01	I1080724-3	67.97008	90.9	157.06	mg/L	97.3	85	115	0.93	20	

**Chloride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248877</b>													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	19.98		20.63	mg/L	103.3	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-1.5	1.5			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	30		30.09	mg/L	100.3	90	110			
L70537-01DUP	DUP	07/28/08 5:19			13.3	13.68	mg/L				2.8	20	
L70589-01AS	AS	07/28/08 5:56	WI080702-9	30	23.8	51.45	mg/L	92.2	90	110			

**Fluoride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248877</b>													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	4		4	mg/L	100	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-0.3	0.3			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	1.5		1.44	mg/L	96	90	110			
L70537-01DUP	DUP	07/28/08 5:19			.4	.35	mg/L				13.3	20	RA
L70589-01AS	AS	07/28/08 5:56	WI080702-9	1.5	.3	1.65	mg/L	90	90	110			

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248821</b>													
WG248821ICV	ICV	07/26/08 15:35	I1080717-3	100		98.93	mg/L	98.9	95	105			
WG248821ICB	ICB	07/26/08 15:39				U	mg/L		-0.6	0.6			
WG248821LFB	LFB	07/26/08 15:51	I1080724-3	49.96908		53.83	mg/L	107.7	85	115			
L70531-06AS	AS	07/26/08 15:57	I1080724-3	49.96908	45.6	97.01	mg/L	102.9	85	115			
L70531-06ASD	ASD	07/26/08 16:01	I1080724-3	49.96908	45.6	95.57	mg/L	100	85	115	1.5	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70537**

Project ID: 8720000

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248324</b>													
WG248324ICV	ICV	07/17/08 19:01	WI080613-1	2.416		2.454	mg/L	101.6	90	110			
WG248324ICB	ICB	07/17/08 19:02				U	mg/L		-0.06	0.06			
WG248324LFB	LFB	07/17/08 19:06	WI080312-1	2		2.065	mg/L	103.3	90	110			
L70521-10AS	AS	07/17/08 19:27	WI080312-1	2	.04	2.071	mg/L	101.6	90	110			
L70524-01DUP	DUP	07/17/08 19:30				U	mg/L				200	20	RA

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248324</b>													
WG248324ICV	ICV	07/17/08 19:01	WI080613-1	.609		.57	mg/L	93.6	90	110			
WG248324ICB	ICB	07/17/08 19:02				U	mg/L		-0.03	0.03			
WG248324LFB	LFB	07/17/08 19:06	WI080312-1	1		1.033	mg/L	103.3	90	110			
L70521-10AS	AS	07/17/08 19:27	WI080312-1	1	U	.973	mg/L	97.3	90	110			
L70524-01DUP	DUP	07/17/08 19:30			1	1.1	mg/L				9.5	20	RA

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248978</b>													
WG248978ICV	ICV	07/29/08 11:47	I1080717-3	20		19.81	mg/L	99.1	95	105			
WG248978ICB	ICB	07/29/08 11:51				U	mg/L		-0.9	0.9			
WG248978LFB	LFB	07/29/08 12:04	I1080724-3	99.76186		104.06	mg/L	104.3	85	115			
L70531-06AS	AS	07/29/08 12:10	I1080724-3	99.76186	4.4	105.91	mg/L	101.8	85	115			
L70531-06ASD	ASD	07/29/08 12:14	I1080724-3	99.76186	4.4	106.64	mg/L	102.5	85	115	0.69	20	

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248378</b>													
WG248378PBW	PBW	07/18/08 14:05				U	mg/L		-20	20			
WG248378LCSW	LCSW	07/18/08 14:07	PCN30198	260		282	mg/L	108.5	80	120			
L70567-05DUP	DUP	07/18/08 14:36			1810	1820	mg/L				0.6	20	

**Sodium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248821</b>													
WG248821ICV	ICV	07/26/08 15:35	I1080717-3	100		99.43	mg/L	99.4	95	105			
WG248821ICB	ICB	07/26/08 15:39				.38	mg/L		-0.9	0.9			
WG248821LFB	LFB	07/26/08 15:51	I1080724-3	98.21624		105.92	mg/L	107.8	85	115			
L70531-06AS	AS	07/26/08 15:57	I1080724-3	98.21624	92	189.67	mg/L	99.4	85	115			
L70531-06ASD	ASD	07/26/08 16:01	I1080724-3	98.21624	92	188.79	mg/L	98.5	85	115	0.47	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70537**

Project ID: 8720000

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248877</b>													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	50.1		53.46	mg/L	106.7	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-1.5	1.5			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	30		31.99	mg/L	106.6	90	110			
L70537-01DUP	DUP	07/28/08 5:19			53.3	53.82	mg/L				1	20	
L70589-01AS	AS	07/28/08 17:37	WI080702-9	150	106	244.9	mg/L	92.6	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: **L70537**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70537-01	WG248877	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248324	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L70537**



No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70537  
 Date Received: 7/17/2008  
 Received By:  
 Date Printed: 7/17/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6472	4.2	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**



Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70537  
 Date Received: 7/17/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70537-01	BMO-2008-6B		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

L70537

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simson
Company: HGC, INC
E-mail: dans@hgcinc.com

Address: 51 W. Wetmore, Ste. 100
Tucson, AZ 85705
Telephone: (520) 293-1500 x.133

Copy of Report to:

Name:
Company:

E-mail:
Telephone:

Invoice to:

Name:
Company:
E-mail:

Address:
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES [ ]
NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO"

is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: NJ Babb
Are any samples NRC licensable material?

Table with columns for # of Containers and analysis results. Row 1: 3, X

Table with columns: SAMPLE IDENTIFICATION, DATE:TIME, Matrix, # of Containers, and analysis results.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

pH = 7.36 DTW = 203.95
T° = 75.3°F GPMs = 3.9
MS = 475

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY: DATE:TIME RECEIVED BY: DATE:TIME

Handwritten signatures and dates for relinquished and received parties.

August 01, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000 T2.2

ACZ Project ID: L70525

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 17, 2008. This project has been assigned to ACZ's project number, L70525. Please reference this number in all future inquiries.

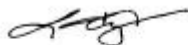
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70525. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 01, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Tony Antalek has reviewed and  
approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000 T2.2  
 Sample ID: WEISKOPF

ACZ Sample ID: **L70525-01**  
 Date Sampled: 07/16/08 09:05  
 Date Received: 07/17/08  
 Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	248			mg/L	0.2	1	07/26/08 18:01	aeH
Magnesium, dissolved	M200.7 ICP	34.3			mg/L	0.2	1	07/26/08 18:01	aeH
Potassium, dissolved	M200.7 ICP	4.4			mg/L	0.3	2	07/30/08 12:08	aeH
Sodium, dissolved	M200.7 ICP	38.6			mg/L	0.3	2	07/26/08 18:01	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		170			mg/L	2	20	07/21/08 0:00	tbD
Carbonate as CaCO3		3	B		mg/L	2	20	07/21/08 0:00	tbD
Hydroxide as CaCO3			U		mg/L	2	20	07/21/08 0:00	tbD
Total Alkalinity		173			mg/L	2	20	07/21/08 0:00	tbD
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.1			%			08/01/08 0:00	calc
Sum of Anions		16.3			meq/L	0.1	0.5	08/01/08 0:00	calc
Sum of Cations		17.0			meq/L	0.1	0.5	08/01/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	26.0		*	mg/L	0.5	3	07/28/08 20:56	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	07/28/08 20:56	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.29			mg/L	0.04	0.2	08/01/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.29		*	mg/L	0.04	0.2	07/17/08 19:41	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/17/08 19:31	pjb
Residue, Filterable (TDS) @180C	SM2540C	1060			mg/L	10	20	07/18/08 14:12	tbD
Sulfate	300.0 - Ion Chromatography	560		*	mg/L	10	50	07/29/08 12:44	aml
TDS (calculated)	Calculation	1040			mg/L	10	50	08/01/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.02						08/01/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000 T2.2

Sample ID: MOORE

ACZ Sample ID: **L70525-02**

Date Sampled: 07/16/08 11:05

Date Received: 07/17/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	9.8		*	mg/L	0.5	3	07/28/08 21:14	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000 T2.2

Sample ID: ZANDER

ACZ Sample ID: **L70525-03**

Date Sampled: 07/16/08 12:03

Date Received: 07/17/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	6.9		*	mg/L	0.5	3	07/28/08 21:33	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000 T2.2

Sample ID: KEEFER

ACZ Sample ID: **L70525-04**

Date Sampled: 07/16/08 14:10

Date Received: 07/17/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	8.0		*	mg/L	0.5	3	07/28/08 21:51	aml

Arizona license number: AZ0102

#### Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

#### QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

#### QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

#### ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

#### Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

#### Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.



Hydro Geo Chem, Inc.

ACZ Project ID: **L70525**

Project ID: 8720000 T2.2

**Alkalinity as CaCO3**

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248454</b>													
WG248454PBW2	PBW	07/21/08 17:31				U	mg/L		-20	20			
WG248454LCSW5	LCSW	07/21/08 17:44	WC080702-8	820		789.7	mg/L	96.3	90	110			
L70527-04DUP	DUP	07/21/08 20:37			129	129.7	mg/L				0.5	20	
WG248454PBW3	PBW	07/21/08 20:42				U	mg/L		-20	20			
WG248454LCSW8	LCSW	07/21/08 20:55	WC080702-8	820		789.2	mg/L	96.2	90	110			
WG248454PBW4	PBW	07/22/08 0:15				U	mg/L		-20	20			
WG248454LCSW11	LCSW	07/22/08 0:27	WC080702-8	820		796.8	mg/L	97.2	90	110			
WG248454LCSW14	LCSW	07/22/08 3:39	WC080702-8	820		798.5	mg/L	97.4	90	110			

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248816</b>													
WG248816ICV	ICV	07/26/08 17:42	I1080717-3	100		99.47	mg/L	99.5	95	105			
WG248816ICB	ICB	07/26/08 17:46				U	mg/L		-0.6	0.6			
WG248816LFB	LFB	07/26/08 17:58	I1080724-3	67.97008		77.72	mg/L	114.3	85	115			
L70525-01AS	AS	07/26/08 18:04	I1080724-3	67.97008	248	315.46	mg/L	99.2	85	115			
L70525-01ASD	ASD	07/26/08 18:08	I1080724-3	67.97008	248	315.47	mg/L	99.3	85	115	0	20	

**Chloride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248915</b>													
WG248915ICV	ICV	07/28/08 18:31	WI080521-1	19.98		20.46	mg/L	102.4	90	110			
WG248915ICB	ICB	07/28/08 18:50				U	mg/L		-1.5	1.5			
WG248915LFB	LFB	07/28/08 19:08	WI080702-9	30		29.15	mg/L	97.2	90	110			
L70469-01DUP	DUP	07/28/08 19:44			40	39	mg/L				2.5	20	RA
L70469-02AS	AS	07/28/08 20:20	WI080702-9	30	30.3	59.06	mg/L	95.9	90	110			

**Fluoride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248915</b>													
WG248915ICV	ICV	07/28/08 18:31	WI080521-1	4		4	mg/L	100	90	110			
WG248915ICB	ICB	07/28/08 18:50				U	mg/L		-0.3	0.3			
WG248915LFB	LFB	07/28/08 19:08	WI080702-9	1.5		1.45	mg/L	96.7	90	110			
L70469-01DUP	DUP	07/28/08 19:44			U	U	mg/L				0	20	RA
L70469-02AS	AS	07/28/08 20:20	WI080702-9	1.5	1.4	2.76	mg/L	90.7	90	110			

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248816</b>													
WG248816ICV	ICV	07/26/08 17:42	I1080717-3	100		98.73	mg/L	98.7	95	105			
WG248816ICB	ICB	07/26/08 17:46				U	mg/L		-0.6	0.6			
WG248816LFB	LFB	07/26/08 17:58	I1080724-3	49.96908		54.86	mg/L	109.8	85	115			
L70525-01AS	AS	07/26/08 18:04	I1080724-3	49.96908	34.3	89.93	mg/L	111.3	85	115			
L70525-01ASD	ASD	07/26/08 18:08	I1080724-3	49.96908	34.3	90.2	mg/L	111.9	85	115	0.3	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70525**

Project ID: 8720000 T2.2

**Nitrate/Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248324</b>													
WG248324ICV	ICV	07/17/08 19:01	WI080613-1	2.416		2.454	mg/L	101.6	90	110			
WG248324ICB	ICB	07/17/08 19:02				U	mg/L		-0.06	0.06			
WG248324LFB	LFB	07/17/08 19:06	WI080312-1	2		2.065	mg/L	103.3	90	110			
L70521-10AS	AS	07/17/08 19:27	WI080312-1	2	.04	2.071	mg/L	101.6	90	110			
L70524-01DUP	DUP	07/17/08 19:30				U	2.3	mg/L			200	20	RA

**Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248324</b>													
WG248324ICV	ICV	07/17/08 19:01	WI080613-1	.609		.57	mg/L	93.6	90	110			
WG248324ICB	ICB	07/17/08 19:02				U	mg/L		-0.03	0.03			
WG248324LFB	LFB	07/17/08 19:06	WI080312-1	1		1.033	mg/L	103.3	90	110			
L70521-10AS	AS	07/17/08 19:27	WI080312-1	1	U	.973	mg/L	97.3	90	110			
L70524-01DUP	DUP	07/17/08 19:30			1	1.1	mg/L				9.5	20	RA

**Potassium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248977</b>													
WG248977ICV	ICV	07/30/08 11:48	I1080717-3	20		20.24	mg/L	101.2	95	105			
WG248977ICB	ICB	07/30/08 11:51				U	mg/L		-0.9	0.9			
WG248977LFB	LFB	07/30/08 12:04	I1080724-3	99.76186		100.46	mg/L	100.7	85	115			
L70525-01AS	AS	07/30/08 12:11	I1080724-3	99.76186	4.4	111.48	mg/L	107.3	85	115			
L70525-01ASD	ASD	07/30/08 12:14	I1080724-3	99.76186	4.4	111.84	mg/L	107.7	85	115	0.32	20	

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248378</b>													
WG248378PBW	PBW	07/18/08 14:05				U	mg/L		-20	20			
WG248378LCSW	LCSW	07/18/08 14:07	PCN30198	260		282	mg/L	108.5	80	120			
L70567-05DUP	DUP	07/18/08 14:36			1810	1820	mg/L				0.6	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248816</b>													
WG248816ICV	ICV	07/26/08 17:42	I1080717-3	100		98.61	mg/L	98.6	95	105			
WG248816ICB	ICB	07/26/08 17:46				U	mg/L		-0.9	0.9			
WG248816LFB	LFB	07/26/08 17:58	I1080724-3	98.21624		107.62	mg/L	109.6	85	115			
L70525-01AS	AS	07/26/08 18:04	I1080724-3	98.21624	38.6	147.74	mg/L	111.1	85	115			
L70525-01ASD	ASD	07/26/08 18:08	I1080724-3	98.21624	38.6	148.55	mg/L	111.9	85	115	0.55	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70525**

Project ID: 8720000 T2.2

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248915</b>													
WG248915ICV	ICV	07/28/08 18:31	WI080521-1	50.1		54.03	mg/L	107.8	90	110			
WG248915ICB	ICB	07/28/08 18:50				.71	mg/L		-1.5	1.5			
WG248915LFB	LFB	07/28/08 19:08	WI080702-9	30		29.5	mg/L	98.3	90	110			
L70469-01DUP	DUP	07/28/08 19:44			4310	4541	mg/L				5.2	20	
L70469-02AS	AS	07/29/08 12:26	WI080702-9	600	750	1249	mg/L	83.2	90	110			M2

Hydro Geo Chem, Inc.

ACZ Project ID: **L70525**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70525-01</b>	WG248915	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248324	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
<b>L70525-02</b>	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
<b>L70525-03</b>	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
<b>L70525-04</b>	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

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Hydro Geo Chem, Inc.

ACZ Project ID: **L70525**

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No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000 T2.2

ACZ Project ID: L70525  
 Date Received: 7/17/2008  
 Received By:  
 Date Printed: 7/17/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
1837	1.8	17

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000 T2.2

ACZ Project ID: L70525  
 Date Received: 7/17/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70525-01	WEISKOPF		Y									<input type="checkbox"/>
L70525-02	MOORE									X		<input type="checkbox"/>
L70525-03	ZANDER									X		<input type="checkbox"/>
L70525-04	KEEFER									X		<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

L970525

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc
E-mail: dan@s@hgcinc.com

Address: 51 W. Wetmore Rd.
Tucson, AZ 85705
Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc

E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com

Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCOB-GW
Project/PO #: 8720000 T2.2
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

Table with columns for # of Containers, Matrix, and various analysis results. Includes handwritten entries for FMCOB-GW and SO4.

Table with columns for SAMPLE IDENTIFICATION, DATE:TIME, and Matrix. Includes entries for WEISKOPF, MOORE, ZANDER, and KEEFER.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Table with columns for FULFILLED BY, DATE:TIME, RECEIVED BY, and DATE:TIME. Includes handwritten signatures and dates.



July 30, 2008

Report to:  
Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

Bill to:  
Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000T2.2  
ACZ Project ID: L70502

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 16, 2008. This project has been assigned to ACZ's project number, L70502. Please reference this number in all future inquiries.

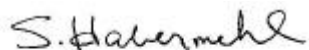
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70502. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 30, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2

Sample ID: ANDERSON

ACZ Sample ID: **L70502-01**

Date Sampled: 07/14/08 10:30

Date Received: 07/16/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	472			mg/L	5	30	07/27/08 21:29	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2

Sample ID: HOBAN

ACZ Sample ID: **L70502-02**

Date Sampled: 07/14/08 11:47

Date Received: 07/16/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	690			mg/L	10	50	07/27/08 21:47	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2

Sample ID: CHAMBERS

ACZ Sample ID: **L70502-03**

Date Sampled: 07/14/08 12:35

Date Received: 07/16/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	5.8			mg/L	0.5	3	07/25/08 20:18	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2

Sample ID: FRANCO

ACZ Sample ID: **L70502-04**

Date Sampled: 07/14/08 15:30

Date Received: 07/16/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	680			mg/L	10	50	07/27/08 22:05	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2

Sample ID: HOWARD

ACZ Sample ID: **L70502-05**

Date Sampled: 07/14/08 16:12

Date Received: 07/16/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	610			mg/L	10	50	07/27/08 22:59	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2  
Sample ID: TVI236

ACZ Sample ID: **L70502-06**  
Date Sampled: 07/15/08 08:25  
Date Received: 07/16/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	70.4			mg/L	0.2	1	07/24/08 20:34	aeH
Magnesium, dissolved	M200.7 ICP	9.3			mg/L	0.2	1	07/24/08 20:34	aeH
Potassium, dissolved	M200.7 ICP	1.8	B	*	mg/L	0.3	2	07/24/08 20:34	aeH
Sodium, dissolved	M200.7 ICP	26.3			mg/L	0.3	2	07/24/08 20:34	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		161			mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3		11	B		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity		173		*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.9			%			07/29/08 0:00	calc
Sum of Anions		5.1			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		5.4			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	23.5		*	mg/L	0.5	3	07/25/08 21:49	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	07/25/08 21:49	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.46			mg/L	0.06	0.3	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.46			mg/L	0.06	0.3	07/16/08 19:17	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:42	pjb
Residue, Filterable (TDS) @180C	SM2540C	310			mg/L	10	20	07/18/08 9:19	tbd
Sulfate	300.0 - Ion Chromatography	37.6			mg/L	0.5	3	07/25/08 21:49	aml
TDS (calculated)	Calculation	292			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.06						07/29/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2  
Sample ID: TVI875

ACZ Sample ID: **L70502-07**  
Date Sampled: 07/15/08 09:00  
Date Received: 07/16/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	131			mg/L	0.2	1	07/24/08 20:38	aeH
Magnesium, dissolved	M200.7 ICP	17.4			mg/L	0.2	1	07/24/08 20:38	aeH
Potassium, dissolved	M200.7 ICP	2.8		*	mg/L	0.3	2	07/24/08 20:38	aeH
Sodium, dissolved	M200.7 ICP	39.6			mg/L	0.3	2	07/24/08 20:38	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		148			mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3		11	B		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity		160		*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			07/29/08 0:00	calc
Sum of Anions		9.7			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		9.7			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	20.2		*	mg/L	0.5	3	07/25/08 22:07	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	07/25/08 22:07	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.00			mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.00			mg/L	0.02	0.1	07/16/08 18:44	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:44	pjb
Residue, Filterable (TDS) @180C	SM2540C	640			mg/L	10	20	07/18/08 9:21	tbd
Sulfate	300.0 - Ion Chromatography	274			mg/L	5	30	07/27/08 23:17	aml
TDS (calculated)	Calculation	598			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						07/29/08 0:00	calc

Arizona license number: AZ0102



**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2  
Sample ID: COOPER C

ACZ Sample ID: **L70502-08**  
Date Sampled: 07/15/08 10:18  
Date Received: 07/16/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	386			mg/L	0.2	1	07/24/08 20:49	aeH
Magnesium, dissolved	M200.7 ICP	58.8			mg/L	0.2	1	07/24/08 20:49	aeH
Potassium, dissolved	M200.7 ICP	5.8		*	mg/L	0.3	2	07/24/08 20:49	aeH
Sodium, dissolved	M200.7 ICP	43.3			mg/L	0.3	2	07/24/08 20:49	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		235			mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity		235		*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-3.5			%			07/29/08 0:00	calc
Sum of Anions		28.1			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		26.2			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	46.5		*	mg/L	0.5	3	07/25/08 22:25	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/25/08 22:25	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.24			mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.24			mg/L	0.02	0.1	07/16/08 18:47	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:47	pjb
Residue, Filterable (TDS) @180C	SM2540C	1860			mg/L	10	20	07/18/08 9:25	tbd
Sulfate	300.0 - Ion Chromatography	1040			mg/L	10	50	07/27/08 23:35	aml
TDS (calculated)	Calculation	1740			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						07/29/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2  
Sample ID: MCCONNELL26

ACZ Sample ID: **L70502-09**  
Date Sampled: 07/15/08 11:30  
Date Received: 07/16/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	700			mg/L	10	50	07/27/08 23:53	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2  
Sample ID: GARNER 635

ACZ Sample ID: **L70502-10**  
Date Sampled: 07/15/08 14:10  
Date Received: 07/16/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	37.6			mg/L	0.2	1	07/24/08 20:52	aeH
Magnesium, dissolved	M200.7 ICP	7.8			mg/L	0.2	1	07/24/08 20:52	aeH
Potassium, dissolved	M200.7 ICP	2.5		*	mg/L	0.3	2	07/24/08 20:52	aeH
Sodium, dissolved	M200.7 ICP	60.2			mg/L	0.3	2	07/24/08 20:52	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		163			mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3		16	B		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity		179		*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.0			%			07/29/08 0:00	calc
Sum of Anions		4.8			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		5.2			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	13.5		*	mg/L	0.5	3	07/25/08 23:38	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	07/25/08 23:38	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.92			mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.92			mg/L	0.02	0.1	07/16/08 18:48	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	300			mg/L	10	20	07/18/08 9:27	tbd
Sulfate	300.0 - Ion Chromatography	37.4			mg/L	0.5	3	07/25/08 23:38	aml
TDS (calculated)	Calculation	281			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						07/29/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2  
Sample ID: DUP071508

ACZ Sample ID: **L70502-11**  
Date Sampled: 07/15/08 00:00  
Date Received: 07/16/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	398			mg/L	0.2	1	07/24/08 20:56	aeH
Magnesium, dissolved	M200.7 ICP	61.7			mg/L	0.2	1	07/24/08 20:56	aeH
Potassium, dissolved	M200.7 ICP	6.1		*	mg/L	0.3	2	07/24/08 20:56	aeH
Sodium, dissolved	M200.7 ICP	46.2			mg/L	0.3	2	07/24/08 20:56	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		234			mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity		234		*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.5			%			07/29/08 0:00	calc
Sum of Anions		26.4			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		27.2			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	46.4		*	mg/L	0.5	3	07/25/08 23:56	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	07/25/08 23:56	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.25			mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.25			mg/L	0.02	0.1	07/16/08 18:49	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:49	pjb
Residue, Filterable (TDS) @180C	SM2540C	1860			mg/L	10	20	07/18/08 9:29	tbd
Sulfate	300.0 - Ion Chromatography	960			mg/L	10	50	07/28/08 0:12	aml
TDS (calculated)	Calculation	1670			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.11						07/29/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2  
Sample ID: EQB071508

ACZ Sample ID: **L70502-12**  
Date Sampled: 07/15/08 00:00  
Date Received: 07/16/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/24/08 21:00	aeH
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/24/08 21:00	aeH
Potassium, dissolved	M200.7 ICP		U	*	mg/L	0.3	2	07/24/08 21:00	aeH
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/24/08 21:00	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity			U	*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			07/29/08 0:00	calc
Sum of Anions			U		meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations			U		meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography		U	*	mg/L	0.5	3	07/26/08 0:14	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/26/08 0:14	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.02	B		mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B		mg/L	0.02	0.1	07/16/08 18:54	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:54	pjb
Residue, Filterable (TDS) @180C	SM2540C		U		mg/L	10	20	07/18/08 9:31	tbd
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	07/26/08 0:14	aml
TDS (calculated)	Calculation		U		mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						07/29/08 0:00	calc

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000T2.2  
Sample ID: FB071508

ACZ Sample ID: **L70502-13**  
Date Sampled: 07/15/08 00:00  
Date Received: 07/16/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1.2			mg/L	0.2	1	07/24/08 21:03	aeH
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/24/08 21:03	aeH
Potassium, dissolved	M200.7 ICP		U	*	mg/L	0.3	2	07/24/08 21:03	aeH
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/24/08 21:03	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity			U	*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			07/29/08 0:00	calc
Sum of Anions			U		meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations			U		meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography		U	*	mg/L	0.5	3	07/26/08 0:32	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/26/08 0:32	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.02	B		mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B		mg/L	0.02	0.1	07/16/08 18:55	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:55	pjb
Residue, Filterable (TDS) @180C	SM2540C		U		mg/L	10	20	07/18/08 9:33	tbd
Sulfate	300.0 - Ion Chromatography	0.6	B		mg/L	0.5	3	07/26/08 0:32	aml
TDS (calculated)	Calculation		U		mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						07/29/08 0:00	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

<i>B</i>	Analyte concentration detected at a value between MDL and PQL.
<i>H</i>	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
<i>U</i>	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70502**

Project ID: 8720000T2.2

**Alkalinity as CaCO3**

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248282</b>													
WG248282PBW2	PBW	07/17/08 18:40				U	mg/L		-20	20			
WG248282LCSW5	LCSW	07/17/08 18:53	WC080702-8	820		791.1	mg/L	96.5	90	110			
WG248282PBW3	PBW	07/17/08 21:25				U	mg/L		-20	20			
WG248282LCSW8	LCSW	07/17/08 21:38	WC080702-8	820		790.4	mg/L	96.4	90	110			
WG248282PBW4	PBW	07/17/08 23:36				U	mg/L		-20	20			
WG248282LCSW11	LCSW	07/17/08 23:48	WC080702-8	820		792.4	mg/L	96.6	90	110			
L70502-13DUP	DUP	07/18/08 1:57			U	U	mg/L				0	20	RA
WG248282LCSW14	LCSW	07/18/08 2:09	WC080702-8	820		791.2	mg/L	96.5	90	110			

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248739</b>													
WG248739ICV	ICV	07/24/08 19:58	I1080717-3	100		98.1	mg/L	98.1	95	105			
WG248739ICB	ICB	07/24/08 20:02				U	mg/L		-0.6	0.6			
WG248739LFB	LFB	07/24/08 20:16	I1080708-3	67.97008		66.86	mg/L	98.4	85	115			
L70501-02AS	AS	07/24/08 20:23	I1080708-3	67.97008	57.2	125.76	mg/L	100.9	85	115			
L70501-02ASD	ASD	07/24/08 20:27	I1080708-3	67.97008	57.2	127.26	mg/L	103.1	85	115	1.19	20	

**Chloride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248754</b>													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-1.5	1.5			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	30		30.71	mg/L	102.4	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	30	U	28.3	mg/L	94.3	90	110			
L70319-01DUP	DUP	07/25/08 9:28			7.1	7.1	mg/L				0	20	
L70502-04AS	AS	07/25/08 20:55	WI080702-9	30	22.2	48.66	mg/L	88.2	90	110			M2
L70502-04DUP	DUP	07/25/08 21:13			22.2	22.11	mg/L				0.4	20	

**Fluoride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248754</b>													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	4		3.92	mg/L	98	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-0.3	0.3			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	1.5		1.48	mg/L	98.7	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	1.5	U	1.4	mg/L	93.3	90	110			
L70319-01DUP	DUP	07/25/08 9:28			7.8	7.79	mg/L				0.1	20	
L70502-04AS	AS	07/25/08 20:55	WI080702-9	1.5	.2	1.5	mg/L	86.7	90	110			M2
L70502-04DUP	DUP	07/25/08 21:13			.2	.18	mg/L				10.5	20	RA



Hydro Geo Chem, Inc.

ACZ Project ID: **L70502**

Project ID: 8720000T2.2

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248739</b>													
WG248739ICV	ICV	07/24/08 19:58	I1080717-3	100		99.92	mg/L	99.9	95	105			
WG248739ICB	ICB	07/24/08 20:02				U	mg/L		-0.6	0.6			
WG248739LFB	LFB	07/24/08 20:16	I1080708-3	49.96908		50.47	mg/L	101	85	115			
L70501-02AS	AS	07/24/08 20:23	I1080708-3	49.96908	55.6	105.97	mg/L	100.8	85	115			
L70501-02ASD	ASD	07/24/08 20:27	I1080708-3	49.96908	55.6	108.81	mg/L	106.5	85	115	2.64	20	

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248236</b>													
WG248236ICV	ICV	07/16/08 18:35	WI080613-1	2.416		2.487	mg/L	102.9	90	110			
WG248236ICB	ICB	07/16/08 18:36				U	mg/L		-0.06	0.06			
WG248236LFB	LFB	07/16/08 18:40	WI080312-1	2		2.054	mg/L	102.7	90	110			
L70502-07DUP	DUP	07/16/08 18:45			3	3.011	mg/L				0.4	20	
L70502-06AS	AS	07/16/08 19:19	WI080312-1	6	3.46	9.683	mg/L	103.7	90	110			

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248236</b>													
WG248236ICV	ICV	07/16/08 18:35	WI080613-1	.609		.584	mg/L	95.9	90	110			
WG248236ICB	ICB	07/16/08 18:36				U	mg/L		-0.03	0.03			
WG248236LFB	LFB	07/16/08 18:40	WI080312-1	1		1.014	mg/L	101.4	90	110			
L70502-06AS	AS	07/16/08 18:43	WI080312-1	1	U	.976	mg/L	97.6	90	110			
L70502-07DUP	DUP	07/16/08 18:45			U	U	mg/L				0	20	RA

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248739</b>													
WG248739ICV	ICV	07/24/08 19:58	I1080717-3	20		19.88	mg/L	99.4	95	105			
WG248739ICB	ICB	07/24/08 20:02				U	mg/L		-0.9	0.9			
WG248739LFB	LFB	07/24/08 20:16	I1080708-3	99.76186		100.33	mg/L	100.6	85	115			
L70501-02AS	AS	07/24/08 20:23	I1080708-3	99.76186	11.5	121.49	mg/L	110.3	85	115			
L70501-02ASD	ASD	07/24/08 20:27	I1080708-3	99.76186	11.5	126.69	mg/L	115.5	85	115	4.19	20	MA

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248329</b>													
WG248329PBW	PBW	07/18/08 9:00				U	mg/L		-20	20			
WG248329LCSW	LCSW	07/18/08 9:01	PCN30198	260		284	mg/L	109.2	80	120			
L70502-07DUP	DUP	07/18/08 9:23			640	644	mg/L				0.6	20	
L70521-10DUP	DUP	07/18/08 9:44			720	698	mg/L				3.1	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70502**

Project ID: 8720000T2.2

**Sodium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248739</b>													
WG248739ICV	ICV	07/24/08 19:58	I1080717-3	100		98.17	mg/L	98.2	95	105			
WG248739ICB	ICB	07/24/08 20:02				U	mg/L		-0.9	0.9			
WG248739LFB	LFB	07/24/08 20:16	I1080708-3	98.21624		98.84	mg/L	100.6	85	115			
L70501-02AS	AS	07/24/08 20:23	I1080708-3	98.21624	122	216.05	mg/L	95.8	85	115			
L70501-02ASD	ASD	07/24/08 20:27	I1080708-3	98.21624	122	224.19	mg/L	104	85	115	3.7	20	

**Sulfate**

300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248754</b>													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	50.1		50.24	mg/L	100.3	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-1.5	1.5			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	30		32.04	mg/L	106.8	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	30	3.9	33.36	mg/L	98.2	90	110			
L70319-01DUP	DUP	07/26/08 1:09			149	154.2	mg/L				3.4	20	
L70502-04AS	AS	07/27/08 22:23	WI080702-9	600	680	1242	mg/L	93.7	90	110			
L70502-04DUP	DUP	07/27/08 22:41			680	774	mg/L				12.9	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70502**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70502-06</b>	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	
<b>L70502-07</b>	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	
<b>L70502-08</b>	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70502**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70502-10</b>	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70502-11</b>	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
<b>L70502-12</b>	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: **L70502**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L70502-13</b>	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	

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Hydro Geo Chem, Inc.

ACZ Project ID: **L70502**

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No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000T2.2

ACZ Project ID: L70502  
 Date Received: 7/16/2008  
 Received By:  
 Date Printed: 7/16/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
2140	0.8	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000T2.2

ACZ Project ID: L70502  
 Date Received: 7/16/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70502-01	ANDERSON									X		<input type="checkbox"/>
L70502-02	HOBAN									X		<input type="checkbox"/>
L70502-03	CHAMBERS									X		<input type="checkbox"/>
L70502-04	FRANCO									X		<input type="checkbox"/>
L70502-05	HOWARD									X		<input type="checkbox"/>
L70502-06	TVI236		Y									<input type="checkbox"/>
L70502-07	TVI875		Y									<input type="checkbox"/>
L70502-08	COOPER C		Y									<input type="checkbox"/>
L70502-09	MCCONNELL26									X		<input type="checkbox"/>
L70502-10	GARNER 635		Y									<input type="checkbox"/>
L70502-11	DUP071508		Y									<input type="checkbox"/>
L70502-12	EQB071508		Y									<input type="checkbox"/>
L70502-13	FB071508		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH_Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_





Laboratories, Inc.

L70502

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com

Address: 51 W. Wetmore Rd
Tulson, AZ 85705
Telephone: (520) 293-1500 x132

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.

E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com

Address: 51 W. Wetmore Rd.
Tulson AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 8720000 T2.2
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

Table with columns for # of Containers, FMCQB-GW, SO4, and analysis results (X marks).

Table with columns for SAMPLE IDENTIFICATION, DATE:TIME, Matrix, and analysis results (X marks).

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Table with columns for RELINQUISHED BY, DATE:TIME, RECEIVED BY, DATE:TIME.



Laboratories, Inc.

L70502

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name:
Company: Same as Page 1
E-mail:

Address:
Telephone:

Copy of Report to:

Name:
Company:

E-mail:
Telephone:

Invoice to:

Name:
Company: Same as Page 1
E-mail:

Address:
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES NO [X]

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #:
Reporting state for compliance testing:
Sampler's Name:
Are any samples NRC licensable material?

Table with columns for # of Containers and analysis results. Row 1: 3 containers, FMCQB-GW, X.

Main data table with columns: SAMPLE IDENTIFICATION, DATE:TIME, Matrix, # of Containers, and analysis results. Rows include DUP071508, EQB071508, and FB071508.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 2 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Table for RELINQUISHED BY, DATE:TIME, RECEIVED BY, DATE:TIME. Includes handwritten signatures and dates like 7-15-08 and 7-16-08.

July 30, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

Project ID: 8720000

ACZ Project ID: L70490

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 15, 2008. This project has been assigned to ACZ's project number, L70490. Please reference this number in all future inquiries.

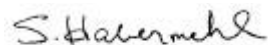
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70490. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 30, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: BMO-2008-7M

ACZ Sample ID: **L70490-01**  
Date Sampled: 07/14/08 12:15  
Date Received: 07/15/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	32.4			mg/L	0.2	1	07/25/08 17:48	aeH
Magnesium, dissolved	M200.7 ICP	11.4			mg/L	0.2	1	07/25/08 0:27	aeH
Potassium, dissolved	M200.7 ICP	2.7			mg/L	0.3	2	07/25/08 0:27	aeH
Sodium, dissolved	M200.7 ICP	60.8			mg/L	0.3	2	07/25/08 0:27	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		188			mg/L	2	20	07/21/08 0:00	td
Carbonate as CaCO3		13	B		mg/L	2	20	07/21/08 0:00	td
Hydroxide as CaCO3			U		mg/L	2	20	07/21/08 0:00	td
Total Alkalinity		201		*	mg/L	2	20	07/21/08 0:00	td
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.9			%			07/29/08 0:00	calc
Sum of Anions		5.1			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		5.3			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	10.4			mg/L	0.5	3	07/25/08 10:41	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B		mg/L	0.1	0.5	07/25/08 10:41	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.55			mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.55			mg/L	0.02	0.1	07/15/08 20:01	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	07/22/08 19:55	pjb
Residue, Filterable (TDS) @180C	SM2540C	290			mg/L	10	20	07/17/08 15:41	td
Sulfate	300.0 - Ion Chromatography	31.4			mg/L	0.5	3	07/25/08 10:41	aml
TDS (calculated)	Calculation	282			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.03						07/29/08 0:00	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70490**

Project ID: 8720000

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248454</b>													
WG248454PBW1	PBW	07/21/08 14:25				25.3	mg/L		-20	20			B4
WG248454LCSW2	LCSW	07/21/08 14:37	WC080702-8	820		786	mg/L	95.9	90	110			
L70504-07DUP	DUP	07/21/08 16:10			457	457.6	mg/L				0.1	20	
WG248454PBW2	PBW	07/21/08 17:31				U	mg/L		-20	20			
WG248454LCSW5	LCSW	07/21/08 17:44	WC080702-8	820		789.7	mg/L	96.3	90	110			
WG248454PBW3	PBW	07/21/08 20:42				U	mg/L		-20	20			
WG248454LCSW8	LCSW	07/21/08 20:55	WC080702-8	820		789.2	mg/L	96.2	90	110			
WG248454PBW4	PBW	07/22/08 0:15				U	mg/L		-20	20			
WG248454LCSW11	LCSW	07/22/08 0:27	WC080702-8	820		796.8	mg/L	97.2	90	110			
WG248454LCSW14	LCSW	07/22/08 3:39	WC080702-8	820		798.5	mg/L	97.4	90	110			

**Calcium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248802</b>													
WG248802ICV	ICV	07/25/08 17:03	I1080717-3	100		99.26	mg/L	99.3	95	105			
WG248802ICB	ICB	07/25/08 17:07				U	mg/L		-0.6	0.6			
WG248802LFB	LFB	07/25/08 17:19	I1080724-3	67.97008		77.22	mg/L	113.6	85	115			
L70485-08AS	AS	07/25/08 17:26	I1080724-3	67.97008	21.6	96.68	mg/L	110.5	85	115			
L70485-08ASD	ASD	07/25/08 17:29	I1080724-3	67.97008	21.6	93.6	mg/L	105.9	85	115	3.24	20	

**Chloride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248754</b>													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-1.5	1.5			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	30		30.71	mg/L	102.4	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	30	U	28.3	mg/L	94.3	90	110			
L70319-01DUP	DUP	07/25/08 9:28			7.1	7.1	mg/L				0	20	

**Fluoride** M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248754</b>													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	4		3.92	mg/L	98	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-0.3	0.3			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	1.5		1.48	mg/L	98.7	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	1.5	U	1.4	mg/L	93.3	90	110			
L70319-01DUP	DUP	07/25/08 9:28			7.8	7.79	mg/L				0.1	20	

**Magnesium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248737</b>													
WG248737ICV	ICV	07/24/08 22:29	I1080717-3	100		100.42	mg/L	100.4	95	105			
WG248737ICB	ICB	07/24/08 22:33				U	mg/L		-0.6	0.6			
WG248737LFB	LFB	07/24/08 22:48	I1080708-3	49.96908		53.29	mg/L	106.6	85	115			
L70485-06AS	AS	07/24/08 23:47	I1080708-3	49.96908	9.1	61.84	mg/L	105.5	85	115			
L70485-06ASD	ASD	07/24/08 23:51	I1080708-3	49.96908	9.1	62.62	mg/L	107.1	85	115	1.25	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70490**

Project ID: 8720000

**Nitrate/Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248161</b>													
WG248161ICV	ICV	07/15/08 19:25	WI080613-1	2.416		2.404	mg/L	99.5	90	110			
WG248161ICB	ICB	07/15/08 19:26				U	mg/L		-0.06	0.06			
WG248161LFB	LFB	07/15/08 19:30	WI080312-1	2		1.926	mg/L	96.3	90	110			
L70428-08AS	AS	07/15/08 20:04	WI080312-1	6	3.33	9.581	mg/L	104.2	90	110			
L70430-01DUP	DUP	07/15/08 20:06			4.27	4.23	mg/L				0.9	20	

**Nitrite as N, dissolved** M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248605</b>													
WG248605ICV	ICV	07/22/08 19:43	WI080613-1	.609		.58	mg/L	95.2	90	110			
WG248605ICB	ICB	07/22/08 19:44				U	mg/L		-0.03	0.03			
WG248605LFB1	LFB	07/22/08 19:49	WI080312-1	1		1.007	mg/L	100.7	90	110			
L70469-02AS	AS	07/22/08 19:51	WI080312-1	1	U	.998	mg/L	99.8	90	110			
L70469-03DUP	DUP	07/22/08 19:54			U	U	mg/L				0	20	RA
WG248605LFB2	LFB	07/22/08 20:28	WI080312-1	1		1.011	mg/L	101.1	90	110			

**Potassium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248737</b>													
WG248737ICV	ICV	07/24/08 22:29	I1080717-3	20		20.89	mg/L	104.5	95	105			
WG248737ICB	ICB	07/24/08 22:33				U	mg/L		-0.9	0.9			
WG248737LFB	LFB	07/24/08 22:48	I1080708-3	99.76186		110.6	mg/L	110.9	85	115			
L70485-06AS	AS	07/24/08 23:47	I1080708-3	99.76186	.5	113.63	mg/L	113.4	85	115			
L70485-06ASD	ASD	07/24/08 23:51	I1080708-3	99.76186	.5	114.37	mg/L	114.1	85	115	0.65	20	

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248309</b>													
WG248309PBW	PBW	07/17/08 15:30				10	mg/L		-20	20			
WG248309LCSW	LCSW	07/17/08 15:31	PCN30198	260		272	mg/L	104.6	80	120			
L70504-05DUP	DUP	07/17/08 15:53			1080	1072	mg/L				0.7	20	

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248737</b>													
WG248737ICV	ICV	07/24/08 22:29	I1080717-3	100		102.8	mg/L	102.8	95	105			
WG248737ICB	ICB	07/24/08 22:33				U	mg/L		-0.9	0.9			
WG248737LFB	LFB	07/24/08 22:48	I1080708-3	98.21624		107.38	mg/L	109.3	85	115			
L70485-06AS	AS	07/24/08 23:47	I1080708-3	98.21624	9	115.3	mg/L	108.2	85	115			
L70485-06ASD	ASD	07/24/08 23:51	I1080708-3	98.21624	9	116.13	mg/L	109.1	85	115	0.72	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70490**

Project ID: 8720000

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248754</b>													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	50.1		50.24	mg/L	100.3	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-1.5	1.5			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	30		32.04	mg/L	106.8	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	30	3.9	33.36	mg/L	98.2	90	110			
L70319-01DUP	DUP	07/26/08 1:09			149	154.2	mg/L				3.4	20	



Hydro Geo Chem, Inc.

ACZ Project ID: **L70490**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70490-01	WG248605	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248454	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70490**

No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70490  
 Date Received: 7/15/2008  
 Received By:  
 Date Printed: 7/15/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6465	0.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L70490  
 Date Received: 7/15/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70490-01	BMO-2008-7M		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_



Laboratories, Inc.

L70490

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HGC, Inc
E-mail: dan@hgcinc.com

Address: 51 West Wetmore, Ste. 100
Tucson, AZ 85705
Telephone: (520) 293-1500

Copy of Report to:

Name: N/A
Company: N/A

E-mail: N/A
Telephone: N/A

Invoice to:

Name:
Company:
E-mail:

Address:
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES [ ]
NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: FMCQB-GW
Project/PO #: 872000
Reporting state for compliance testing: AZ
Sampler's Name: NJ Babb
Are any samples NRC licensable material?

Table with columns for # of Containers, Matrix, and multiple analysis columns. Row 1: 3, GW, X

SAMPLE IDENTIFICATION

DATE:TIME

Matrix

Table with columns for Sample ID, Date/Time, and Matrix. Row 1: BMO-2008-7M, 7-14-08/12:15, GW

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

pH = 7.63
MS = 500
TOC = 77.4 %

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:

DATE:TIME

RECEIVED BY:

DATE:TIME

NJ Babb 7-14-08/13:00 WPL 7-15-08 10:02

**Hydro Geo Chem, Inc.**

Project ID: 8720000,T2.3  
Sample ID: BMO-2008-6M

ACZ Sample ID: **L70440-01**  
Date Sampled: 07/10/08 12:30  
Date Received: 07/11/08  
Sample Matrix: Ground Water

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	104		*	mg/L	0.2	1	07/23/08 17:29	aeH
Magnesium, dissolved	M200.7 ICP	17.9		*	mg/L	0.2	1	07/23/08 17:29	aeH
Potassium, dissolved	M200.7 ICP	3.6		*	mg/L	0.3	2	07/23/08 17:29	aeH
Sodium, dissolved	M200.7 ICP	32.5			mg/L	0.3	2	07/23/08 17:29	aeH

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		144			mg/L	2	20	07/14/08 0:00	gkj
Carbonate as CaCO3		9	B		mg/L	2	20	07/14/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/14/08 0:00	gkj
Total Alkalinity		153		*	mg/L	2	20	07/14/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.5			%			07/28/08 0:00	calc
Sum of Anions		7.4			meq/L	0.1	0.5	07/28/08 0:00	calc
Sum of Cations		8.1			meq/L	0.1	0.5	07/28/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	15.8		*	mg/L	0.5	3	07/25/08 5:15	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	07/25/08 5:15	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.98			mg/L	0.02	0.1	07/28/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.98		*	mg/L	0.02	0.1	07/11/08 20:30	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/11/08 20:30	pjb
Residue, Filterable (TDS) @180C	SM2540C	480			mg/L	10	20	07/15/08 16:50	ear
Sulfate	300.0 - Ion Chromatography	182		*	mg/L	3	10	07/25/08 18:12	aml
TDS (calculated)	Calculation	460			mg/L	10	50	07/28/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						07/28/08 0:00	calc

Arizona license number: AZ0102

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L70440**

Project ID: 8720000,T2.3

**Alkalinity as CaCO3**

SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248028</b>													
WG248028PBW2	PBW	07/14/08 16:16				U	mg/L		-20	20			
WG248028LCSW5	LCSW	07/14/08 16:28	WC080702-8	820		786.3	mg/L	95.9	90	110			
WG248028PBW3	PBW	07/14/08 19:20				U	mg/L		-20	20			
WG248028LCSW8	LCSW	07/14/08 19:32	WC080702-8	820		785	mg/L	95.7	90	110			
L70446-01DUP	DUP	07/14/08 20:45			U	U	mg/L				0	20	RA
WG248028PBW4	PBW	07/14/08 22:24				U	mg/L		-20	20			
WG248028LCSW11	LCSW	07/14/08 22:37	WC080702-8	820		790	mg/L	96.3	90	110			
WG248028LCSW14	LCSW	07/15/08 2:21	WC080702-8	820		791.9	mg/L	96.6	90	110			

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248576</b>													
WG248576ICV	ICV	07/23/08 16:53	I1080717-3	100		95.23	mg/L	95.2	95	105			
WG248576ICB	ICB	07/23/08 16:57				U	mg/L		-0.6	0.6			
WG248576LFB	LFB	07/23/08 17:11	I1080708-3	67.97008		72.72	mg/L	107	85	115			
L70432-03AS	AS	07/23/08 17:18	I1080708-3	67.97008	2.9	79.23	mg/L	112.3	85	115			
L70432-03ASD	ASD	07/23/08 17:22	I1080708-3	67.97008	2.9	81.95	mg/L	116.3	85	115	3.38	20	MA

**Chloride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248704</b>													
WG248704ICV	ICV	07/24/08 20:11	WI080521-1	19.98		20.46	mg/L	102.4	90	110			
WG248704ICB	ICB	07/24/08 20:29				U	mg/L		-1.5	1.5			
WG248704LFB	LFB	07/24/08 20:48	WI080702-9	30		30.27	mg/L	100.9	90	110			
L70408-15AS	AS	07/25/08 2:50	WI080702-9	600	80	528	mg/L	74.7	90	110			M2
L70408-15DUP	DUP	07/25/08 3:08			80	79	mg/L				1.3	20	RA

**Fluoride**

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248704</b>													
WG248704ICV	ICV	07/24/08 20:11	WI080521-1	4		3.98	mg/L	99.5	90	110			
WG248704ICB	ICB	07/24/08 20:29				U	mg/L		-0.3	0.3			
WG248704LFB	LFB	07/24/08 20:48	WI080702-9	1.5		1.47	mg/L	98	90	110			
L70408-15AS	AS	07/25/08 2:50	WI080702-9	30	U	21.5	mg/L	71.7	90	110			M2
L70408-15DUP	DUP	07/25/08 3:08			U	U	mg/L				0	20	RA

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248576</b>													
WG248576ICV	ICV	07/23/08 16:53	I1080717-3	100		97.68	mg/L	97.7	95	105			
WG248576ICB	ICB	07/23/08 16:57				U	mg/L		-0.6	0.6			
WG248576LFB	LFB	07/23/08 17:11	I1080708-3	49.96908		54.71	mg/L	109.5	85	115			
L70432-03AS	AS	07/23/08 17:18	I1080708-3	49.96908	.5	57.79	mg/L	114.7	85	115			
L70432-03ASD	ASD	07/23/08 17:22	I1080708-3	49.96908	.5	58.56	mg/L	116.2	85	115	1.32	20	MA



Hydro Geo Chem, Inc.

ACZ Project ID: **L70440**

Project ID: 8720000,T2.3

**Nitrate/Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG247990</b>													
WG247990ICV	ICV	07/11/08 18:43	WI080613-1	2.416		2.421	mg/L	100.2	90	110			
WG247990ICB	ICB	07/11/08 18:45				U	mg/L		-0.06	0.06			
<b>WG247992</b>													
WG247992ICV	ICV	07/11/08 20:22	WI080613-1	2.416		2.541	mg/L	105.2	90	110			
WG247992ICB	ICB	07/11/08 20:23				U	mg/L		-0.06	0.06			
WG247992LFB	LFB	07/11/08 20:24	WI080312-1	2		2.09	mg/L	104.5	90	110			
L70428-12AS	AS	07/11/08 20:36	WI080312-1	4	2.13	6.594	mg/L	111.6	90	110			M1
L70428-13DUP	DUP	07/11/08 20:42			9.4	9.44	mg/L				0.4	20	

**Nitrite as N, dissolved**

M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG247990</b>													
WG247990ICV	ICV	07/11/08 18:43	WI080613-1	.609		.57	mg/L	93.6	90	110			
WG247990ICB	ICB	07/11/08 18:45				U	mg/L		-0.03	0.03			
<b>WG247992</b>													
WG247992ICV	ICV	07/11/08 20:22	WI080613-1	.609		.569	mg/L	93.4	90	110			
WG247992ICB	ICB	07/11/08 20:23				U	mg/L		-0.03	0.03			
WG247992LFB	LFB	07/11/08 20:24	WI080312-1	1		.983	mg/L	98.3	90	110			
L70428-12AS	AS	07/11/08 20:27	WI080312-1	1	.04	1.059	mg/L	101.9	90	110			
L70428-13DUP	DUP	07/11/08 20:29			.03	.019	mg/L				44.9	20	RA

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248576</b>													
WG248576ICV	ICV	07/23/08 16:53	I1080717-3	20		19.9	mg/L	99.5	95	105			
WG248576ICB	ICB	07/23/08 16:57				U	mg/L		-0.9	0.9			
WG248576LFB	LFB	07/23/08 17:11	I1080708-3	99.76186		110.72	mg/L	111	85	115			
L70432-03AS	AS	07/23/08 17:18	I1080708-3	99.76186	U	116.08	mg/L	116.4	85	115			M1
L70432-03ASD	ASD	07/23/08 17:22	I1080708-3	99.76186	U	116.68	mg/L	117	85	115	0.52	20	M1

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248146</b>													
WG248146PBW	PBW	07/15/08 16:30				U	mg/L		-20	20			
WG248146LCSW	LCSW	07/15/08 16:31	PCN30198	260		250	mg/L	96.2	80	120			
L70450-04DUP	DUP	07/15/08 16:59			5460	5492	mg/L				0.6	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70440**

Project ID: 8720000,T2.3

**Sodium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248576</b>													
WG248576ICV	ICV	07/23/08 16:53	I1080717-3	100		98.05	mg/L	98.1	95	105			
WG248576ICV	ICV	07/23/08 16:53	I1080717-3	100		96.7	mg/L	96.7	95	105			
WG248576ICB	ICB	07/23/08 16:57				U	mg/L		-6	6			
WG248576ICB	ICB	07/23/08 16:57				U	mg/L		-0.9	0.9			
WG248576LFB	LFB	07/23/08 17:11	I1080708-3	98.21624		106.2	mg/L	108.1	85	115			
WG248576LFB	LFB	07/23/08 17:11	I1080708-3	98.21624		108.15	mg/L	110.1	85	115			
L70432-03AS	AS	07/23/08 17:18	I1080708-3	98.21624	1.1	113.33	mg/L	114.3	85	115			
L70432-03ASD	ASD	07/23/08 17:22	I1080708-3	98.21624	1.1	113.92	mg/L	114.9	85	115	0.52	20	

**Sulfate**

300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG248704</b>													
WG248704ICV	ICV	07/24/08 20:11	WI080521-1	50.1		50.7	mg/L	101.2	90	110			
WG248704ICB	ICB	07/24/08 20:29				U	mg/L		-1.5	1.5			
WG248704LFB	LFB	07/24/08 20:48	WI080702-9	30		32.02	mg/L	106.7	90	110			
L67329-26DUP	DUP	07/24/08 22:18			13.9	16.17	mg/L				15.1	20	
L70408-15AS	AS	07/25/08 2:50	WI080702-9	600	890	1248	mg/L	59.7	90	110			M2
L70408-15DUP	DUP	07/25/08 3:08			890	902	mg/L				1.3	20	

Hydro Geo Chem, Inc.

ACZ Project ID: **L70440**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70440-01	WG248576	Calcium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Magnesium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Potassium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG248704	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG247992	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248704	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
WG248028	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).	

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Hydro Geo Chem, Inc.

ACZ Project ID: **L70440**

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No certification qualifiers associated with this analysis

Hydro Geo Chem, Inc.  
 8720000,T2.3

ACZ Project ID: L70440  
 Date Received: 7/11/2008  
 Received By:  
 Date Printed: 7/11/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6444	1.1	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000,T2.3

ACZ Project ID: L70440  
 Date Received: 7/11/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L70440-01	BMO-2008-GM		Y									<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: \_\_\_\_\_

July 28, 2008

## Report to:

Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Road Suite 101  
Tuscon, AZ 85705

## Bill to:

Accounts Payable  
Hydro Geo Chem, Inc.  
P. O. Box 97220  
Phoenix, AZ 85060

Project ID: 8720000,T2.3

ACZ Project ID: L70440

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 11, 2008. This project has been assigned to ACZ's project number, L70440. Please reference this number in all future inquiries.

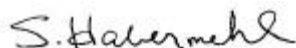
All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70440. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 28, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.





Laboratories, Inc.

L70440

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: HGC, Inc.
E-mail: dans@hscinc.com

Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: (520) 293-1500

Copy of Report to:

Name: [Redacted]
Company: HGC, Inc.

E-mail:
Telephone:

Invoice to:

Name:
Company: Same as above?
E-mail:

Address:
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Table with columns: Quote #, Project/PO #, Reporting state, Sampler's Name, Matrix, # of Containers, and analysis results. Includes handwritten entries like '8720000, T 2.3', 'AZ', 'NS. Babb', and 'FMCA-B-GW'.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

T°C @ sample time = 22.1 °C
MS @ sample time = 702
Note pH meter malfunction

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Table with columns: RELINQUISHED BY, DATE:TIME, RECEIVED BY, DATE:TIME. Includes signatures and dates like '7-10-08/12:35' and '7-10-08/14:35'.



Dan Simpson  
Hydro Geo Chem, Inc.  
51 West Wetmore Rd. Suite 101  
Tucson, AZ 85705

October 06, 2008

Cc: Jim Norris

Project ID: 8720000  
ACZ Project ID: L72036

Dan Simpson:

Enclosed are revised analytical reports for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on September 25, 2008 and reported on October 02, 2008. Refer to the case narrative for an explanation of the changes. This project was assigned to ACZ's project number, L72036. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72036. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all the requirements of NELAC.

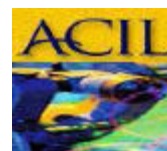
This report should be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 02, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years. Please notify your Project Manager if you have other needs.

If you have any questions, please contact your Project Manager or Customer Service Representative.



Scott Habermehl has reviewed  
and approved this report.



Hydro Geo Chem, Inc.

October 06, 2008

Project ID: 8720000

ACZ Project ID: L72036

**Sample Receipt**

ACZ Laboratories, Inc. (ACZ) received 6 ground water samples from Hydro Geo Chem, Inc. on September 25, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L72036. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

**Holding Times**

Any analyses not performed within EPA recommended holding times have been qualified with an "H" flag.

**Sample Analysis**

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

This project has been revised to edit the sample identification on L72036-05 and -06. They were originally reported switched.

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: ROGERS 803

ACZ Sample ID: **L72036-01**  
Date Sampled: 09/23/08 09:55  
Date Received: 09/25/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	133		*	mg/L	3	10	10/01/08 23:38	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: SCHWARTZ

ACZ Sample ID: **L72036-02**  
Date Sampled: 09/23/08 11:15  
Date Received: 09/25/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	124		*	mg/L	3	10	10/01/08 23:56	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000  
Sample ID: BLOMMER

ACZ Sample ID: **L72036-03**  
Date Sampled: 09/23/08 12:15  
Date Received: 09/25/08  
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	193		*	mg/L	5	30	10/02/08 0:14	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: RAY

ACZ Sample ID: **L72036-04**

Date Sampled: 09/23/08 13:45

Date Received: 09/25/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	125		*	mg/L	5	30	10/02/08 1:08	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: FULTZ

ACZ Sample ID: **L72036-05**

Date Sampled: 09/23/08 15:05

Date Received: 09/25/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	137		*	mg/L	5	30	10/02/08 1:26	aml

Arizona license number: AZ0102

**Hydro Geo Chem, Inc.**

Project ID: 8720000

Sample ID: BIMA

ACZ Sample ID: **L72036-06**

Date Sampled: 09/23/08 16:15

Date Received: 09/25/08

Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	296		*	mg/L	5	30	10/02/08 1:44	aml

Arizona license number: AZ0102



**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: **L72036**

Project ID: 8720000

**Sulfate** 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG249769</b>													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
<b>WG252835</b>													
WG252835ICV	ICV	08/11/08 15:32	WI080919-1	50.1		49.34	mg/L	98.5	90	110			
WG252835ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG252835ICV1	ICV	10/01/08 8:26	WI080919-1	50.1		51	mg/L	101.8	90	110			
WG252835ICB1	ICB	10/01/08 8:44				U	mg/L		-1.5	1.5			
WG252835LFB	LFB	10/01/08 9:02	WI080702-9	30		32.91	mg/L	109.7	90	110			
L71963-01DUP	DUP	10/01/08 9:56			109	113.4	mg/L				4	20	
L71963-01AS	AS	10/01/08 10:15	WI080702-9	300	109	448.5	mg/L	113.2	90	110			M1
WG252835ICV1	ICV	10/01/08 21:31	WI080919-1	50.1		48.98	mg/L	97.8	90	110			
WG252835ICB1	ICB	10/01/08 21:49				U	mg/L		-1.5	1.5			

Hydro Geo Chem, Inc.

ACZ Project ID: **L72036**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L72036-01	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72036-02	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72036-03	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72036-04	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72036-05	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72036-06	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

Hydro Geo Chem, Inc.

ACZ Project ID: **L72036**

No certification qualifiers associated with this analysis

**Hydro Geo Chem, Inc.**  
 8720000

ACZ Project ID: L72036  
 Date Received: 9/25/2008  
 Received By: lcp  
 Date Printed: 10/6/2008

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
2231	0.4	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

Hydro Geo Chem, Inc.  
 8720000

ACZ Project ID: L72036  
 Date Received: 9/25/2008  
 Received By:

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L72036-01	ROGERS 803									X		<input type="checkbox"/>
L72036-02	SCHWARTZ									X		<input type="checkbox"/>
L72036-03	BLOMMER									X		<input type="checkbox"/>
L72036-04	RAY									X		<input type="checkbox"/>
L72036-05	FULTZ									X		<input type="checkbox"/>
L72036-06	BIMA									X		<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: lcp

L72036

<b>ACZ Laboratories, Inc.</b>			<b>CHAIN of CUSTODY</b>		
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493					
<b>Report to:</b>					
Name: Dan Simpson		Address: 51 West Wetmore Road			
Company: Hydro Geo Chem Inc.		Tucson, AZ 85705			
E-mail: dans@hgcinc.com		Telephone: (520) 293-1500 x 133			
<b>Copy of Report to:</b>					
Name: Jim Norris		E-mail: jimn@hgcinc.com			
Company: Hydro Geo Chem Inc.		Telephone: (520) 293-1500 x 112			
<b>Invoice to:</b>					
Name: Jim Norris		Address: 51 West Wetmore Road			
Company: Hydro Geo Chem Inc.		Tucson, AZ 85705			
E-mail: jimn@hgcinc.com		Telephone: (520) 293-1500 x 112			
If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?					YES <input checked="" type="checkbox"/>
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.					NO <input type="checkbox"/>
<b>PROJECT INFORMATION</b>			<b>ANALYSES REQUESTED (attach list or use quote number)</b>		
Quote #:	FMCQB-GW		# of Containers <i>SO<sub>4</sub></i>		
Project/PO #:	8720000				
Reporting state for compliance testing:	AZ				
Sampler's Name:	Mark Arneson				
Are any samples NRC licensable material? No					
<b>SAMPLE IDENTIFICATION</b>	<b>DATE:TIME</b>	<b>Matrix</b>			
ROGERS 803	9-23-08: 0955	GW	1	X	
SCHWARTZ	9-23-08: 1115	GW	1	X	
BLOMMER	9-23-08: 1215	GW	1	X	
RAY	9-23-08: 1345	GW	1	X	
BIMA	9-23-08: 1505	GW	1	X	
FULTZ	9-23-08: 1615	GW	1	X	
Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)					
<b>REMARKS</b>					
Please refer to ACZ's terms & conditions located on the reverse side of this COC.					
<b>RELINQUISHED BY:</b>		<b>DATE:TIME</b>		<b>RECEIVED BY:</b>	
<i>[Signature]</i>		9-24-08 1500		<i>[Signature]</i>	
				9-25-08 10:49	

FRMAD050.03.05.02      White - Return with sample.      Yellow - Retain for your records.





**APPENDIX C**

**HYDRO GEO CHEM, INC. GROUNDWATER SAMPLING FORMS**



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	ANDERSON	Weather:	clear
ADWR No.	613396	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	236	Time:	9:15
Casing Diameter (in):	8"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	146.16	GPS:	601134N 3468816E Zone 12 Band R
1 Casing Volume (gals):	234	Elevation:	4596 ft. amsl
3 Casing Volumes (gals):	704		71/min

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:21	10	30	6.96	22.4	1182	clear	No	open bib at 9:18
9:26	"	80	7.11	21.5	1201	"	"	
9:36	"	180	7.04	21.5	1258	"	"	
9:46	"	280	7.12	21.5	1269	"	"	
9:56	"	380	7.07	21.5	1252	"	"	
10:06	"	480	7.12	21.6	1256	"	"	
10:16	"	580	7.11	21.6	1256	"	"	
10:26	"	680	7.11	21.6	1260	"	"	
		Total Discharge		720 gal				

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ANDERSON	10:30	Plastic	500-250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Residents are home and well has been in use over the weekend and this morning.







# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	08/12/08
Well ID:	AWC 04	Weather:	Overcast 75°
ADWR No.	616584	Collected By:	Mark Arneson

### WELL DATA

Well Depth (ft bls):	337	Time:	1020
Casing Diameter (in):	16	Point of Measurement:	Top of Sounding Tube
Static Water Level (ft bmp):	NA; Pump On	GPS:	ALS to Survey Well August 18, 2008
1 Casing Volume (gals):	NA	Elevation:	ALS to Survey Well August 18, 2008
3 Casing Volumes (gals):	NA		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1040	-	-	7.08	22.5	458	Clear	No	-

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
AWC 04	1040	Plastic	*	7	FMCQB-WT	*	-

Additional Comments: \* (1) 500 ml Raw; (1) 250 ml Raw/Nitric; (1) 125 ml Raw/NaOH & Zinc Acetate  
(1) 125 ml Filtered/Nitric; (1) 250 ml Filtered; (1) 100 ml Raw/Sodium Thiosulfate  
(1) 250 ml Raw/Sulfuric

**HYDRO GEO CHEM, INC.****Groundwater Sampling Form**

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	08/12/08
Well ID:	AWC 05	Weather:	Overcast 75°
ADWR No.	590620	Collected By:	Mark Arneson

**WELL DATA**

Well Depth (ft bls):	1183	Time:	0930
Casing Diameter (in):	16	Point of Measurement:	Top of Sounding Tube
Static Water Level (ft bmp):	NA; Pump On	GPS:	ALS to Survey Well August 18, 2008
1 Casing Volume (gals):	NA	Elevation:	ALS to Survey Well August 18, 2008
3 Casing Volumes (gals):	NA		

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
0950	-	-	6.74	23.3	425	Clear	No	-

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
AWC 05	0950	Plastic	*	7	FMCQB-WT	*	-

Additional Comments: \* (1) 500 ml Raw; (1) 250 ml Raw/Nitric; (1) 125 ml Raw/NaOH & Zinc Acetate  
 (1) 125 ml Filtered/Nitric; (1) 250 ml Filtered; (1) 100 ml Raw/Sodium Thiosulfate  
 (1) 250 ml Raw/Sulfuric



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-21-05
Well ID:	Banks 986	Weather:	Sunny
ADWR No.	55-647981	Collected By:	MARK ARNESON John Villinski

### WELL DATA

Well Depth (ft bis):	435.8	Time:	09:30 (measured monitoring well 3x w/ 2 sounders)
Casing Diameter (in):	6'	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	228.95 (647981)	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	303.75	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	911. (15 min)		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:52	6	18	7.56	22.7	1033	—	—	clear
10:05	6	40	7.59	22.5	1040	"	"	"
10:20	6	180	7.55	22.3	1033	"	"	"
10:35	7.5	293	7.47	22.5	1026	"	"	"
10:50	7.5	405	7.46	22.4	1021	"	"	"
11:05	7.5	518	7.44	22.3	1012	"	"	"
11:15	7.5	593	7.43	23.4	1014	"	"	"
11:30	7.5	705	7.47	22.6	1040	"	"	"
11:45	7.5	818	7.44	22.8	1034	"	"	"
11:58	7.0	909	7.43	22.9	1034	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Banks 986	12:05	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Measured WL at unused well in back - static water level. supply well in use, 40 gal pressurized tank 958 gallons total



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	Barton 010	Weather:	partly cloudy
ADWR No.	55-85010	Collected By:	MARK ARNESON John Wilinski

### WELL DATA

Well Depth (ft bis):	300' 3	Time:	11:40
Casing Diameter (in):	<del>8</del> 6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	276.06	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):		Elevation:	on file ft. amsl
3 Casing Volumes (gals):			

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

Brought up alot of clay/silt on the probe







**HYDRO GEO CHEM, INC.**  
**Groundwater Sampling Form**

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8.5-08
Well ID:	BF-01	Weather:	Clear
ADWR No.	539783	Collected By:	MARK ARNESON

**WELL DATA**

Well Depth (ft bls):	400	Time:	8:40
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	348.66	GPS:	3472151N 604169E
1 Casing Volume (gals):	33.5	Elevation:	ft amsl 4835
3 Casing Volumes (gals):	101		

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:45	6	6	6.11	22.6	3114	clear	No	Pump on 8:44
8:48	"	24	6.11	22.4	3095			
8:51	Pumped down - no flow							
Total Discharge 42 gal								

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BF-01	9:20	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-29-08
Well ID:	BIMA	Weather:	Mostly Sunny
ADWR No.	577927	Collected By:	John Villinski

### WELL DATA

Well Depth (ft bls):	460'	Time:	<del>12:17</del> 12:17
Casing Diameter (in):	4'	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	(Obstructed @ 350) Is found obs @ 4'	GPS:	
1 Casing Volume (gals):	72	Elevation:	ft amsl
3 Casing Volumes (gals):	215		

pump on @ 12:20

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:22	12	24	6.49	23.0	1645	clear	no	
12:26	8	56	6.45	22.8	1645	clear	no	"
12:31	8	96	6.46	22.8	1629	"	"	"
12:36	8	136	6.45	23.1	1644	"	"	"
12:41	8	176	6.47	22.9	1645	"	"	"
12:46	8	216	6.44	23.0	1647	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BIMA	12:50	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

8/18/08 370.24



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No. <u>822002.2</u>	Client: <u>PHELPS DODGE COPPER QUEEN BRANCH</u>
Well ID: <u>BINYON</u>	Date: <u>8-18-08</u>
ADWR No. <u>594938</u>	Weather: <u>clear</u>
Location: <u>1188 E Border Rd</u>	Collected By: <u>Mark Arneson</u>

WELL DATA

Well Depth (ft bis): <u>260</u>	Static Water Level (ft bmp): <u>85.17</u>
Casing Diameter (in): <u>4</u>	Date/Time: <u>8-18-08 12:41</u>
Well Use: <u>Domestic</u>	Point of Measurement: <u>TOL</u>
3 Casing Volumes: <u>114 X 3 = 342</u>	GPS: <u>608533 3468553</u>
	Elevation: <u>4654</u>

FIELD SAMPLING DATA

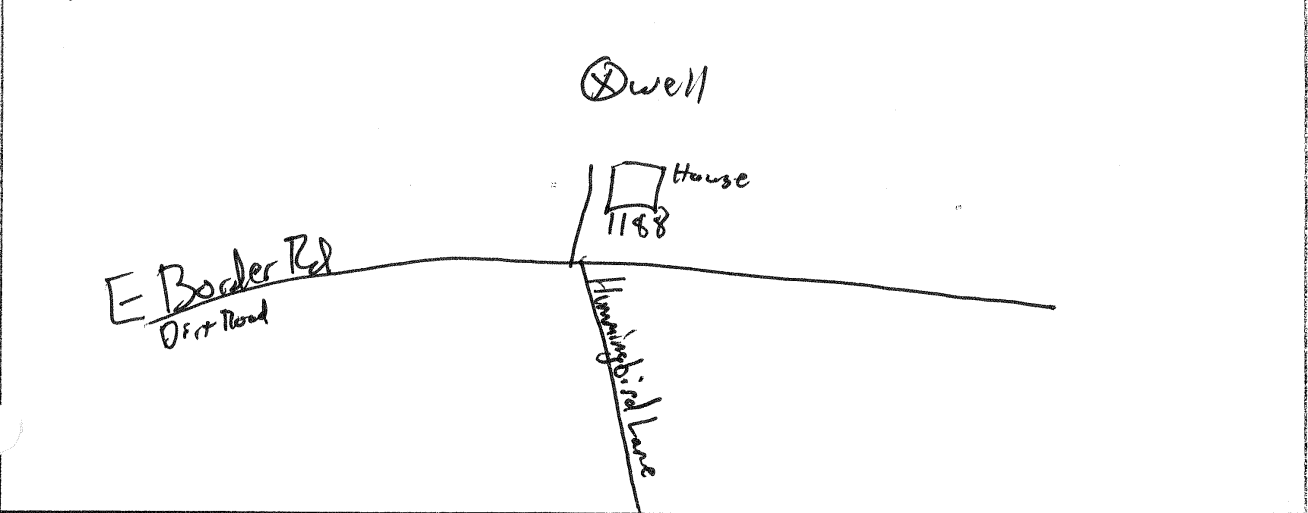
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comments
1310	10	20	7.30	24.2	521	clear	No	Pump on 1308
1315	9	65	7.44	23.7	518	"	"	
1320	9	110	7.44	23.0	519	"	"	
1325	9	155	7.44	22.9	518	"	"	
* NOT PART OF WELL INVENTORY PROGRAM *								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BINYON	1330	HDPE	250ml	1	300.0	None	Filtered

Additional Comments: At owners request I will stop purging

Water System Schematic:





**HYDRO GEO CHEM, INC.**  
**Groundwater Sampling Form**

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	<del>7-29-08</del> 7-29-08
Well ID:	Blommer	Weather:	Clear warm
ADWR No.	633472 2254 S Barnett Rd	Collected By:	John Villinski

**WELL DATA**

Well Depth (ft bls):	350	Time:	9:10
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	obstructed @ ~275'	GPS:	
1 Casing Volume (gals):	< 110	Elevation:	ft amsl
3 Casing Volumes (gals):	< 330		

9.15 pump on

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:17	9	18	7.11	23.7	912	clear	no	
9:22	9	63	7.21	22.1	922	"	"	"
9:26	9	99	7.25	22.3	916	"	"	"
9:30	9.5	137	7.21	22.3	919	"	"	"
9:34	9.5	175	7.21	22.2	921	"	"	"

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Blommer	9:38	Plastic	250	1	EPA 300.0	none	Filtered

Additional Comments: (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered



**HYDRO GEO CHEM, INC.**  
**Groundwater Sampling Form**

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.3	Date:	08/27/08
Well ID:	BMO-2008-1G	Weather:	
ADWR No:	909474	Collected By:	Neil Babb

**WELL DATA**

Well Depth (ft bls):	320	Time:	1300
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	62.05	GPS:	ALS to Survey 09/03/08 UTM NAD 83
1 Casing Volume (gals):	NA	Elevation:	ALS to Survey 09/03/08 NAVD 88
3 Casing Volumes (gals):	NA		

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
-	-	-	7.09	24.2	808	-	-	-
<b>Sample Collected after Aquifer Testing</b>								

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-1G	1300	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: \* 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

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**HYDRO GEO CHEM, INC.**  
Well Development Form

Well No: 38 Project No: 8720000  
Date: 7-18-08

Name/Number \_\_\_\_\_  
Sampler: NJ. Babb

**WELL INFORMATION**

Casing Diameter ("d", in.): 5"  
Well/Packer Depth ("a", ft): 261.6  
One Wetted Casing Volume:  $(a - b) \cdot d^2 \cdot 0.0408 = \underline{126}$

Screened Interval (ft) From: 150 To: 250  
Depth to Water ("b", ft): 138.05 @ 7:50  
Gallons, (3 Casing Volumes gal)  
378-gals

**BAIL & PURGE INFO AND FIELD MEASUREMENTS**

Time Started: 8:27  
Purge Method: 10 hp submersible pump  
Pump Setting: Intake @ 24"

Time Completed: \_\_\_\_\_  
Total Development Time: \_\_\_\_\_-min  
Total Bail & Purge Volume: \_\_\_\_\_-gallons  
Bail @ 40-gals

1st  
step

2nd  
step

3rd  
step

Actual or Elapsed Time (Min)	Extraction Rate/Vol (gpm)	Temp (°F)	Conductivity (µS/cm)	pH	Turbidity (NTUs)	DTW (ft btoc)	Notes
8:27	20-21	N/A	N/A	N/A	N/A	138.05	pump-on
8:33	15 gpm	74.3	678	7.29	}	140.28	Discharge clear
8:47	11	74.6	643	7.39		<del>140.28</del>	" "
9:00	14.5	74.8	635	7.42		140.12	" " 62 mins @ 15 gpm
9:15	14.5	75.5	633	7.44		140.09	" " gals = 930.0
9:29							→ increased to 2nd step
9:38	41	75.4	624	7.49	}	144.4	Discharge clear
9:57	41	76.0	621	7.47		144.51	" "
10:13	41	74.8	620	7.46		144.53	" "
10:42	63	75.6	609	7.43	}	148.34	" "
11:07	"	76.0	611	7.40			
11:17	"	75.0	615	7.35		148.54	
11:25							→ obtained samples





# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	07/16/08
Well ID:	BMO-2008-6B	Weather:	Sunny
ADWR No:	909146	Collected By:	Neil Babb

### WELL DATA

Well Depth (ft bls):	265	Time:	0840
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	190.13	GPS:	3469280 N    600366 E    UTM NAD 83
1 Casing Volume (gals):		Elevation:	4627.44    ft amsl    NAVD 88
3 Casing Volumes (gals):			

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°F)	Specific Conductance (µS/cm)	Color	Odor	Comment
1200	-	-	7.36	75.3	475			
Sample Collected after Aquifer Testing								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-6B	1200	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: \* 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

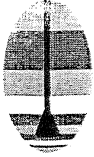
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**HYDRO GEO CHEM, INC.**  
Well Development Form

Well No: 6B Project No: 8720000  
Date: 7/16/08

Name/Number \_\_\_\_\_  
Sampler: NJ. Babb

**WELL INFORMATION**

Casing Diameter ("d", in.): 5"  
Well/Packer Depth ("a", ft): 265  
One Wetted Casing Volume:  $(a - b) \cdot d^2 \cdot 0.0408 = \underline{76.4}$

Screened Interval (ft) From: 195 To: 255  
Depth to Water ("b", ft): @ 190.13  
Gallons, (3 Casing Volumes gal)  
230-gals

**BAIL & PURGE INFO AND FIELD MEASUREMENTS**

Time Started: 8:43  
Purge Method: Submersible  
Pump Setting: 2.4 @ 1, 2, & 3.8 gpm

Time Completed: \_\_\_\_\_  
Total Development Time: \_\_\_\_\_ min  
Total Bail & Purge Volume: \_\_\_\_\_ gallons  
7-7-08  
APPROX. 50 gals bailed

1st  
step

6-min @ 1.7 gpm  
=> 110.5 gals

Actual or Elapsed Time (Min)	Extraction Rate/Vol (gpm)	Temp of	Conductivity (μS/cm)	pH	Turbidity (NTUs)	DTW (ft btoc)	Notes
8:43	1.0 gpm						pump on
8:50	"	75.5	478	7.54		191.04	Discharge clear
9:00	"	76.3	465	7.47		191.35	slightly cloudy, yellowish-orange
9:17	"	76.9	464	7.67		191.40	slightly cloudy, clearing
9:40	"	77.6	467	7.66		191.43	mostly clear (63-min @ 1.0 gpm = 63-gals)
9:45	Increase to 2nd						Increase to 2.0 gpm target
10:30	1.7 gpm	78.4	474	7.56		192.30	mostly clear
10:48	"	77.4	473	7.37			mostly clear
10:50	Increase to 3rd						step
10:58	3.8	76.2	470	7.37		196.59	
11:10	"	75.0	471	7.39			Discharge clear
11:31	3.9	75.2	478	7.40		202.04	clear
12:58		75.6	478	7.36			clear
12:00						203.95	obtained samples

15

2nd  
step

3rd  
step



**HYDRO GEO CHEM, INC.**  
**Groundwater Sampling Form**

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	07/10/08
Well ID:	BMO-2008-6M	Weather:	Sunny
ADWR No:	909019	Collected By:	Neil Babb

**WELL DATA**

Well Depth (ft bls):	450	Time:	0815
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	191.63	GPS:	3469813 N 600367 E UTM NAD 83
1 Casing Volume (gals):		Elevation:	4626.90 ft amsl NAVD 88
3 Casing Volumes (gals):			

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1230	-	-	NR	22.1	702			
Sample Collected after Aquifer Testing								

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-6M	1230	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: \* 500 ml raw, 125 ml filtered nitric, and 250 ml filtered  
 NR = Not Recorded, Probe Malfunction

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**HYDRO GEO CHEM, INC.**  
Well Development Form

Name/Number: PDCOB, 5, 3, 2, A2  
Sampler: NJ. Babb

Well No: 7M Project No: 8770000  
Date: 7-14-08

**WELL INFORMATION**

Casing Diameter ("d", in.): 5 1/2"  
Well/Packer Depth ("a", ft): 670  
One Wetted Casing Volume:  $(a - b) \cdot d^2 \cdot 0.0408 =$  \_\_\_\_\_  
Screened Interval (ft) From: 560 To: 660  
Depth to Water ("b", ft): @ 278.31 @ 8:15  
Gallons, (3 Casing Volumes) \_\_\_\_\_ gal

**BAIL & PURGE INFO AND FIELD MEASUREMENTS**

Time Started: 8:43 Time Completed: \_\_\_\_\_  
Purge Method: 90 hp submersible pump Total Development Time: \_\_\_\_\_ -min  
Pump Setting: 420/250 @ 3-steps (6rms) Total Bail & Purge Volume: \_\_\_\_\_ -gallons

Actual or Elapsed Time (Min)	meter & Extraction Rate/Vol (gpm) manual	Temp (F)	Conductivity (uS/cm)	pH	Pressure Turbidity (NTUs) (PSI)	DTW (ft btoc)	Notes
8:43	N/A				over 200 PSI		PUMP-ON
8:44	11 gpm				80 rms meter	242.51	Discharge clear
8:47	"	70.9	513	7.53	110 rms @ hole	244.63	
9:05	"	75.3	495	7.81	"		discharge cloudy, semi-transparent, opalescent-brown color mostly clear
9:16	"	75.4	490	7.69	"	245.80	
9:28	"	76.4	497	7.71	"	246.19	clear
9:38	"	"	495	7.73	"		9:40 DTW → 246.39
9:44	Increased to 2nd step						
9:46	20-23 gpm				180-185		discharge slightly cloudy;
10:07	20-23 gpm	75.9	504	7.66	181	265.70	discharge clear
10:22	"	75.4	503	7.64	20-23 gpm	267.18	" "
10:35	20-23 gpm	"	"	7.74	" "	268.40	" "
10:47	Increased to 3rd step						" "
10:50	30-35 gpm	76.6	504	7.69	PSI=142	268.45	" "
11:20	30-35	77.1	505	7.64	PSI=141		Discharge clear
11:40	30-35	76.0	503	7.65	PSI=140	294.54	" "
12:05	30-35	77.4	500	7.63		296.55	
12:15							obtained 7M samples

11 gpm  
20-23 gpm



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	08/08/08
Well ID:	BMO-2008-9M	Weather:	Overcast
ADWR No:	909255	Collected By:	John Villinski

### WELL DATA

Well Depth (ft bls):	785	Time:	1350 (08/07/08)
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	287.17	GPS:	3471121 N 604668 E UTM NAD 83
1 Casing Volume (gals):		Elevation:	4762.61 ft amsl NAVD 88
3 Casing Volumes (gals):			

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1345	-	-	7.72	25.7	415	Clear	No	
Sample Collected after Aquifer Testing								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-9M	1345	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: \* 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No:	<u>8720000</u>	Client:	<u>Freeport Copper Queen Branch</u>
Task No:	<u>2.2</u>	Date:	<u>08/04/08</u>
Well ID:	<u>BMO-2008-10GU</u>	Weather:	<u>Sunny</u>
ADWR No:	<u>909272</u>	Collected By:	<u>John Villinski</u>

### WELL DATA

Well Depth (ft bls):	<u>700</u>	Time:	<u>0935</u>
Casing Diameter (in):	<u>5"</u>	Point of Measurement:	<u>Top of Casing</u>
Static Water Level (ft bmp):	<u>299.28</u>	GPS:	<u>3471731 N    605267 E    UTM NAD 83</u>
1 Casing Volume (gals):		Elevation:	<u>4793.45    ft amsl    NAVD 88</u>
3 Casing Volumes (gals):			

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1415	-	-	6.41	23.6	3660	Clear	No	
<b>Sample Collected after Aquifer Testing</b>								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
<b>BMO-2008-10GU</b>	<b>1415</b>	<b>Plastic</b>	<b>*</b>	<b>3</b>	<b>FMCQB-GW</b>	<b>*</b>	<b>-</b>

Additional Comments: \* 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No:	<u>8720000</u>	Client:	<u>Freeport Copper Queen Branch</u>
Task No:	<u>2.3</u>	Date:	<u>08/20/08</u>
Well ID:	<u>BMO-2008-10GL</u>	Weather:	
ADWR No:	<u>909435</u>	Collected By:	<u>Neil Babb</u>

### WELL DATA

Well Depth (ft bls):	<u>810</u>	Time:	<u>1345</u>
Casing Diameter (in):	<u>5"</u>	Point of Measurement:	<u>Top of Casing</u>
Static Water Level (ft bmp):	<u>521.75</u>	GPS:	<u>3471702 N    605264 E    UTM NAD 83</u>
1 Casing Volume (gals):	<u>NA</u>	Elevation:	<u>4792.21    ft amsl    NAVD 88</u>
3 Casing Volumes (gals):	<u>NA</u>		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
-	-	-	6.22	29.5	2924	-	-	-
<b>Sample Collected after Aquifer Testing</b>								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
<b>BMO-2008-10GL</b>	<b>1345</b>	<b>Plastic</b>	<b>*</b>	<b>3</b>	<b>FMCQB-GW</b>	<b>*</b>	<b>-</b>

Additional Comments: \* 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No:	<u>8720000</u>	Client:	<u>Freeport Copper Queen Branch</u>
Task No:	<u>2.3</u>	Date:	<u>08/22/08</u>
Well ID:	<u>BMO-2008-11G</u>	Weather:	
ADWR No:	<u>909434</u>	Collected By:	<u>Neil Babb</u>

### WELL DATA

Well Depth (ft bls):	<u>760</u>	Time:	<u>1230</u>
Casing Diameter (in):	<u>5"</u>	Point of Measurement:	<u>Top of Casing</u>
Static Water Level (ft bmp):	<u>577.76</u>	GPS:	<u>ALS to Survey 09/03/08</u> <u>UTM NAD 83</u>
1 Casing Volume (gals):	<u>NA</u>	Elevation:	<u>ALS to Survey 09/03/08</u> <u>NAVD 88</u>
3 Casing Volumes (gals):	<u>NA</u>		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
-	-	-	8.02	28.2	359	-	-	-
<b>Sample Collected after Aquifer Testing</b>								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
<b>BMO-2008-11G</b>	<b>1230</b>	<b>Plastic</b>	<b>*</b>	<b>3</b>	<b>FMCQB-GW</b>	<b>*</b>	<b>-</b>

Additional Comments: \* 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

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**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	CHAMBERS	Weather:	Cloudy
ADWR No.	629807	Collected By:	MARK ARNESON

WELL DATA			
Well Depth (ft bis):	245	Time:	12:05
Casing Diameter (in):	6	Point of Measurement:	Top of Casing No Access
Static Water Level (ft bmp):	NA	GPS:	600024N 346738W Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	4592 ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA								
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:14	8	16	7.34	24.3	431	Clear	No	Open: 12:12
12:16	"	32	7.37	23.6	431	"	"	
12:23	"	88	7.41	23.1	432	"	"	
12:28	"	128	7.43	23.3	437	"	"	
12:33	"	168	7.43	23.2	434	"	"	
Total Discharge 184 gal								

SAMPLE INFORMATION							
Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
CHAMBERS	12:35	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Well pump was running upon arrival. Resident stated that they use it all the time. It serves 2 houses. 12:28 yard is near capacity



**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No. <u>8720000</u>	Client: <u>Freeport Copper Queen Branch</u>
Task No. <u>2.2</u>	Date: <u>7-30-08</u>
Well ID: <u>COB MW-1</u>	Weather: <u>Sunny</u>
ADWR No. <u>903992</u>	Collected By: <u>John Villinski</u>

WELL DATA

Well Depth (ft bis): <u>420</u>	Time: <u>7:10</u>
Casing Diameter (in): <u>8"</u>	Point of Measurement: <u>Top of Casing</u>
Static Water Level (ft bmp): <u>233.37</u>	GPS: _____
1 Casing Volume (gals): <u>486</u>	Elevation: <u>ft amsl</u>
3 Casing Volumes (gals): <u>1457</u>	

pump on @ 7:15

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
7:17	12	24	7.05	21.3	1582	clear	no	
7:24	12	96	7.01	21.6	1563	"	"	"
7:29	12	146	6.96	21.7	1622	"	"	"
7:35	12	218	6.94	21.6	1698	"	"	"
7:40	12	278	6.91	21.7	1718	"	"	"
7:45	12	338	6.97	21.7	1742	"	"	"
7:50	12	398	6.90	21.6	1770	"	"	"
7:55	12	458	6.88	21.7	1780	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
<u>COB MW-1</u>	<u>8:50</u>	<u>Plastic</u>	<u>*</u>	<u>3</u>	<u>EPA 300.0</u>	<u>*</u>	

Additional Comments: \* (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered



**HYDRO GEO CHEM, INC.**  
**Groundwater Sampling Form**

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-30-08
Well ID:	COB MW2	Weather:	Sunny
ADWR No.	903984	Collected By:	John Villinski

**WELL DATA**

Well Depth (ft bis):	162	Time:	9:55
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	123.63	GPS:	
1 Casing Volume (gals):	25	Elevation:	ft amsl
3 Casing Volumes (gals):	75		

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:57	7.5	7.5	7.28	21.9	520	clear	no	-
10:00	7.5	30	7.30	21.1	508	"	"	"
10:04	7.5	60	7.32	21.0	511	"	"	"
10:08	7.5	90	7.32	21.0	510	"	"	"
10:12	7.5	120	7.33	20.9	510	"	"	"
10:16	7.5	150	7.34	20.8	511	"	"	"

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB MW-2	10:20	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered







# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-30-08
Well ID:	COB WL	Weather:	Mostly Sunny
ADWR No.	599535	Collected By:	John Villinski

### WELL DATA

Well Depth (ft bls):	150'	Time:	8:35
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	58.64	GPS:	
1 Casing Volume (gals):	59	Elevation:	ft amsl
3 Casing Volumes (gals):	178		

pump @ 847.

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:49	7.5	15	6.95	21.9	1094	clear	no	
8:54	7.5	52.5	6.97	21.4	1092	"	"	"
8:59	7.5	90	7.03	21.2	1094	"	"	"
9:05	2	102	7.19	21.7	1094	"	"	"
9:12	2	116	7.17	22.0	1098	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB WL	9:17	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:	Collins	Weather:	Sunny
ADWR No.	565260	Collected By:	John Villinski

### WELL DATA

Well Depth (ft bis):	320	Time:	7:24
Casing Diameter (in):	4 1/2	Point of Measurement:	TOC
Static Water Level (ft bmp):	290.08	GPS:	
1 Casing Volume (gals):	24.8	Elevation:	
3 Casing Volumes (gals):	74.4		

psmp on 7:34 @ 12 gpm

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
7:35	12	12	6.78	23.8	1496	clear	no	
7:38	12	48	6.81	21.8	1503	"	"	"
7:40	12	72	6.84	21.5	1505	"	"	"
7:43	12	108	6.86	21.6	1507	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Collins	7:46	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: well in use by the wife before I got here - shower, etc



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:	Cooper	Weather:	Sunny, Warm
ADWR No.	623564	Collected By:	John Villinski

### WELL DATA

Well Depth (ft bis):	325	Time:	
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	cannot measure	GPS:	
1 Casing Volume (gals):		Elevation:	ft amsl
3 Casing Volumes (gals):			

Pump on @ 10:48 @ 9gpm

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:50	9	18	7.83	28.0	463	clear	no	—
10:58	9	90	7.83	28.2	457	"	"	"
11:03	9	135	7.84	28.4	454	"	"	"
11:08	9	180	7.84	28.4	457	"	"	"
11:13	9	225	7.81	28.4	455	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Cooper	11:15	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

Woman w/ 3 young children living @ 2171 S Naco Hwy  
 Catherine would not answer the door again when I was  
 leaving, could not get more information



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	COOPER C	Weather:	Clear
ADWR No.	637069	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	220	Time:	9:46
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	156.01	GPS:	601350N 3468915E Zone 12 Band R
1 Casing Volume (gals):	94	Elevation:	4607 ft. amsl
3 Casing Volumes (gals):	282		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:50	10	20	6.74	25.2	2104	Clear	No	Open to 9:48
9:55	"	70	6.84	22.9	2133	"	"	
10:00	"	120	6.85	22.5	2150	"	"	
10:05	"	170	6.85	22.3	2145	"	"	
10:10	"	220	6.87	22.3	2146	"	"	
10:15	"	270	6.86	22.3	2162	"	"	

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COOPER C	10:18	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Duplicate sample collected (DUPO71508)







# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	EQB 071508	Weather:	Cloudy
ADWR No.		Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	NA	Time:	14:35
Casing Diameter (in):	NA	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	NA	GPS:	NA Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	NA ft. amsl
3 Casing Volumes (gals):			

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
Equipment Blank								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EQB 071508	14:35	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-24-08
Well ID:	Dodson	Weather:	Clear
ADWR No.	644927	Collected By:	MARK ARNESON John Villinger

### WELL DATA

Well Depth (ft bis):	180	Time:	11:40
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	82.2	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	144	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	431		

on @ 11:48 12 gpm

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:49	12	12	7.28	22.0	1087	clear	no	
11:53	12	60	7.29	21.7	1093	"	"	"
11:57	12	108	7.29	21.4	1127	"	"	"
12:01	12	156	7.26	21.4	1163	"	"	"
12:07	12	228	7.26	21.5	1191	"	"	"
12:11	12	276	7.25	21.3	1202	"	"	"
12:15	12	324	7.27	21.4	1220	"	"	"
12:19	12	372	7.27	21.4	1221	"	"	"
12:25	15	452	7.25	21.6	1233	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Dodson	12:30	Plastic	250 ml	13	EPA 300.0	None	Filtered

Additional Comments: Not living in the house currently. He said he may use ~180 gallons per week









# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	East 796	Weather:	Clear
ADWR No.	599796	Collected By:	MARK ARNESON John Villarski

### WELL DATA

Well Depth (ft bis):	125	Time:	8:15
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	52.16	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	107	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	321		pump on 8:25

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:26	14.3	14.3	7.25	20.9	579	Clear	no	"
8:29	14.3	57	7.34	20.8	586	"	"	"
8:32	14.3	100	7.33	20.8	591	"	"	"
8:35	14.3	143	7.34	20.7	598	"	"	"
8:38	14.3	186	7.34	20.7	601	"	"	"
8:41	14.3	229	7.34	20.7	601	"	"	"
8:45	14.3	287	7.34	20.8	605	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
East 796	8:48	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Well is in use. Was used right before I arrived to clean sidewalk.  
 Note static #.



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-21-07
Well ID:	Epelle 641	Weather:	partly cloudy
ADWR No.	805641	Collected By:	MARK ARNESON John Villinski

### WELL DATA

Well Depth (ft bis):	265	Time:	<del>2559</del> 12:18
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	25.59	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	625	Elevation:	onfile ft. amsl
3 Casing Volumes (gals):	1875		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:12	10	70	7.00	22.8	<del>233</del> 667	clear	None	-
12:37	12	180	7.36	21.6	671	H	"	"
12:52	13.5	383	7.39	21.7	674	"	"	"
13:07	13.5	585	7.42	21.4	679	"	"	"
13:22	13.5	788	7.47	21.7	681	"	"	"
13:35	—	1024	well pumped dry - watched it happen					
16:10	12	1084	7.49	23.9	605	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EPPELE	16:15	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: well goes dry after 1hr or so. let recover then sample



**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	FRANKO	Weather:	Rain
ADWR No.	500101	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	200	Time:	15:08
Casing Diameter (in):	6	Point of Measurement:	Top of Casing <i>Obstructed</i>
Static Water Level (ft bmp):	NA	GPS:	602951N 3468828E Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	4619 ft. amsl
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
15:11	10	10	6.99	26.5	1571	clear	No	15:10 open b.b
15:13	"	30	7.01	23.4	1596	"	"	
15:18	"	80	7.02	22.8	1583	"	"	
15:23	"	130	7.00	22.8	1583	"	"	
15:28	"	180	7.00	22.7	1586	"	"	
<i>Total Discharge 200 gal</i>								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FRANKO	15:30	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Four houses share this well



**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7/29/08
Well ID:	FULTZ	Weather:	Sunny
ADWR No.	212447	Collected By:	John Villinski

WELL DATA

Well Depth (ft bis):	300	Time:	16:20
Casing Diameter (in):	8	Point of Measurement:	—
Static Water Level (ft bmp):	obs. @ 63'	GPS:	—
1 Casing Volume (gals):	—	Elevation:	—
3 Casing Volumes (gals):	—		

pump on @ 16:00

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
16:05	10	50	6.74	24.3	1988	clear	no	—
16:10	10	100	6.74	22.9	1987	"	"	1
16:15	10	150	6.73	22.3	1996	"	"	"
16:21	10	210	6.74	22.1	1997	"	"	"
16:26	10	260	6.75	22.0	1988	"	"	4
16:30	10	300	6.74	22.0	1989	"	"	1

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FULTZ	16:10	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Well was just on for the cooler. Richard tried to remove rubber covering - provided access to sounding hole - obstruction @ 6.3 ft. no WL



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	Gallant <del>527</del>	Weather:	Partly Cloudy
ADWR No.	55-502527	Collected By:	MARK ARNESON John Villinski

WELL DATA			
Well Depth (ft bis):	190	Time:	9:57
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	33.05	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	230	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	691		

FIELD SAMPLING DATA								
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:00	15	15	7.30	22.6	936	clear	no	11
10:05	15	90	7.22	21.5	932	"	"	11
10:10	15	165	7.24	21.4	932	"	"	11
10:15	15	240	7.23	21.5	932	"	"	11
10:20	15	315	7.23	21.5	931	"	"	11
10:25	15	390	7.24	21.4	930	"	"	11
10:30	15	465	7.22	21.3	928	"	"	11
10:35	15	540	7.23	21.1	927	"	"	11
10:40	15	615	7.24	21.2	927	"	"	11
10:45	15	690	7.26	21.2	925	"	"	11

SAMPLE INFORMATION							
Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Gallant 5:27	10:50	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	GARNER 635	Weather:	cloudy
ADWR No.	587635	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bis):	680	Time:	1235
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	193.58	GPS:	<del>602641</del> 3468972E Zone 12 Band R
1 Casing Volume (gals):	496	Elevation:	4616 ft. amsl
3 Casing Volumes (gals):	1488		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:45	18	36	7.39	26.6	489	clear	No	open: 12:43
12:50	"	126	7.59	24.7	486	"	"	
13:00	"	306	7.60	25.5	487	"	"	
13:10	"	486	7.63	25.8	480	"	"	
13:20	"	666	7.58	26.0	487	"	"	
13:30	"	846	7.64	26.2	480	"	"	
13:40	"	1026	7.61	26.2	489	"	"	
13:50	"	1206	7.63	25.7	487	"	"	
14:00	"	1386	7.61	25.7	486	"	"	
14:05	"	1476	7.63	25.6	480	"	"	

Total Discharge 1566 gal

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
GARNER 635	14:10	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered



**HYDRO GEO CHEM, INC.**  
**Groundwater Sampling Form**

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-15-08
Well ID:	GGOOSE 547	Weather:	Cloudy
ADWR No.	628547	Collected By:	MARK ARNESON

WELL DATA			
Well Depth (ft bls):	800	Time:	9:15
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	238.48	GPS:	3469820 N 606256 E UTM NAD 83
1 Casing Volume (gals):	824.7	Elevation:	4717.11 ft. amsl NAVD 88
3 Casing Volumes (gals):	2474		

FIELD SAMPLING DATA								
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:21	15	60	6.57	24.0	879	clear	No	Pump on 9:17
9:30	"	195	6.96	23.7	898	"	"	
9:40	"	345	7.05	23.9	930	"	"	
10:00	"	645	7.07	23.5	915	"	"	
10:20	"	945	7.07	23.4	920	"	"	
10:23	19							Flow increase
10:30	19	1033	7.08	23.7	918	"	"	
11:00	"	1603	7.07	24.1	926	"	"	Flow steady
11:30	"	2173	7.07	24.4	928	"	"	"
11:40	"	2363	7.02	24.8	915			
Total Discharge 2553 gal								

SAMPLE INFORMATION							
Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
GGOOSE 547	11:50	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-4-08
Well ID:	GL-03	Weather:	cloudy
ADWR No.	539782	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	820	Time:	1411
Casing Diameter (in):	4	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	659.79	GPS:	3472738N 608379E
1 Casing Volume (gals):	104	Elevation:	ft amsl 4840
3 Casing Volumes (gals):	312		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1414	26.0	16	7.08	22.0	718	clear	No	Pumper 1412
1417	"	40	6.94	23.6	756	light gray	"	
1420	"	64	7.26	25.8	646	clear	"	
1425	"	104	7.25	26.3	648	"	"	
1430	"	144	7.10	26.6	679	"	"	
1435		184	7.10	26.8	673	dark	No	
1436	flow dropped 3-4 gpm							
1436	flow stopped - Allow Recovery							
		Total Discharge 185 gal						

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
GL-03	14:55	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered





**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	HOBAN	Weather:	clear
ADWR No.	805290	Collected By:	MARK ARNESON

**WELL DATA**

Well Depth (ft bis):	316	Time:	11:00
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	163.87	GPS:	601706N 3468878E Zone 12 Band R
1 Casing Volume (gals):	223	Elevation:	4588 ft. amsl
3 Casing Volumes (gals):	670		45m

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:03	15	30	6.99	24.0	1562	clear	No	open to 11:01
11:08	11	105	7.01	22.9	1537	"	"	
11:13	"	180	7.02	22.9	1491	"	"	
11:18	"	255	7.00	22.6	1541	"	"	
11:23	"	330	6.97	22.8	1624	"	"	
11:33	"	480	6.87	22.8	1613	"	"	
11:43	"	630	6.88	23.1	1719	"	"	
		Total Discharge 705 gal						

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
HOBAN	11:47	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:



**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	HOWARD	Weather:	Rain
ADWR No.	<del>UNKNOWN</del> NO RECORD	Collected By:	MARK ARNESON

WELL DATA			
Well Depth (ft bis):	200	Time:	15:47
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	150.91	GPS:	601291N 3468769E Zone 12 Band R
1 Casing Volume (gals):	73	Elevation:	4595 ft. amsl
3 Casing Volumes (gals):	220		

FIELD SAMPLING DATA								
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
15:50	11	11	7.02	23.8	1524	clear	No	open b.i.b at 15:47
15:53	"	44	7.08	21.6	1424	"	"	
15:57	"	88	7.02	21.1	1448	"	"	
16:01	"	132	7.00	20.9	1504	"	"	
16:05	"	176	7.02	21.0	1541	"	"	
16:09	"	220	7.00	21.1	1566			
Total Discharge 253 gal								

SAMPLE INFORMATION							
Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
HOWARD	16:12	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Unsure of well activity as no one is home.

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	KEEFER	Weather:	cloudy
ADWR No.	209744	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	250	Time:	1325
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	136.24	GPS:	599881N 346812E Zone 12 Band R
1 Casing Volume (gals):	167	Elevation:	4567 ft. amsl
3 Casing Volumes (gals):	503		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:36	15	30	7.07	23.8	467	Clear	No	open bit at 13:34
13:40	"	90	7.24	23.8	476	"	"	
13:45	"	165	7.28	22.3	483	"	"	
13:50	"	240	7.26	22.1	492	"	"	
14:00	"	390	7.28	22.4	507	"	"	
14:05	"	465	7.21	21.4	539	"	"	
		Total Discharge 540 gal						

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
KEEFER	14:10	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	MCCONNELL 265	Weather:	Cloudy
ADWR No.	539265	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bis):	216'	Time:	
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	157.07	GPS:	601463N 346884E Zone 12 Band R
1 Casing Volume (gals):	86.6	Elevation:	4604 ft. amsl
3 Casing Volumes (gals):	260		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:02	10	20	6.82	24.5	1746	Clear	No	Open to well 11:00
11:05	"	50	6.88	23.0	1740	"	"	
11:10	"	100	6.86	22.1	1751	"	"	
11:15	"	150	6.87	22.0	1754	"	"	
11:20	"	200	6.91	21.8	1748	"	"	
11:25	"	250	6.91	22.3	1775	"	"	
Total Discharge 300 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
MCCONNELL 265	11:30	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:





# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	08/12/08
Well ID:	MCCONNELL 265	Weather:	Sunny 85°
ADWR No.	539265	Collected By:	Mark Arneson

WELL DATA			
Well Depth (ft bls):	216	Time:	1415
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	154.70	GPS:	3468840 N 601463 E UTM NAD83
1 Casing Volume (gals):	90	Elevation:	4600.70 ft amsl
3 Casing Volumes (gals):	270		

FIELD SAMPLING DATA								
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1424	0	0	-	-	-	-	-	-
1425	12	12	6.77	25.4	1740	Brown	No	-
1430	12	72	7.16	22.5	1742	"	"	-
1435	12	132	7.12	22.5	1767	Clear	"	-
1440	12	192	7.11	21.9	1764	"	"	-
1445	12	252	7.11	21.7	1763	"	"	-
1450	12	302	6.82	21.7	1762	"	"	-

SAMPLE INFORMATION							
Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
MCCONNELL 265	1450	Plastic	*	7	FMCQB-WT	*	-

Additional Comments: \* (1) 500 ml Raw; (1) 250 ml Raw/Nitric; (1) 125 ml Raw/NaOH & Zinc Acetate  
 (1) 125 ml Filtered/Nitric; (1) 250 ml Filtered; (1) 100 ml Raw/Sodium Thiosulfate  
 (1) 250 ml Raw/Sulfuric



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:	METZLER	Weather:	Sunny, Breezy
ADWR No.	35-7891	Collected By:	John Villinski

### WELL DATA

Well Depth (ft bis):	351	Time:	9:35
Casing Diameter (in):	6	Point of Measurement:	TOC
Static Water Level (ft bmp):	286.82	GPS:	12R 0602094 UTM 3471380
1 Casing Volume (gals):	94	Elevation:	4233
3 Casing Volumes (gals):	283		

Pump on @ 9:40 @ 6 gpm 47 mins

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:41	6	6	7.15	23.0	1067	Clear	no	
9:47	6	42	7.17	22.4	1082	"	"	"
9:52	6	72	7.16	22.3	1069	"	"	"
9:58	6	108	7.15	22.4	1075	"	"	"
10:03	6	138	7.13	22.4	1088	"	"	"
10:08	6	168	7.13	22.4	1079	"	"	"
10:13	6	198	7.12	22.4	1082	"	"	"
10:18	6	228	7.15	22.5	1079	"	"	"
10:23	6	288	7.16	22.5	1078	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Metzler	10:30	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

Cooler was on when I got there



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	MOORE	Weather:	Clear
ADWR No.	538847	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bis):	220	Time:	10:25
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	No Access	GPS:	599560N 3467845E Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	4574 ft. amsl
3 Casing Volumes (gals):	418		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:30	12	24	7.27	25.5	475	Clear	No	open bit at 10:28
10:35	"	84	7.32	23.4	472	"	"	
10:40	"	144	7.32	23.0	477	"	"	
10:45	"	204	7.34	23.2	477	"	"	
10:55	"	324	7.35	23.2	479	"	"	
11:00		384	7.34	23.0	482			
Total Discharge 444 gal.								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
MOORE	11:05	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: I will use w/ measure written on control box dated 1997 of 125' btoc for purge volume.





# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-24-08
Well ID:	NOTE MAN	Weather:	post-rain/partly cloudy
ADWR No.	212483	Collected By:	MARK ARNESON John Villinski

### WELL DATA

Well Depth (ft bls):	470	Time:	
Casing Diameter (in):	5	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	abstructed	GPS:	Zone 12 Band R
1 Casing Volume (gals):		Elevation:	ft. amsl
3 Casing Volumes (gals):			

Pump on 16:02 @ 15 gpm

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
16:06	15	60	6.68	23.9	1544	clear	no	---
16:10	15	120	6.68	24.0	1541	"	"	---
16:14	15	180	6.67	24.4	1540	slightly rosy	no	---
16:18	15	240	6.68	24.2	1539	clear	---	---

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Noteman	16:25	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: \_\_\_\_\_

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-22-08
Well ID:	Osborn <del>436</del>	Weather:	Cloudy
ADWR No.	643436	Collected By:	MARK ARNESON John Wilowski

### WELL DATA

Well Depth (ft bis):	258	Time:	still obstructed - don measure
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):		GPS:	Zone 12 Band R
1 Casing Volume (gals):	est on 2/25/08 = 73	Elevation:	ft. amsl
3 Casing Volumes (gals):	221		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:17	10	10	7.23	23.4	621	clear	no	
13:21	10	50	7.22	23.2	620	"	"	y
13:25	10	90	7.24	23.4	625	"	"	7
13:29	10	130	7.22	23.0	619	"	"	11
13:33	10	170	7.22	22.8	620	"	"	11
13:37	10	210	7.24	22.9	618	"	"	5

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Osborn 436	13:42	Plastic	*	3	EPA 300.0	*	
DUPD72208	13:43						

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-22-08
Well ID:		Weather:	Partly Cloudy
ADWR No.		Collected By:	<del>MARK ARNOLDSON</del> John Villinski

### WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):		GPS:	
1 Casing Volume (gals):		Elevation:	ft amsl
3 Casing Volumes (gals):			

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FB 072208	—	Plastic	*	3	EPA 300.0	*	
EQB072208			1	3	1	4	1

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-22-08
Well ID:	Palmer 819	Weather:	Partly cloudy
ADWR No.	55-578819	Collected By:	MARK ARNESON John Villins

### WELL DATA

Well Depth (ft bis):	220	Time:	
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	<del>no access</del>	GPS:	Zone 12 Band R
1 Casing Volume (gals):	<del></del>	Elevation:	ft. amsl
3 Casing Volumes (gals):	<del></del>		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
<del>12:25</del>	<del></del>	<del></del>	<del>7.83</del>	<del>30.8</del>	<del>554</del>	<del>clear</del>	<del>No</del>	<del></del>
12:35			7.64	25.8	548	clear	No	

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PALMER 819	12:35	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Sample directly from Tank - 1<sup>st</sup> sample was sitting in hose - discarded.



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-21-08
Well ID:	Paragalos 413	Weather:	cloudy
ADWR No.	35-76413	Collected By:	MARK ARNESON John Villinski

### WELL DATA

Well Depth (ft bis):	200	Time:	no access
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	est. 60	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	365	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	1096		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
14:10	10	50	6.90	23.6	1435	clear	no	
14:20	10	150	6.87	22.1	1191	"	"	
14:30	10	250	6.97	21.9	1218	"	"	"
14:40	10	350	6.97	22.1	1290	"	"	"
14:50	10	450	6.94	21.8	1325	"	"	"
15:00	10	550	6.97	21.8	1350	"	"	"
15:10	10	650	6.97	21.8	1360	"	"	"
15:20	10	750	6.94	21.8	1371	"	"	"
15:30	10	850	6.95	21.8	1388	"	"	"
15:40	10	950	6.93	21.8	1390	"	"	"
15:50	10	1050	6.95	21.9	1390	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Paragalos 413	13:55	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

pump on @ 14:05. well is used for irrigation.  
 No WL access - est. ~60 ft bmp. Total pumped 1100 gallons  
 Talked w/ Mr. Paragalos - informed me that original OTW was 40';  
 now, a few years ago when new pump installed, ~140 ft.



**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:	Parra	Weather:	Sunny
ADWR No.	576 415	Collected By:	John Villinski

**WELL DATA**

Well Depth (ft bls):	355'	Time:	
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	263' from 1999	GPS:	
1 Casing Volume (gals):	95 (use WL=290')	Elevation:	ft amsl
3 Casing Volumes (gals):	286		

Pump on @ 8:18 @ 6.5 gpm

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:20	6.5	13	6.94	22.4	1244	clear	no	
8:25	6.5	45	6.98	22.2	1253	"	"	"
8:31	6.5	84	6.98	22.1	1248	"	"	"
8:38	7.5	137	7.01	22.2	1247	"	"	"
8:46	7.5	197	6.98	22.4	1247	"	"	"
8:56	6.5	262	7.01	22.4	1250	"	"	"
9:04	6.5	314	7.00	22.4	1248	"	"	"

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Parra	9:07	Plastic	*	3	EPA 300.0	*	
DVP073108	9:10	11	*	3	11	*	

Additional Comments: \*(1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

well obstructed @ 60'. almost got probe stuck @ 42'. Estimate depth to WL @ 290 like RUIZ & COLLINS  
Normal household use this morning

8/18/08 280.06





# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-17-08
Well ID:	PIONKE	Weather:	Clear
ADWR No.	613395	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bis):	330	Time:	8:15
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	149.88	GPS:	601048N 3468956E Zone 12 Band R
1 Casing Volume (gals):	264	Elevation:	4592 ft. amsl
3 Casing Volumes (gals):	793		45min

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:32	18	36	6.85	23.3	1202	Clear	No	Open Valve 8:30
8:35	"	90	6.94	22.1	1230	"	"	
8:40	"	180	6.97	21.9	1203	"	"	
8:45	"	270	7.01	22.1	1199	"	"	
8:55	"	450	6.96	21.9	1189	"	"	
9:05	"	630	7.06	21.9	1190	"	"	
9:12	"	756	6.99	21.9	1209	"	"	
Total Discharge 810 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PIONKE	9:15	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: \_\_\_\_\_

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\_\_\_\_\_



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	08/12/08
Well ID:	PIONKE	Weather:	Sunny 85°
ADWR No.	613395	Collected By:	Mark Arneson

### WELL DATA

Well Depth (ft bls):	330	Time:	1305
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	149.91	GPS:	3468956 N 601048 E
1 Casing Volume (gals):	264	Elevation:	ALS to Survey August 18, 2008
3 Casing Volumes (gals):	793		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1330	15	15	6.92	25.3	1178	Clear	No	-
1335	15	90	7.07	22.5	1002	"	"	-
1340	15	165	7.16	22	1134	"	"	-
1345	15	220	7.12	21.7	1199	"	"	-
1350	15	275	7.11	21.6	1202	"	"	-
1355	15	330	7.11	21.6	1198	"	"	-

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PIONKE	1400	Plastic	*	7	FMCQB-WT	*	-

Additional Comments: \* (1) 500 ml Raw; (1) 250 ml Raw/Nitric; (1) 125 ml Raw/NaOH & Zinc Acetate  
(1) 125 ml Filtered/Nitric; (1) 250 ml Filtered; (1) 100 ml Raw/Sodium Thiosulfate  
(1) 250 ml Raw/Sulfuric



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:	POOL	Weather:	Sunny, windy
ADWR No.	509518	Collected By:	John Villinski

### WELL DATA

Well Depth (ft bis):	<del>205</del> 313	Time:	11.48
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	205.56	GPS:	
1 Casing Volume (gals):	158	Elevation:	
3 Casing Volumes (gals):	473 (32 min)		

pump on @ 11:58 15 gpm

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:00	15	30	7.58	23.0	587	clear	no	
12:08	15	150	7.51	22.3	603	"	"	"
12:13	15	225	7.50	22.2	603	"	"	"
12:18	15	300	7.51	22.4	600	"	"	"
12:23	15	375	7.50	22.3	601	"	"	"
12:28	15	450	7.47	22.3	599	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
POOL	12:30	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Lynn 520-432-5106

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-22-08
Well ID:	Power 535	Weather:	Sunny / Warm
ADWR No.	55-624 535	Collected By:	MARK ARNESON John Villinski

### WELL DATA

Well Depth (ft bis):	100	Time:	9:41
Casing Diameter (in):	7	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	42.82 (measured in unused well)	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	114	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	343		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:46	14.3	14.3	6.97	22.3	607	clear	no	—
9:49	14.3	57	6.97	22.8	759	"	"	—
9:52	12	93	6.97	21.7	767	"	"	—
9:55	11.1	126	6.92	21.5				
9:56	well ran dry →				127 gals	- let recover		
10:26	pump on							
10:30			7.10	21.7	795	clear	no	
10:35	sample							

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Power 535	10:35	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Cannot access pump well - measured WL in unused well. Pumped the well dry in 10 mins. Need garden hose





# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-17-08
Well ID:	RAMIREZ	Weather:	clear
ADWR No.	216425	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bis):	300'	Time:	10:55
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	obstructed	GPS:	599731N 3467586E Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	4594 ft. amsl
3 Casing Volumes (gals):	NA		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:00	12	36	7.24	26.2	440	clear	Na	open b'6 at 10:55
11:05	"	96	7.29	24.1	443	"	"	
11:10	"	156	7.25	24.3	459	"	"	
11:20	"	276	7.28	24.4	437	"	"	
11:30	"	396	7.32	24.5	439	"	"	
Total Discharge 456 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RAMIREZ	11:35	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: This well was running on arrival. Cannot get w/ here as it is obstructed. 11:20 New landscape areas are flooded



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-29-08
Well ID:	Ray	Weather:	Clear, warm
ADWR No.	803772	Collected By:	John Villinski

### WELL DATA

Well Depth (ft bis):	100'	Time:	45.25 13:05
Casing Diameter (in):	8"	Point of Measurement:	TOC
Static Water Level (ft bmp):	45.25	GPS:	
1 Casing Volume (gals):	143	Elevation:	
3 Casing Volumes (gals):	429		

pump on @ 13:02 45 min

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:11	10	30	6.86	23.3	1450	clear	no	
13:17	10	90	6.96	22.9	1445	"	"	"
13:22	10	140	6.98	21.5	1427	"	"	"
13:27	10	190	6.99	21.2	1390	"	"	"
13:32	10	240	6.99	21.6	1412	"	"	"
13:37	10	290	6.99	21.4	1406	"	"	"
13:42	10	340	7.00	21.5	1409			
13:48	10	400	6.99	21.4	1412			
13:52	10	440	6.98	21.8	1411			

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RAY	13:55	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

Marla Ray ~~was~~ had Doctor's appt in morning  
 so sampling was sched. for the afternoon.  
 Water off for 4+ hrs before sampling  
 Mrs Ray is buying water - not being provided any -  
 what is her sulfate level?



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-17-08
Well ID:	ROGERS E	Weather:	clear
ADWR No.	216018	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bis):	285	Time:	9:48
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	149.65	GPS:	600464N 3467634E Zone 12 Band R
1 Casing Volume (gals):	198.8	Elevation:	4607 ft. amsl
3 Casing Volumes (gals):	596 <small>40 min</small>		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:58	15	45	7.25	24.9	450	clear	No	open bit at 9:55
10:00	11	75	7.31	23.5	445	"	"	
10:10	11	225	7.22	23.0	442	"	"	flow is steady
10:20	"	375	7.24	23.0	443	"	"	
10:30	"	525	7.28	23.0	449	"	"	
10:33	"	570	7.28	23.0	446	"	"	
Total Discharge 615 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ROGERS E	10:36	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

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**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-29-08
Well ID:	Rogers 803	Weather:	P. Cloudy
ADWR No.	641803	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	140'	Time:	<del>13:46</del> 10:00
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	131.86	GPS:	
1 Casing Volume (gals):	12	Elevation:	ft amsl
3 Casing Volumes (gals):	36		

Pump on 10:06

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:07	18	10	7.26	25.9	694	clear	no	
10:10	10	40	6.81	23.1	340	"	"	"
10:12	10	60	6.78	23.1	339	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Rogers 803	10:15	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered  
 1st sample may have carry-over in hose



**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No. 8720000	Client: Freeport Copper Queen Branch
Task No. 2.2	Date: 7-30-08
Well ID: RUIZ	Weather: Sunny
ADWR No. <del>531770</del> 531770	Collected By: John Villinski

WELL DATA

Well Depth (ft bls): 312	Time: 12:05
Casing Diameter (in): 6	Point of Measurement: TOC
Static Water Level (ft bmp): 293.86	GPS:
1 Casing Volume (gals): 26.6	Elevation:
3 Casing Volumes (gals): 80	

12:12  
FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:15	4.5	13.5	6.95	22.8	996	clear	no	—
12:19	4.5	27.5	6.95	21.9	997	clear	"	h
12:23	4.5	44.5	6.97	21.8	995	"	"	h
12:27	4.5	67.5	6.96	21.8	999	"	"	
12:31	4.5	85.5	6.99	22.1	999			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RUIZ	12:35	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: If Tim knows you are coming, he will have it set for you that you can turn the switch on the electrical box and the pump will go on

**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No. 8720000	Client: Freeport Copper Queen Branch
Task No. 2.2	Date: 7-29-08
Well ID: Schwarz	Weather: mostly Sunny
ADWR No. 210865	Collected By: John Villinski

WELL DATA

Well Depth (ft bis): 305'	Time: 10:45
Casing Diameter (in): 6"	Point of Measurement: TOC
Static Water Level (ft bmp): 122.64	GPS:
1 Casing Volume (gals): 264	Elevation:
3 Casing Volumes (gals): 793	

pump on @ 10:46 (66 min purge)

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:48	12	24	7.06	23.4	1156	clear	no	
10:54	12	96	7.12	22.8	1139	"	"	"
11:00	12	168	7.15	22.4	1082	"	"	"
11:06	12	240	7.19	22.4	1003	"	"	"
11:12	12	312	7.23	22.4	972	"	"	"
11:18	12	384	7.22	22.3	956	"	"	"
11:25	12	468	7.25	22.3	954	"	"	"
11:32	12	552	7.17	22.4	952	"	"	"
11:39	12	636	7.26	22.3	954			
11:46	12	720	7.26	22.5	949			
11:52	12	804	7.25	22.4	955			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Schwarz	11:55	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: did one lead of wash before I came. was off all night



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-5-08
Well ID:	SRL	Weather:	clear
ADWR No.	211345	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	965	Time:	9:55
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	543.70	GPS:	3472505N 599723E
1 Casing Volume (gals):	618.8	Elevation:	ft amsl 4807
3 Casing Volumes (gals):	1856		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:05	30	150	7.21	24.2	483	Pink	No	Pump on @ 10:00
10:10	20	250	7.33	26.3	452	light pink	No	
10:15	15	325	7.47	25.5	454	" "	"	
10:35	8	485	7.53	26.4	455	" "	"	
10:50	8	605	7.44	27.1	451	" "	"	
11:00	8	685	7.40	27.2	452	" "	"	
Total Discharge 765 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SRL	11:10	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Pump is set at 760' b to c









# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7/24/08
Well ID:	SWAN	Weather:	clear
ADWR No.	—	Collected By:	MARK ARNESON <i>Johna Villinski</i>

### WELL DATA

Well Depth (ft bis):	98	Time:	1:20
Casing Diameter (in):	4	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	32.06	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	66	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	198		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1:33	12	12	7.22	27.1	513	clear	no	—
1:36	12	48	7.30	24.6	539	"	"	"
1:39	12	84	7.33	24.2	513	"	"	"
1:42	12	120	7.35	22.8	509	"	"	"
1:45	12	156	7.34	22.6	505	"	"	"
1:49	12	204	7.35	22.4	506	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SWAN	13:53	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-15-08
Well ID:	TM-02A	Weather:	Clear
ADWR No.	522574	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	925	Time:	13:00
Casing Diameter (in):	4	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	353.91	GPS:	3472008N 604152E UTM NAD 83
1 Casing Volume (gals):	368	Elevation:	4808.43 ft. amsl NAVD 88
3 Casing Volumes (gals):	1107		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1340	9	162	7.77	28.3	383	4 tan	No	Pump on 1322
1400	9	342	7.83	25.5	379	clear	no	
1420	9	522	7.86	28.2	371	"	"	
1440	7	662	7.88	25.6	369	"	"	
1500	7	802	7.83	26.2	366	"	"	
1515	5	877	7.84	26.4	369	"	"	
1525	Flow is down to < 2 gpm							
		Total Discharge 952 gal						

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-02A	15:30	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	6-6-08
Well ID:	TM-03	Weather:	Clear
ADWR No.	522575	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	200	Time:	6:55
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	128.02	GPS:	3473711N 606366E
1 Casing Volume (gals):	47	Elevation:	ft amsl 4897
3 Casing Volumes (gals):	141		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
705	10	10	7.16	21.3	829	clear	No	Pump on 7:04
708	11	40	7.21	21.4	841	"	"	
710	11	60	7.17	21.5	839	"	"	
712	11	80	7.08	21.5	838	"	"	
714	11	100	7.08	21.5	834	"	"	
716	11	120	7.07	21.5	830	"	"	
718	11	140	7.08	21.6	828	"	"	
Total Discharge					160 gal			

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-03	7:20	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-4-08
Well ID:	TM-06 MILLER	Weather:	Clear
ADWR No.	522695	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	200	Time:	15:36
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	158.80	GPS:	3768346N 606055E
1 Casing Volume (gals):	26.8	Elevation:	ft amsl 4707
3 Casing Volumes (gals):	81		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1549	10	10	7.49	22.1	534	Gray	No	Pump on 15:48
1551	"	30	7.37	21.0	522	clear	"	
1554	"	60	7.42	21.0	527	"	"	
1556	"	80	7.41	20.7	529	"	"	
Total Discharge 120 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-06 MILLER	16:00	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered





# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	Swan TMO8	Weather:	partly cloudy
ADWR No.	522817	Collected By:	MARK ARNESON John Villivski

WELL DATA			
Well Depth (ft bis):	817	Time:	13:40
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	no higher 600'	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	141	Elevation:	on file ft. amsl
2 Casing Volumes (gals):	425 (47 min)		

FIELD SAMPLING DATA								
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:47	9	18	7.96	28.7	516	clear	no	—
13:51	9	54	7.94	28.6	519	clear	no	—
13:58	9	117	7.97	28.0	518	"	"	—
14:03	9	162	7.94	28.5	524	"	"	—
14:09	9	210	7.85	28.4	528	"	"	—
14:16	9	273	7.82	27.4	514	"	"	—
14:21	9	318	7.77	27.7	522	"	"	↓
14:25	9	390	7.76	28.2	521	"	"	↓
14:34	9	435	7.76	28.1	522	"	"	↓

SAMPLE INFORMATION							
Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SWANTMO8	14:37	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered  
 (Kim Wilson heard) that someone got a measurement ~ 700'. Not certain -  
 guess WL no higher than 600'



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	TM-14 Nelson	Weather:	Clear
ADWR No.	522816	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	215	Time:	9:40
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	210.02	GPS:	599627N 3470110E Zone 12 Band R
1 Casing Volume (gals):	7.3	Elevation:	4618 ft. amsl
3 Casing Volumes (gals):	22.0		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:55	6	6	7.22	27.6	474	Clear	No	Opad. & 9:54
9:56	out of water							

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
<del>TM-14 NELSON</del>		Plastic	*	3	EPA 300-0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

*This well is dry and will not pump any water.*





# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8.5-08
Well ID:	TM-15 MILLER	Weather:	Clear
ADWR No.	522699	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	325	Time:	12:57
Casing Diameter (in):	4	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	No Access	GPS:	3471427N 599617E
1 Casing Volume (gals):	N/A	Elevation:	ft amsl 4730
3 Casing Volumes (gals):			

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1300	6.0	16	7.24	24.0	411	clear	yes	perception 1258
1303	"	39	7.45	23.3	415	"	No	
1304	"	48	7.46	23.3	417	"	"	
1307	"	72	7.42	23.3	413			
Total Discharge 96gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-15 MILLER	13:10	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-6-08
Well ID:	TM-16	Weather:	clear
ADWR No.	522578	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	115	Time:	7:58
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	81.65	GPS:	3471427N 599617E
1 Casing Volume (gals):	21.7	Elevation:	ft amsl 4729
3 Casing Volumes (gals):	66		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:03	10	10	6.70	21.4	1395	clear	No	Pumped at 8:03
8:05	"	30	6.68	21.0	1403	"	"	
8:07	"	50	6.66	20.9	1412	"	"	
8:08	"	60	6.67	20.9	1410	"	"	
Total Discharge 80 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-16	8:10	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-6-08
Well ID:	TM-19A	Weather:	Clear
ADWR No.	522581	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	210	Time:	9:25
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	199.19	GPS:	602458E 3469197N
1 Casing Volume (gals):	7	Elevation:	ft amsl 4646
3 Casing Volumes (gals):	21		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:35	15	15	6.85	23.1	518	clear	No	Reason 9:34
9:36	"	30	7.22	22.4	493	"	"	
9:38	"		7.32	22.6	494	"	"	
Total Discharge 90 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-19A	9:40	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered





# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-6-08
Well ID:	TM-42	Weather:	Clear
ADWR No.	562554	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	250	Time:	8:35
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	211.55	GPS:	603698E 3469104N
1 Casing Volume (gals):	25	Elevation:	ft amsl 4667
3 Casing Volumes (gals):	75		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:38	6	6	6.65	22.4	1397	Clear	No	pump on 8:37
8:40	"	12	6.64	21.8	1396	"	"	
8:42	5	38	6.62	21.9	1410	"	"	
8:45	5	53	6.64	21.9	1393	"	"	
8:48	5	68	6.65	21.9	1380	"	"	
8:50	5	78	6.69	22.0	1388	"	"	
Total Discharge 93 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-42	8:53	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered



**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-4-08
Well ID:	TM-43	Weather:	clear
ADWR No.	564729	Collected By:	MARK ARNESON

**WELL DATA**

Well Depth (ft bls):	250 830	Time:	0955
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	148.70	GPS:	3474670N 605365E
1 Casing Volume (gals):	444	Elevation:	ft amsl 4971
3 Casing Volumes (gals):	1334		

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1012	8	16	8.31	22.7	442	lt gray	yes	Pumpen 10/10
1016	"	48	8.24	22.3	428	clear	"	
1021	"	88	8.28	22.6	422	"	"	
1031	"	168	8.15	23.1	418	"	"	
1041	"	248	8.17	23.3	421	"	slight	
1101	"	408	8.03	24.1	429	"	"	
1131	"	648	7.96	24.8	436	"	"	
1201	"	888	7.90	25.3	442	"	"	
1231	"	1128	7.91	25.7	434			
MB 1300	"		8.14	25.7	436			
1255		1320						

Total Discharge 1360 gal

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-43	13:00	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered



**HYDRO GEO CHEM, INC.**  
**Groundwater Sampling Form**

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-4-08
Well ID:	TM-43A	Weather:	Clear
ADWR No.	564726	Collected By:	MARK ARNESON

**WELL DATA**

Well Depth (ft bls):	215	Time:	9:10
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	133.71	GPS:	3474661N 605358E
1 Casing Volume (gals):	53	Elevation:	ft amsl 4970
3 Casing Volumes (gals):	160 gal		

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
924	6	12	6.00	22.3	3239	clear	No	pump on 9:22
927	"	60	6.07	21.6	2996	"	"	
931	"	84	6.11	21.6	3019	"	"	
935	5	104	6.09	21.7	3080	"	"	
940	5	129	6.06	21.5	3113	"	"	
945	5	154	6.03	21.6	3149	"	"	
		Total Discharge 154 gal						

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-43A	9:44	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered



**HYDRO GEO CHEM, INC.**  
Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-5-08
Well ID:	TM-43B	Weather:	Clear
ADWR No.	565004	Collected By:	MARK ARNESON

**WELL DATA**

Well Depth (ft bls):	215	Time:	6:28
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	65.21	GPS:	3474379N 605444E
1 Casing Volume (gals):	97.7	Elevation:	ft amsl 4922
3 Casing Volumes (gals):	293		

**FIELD SAMPLING DATA**

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
6:43	6	6	6.85	20.7	643	Black	yes	pump on 6:42
6:45	"	18	6.96	20.9	532	Clear	"	
6:49	"	42	6.98	20.8	511	"	"	
6:53	"	66	6.92	20.8	509	"	"	flow steady
6:59	"	102	6.91	20.8	505	"	"	
7:09	"	162	6.89	21.0	507			
7:13	Flow dropped to 0							
Total Discharge = 186 gal								

**SAMPLE INFORMATION**

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-43B	8:10	Plastic	*	3	EPA 300.0	*	
DUPO80508	8:10	"	"	"	"	"	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered





# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	TVI 236	Weather:	Clear
ADWR No.	802236	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	222	Time:	7:50
Casing Diameter (in):	12"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	121.55	GPS:	600564N 3167001E Zone 12 Band R
1 Casing Volume (gals):	593	Elevation:	4572 ft. amsl
3 Casing Volumes (gals):	1780		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:18	500	13,000	7.26	22.6	511	Clear	No	Pump on at 7:52
8:23	500	15,500	7.39	21.9	532	"	"	

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TVI 236	8:25	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: This well has been off for 5 days.

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# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	TVI 875	Weather:	Clear
ADWR No.	568875	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	330	Time:	8:00
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	126.30 (TVI 70)	GPS:	600737N 3468417E Zone 12 Band R
1 Casing Volume (gals):	300	Elevation:	4752 ft. amsl
3 Casing Volumes (gals):	900		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:47	500	3500	7.23	23.4	955	Clear	No	Pump on 8:40
8:51	11	5500	7.36	22.7	932	"	"	
8:54	11	7500	7.27	22.4	925	"	"	

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TVI 875	9:00	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered  
 This well has been off for 5 days



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	Walker 393	Weather:	<del>Clear</del> Partly Cloudy
ADWR No.	55-200393	Collected By:	MARK ARNESON John Villinski

### WELL DATA

Well Depth (ft bis):	120	Time:	9:07
Casing Diameter (in):	5 1/2	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	42.65	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	95	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	286		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:13	10	30	7.17	21.3	738	clear	no	
9:17	10	70	7.20	20.6	734	"	"	"
9:21	12	118	7.21	20.6	740	"	"	"
9:25	12	166	7.23	20.6	738	"	"	"
9:30	12	226	7.25	20.6	744	"	"	"
9:35	13	296	7.25	20.7	740	"	"	"

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Walker 393	9:38	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered





# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	WEISKOPF	Weather:	clear
ADWR No.	641802	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bls):	200	Time:	8:25
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	144.22	GPS:	601147N 3468667E Zone 12 Band R
1 Casing Volume (gals):	82	Elevation:	4602 ft. amsl
3 Casing Volumes (gals):	247		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:46	10	10	6.93	22.6	1381	Clear	No	opened at 8:39
8:43	"	40	7.05	22.0	1331	"	"	
8:47	"	80	7.09	22.3	1354	"	"	
8:52	"	130	7.08	22.2	1389	"	"	
8:57	"	180	7.10	22.3	1384	"	"	
9:02	"	230	7.07	22.2	1399	"	"	
Total Discharge 260 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
WEISKOPF	9:05	Plastic	*	3	EPA 300.0	*	

Additional Comments: \* (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered



# HYDRO GEO CHEM, INC.

## Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	ZANDER	Weather:	clear
ADWR No.	205126	Collected By:	MARK ARNESON

### WELL DATA

Well Depth (ft bis):	280	Time:	11:25
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	146.40	GPS:	599677N 346903E Zone 12 Band R
1 Casing Volume (gals):	196	Elevation:	4566 ft. amsl
3 Casing Volumes (gals):	588		

### FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:34	20	80	7.00	25.3	444	clear	No	open 0.6 11:30
11:39	"	180	7.00	23.1	433	"	"	
11:44	"	280	7.11	24.1	437	"	"	
11:49	"	380	6.94	22.8	434	"	"	
11:54	"	480	6.94	22.8	440	"	"	
11:59	"	580	6.92	22.9	441	"	"	
Total Discharge 660 gal								

### SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ZANDER	12:03	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: