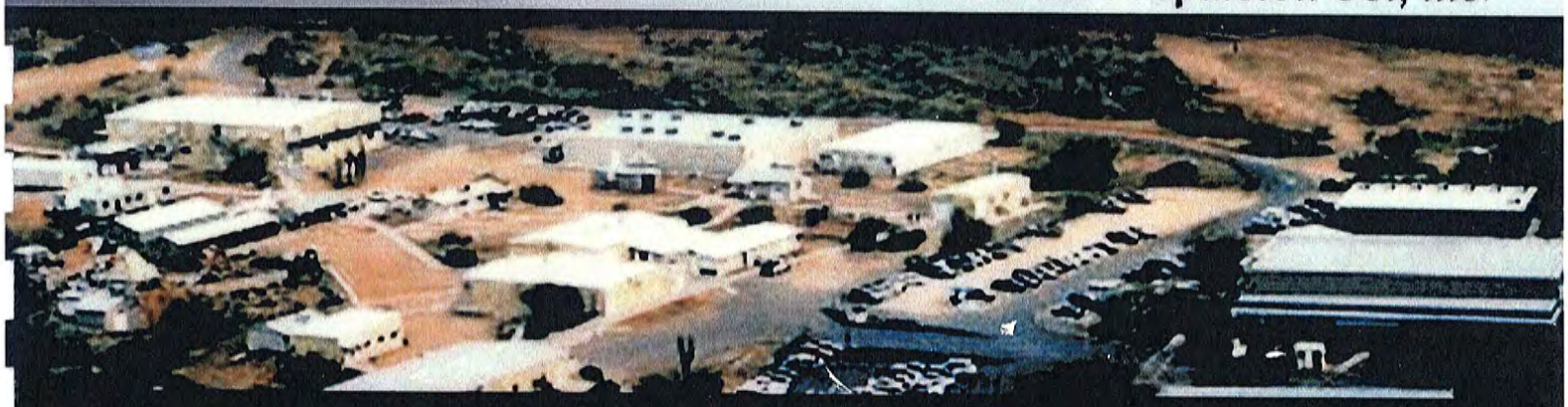
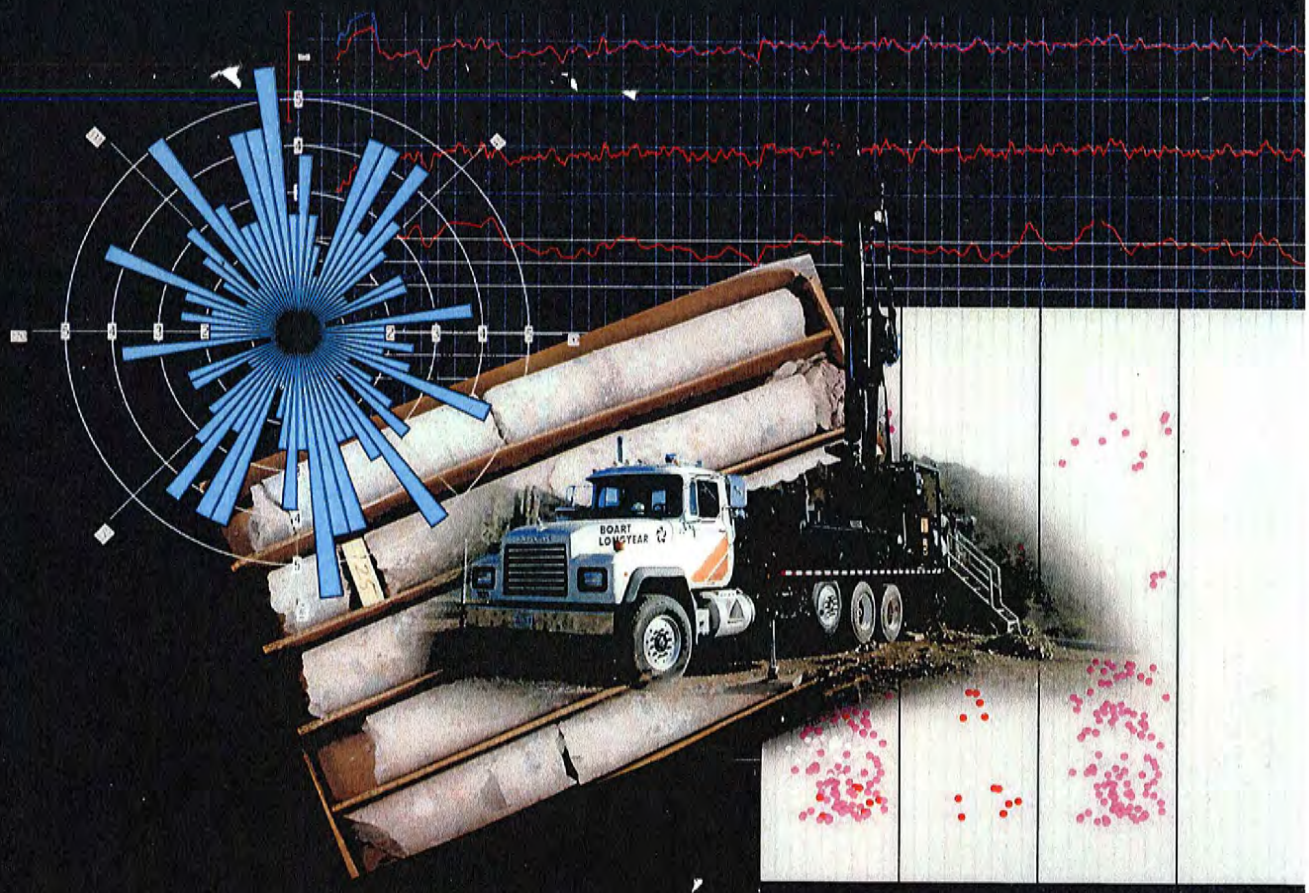
2008 ANNUAL MONITORING REPORT

Universal Propulsion Co., Inc.





DECEMBER 2009

GOODRICH | MALCOLM PIRNIE

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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
DEC 21 2009
Waste Programs Div.
Permits Section

December 18, 2009

Mr. Richard Olm, P.E.
Hazardous Waste Permits Unit
Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, Arizona 85007

Re: Final 2008 Annual Monitoring Report
Consent Order P-136-04
Universal Propulsion Company, Inc.
Phoenix, Arizona 85085

Dear Mr. Olm:

Please find attached the Final 2008 Annual Monitoring Report for the Universal Propulsion Company, Inc. (UPCO). The draft report, dated March 2009, had been submitted to the Arizona Department of Environmental Quality (ADEQ) for review; however, no comments had been received on the draft report.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluated the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please contact Ms. Karen Mittleider at (623) 516-3340, extension 2266 if you have any questions or need additional information.

Sincerely,

Jerry Ricketts

Jerry Ricketts
Value Stream Director

cc: Robin Thomas, ADEQ
David Haag, ADEQ
Philip McNeely, City of Phoenix
Donn Stoltzfus, City of Phoenix
Karen Mittleider, UPCO
Cynthia Stefanovic, ASLD
Anthony Orlich, ASLD
Bruce Campbell, ASLD
David Gordon, Malcolm Pirnie

Universal Propulsion Company, Inc.
25401 North Central Avenue • Phoenix, Arizona 85085

2008 Annual Monitoring Report

December 2009

Registered Professional Engineer (Chemical)
CERTIFICATE NO.
37697
GREGORY C.
GUIMOND
Date Signed 12/17/09
ARIZONA, U.S.A.
Expires: 6/30/11

Report Prepared By:

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MALCOLM PIRNIE

Registered Professional Engineer (Chemical) CERTIFICATE NO. 37697 GREGORY C. GUIMOND Date Signed 12/17/09 ARIZONA, U.S.A. Expires: 6/30/11

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1. Introduction

This Annual Monitoring Report (report) summarizes the monitoring activities and additional site investigations conducted at the Universal Propulsion Company, Inc. (UPCO) facility (site) in Phoenix, Arizona during 2008. The additional investigative activities included installation and monitoring of three site monitor wells and a nested multi-port soil vapor monitor well. This report continues to be part of an overall site characterization for soil and groundwater pursuant to Consent Order (Order) No. P-136-04 entered into between UPCO and the Arizona Department of Environmental Quality (ADEQ).

This report is supported by the Remedial Investigation Work Plan (Hargis+Associates, Inc. (H+A), 2004a), Quality Assurance Project Plan (QAPP) (H+A, 2004b), Groundwater Monitoring Plan (Malcolm Pirnie, 2004a), Updated Groundwater Monitoring Plan (Malcolm Pirnie, 2008a), and the Supplemental Soil and Soil Gas Investigation Work Plan (Malcolm Pirnie, 2008b). This report consists of the following:

- facility description;
- summary of previous groundwater investigations;
- additional site investigative activities;
- data evaluation and verification;
- summary of monitoring activities for the year;
- lists of wells that were sampled, including sample dates and analyses performed;
- table of water level measurements including, well identification, date and time of measurement, depth to water below measuring point and groundwater elevation above mean sea level;
- table of analytical data;
- hydrographs for the UPCO facility groundwater monitor wells;
- maps of groundwater elevation data;
- trend graphs of perchlorate concentrations for the UPCO facility groundwater monitor wells;
- investigation derived waste (IDW) documentation;
- copies of laboratory reports and data verification summaries; and
- recommendations for revisions to the monitoring plan.

1.1. Facility Description

The UPCO facility is located approximately two miles north of the Deer Valley Airport, Phoenix, Arizona (Figure 1). Specifically, the facility is at the intersection of Central Avenue and Happy Valley Road at an address of 25401 North Central Avenue. The site is within the southeast quarter of Section 5, Township 4 North, Range 3 East of the Gila and Salt River Baseline and Meridian. The UPCO facility is located on approximately 160 acres of land leased from the State of Arizona and consists of numerous manufacturing and administrative buildings (Figure 2). A fence surrounds the facility and restricts general access. The facility was initially constructed in 1972.

3. Monitoring Activities

3.1. Previous Groundwater Investigation Activities

A summary of previous groundwater investigation activities is presented below:

3.1.1. 2004 Activities

The UPCO facility production well (PW-1) and point of entry (POE) have been sampled periodically as part of county requirements for water service providers. During 2004, perchlorate was detected at concentrations ranging from non-detect to 2.1 micrograms per liter (µg/L).

Monitor wells MW-1 and MW-2 were installed in December 2003 and sampled three times during the first quarter of 2004. During those sampling events, perchlorate was detected in samples collected from MW-1 and MW-2 at concentrations ranging from 39 to 130 µg/L.

Monitor wells MW-3 through MW-6 were installed in August 2004 and sampled three times during the fourth quarter of 2004. Monitor wells MW-7 and MW-8 were installed in October 2004 and sampled twice during the second quarter of 2004. During those sampling events, perchlorate was detected in samples collected from MW-5 and MW-6 at concentrations of 6.4 and 18 µg/L, respectively. Perchlorate was not detected above the laboratory reporting limit (2 µg/L) in samples collected from MW-3, MW-4, MW-7, and MW-8.

UPCO and ADEQ sampled private domestic wells during the fourth quarter of 2004. ADEQ also sampled wells at the Arizona Department of Transportation (ADOT) facility located south west of the UPCO facility. Perchlorate was not detected above the laboratory reporting limit (2 µg/L) in samples collected from the private wells or at the ADOT facility.

Depth to groundwater measurements were collected monthly at each of the UPCO monitor wells during 2004.

3.1.2. 2005 Activities

Monitor wells MW-9 and MW-10 were installed in January 2005 and sampled quarterly during 2005. During those sampling events, perchlorate was not detected above the laboratory reporting limit (2 µg/L).

UPCO and ADEQ sampled private domestic wells semi-annually during 2005. Perchlorate was not detected above the laboratory reporting limit (2 µg/L) in samples collected from the private wells.

Depth to groundwater measurements were collected monthly at each of the UPCO monitor wells during 2005.

3.1.3. 2006 Activities

Monitor wells MW-11 and MW-12 were installed in December 2005 and initially sampled quarterly during 2006. During those sampling events, perchlorate was detected in samples collected from MW-11 at concentrations ranging from less than the laboratory reporting limit (2 µg/L) to 2.2 µg/L. Perchlorate was not detected above the laboratory reporting limit (2 µg/L) in samples collected from MW-12.

During the fourth quarter 2006 groundwater monitoring event conducted in November, the private wells were analyzed for perchlorate using two analytical methods. The two methods included EPA Method 314.0, which is specified in the Order, and EPA Method 332.0. This was performed for a comparative analysis between different perchlorate analytical testing methods. The results of the perchlorate comparative analysis showed concentration values ranging between 0.68 µg/L and 2.0 µg/L. The results of the perchlorate analysis for the UPCO monitor wells using both methods were analyzed for wells with perchlorate detection previously reported below 2 µg/L. Perchlorate analysis for UPCO monitor wells sampled during this quarter using Method 322.0 showed a range in concentration between 0.59 µg/L in monitor well MW-3 and 2.2 µg/L in monitor well MW-11. The HBGL specified in the order for perchlorate is 14 µg/L.

3.1.4. 2007 Activities

In an effort to expand the evaluation of the hydrogeological conditions at the site, additional pressure transducers were installed on April 4, 2007 in four site wells (PW-1, MW-7, MW-8, and MW-10) and two private wells along Yearling Road (218 E.Yearling and 520 E.Yearling). Between the weeks of July 7 and August 6, 2007, UPCO conducted a geophysical survey and installed a pressure transducer at a third private well located along Yearling Road (18 E. Yearling). A review of groundwater level data collected to

date from the transducers indicate that the groundwater elevation in the private wells are currently lower than at the nearest site wells, MW-3 and MW-4. Wells MW-3 and MW-4 are completed in bedrock units, and both show an overall declining water level trend. More recently, some of the private well owners have also resorted to drilling deeper wells as water levels have continued to decline in the area.

During the 2007 monitoring period, perchlorate was detected in monitor wells MW-1, MW-2, MW-5, MW-6 and MW-11. Perchlorate was detected in groundwater samples collected from MW-1 at concentrations ranging from 70 µg/L to 76 µg/L; from MW-2 at concentrations ranging from 80 µg/L to 87 µg/L; from MW-5 at concentrations ranging from 19 µg/L to 22 µg/L; from MW-6 at concentrations ranging from 15 µg/L to 18 µg/L; and from MW-11 at concentrations ranging from less than 2 µg/L to 2.4 µg/L. Perchlorate was not detected at concentrations above the laboratory reporting limit (2 µg/L) in the remaining UPCO monitor wells, including the deep monitor well (MW-12) located near MW-1. Perchlorate was detected in samples collected from PW-1 and the POE at concentrations ranging from less than 2 µg/L to 3 µg/L.

Perchlorate was detected once in one of the private domestic wells at a concentration above the EPA Method 314.0 laboratory reporting limit of 2 µg/L. Perchlorate was detected in one sample collected from 520 East Yearling at a concentration of 2.4 µg/L. During the 2007 groundwater monitoring period, the site wells were analyzed for perchlorate using three analytical methods. The three methods included EPA Method 314.0, which is specified in the Order, and EPA Methods 332.0 and 6850. This was performed for a comparative analysis between different perchlorate analytical testing methods. The newer methods for perchlorate analysis were utilized in an attempt to obtain lower reporting limits and minimize potential false positives. Method 332.0 was promulgated by EPA and was approved by ADHS in January 2007.

3.2. 2008 Groundwater Monitoring

3.2.1. Water Level Measurements

An Updated Groundwater Monitoring Plan for UPCO was submitted to ADEQ in March 2008 (Malcolm Pirnie, 2008a). Following ADEQ's approval, groundwater measurements were collected on a monthly basis. Depth to water was measured to the nearest 0.01 foot with respect to a surveyed measurement point at the top of each well using a decontaminated electronic meter.

Pressure transducer data from selected monitor wells was also transmitted to ADEQ in a separate letter dated May 15, 2008 (Malcolm Pirnie, 2008c). Some transducers were

removed from UPCO wells as described in that letter. UPCO agreed to ADEQ's request to leave the transducers in the three private wells (18 E. Yearling, 218 E. Yearling, and 520 E. Yearling) until new monitor wells MW-14 and MW-15 have been installed and aquifer testing completed. Additionally, UPCO agreed that the transducer in the private well located at 18 East Yearling will remain at least until a complete year of water level monitoring data has been recorded at that well.

3.2.2. UPCO Facility Wells Sampling

The 2008 Sampling activities were conducted in accordance with the schedule outlined in the 2007 Annual Groundwater Report (Malcolm Pirnie, 2008d). Project specific sampling procedures are outlined in the Groundwater Monitoring Plan (Malcolm Pirnie, 2004), the Updated Groundwater Monitoring Plan (Malcolm Pirnie, 2008a), and industry standard methods. Groundwater samples were collected from UPCO groundwater monitor wells (MW-1 to MW-12) on a quarterly basis in 2008. During the third quarter, installation of Phase IV monitor wells MW-13, MW-14, and MW-15 were completed. Monitor wells MW-13 and MW-15 were initially sampled on August 8, 2008 while monitor well MW-14 was sampled on August 19, 2008. Samples from the production well, PW-1, were collected at the well head and POE. It should be noted that the POE for the facility's drinking water system changed location at the beginning of 2007 due to implementation of point of use treatment at the various locations. Data presented for the POE represents the new location (at a sink in building A-1) starting in the second quarter of 2008. A list of UPCO monitor wells sampled, including dates and analysis performed, is provided in Table 3.

3.2.3. Private Wells Sampling

Private wells incorporated into the groundwater monitoring program were sampled using existing dedicated submersible pumps. Groundwater samples were collected semi-annually in the second and fourth quarter of 2008. A list of private wells that were sampled in 2008 including dates and analysis performed is included in Table 4.

3.3. Additional Monitor Well Installation

This section summarizes the Phase IV monitor well drilling and installation activities at UPCO in 2008. Phase IV involved installation of monitor wells MW-13 through MW-15 at the site. These wells were installed to address the objectives related to groundwater characterization discussed in the November 21, 2007 meeting between UPCO and ADEQ.

Monitor wells MW-13 through MW-15 were installed between May and June 2008. Monitor well installation activities were completed in general accordance with the Monitor Well Construction Work Plan (H+A, 2004c) and the Supplemental Groundwater Investigation Work Plan (Malcolm Pirnie, 2008e). The construction specifications and location of the Phase IV monitor wells were verified with ADEQ prior to construction. The Phase IV monitor well locations are included in Figure 3.

3.3.1. Drilling Methods

Drilling was accomplished using a combination of coring (4-inch outside diameter, 2.5-inch inner diameter core) and air rotary methods. The deep boring for MW-13 was drilled using a core rig. The other Phase IV wells (MW-14 and MW-15) were drilled directly with an air rotary drill rig.

At MW-13, a core rig was used to drill a 4-inch diameter pilot borehole from ground surface to total depth. Lithologic samples were collected using a core barrel advanced in five foot sections. The core samples were logged using the United Soil Classification System (USCS) in the unconsolidated units while the consolidated units (i.e. bedrock) was logged using the United States Geologic Survey (USGS) descriptions. The recovered cores were placed in labeled and wax-coated boxes and are currently stored off-site. Following borehole geophysics, the diameter of the pilot borehole was increased to 10 inches by reaming with an air rotary drill rig. Unconsolidated alluvium extended from ground surface to approximately 195 feet bgs; bedrock was present from 195 feet bgs to the total depth of the borehole at 500 feet bgs. The well was installed at a depth of 490.5 feet bgs.

Monitor wells MW-14 and MW-15 were drilled directly with an air rotary drill rig. Grab samples of the cuttings were collected at regular intervals and logged using the USCS method. The boring for each well was drilled to total depth of 503 and 350 feet bgs, respectively. The wells were installed at depths of 500, and 325 feet bgs, respectively.

At each location, a 20-foot section of low carbon steel conductor casing was grouted in place to provide a surface seal and prevent collapse of the borehole. Lithologic logs for each borehole are provided in Appendix A.

3.3.2. Rock Quality Designation (RQD) and Fracture Analysis

Rock Quality Designation (RQD) analysis was performed on the bedrock core recovered from the pilot borehole for MW-13. RQD evaluates the relative degree of fracturing of the bedrock unit and provides a systematic method of identifying the location and extent

of fracture zones. The RQD data collected from the boring for monitor well MW-13 indicates that fracture intensity of the bedrock was heterogeneous with depth. The RQD data per core run for MW-13 is provided in the draft Interim RI Summary Report (Malcolm Pirnie, 2009a).

3.3.3. Borehole Geophysics

Geophysical surveys were performed in the boreholes for monitor wells MW-13 and MW-14. The suite of geophysical techniques performed included:

- natural gamma ray;
- neutron;
- caliper;
- density;
- spontaneous potential (SP);
- temperature;
- Electric log resistivities;
- Sonic;
- acoustic borehole televiewer; and
- optical borehole televiewer.

The methods employed at each location depended upon the stability of the borehole, type of fluid in the hole such as mud or water, and potential of the borehole to retain fluid. The geophysical data was collected by a variety of source and receivers. The geophysical data are presented in the draft Interim RI Summary Report (Malcolm Pirnie 2009a).

3.3.4. Geophysical Fracture Analysis

Fracture analyses were performed in the borings for MW-13 and MW-14 to provide a quantitative assessment of the orientation and intensity of fractures. Acoustical and optical televiewer geophysical tools collected fracture data from the boreholes. The data was digitized and reduced to conduct the fracture analyses. The orientation and depth interval were recorded for each fracture observed. Borehole geophysics collected in these borings, as well as others at the site, indicates there is not a strong preferential orientation of the fractures, as fractures are observed in a variety of orientations. A summary of the fracture analyses of the geophysical logs for MW-13 and MW-14 are provided in the draft Interim RI Summary Report (Malcolm Pirnie, 2009a).

3.3.5. Hydrophysical Logging

Hydrogeophysical logging (HPL) activities were conducted at the borehole for monitor well MW-14 between June 23, 2008 and June 25, 2008. Hydrophysical analyses consisted of an ambient flow characterization (AFC) test, a hydraulic characterization (HC) test using a prescribed draw down to determine well productivity, and a pumping during injection (PDI) test to monitor changes in fluid electrical conductivity (FEC). HPL logging was only performed at the MW-14 borehole location. Planned HPL logging was not conducted at the MW-13 borehole location due to borehole instability. Results of the hydrophysical testing are summarized in the draft Interim RI Summary Report (Malcolm Pirnie 2009a).

3.3.6. Zonal Sampling

Depth specific (zonal) groundwater samples were collected during the drilling of monitor wells MW-13 and MW-14 using both packer assemblies and temporary wells (Malcolm Pirnie, 2009a). At MW-13, zonal samples were collected at 247 to 269 feet bgs with a temporary well set, and at 480 to 502 feet bgs with a packer assembly. At MW-14, zonal samples were collected at 285 to 305 feet bgs and 413.5 to 500 feet bgs with a packer assembly, and at 360 to 380 feet bgs with a temporary well set.

A zonal groundwater sample was also collected during the drilling of soil vapor monitor well SVMW-1 (see Section 3.4). At SVMW-1, a zonal sample was collected at 218 to 238 feet bgs (at the upper surface of groundwater) with a temporary well set (Malcolm Pirnie, 2009a).

3.3.7. Monitor Well Installation

Monitor wells were installed in each borehole following completion of drilling and geophysical survey activities. The wells were constructed in the manner outlined in the Supplemental Groundwater Investigation Work Plan (Malcolm Pirnie, 2008e). A summary of the well information for the UPCO facility monitor wells is included in Table 1. As-built well construction diagrams are provided in Appendix A.

3.3.8. Monitor Well Development

Monitor wells MW-13 through MW-15 were developed within one week of installation. The monitor wells were developed by swabbing, surging, bailing and pumping. Development activities were conducted for two to eight hours at each well. The well screen was surged in 10-foot sections from the top of the interval to the bottom for between 30 and 45 minutes. A bailer was used to remove settled solids that had entered the casing during surging for between two to five hours. A submersible Grundfos pump

been attributed to the well installation activities. On September 20, 2008, monitor well MW-13 was further developed and two additional groundwater samples were collected, one after purging three well volumes from the well and one after pumping for approximately eight hours. Results of the additional sampling are discussed in Section 4. Monitor well MW-15 was sampled on August 8, 2008 while monitor well MW-14 was sampled on August 19, 2008. In accordance with the Groundwater Monitoring Plan (Malcolm Pirnie, 2004c), and the Updated Groundwater Monitoring Plan (Malcolm Pirnie, 2008a), monitor wells MW-13, MW-14, and MW-15 were incorporated into UPCO's groundwater monitoring program in 2008. The results of the initial groundwater sampling activities were presented in the Third Quarter 2008 Monitoring Report (Malcolm Pirnie, 2008f).

3.4. Soil Vapor Monitor Well Installation

During the fourth quarter of 2008, a nested soil vapor monitor well (SVMW-1) was installed in B-Complex. Prior to installation, a temporary well was constructed in the borehole with a temporary well set screened at approximately 218-238 feet bgs. A grab groundwater sample was collected from the temporary well on October 23, 2008 and groundwater elevation was recorded from a surveyed measurement point on October 29, 2008. The temporary well was then removed, the bottom of the borehole was grouted, and the soil vapor monitor well was constructed. SVMW-1 consists of four nested wells, including one well with a 0.5-inch diameter schedule 80 PVC casing and 0.04-inch slot screen (installed at 190 to 200 feet bgs) and three wells with 2-inch diameter schedule 80 PVC casing with 0.02-inch slot screens. The screen interval for each sampling port was determined based on the analytical results for VOCs collected from boring BC-SG41 during the Supplemental Soil and Soil Gas Investigation. The soil gas monitoring screens, each ten feet in length, were installed at 190-200 feet bgs, 140-150 feet bgs, 90-100 feet bgs, and 30-40 feet bgs, respectively. Annular construction materials included #8-12 silica sand, 3/8"-inch washed pea gravel, bentonite pellets, and neat cement grout. Annular materials were delivered to the subsurface using a tremie pipe. The SVMW-1 lithologic log and as-built well construction diagram are included in Appendix A.

3.5. Survey

A state registered land surveyor established horizontal and vertical control at each Phase IV monitor well. The vertical coordinates of the sounding port, top of casing, and ground surface were surveyed in the Arizona State Plane Coordinate System (NGVD 29) with units of international feet above mean sea level. The measuring point elevation of the PVC sounding tube port contained in the well seal was measured to the nearest 0.01 foot.

The measuring point was marked on the north side of the port. The horizontal coordinates of the well were surveyed in the Arizona State Plane Coordinate System, Central Zone, North American Datum 1983 (NAD 83) with units of international feet. Survey information is provided in Table 1.

3.6. Investigative Derived Waste (IDW)

Soil cuttings and water generated during the drilling, installation, development, and sampling of the monitor wells was stored in roll-off bins or poly tanks. The soil and water were sampled and characterized prior to off site disposal. IDW documentation is included in the draft Interim RI Summary Report (Malcolm Pirnie 2009a). Water generated during well installation, well development, and sampling of the monitor wells was stored in 5,000 gallon poly tanks and a 20,000 frac tank. The water was sampled and characterized prior to offsite disposal. IDW documentation related to groundwater sampling during 2008 is presented in Appendix B.

4. Data Evaluation

4.1. Groundwater Level Measurements

Groundwater elevations have been monitored at and near the UPCO facility to evaluate potential gradients. These measurements have been collected at UPCO site wide monitor wells and private wells located near the north property boundary at 18 East Yearling, 218 East Yearling and 520 East Yearling Road using electronic water level equipment and dedicated pressure transducers.

Historic depth to groundwater measurements and groundwater elevations for site and private wells are summarized in Appendix C. Historic hydrographs are presented in Appendix D. Graphs of the transducer data collected to date are presented in Appendix D. Groundwater elevation maps for 2008 are provided on Figures 5 through 15.

The highest water elevations were observed in late 2004 to early 2005, and the lowest elevations for a majority of the wells were observed in 2008. A potential geologic structure (Malcolm Pirnie, 2009a) is located east of the area monitored by MW-6, MW-7 and MW-10, and generally on the west side of the UPCO facility. Groundwater elevations on the west side of the structure are approximately 30 feet higher than on the east side of the structure. The wells located east of the potential geologic structure, with the exception of MW-3 and MW-4, showed a nearly static/slightly declining water level trend. The difference between the minimum and maximum groundwater elevations measured in each of these wells in 2008 (i.e., the groundwater elevation decline) varied between 0.08 feet in newly installed monitor well MW-13 and 1.66 feet in monitor well MW-3. Monitor wells MW-3 and MW-4 continue to show a larger decline in groundwater elevations with differences in minimum and maximum groundwater elevations of 1.66 and 1.14 feet, respectively.

West of the potential geologic structure, groundwater elevations were also declining. However, monitor well MW-6 showed a mainly rising trend during the first half of 2008. The difference between the minimum and maximum groundwater elevations for these wells varied by 0.76 and 0.95 feet in monitor wells MW-7 and MW-10, and 4.12 feet in monitor well MW-6.

A review of groundwater level data collected from wells with transducers indicate a general declining trend. The observed declining trend in the transducers is in agreement

with the manual measurements. As stated previously, UPCO in consultation with ADEQ reduced the number of transducer measurements conducted in site wells, while installing additional transducers in the newly constructed monitor wells MW-14 and MW-15. Groundwater elevations in the private wells are currently lower than at the nearest site wells, MW-3 and MW-4. Hydrographs for the private wells show pumping level drawdowns ranging from 10 to 50 feet below static levels, particularly during the on-cycles which may correlate with cumulative peak periods of use (Appendix D). However, this drawdown has not been observed in the nearest site wells showing, at a minimum, that the short term pumping-related drawdown does not extend very far. Although, as noted above, wells MW-3 and MW-4 show steeper water level declines when compared to other onsite wells suggesting that the overall lowered water table to the north is propagating south toward the site.

4.2. Groundwater Quality Data

Tables presenting water quality analytical data for the UPCO monitor wells, UPCO production well, and the POE are summarized in Appendix E. The perchlorate results for the UPCO monitor wells are provided in Table 5. A table presenting water quality analytical data for the private wells is provided in Appendix F. The perchlorate results for the private wells are provided in Table 6. Perchlorate concentration trend plots for each UPCO monitor well are presented in Appendix G. Field parameter data collected during 2008 sampling events is provided in Appendix H. Figures 16 through 19 present perchlorate concentration maps for First Quarter 2008 through Fourth Quarter 2008.

4.2.1. Perchlorate

The Arizona Department of Health Services (ADHS) Health Based Guidance Level (HBGL) identified by ADEQ in the Order is 14 µg/L for perchlorate. The laboratory reporting limit using the Order-specified EPA Method 314.0 is 2 µg/L. During the 2008 monitoring period, perchlorate was detected in monitor wells MW-1, MW-2, MW-5, MW-6, MW-11, MW-13 and MW-14. Perchlorate was detected in groundwater samples collected from MW-1 at concentrations ranging from 73 µg/L to 76 µg/L; from MW-2 at concentrations ranging from 78 µg/L to 88 µg/L; from MW-5 at concentrations ranging from 22 µg/L to 25 µg/L; from MW-6 at concentrations ranging from 15 µg/L to 18 µg/L; from MW-13 at concentrations ranging from 220 µg/L to 330 µg/L, from MW-14 at concentrations ranging from ranging from less than 2 µg/L to 2.5 µg/L and from MW-11 at concentrations ranging from less than 2 µg/L to 2.6 µg/L.

Perchlorate was not detected at concentrations above the laboratory reporting limit (2 µg/L) in the remaining UPCO monitor wells, including the newly installed monitor well

MW-15 and the deep monitor well (MW-12) located near MW-1. Perchlorate was detected in samples collected from PW-1 and the POE at concentrations ranging from less than 2 µg/L to 2.5 µg/L.

During the 2008 monitoring period, perchlorate was detected once in one of the private domestic wells at a concentration above the EPA Method 314.0 laboratory reporting limit of 2 µg/L. Perchlorate was detected in one sample collected from 25903 N. 2nd St at a concentration of 2.2 µg/L.

During the 2008 groundwater monitoring period, the site wells were analyzed for perchlorate using two analytical methods. The two methods included EPA Method 314.0, which is specified in the Order, and EPA Method 332.0. Two methods were performed for a comparative analysis between different perchlorate analytical testing methods. The results of the perchlorate comparative analyses for the site wells are included in Table 5, and show concentration values ranging between 0.46 µg/L in monitor well MW-3 and 210 µg/L in monitor well MW-13. The results of the perchlorate comparative analysis for the private wells are included in Table 6, and show concentration values ranging between 0.72 µg/L and 3.1 µg/L.

4.2.2. VOCs

Eight VOCs were detected during 2008 groundwater sampling activities including 1,1-DCE, 1,1-DCA , 1,4-dioxane, bromoform, chloroform, dibromochloromethane, toluene and trihalomethanes (Appendix E). These detections were at concentrations below the applicable Arizona Aquifer Water Quality Standard (AWQS). 1,1-DCE was detected in groundwater samples collected from PW-1 and POE at concentrations ranging from less than the laboratory reporting limit of 2 µg/L to 4.3 µg/L. The AWQS for 1,1-DCE is 7 µg/L. 1,1-DCA was detected in groundwater samples collected from PW-1 at concentrations ranging from less than the laboratory reporting limit of 0.50 µg/L to 0.52 µg/L. A numeric standard has not been established for 1,1-DCA. 1.4-Dioxane was detected in samples collected from MW-1, MW-2, MW-14, MW-15, PW-1 and POE at concentrations ranging from less than 1 µg/L to 3.7 µg/L. 1,4-Dioxane does not have an applicable AWQS; however, the EPA preliminary remediation goal (PRG) for 1,4-dioxane is 6.1 µg/L. Bromoform, chloroform, and dibromochloromethane were detected in samples collected from MW-15, PW-1 and POE. These chemicals are classified as trihalomethanes and were detected below the AWQS for total trihalomethanes, which is 100 µg/L. Toluene was detected in groundwater samples collected from MW-15 at concentrations ranging from less than the laboratory reporting limit of 0.5 µg/L to 0.77 µg/L. The AWQS for toluene is 1,000 µg/L.

4.2.3. Metals

Barium was detected in each of the UPCO monitor wells, except for MW-7, and ranged in concentration from 0.003 mg/L to 0.23 mg/L. The AWQS for barium is 2 mg/L. Arsenic was detected in monitor wells MW-2, MW-3, MW-4, MW-8, MW-9, MW-10, POE, and PW-1 and ranged in concentration from 0.0023 mg/L to 0.047 mg/L. The AWQS for arsenic is 0.05 mg/L. Cadmium was detected in monitor wells MW-2, MW-3, MW-4, MW-8, MW-9, MW-10, POE, and PW-1 at a concentration of 0.001 mg/L. The AWQS for cadmium is 0.005 mg/L. Chromium was detected in monitor wells MW-2, MW-3, MW-4, MW-5, MW-8, MW-9, MW-10, MW-14, POE, and PW-1 and ranged in concentration from 0.002 mg/L to 0.024 mg/L. The AWQS for chromium is 0.1 mg/L. Lead was detected in monitor wells MW-2, MW-3, MW-4, MW-8, MW-9, MW-10, POE, and PW-1 and ranged in concentration from 0.001 mg/L to 0.0037 mg/L. The AWQS for lead is 0.015 mg/L. Selenium was detected in monitor wells MW-2, MW-3, MW-4, MW-8, MW-9, MW-10, POE, and PW-1 and ranged in concentration from 0.002 mg/L to 0.0037 mg/L. The AWQS for selenium is 0.05 mg/L. Silver was detected in monitor well MW-2, MW-3, MW-4, MW-8, MW-9, MW-10, POE, and PW-1 at a concentration of 0.001 mg/L. The AWQS for silver is 0.035 mg/L. Calcium, potassium, sodium, and magnesium were detected in PW-1 and POE. However, no AWQS have been established for these metals. No other metals analyzed during the monitoring period were detected above the laboratory detection limits.

4.3. Zonal Groundwater Data

Zonal samples were collected prior to well completion within the boreholes for deeper monitor wells MW-13 and MW-14 and soil vapor monitor well SVMW-1. The zonal samples collected from MW-13, MW-14 and SVMW-1 were analyzed for perchlorate by EPA Method 314. The sample collected from the SVMW-1 borehole was also analyzed for VOCs by EPA Method 8260. Table 7 summarizes the zonal sampling analytical data for perchlorate.

The zonal sample collected from 247 to 269 feet bgs at MW-13, at the surface of the water table directly beneath the former Waterbore Area ponds, contained perchlorate at a concentration of 120,000 ug/L. The zonal sample collected at the bottom of the borehole (480 to 502 feet bgs) contained perchlorate at a concentration of 3.6 ug/L prior to reaming the borehole and well construction. These results also appear to indicate that limited vertical migration of perchlorate has occurred but has not extended to the depths that the private wells are screened. Perchlorate concentrations at MW-13 after well installation ranged between 220 and 330 ug/L in 2008 and have exhibited lower concentrations with additional purging. The initial elevated perchlorate concentration in

MW-13 may be related to well installation activities and not representative of the aquifer water quality at that location. Continued quarterly monitoring will be conducted to confirm this observation.

The zonal samples collected at MW-14 from 285 to 305 feet bgs, 360 to 380 feet bgs, and 413.5 to 500 feet bgs, did not contain perchlorate at a detectable concentration (<2 ug/L).

The zonal sample at SVMW-1, collected at 218 to 238 feet bgs, contained perchlorate at a concentration of 7.8 ug/L. Acetone and MEK were the only VOCs detected in the groundwater sample at concentrations of 45 ug/L and 4.6 ug/L, respectively. Acetone was also detected in the trip blank sample that was concurrently submitted to the laboratory with the zonal sample. AWQS' have not been established for acetone or MEK. The primary contaminant of concern in soil vapor, 1,1-DCE was not detected in the grab groundwater sample. The VOC analysis for the zonal sample collected at SVMW-1 is presented in Table 8.

4.4. Soil Vapor Data

Soil gas samples were collected from SVMW-1 on November 13, 2008 and analytical results are summarized in Table 9. The primary contaminant of concern, 1,1-DCE, was detected at 800 parts per billion vapor (ppbv) at 30 feet bgs, 11,000 ppbv at 90 feet bgs, at 3,100 ppbv at 140 feet bgs and at 180 ppbv at 190 feet bgs. As stated in Section 4.3, a grab groundwater sample was collected from a temporary well during the installation of SVMW-1. Analysis of the grab groundwater sample indicated that significant migration of VOCs from soil vapor to groundwater has not occurred. Soil vapor will continue to be sampled quarterly at this location to monitor potential VOC migration in soil beneath B-Complex.

5. Quality Assurance and Data Verification

Analytical data provided by the laboratories were subjected to data review for quality control/quality assurance. A summary of the data verification is presented in Appendix I. Copies of the analytical data reports are provided in Appendix J.

Groundwater monitoring activities followed the quality assurance procedures outlined in the QAPP (H+A, 2004b). The project specific QAPP establishes procedures and guidance for the following:

- data quality objectives;
- sample documentation and custody;
- sample container requirements;
- quality control procedures; and
- quality assurance management including, data management and data verification/validation procedures.

Samples were collected and submitted to the laboratory in a manner that provides data that are representative of site conditions. Laboratory analyses were conducted according to analytical methods described in EPA guidance manuals. Field quality control (QC) samples included field duplicates and trip blanks. Laboratory QC samples included method blanks, laboratory control samples (LCS), and matrix spike/matrix spike duplicate (MS/MSD) samples.

Laboratory deliverables consist of Level II data packages (including a QC summary). Data reported by the laboratory has been verified that the data meets the data quality objectives. The results were considered usable for the intended purposes, and the project data quality objectives (DQOs) specified in the QAPP (H+A, 2004b) were met.

6. Future Monitoring Activities

6.1. 2009 Monitoring Program

The 2009 monitoring program was conducted in accordance with the procedure and methods outlined in the Updated Groundwater Monitoring Plan (Malcolm Pirnie, 2008a). UPCO revised the monitoring program to include the quarterly monitoring requirements for the new groundwater wells (MW-13, MW-14, and MW-15) and the soil vapor monitor well (SVMW-1). The 2009 sampling and analysis schedule is summarized in Table 10. The current location of the POE, at the sink in the building A-1 lunchroom, no longer provides value-added data for monitoring groundwater quality at the UPCO site. Sampling at the POE for groundwater monitoring purposes did not occur in 2009. UPCO will continue to collect samples at the POE to remain in compliance with drinking water regulations.

The draft Interim RI Report (Malcolm Pirnie, 2009a) includes proposals to install three additional Phase V wells. The groundwater monitoring plan will be revised, as necessary, to include the new wells if approved by ADEQ.

Transducers were removed from the UPCO monitor wells and the private wells once at least one year of water level data had been obtained. Additional transducers will not be installed in future monitor wells.

7. References

Hargis + Associates, Inc. (H+A), 2004a. Draft Remedial Investigation Work Plan, Volume 1 of II, Goodrich Universal Propulsion Company, Inc., June 11, 2004.

_____, 2004b. Quality Assurance Project Plan, Goodrich Universal Propulsion Company, Inc., July 16, 2004.

_____, 2004c. Monitoring Well Construction Summary Report, Goodrich Universal Propulsion Company, Inc., July 16, 2004.

Malcolm Pirnie, Inc., 2004. Groundwater Monitoring Plan, Universal Propulsion Company, Inc., December 16, 2004.

_____, 2005. Phase II Monitoring Well Installation Report, Universal Propulsion Company, Inc., January 7, 2005.

_____, 2006a. Phase III Monitoring Well Installation Report, Universal Propulsion Company, Inc., April 2006.

_____, 2008a. Updated Groundwater Monitoring Plan, Universal Propulsion Company, Inc., March 14, 2008.

_____, 2008b. Supplemental Soil and Soil Gas Investigation Work Plan, Universal Propulsion Company, Inc., March 12, 2008.

_____, 2008c. Groundwater Monitoring Pressure Transducer Assessment, Universal Propulsion Company, Inc., March, 2008.

_____, 2008d. 2007 Annual Groundwater Report, Universal Propulsion Company, Inc., May 15, 2008.

_____, 2008e. Supplemental Groundwater Investigation Work Plan, Universal Propulsion Company, Inc., March 14, 2008.

_____, 2008f. Third Quarter 2008 Monitoring Report, Universal Propulsion Company, Inc., October 30, 2008.

_____, 2009a. Draft Interim RI Report, Universal Propulsion Company, Inc., February 13, 2009.

_____, 2009b. Fourth Quarter 2008 Monitoring Report, Universal Propulsion Company, Inc., January 30, 2009.

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

Tables

Table 1
UPCO Monitor Well Information

Well ID	Latitude	Longitude	ADWR Number	Total Casing Depth (feet bgs)	Screened Interval (feet bgs)	Measuring Point Elevation (feet amsl)	Approximate Depth of Transducer Below Measuring Point (ft)	Approximate Depth of Submergence of Transducer Below Static Water Level (ft)
MW-1	112°04'13.76"W	33°42'47.61"N	55-201495	240	190-240	1557.22	NA	NA
MW-2	112°04'13.03"W	33°42'53.39"N	55-201494	250	200-250	1567.62	NA	NA
MW-3	112°04'20.91"W	33°43'03.49"N	55-204197	271	221-271	1583.59	251	15
MW-4	112°04'01.27"W	33°43'06.49"N	55-204196	300	245-295	1620.34	280	5
MW-5	112°04'04.97"W	33°42'58.13"N	55-204195	285	230-280	1590.45	NA	NA
MW-6	112°04'25.09"W	33°42'50.47"N	55-204194	210	155-205	1548.22	NA	NA
MW-7	112°04'26.79"W	33°42'42.34"N	55-205001	210	155-205	1541.35	NA	NA
MW-8	112°04'11.43"W	33°42'38.66"N	55-205002	235	180-230	1542.18	NA	NA
MW-9	112°04'00.37"W	33°42'38.46"N	55-901548	255	200-250	1565.60	NA	NA
MW-10	112°04'36.07"W	33°42'47.49"N	55-901549	205	150-200	1536.11	NA	NA
MW-11	112°04'02.46"W	33°42'54.85"N	55-903736	315	260-310	1603.35	NA	NA
MW-12	112°04'13.93"W	33°42'88.09"N	55-903737	480	450-480	1557.46	NA	NA
MW-13	112°04'2.97"W	33°42'59.55"N	55-217221	490	440-490	1595.77	NA	NA
MW-14	112°04'13.66"W	33°43'10.34"N	55-217222	500	445-495	1602.48	287	23
MW-15	112°04'13.82"W	33°43'9.86"N	55-217223	325	270-320	1600.48	290	28
SVMW-1*	112°04'17.61"W	33°42'52.99"N	55-909947	200**	30 - 40 90 - 100 140 - 150 190 - 200	NA	NA	NA
Production Well (PW-1)	112°04'24.00"W	33°42'51.40"N	55-500290	500	420-480	1554.55	NA	NA

Note:
amsl = above mean sea level
NA = not available, transducer not installed
* = SVMW-1 is a Soil Vapor Montioring Well constructed above groundwater level
** = total depth of the nested well

Table 2
Private Well Information

ADDRESS	ADWR Well Registraiton ID	Well Use	Date Installed	Well Depth (Feet)	Measuring Point Elevation (feet amsl)	Approximate Depth of Transducer Below Measuring Point (ft)	Approximate Depth of Submergence of Transducer Below Static Water Level (ft)
16 E. YEARLING	55-578534	Domestic	1/26/2000	738	NA	NA	NA
18 E. YEARLING	55-212662	Domestic	5/14/2007	520	1596.79	394	35
25825 N. 1ST PLACE	55-557685	Domestic	7/22/1996	495	NA	NA	NA
520 E. YEARLING	NA	Domestic	NA	NA	1635.71	360	62
616 E. YEARLING	NA	Domestic	NA	NA	NA	NA	NA
604 E. YEARLING	NA	Domestic	NA	NA	NA	NA	NA
218 E. YEARLING	55-550038	Domestic	8/17/1995	415	1617.01	355	41
25903 N. 2ND ST	NA	Domestic	NA	NA	NA	NA	NA
412 E. YEARLING	NA	Domestic	NA	NA	NA	NA	NA
424 E. YEARLING	NA	Domestic	NA	NA	NA	NA	NA
8 W. YEARLING	55-205738	Domestic	12/2/2005	260	NA	NA	NA
122 W. YEARLING	NA	Domestic	NA	NA	NA	NA	NA
104 E. YEARLING	NA	Domestic	NA	NA	NA	NA	NA
204 E. YEARLING	NA	Domestic	NA	NA	NA	NA	NA
106 W. YEARLING	55-583418	Domestic	1/9/2001	440	NA	NA	NA

Note:
NA = not available, transducer not installed, or corresponding ADWR registry number could not be identified with the current owner or address

Table 3
UPCO Monitor Wells Sampled and Analyses Performed in 2008

Sample ID	Date Collected	Laboratory ID	Analytes and EPA Test Methods Used							
			Metals			Perchlorate		Volatile Organic Compounds		
			200.7	200.8	245.1	314.0	332	524.2	8260B	8260B-SIM
MW-1	01/15/08	PRA0956-02	X		X	X			X	X
	03/31/08	PRD0024-02RE1				X				
	10/17/08	PRJ1090-02							X	X
	10/17/08	PRJ1090-03RE1				X				
MW-2	01/19/08	PRA1219-02		X	X	X			X	X
	03/31/08	PRD0024-03RE1				X				
	07/30/08	PRG1750-05							X	X
	07/30/08	PRG1750-05RE1				X				X
	10/17/08	PRJ1090-04RE1				X				
MW-3	01/18/08	PRA1222-07		X	X	X			X	X
	01/18/08	PRA1223-02					X			
	07/30/08	PRG1750-04				X	X			
MW-4	01/19/08	PRA1219-01		X	X	X			X	X
	01/19/08	PRA1225-01					X			
	07/30/08	PRG1750-03				X	X			
MW-5	01/16/08	PRA1046-01	X		X	X			X	X
	03/31/08	PRD0024-01				X				
	07/30/08	PRG1750-02				X				
	10/17/08	PRJ1090-06				X				
MW-6	01/17/08	PRA1148-01	X		X	X			X	X
	03/31/08	PRD0024-04				X				
	07/30/08	PRG1750-01				X				
	10/17/08	PRJ1090-08				X				
MW-7	01/17/08	PRA1148-02	X		X	X			X	X
	01/17/08	PRA1149-01					X			
	08/01/08	PRH0063-01					X			
	08/01/08	PRH0063-01RE1				X				

Table 3
UPCO Monitor Wells Sampled and Analyses Performed in 2008

Sample ID	Date Collected	Laboratory ID	Analytes and EPA Test Methods Used							
			Metals			Perchlorate		Volatile Organic Compounds		
			200.7	200.8	245.1	314.0	332	524.2	8260B	8260B-SIM
MW-8	01/18/08	PRA1222-09		X	X	X			X	X
	01/18/08	PRA1223-03					X			
	07/31/08	PRG1823-01	X		X	X	X			
MW-9	01/18/08	PRA1222-06		X	X	X			X	X
	01/18/08	PRA1223-01					X			
	08/01/08	PRH0063-02					X			
	08/01/08	PRH0063-02RE1				X				
MW-10	01/18/08	PRA1222-01		X	X	X			X	X
	01/18/08	PRA1223-04					X			
	07/31/08	PRG1823-02				X	X			
MW-11	01/16/08	PRA1046-02	X		X	X			X	X
	01/16/08	PRA1048-01					X			
	08/01/08	PRH0063-03					X			
	08/01/08	PRH0063-03RE1				X				
MW-12	01/15/08	PRA0956-01	X		X	X			X	X
	01/15/08	PRA0958-01					X			
	07/31/08	PRG1823-03				X	X			
MW-13	08/08/08	PRH0600-02	X		X		X		X	X
	08/08/08	PRH0600-02RE1				X				
	10/17/08	PRJ1090-07					X			
	10/17/08	PRJ1090-07RE1				X				
MW-14	08/19/08	PRH1157-01	X		X	X	X		X	X
	10/17/08	PRJ1090-05				X	X			
MW-15	08/08/08	PRH0600-01	X		X	X	X		X	X
	10/16/08	PRJ1016-01				X	X			

Table 3
UPCO Monitor Wells Sampled and Analyses Performed in 2008

Sample ID	Date Collected	Laboratory ID	Analytes and EPA Test Methods Used							
			Metals			Perchlorate		Volatile Organic Compounds		
			200.7	200.8	245.1	314.0	332	524.2	8260B	8260B-SIM
POE	01/18/08	PRA1222-03	X	X	X	X		X		X
	04/02/08	PRD0208-02	X		X	X		X		X
	04/02/08	PRD0208-02RE1						X		
	08/01/08	PRH0063-04	X		X			X		
	08/01/08	PRH0063-04RE1				X				X
	10/20/08	PRJ1144-04	X		X	X		X		X
PW-1	01/18/08	PRA1222-02	X	X	X	X			X	X
	04/02/08	PRD0208-01	X		X	X			X	X
	08/01/08	PRH0063-05	X		X	X			X	
	08/01/08	PRH0063-05RE1								X
	10/20/08	PRJ1144-03	X		X	X			X	X

Notes:
EPA Test Methods 200.7 and 200.8 used for arsenic, barium, cadium, chromium, lead, selenium, silver, calcium, magnesium, potassium and sodium analyses
EPA Test Method 245.1 used for mercury analysis
EPA Test Methods 314.0 and 332 used for perchlorate analyses
EPA Test Methods 524.2 and 8260B used for volatile organic compound analyses
EPA Test Method 8260B-SIM used for 1,4-dioxane analysis

Table 4
Private Wells Sampled and Analyses Performed in 2008

Sample ID	Date Collected	Laboratory ID	EPA Test Method Used	
			EPA 314.0	EPA 332.0
106 W. Yearling	04/01/08	PRD0126-01	X	
	04/01/08	PRD0167-01		X
	10/15/08	PRJ0915-01	X	
	10/15/08	PRJ0920-01		X
122 W. Yearling	04/01/08	PRD0127-01	X	
	04/01/08	PRD0171-01		X
	10/13/08	PRJ0725-01	X	
	10/13/08	PRJ0724-01		X
16 E. Yearling	10/15/08	PRJ0913-01	X	
	10/15/08	PRJ0918-01		X
	04/01/08	PRD0124-01	X	
	04/01/08	PRD0165-01		X
16 E. Yearling - N	04/01/08	PRD0122-01	X	
	04/01/08	PRD0164-01		X
18 E. Yearling	04/01/08	PRD0159-01	X	
	04/01/08	PRD0175-01		X
	10/15/08	PRJ0916-01	X	
	10/15/08	PRJ0929-01		X
218 E. Yearling	04/01/08	PRD0128-01	X	
	04/01/08	PRD0174-01		X
	10/15/08	PRJ0924-01	X	
	10/15/08	PRJ0934-01		X
204 E. Yearling	10/15/08	PRJ0922-01	X	
	10/15/08	PRJ0933-01		X
25825 N. 1st Place	04/01/08	PRD0134-01	X	
	04/01/08	PRD0168-01		X
	10/15/08	PRJ0921-01	X	
	10/15/08	PRJ0931-01		X
25903 N. 2nd St	04/01/08	PRD0147-01	X	
	04/01/08	PRD0172-01		X
	10/15/08	PRJ0919-01	X	
	10/15/08	PRJ0930-01		X
412 E. Yearling	04/01/08	PRD0132-01	X	
	04/01/08	PRD0166-01		X
	10/15/08	PRJ0926-01	X	
	10/15/08	PRJ0937-01		X
424 E. Yearling	01/19/08	PRA1226-01	X	
	01/19/08	PRA1224-01		X
	04/01/08	PRD0129-01	X	
	04/01/08	PRD0176-01		X
	10/15/08	PRJ0925-01	X	
	10/15/08	PRJ0936-01		X

Table 4
Private Wells Sampled and Analyses Performed in 2008

Sample ID	Date Collected	Laboratory ID	EPA Test Method Used	
			EPA 314.0	EPA 332.0
520 E. Yearling	04/01/08	PRD0148-01	X	
	04/01/08	PRD0173-01		X
	10/15/08	PRJ0928-01	X	
	10/15/08	PRJ0940-01		X
604/616 E. Yearling	10/15/08	PRJ0927-01	X	
	10/15/08	PRJ0939-01		X
	04/01/08	PRD0131-01	X	
	04/01/08	PRD0179-01		X
8/20 W. Yearling	04/04/08	PRD0358-01	X	
	04/04/08	PRD0395-01		X
	10/15/08	PRJ0917-01	X	
	10/15/08	PRJ0923-01		X

Notes:

1) 204 East Yearling was not accessible at the time of sampling ; however, a sample was collected from the well which supplies 204 East Yearling from the front yard of 218 East Yearling and identified as '218 S E Yearling' in the laboratory report

2) 8 West Yearling and 20 West Yearling share the same well

3) 604 East Yearling and 616 East Yearling share the same well

4) 16 East Yearling has two wells which were both sampled on 4/1/2008 for comparison purposes; the second well is identified as '16 E. Yearling - N'

Table 5
2008 UPCO Monitor Well Perchlorate Results

Sample ID	Date	Perchlorate (ug/L)	
		EPA 314.0	EPA 332.0
Monitor Well MW-1			
MW-1	1/15/08	74	NA
MW-1	3/31/08	76	NA
MW-1	10/17/08	73	NA
Monitor Well MW-2			
MW-2	1/19/08	84	NA
MW-2	3/31/08	86	NA
MW-2	7/30/08	88	NA
MW-2	10/17/08	78	NA
Monitor Well MW-3			
MW-3	1/18/08	<2.0	0.46
MW-3	7/30/08	<2.0	0.69
Monitor Well MW-4			
MW-4	1/19/08	<2.0	0.53
MW-4	7/30/08	<2.0	0.74
Monitor Well MW-5			
MW-5	1/16/08	25	NA
MW-5	3/31/08	23	NA
MW-5	7/30/08	24	NA
MW-5	10/17/08	22	NA
Monitor Well MW-6			
MW-6	1/17/08	18	NA
MW-6	3/31/08	17	NA
MW-6	7/30/08	17	NA
MW-6	10/17/08	15	NA
Monitor Well MW-7			
MW-7	1/17/08	<2.0	0.49
MW-7	8/1/08	<2.0	0.73
Monitor Well MW-8			
MW-8	1/18/08	<2.0	0.92
MW-8	7/31/08	<2.0	0.88
Monitor Well MW-9			
MW-9	1/18/08	<2.0	0.68
MW-9	8/1/08	<2.0	0.86
Monitor Well MW-10			
MW-10	1/18/08	<2.0	0.75
MW-10	7/31/08	<2.0	0.87
Monitor Well MW-11			
MW-11	1/16/08	<2.0	2.6
MW-11	8/1/08	2.6	2.2
Monitor Well MW-12			
MW-12	1/15/08	<2.0	0.66
MW-12	7/31/08	<2.0	1.2
Monitor Well MW-13			
MW-13	8/8/08	330	250
MW-13	10/17/08	220	210
Monitor Well MW-14			
MW-14	8/19/08	2.5	2.6
MW-14	10/17/08	<2.0	1.1

Table 5
2008 UPCO Monitor Well Perchlorate Results

Sample ID	Date	Perchlorate (ug/L)	
		EPA 314.0	EPA 332.0
Monitor Well MW-15			
MW-15	8/8/08	<2.0	0.88
MW-15	10/16/08	<2.0	0.82
Production Well			
PW-1	1/18/08	<2.0	NA
PW-1	4/2/08	<2.0	NA
PW-1	8/1/08	2.1	NA
PW-1	10/20/08	2.2	NA
Point-of Entry			
POE	1/18/08	2.5	NA
POE	4/2/08	2.4	NA
POE	8/1/08	2.5	NA
POE	10/20/08	2.0	NA

Notes:
ug/L = micrograms per liter
NA = not analyzed
< = Analyte was not detected above the listed laboratory reporting limit.

Table 6
2008 Private Well Perchlorate Results

Sample ID	Date	Perchlorate (ug/L)	
		EPA 314.0	EPA 332.0
8 West Yearling Road			
8/20 W. Yearling	4/4/08	<2.0	0.78
8 W. Yearling	10/15/08	<2.0	1.1
16 East Yearling Road			
16 E. Yearling - N*	4/1/08	<2.0	2.6
16 E. Yearling	4/1/08	<2.0	2.9
16 E. Yearling	10/15/08	<2.0	0.77
18 East Yearling Road			
18 E.Yearling	4/1/08	<2.0	1.0
18 E.Yearling	10/15/08	<2.0	1.1
106 West Yearling Road			
106 W. Yearling	4/1/08	<2.0	1.1
106 W.Yearling	10/15/08	<2.0	0.75
122 West Yearling Road			
122 W.Yearling	4/1/08	<2.0	1.2
122 W.Yearling	10/13/08	<2.0	0.72
218 East Yearling Road			
218 E.Yearling	4/1/08	<2.0	1.3
218 E.Yearling	10/15/08	<2.0	0.80
218 E.Yearling**	10/15/08	<2.0	0.73
412 East Yearling Road			
412 E. Yearling	4/1/08	<2.0	2.1
412 E. Yearling	10/15/08	<2.0	1.5
424 East Yearling Road			
424 E. Yearling	1/19/08	<2.0	1.2
424 E. Yearling	4/1/08	<2.0	2.2
424 E. Yearling	10/15/08	<2.0	1.6
520 East Yearling Road			
520 E. Yearling	4/1/08	<2.0	2.2
520 E. Yearling	10/15/08	<2.0	1.3
604 East Yearling Road			
604-616 E. Yearling	4/1/08	<2.0	1.5
604-616 E. Yearling	10/15/08	<2.0	1.1
25825 North 1st Place			
25825 N. 1st Place	4/1/08	<2.0	1.1
25825 N. 1st Place	10/15/08	<2.0	0.97

Table 6
2008 Private Well Perchlorate Results

Sample ID	Date	Perchlorate (ug/L)	
		EPA 314.0	EPA 332.0
25903 North 2nd Street			
25903 N. 2nd St.	4/1/08	2.2	3.1
25903 N. 2nd St	10/15/08	<2.0	0.84

Notes:
* = one time sample collected from the front yard well for comparison purposes
** = 204 East Yearling was vacant at the time of sampling due to foreclosure; however, a sample was collected from the well which supplies 204 East Yearling from the front yard of 218 East Yearling and identified as '218 S E Yearling' in the laboratory report.
ug/L = micrograms per liter
< = Analyte was not detected above the listed laboratory reporting limit

Table 7
Zonal Sampling Results

Sample ID	Interval Sampled (feet bgs)	Date	Perchlorate (ug/L)
			EPA 314.0
Boring MW-13			
MW-13-247-269	247 - 269	7/15/08	120,000
MW-13-480-502	480 - 502	6/18/08	3.6
Boring MW-14			
MW-14-285-305	285 - 305	6/17/08	<2.0
MW-14-360-380	360 - 380	8/7/08	<2.0
MW-14-413.5	413.5 - 500	6/16/08	<2.0
Boring SVMW-1			
SVMW-1-218-238	218 - 238	10/23/08	7.8

Notes:
ug/L = micrograms per liter
< = Analyte was not detected above the listed laboratory reporting limit

Table 8
Temporary Well Set at SVMW-1 Groundwater Results

Parameter	SVMW-1-218 10/23/2008
Inorganics (µg/L)	
Perchlorate	7.8
Volatile Organic Compounds (µg/L)	
1,1,1,2-Tetrachloroethane	<0.50
1,1,1-Trichloroethane	<0.50
1,1,2,2-Tetrachloroethane	<0.50
1,1,2-Trichloroethane	<0.50
1,1-Dichloroethane	<0.50
1,1-Dichloroethene	<0.50
1,1-Dichloropropene	<0.50
1,2,3-Trichlorobenzene	<1.0
1,2,3-Trichloropropane	<1.0
1,2,4-Trichlorobenzene	<1.0
1,2,4-Trimethylbenzene	<0.50
1,2-Dibromo-3-chloropropane	<2.5
1,2-Dibromoethane (EDB)	<0.50
1,2-Dichlorobenzene	<0.50
1,2-Dichloroethane	<0.50
1,2-Dichloropropane	<0.50
1,3,5-Trimethylbenzene	<0.50
1,3-Dichlorobenzene	<0.50
1,3-Dichloropropane	<0.50
1,4-Dichlorobenzene	<0.50
1,4-Dioxane	<1.0
2,2-Dichloropropane	<1.0
2-Butanone (MEK)	4.6
2-Chlorotoluene	<0.50
2-Hexanone	<2.5
4-Chlorotoluene	<0.50
4-Methyl-2-pentanone (MIBK)	<2.5
Acetone	45
Benzene	<0.50
Bromobenzene	<0.50
Bromochloromethane	<0.50
Bromodichloromethane	<0.50
Bromoform	<1.0
Bromomethane	<1.0
Carbon disulfide	<0.50
Carbon tetrachloride	<0.50
Chlorobenzene	<0.50
Chloroethane	<1.0
Chloroform	<0.50
Chloromethane	<1.0
cis-1,2-Dichloroethene	<0.50
cis-1,3-Dichloropropene	<0.50
Dibromochloromethane	<0.50
Dibromomethane	<0.50
Dichlorodifluoromethane	<0.50
Ethylbenzene	<0.50
Hexachlorobutadiene	<1.0
Iodomethane	<2.5
Isopropylbenzene	<0.50
Methylene Chloride	<1.0

Table 8
Temporary Well Set at SVMW-1 Groundwater Results

Parameter	SVMW-1-218 10/23/2008
Methyl-tert-butyl Ether (MTBE)	<0.50
Naphthalene	<2.5
n-Butylbenzene	<0.50
n-Propylbenzene	<0.50
p-Isopropyltoluene	<0.50
sec-Butylbenzene	<0.50
Styrene	<0.50
tert-Butylbenzene	<0.50
Tetrachloroethene	<0.50
Toluene	<0.50
trans-1,2-Dichloroethene	<0.50
trans-1,3-Dichloropropene	<0.50
Trichloroethene	<0.50
Trichlorofluoromethane	<0.50
Vinyl Acetate	<0.50
Vinyl chloride	<0.50
Xylenes, Total	<1.0

Notes:

ug/L = Micrograms per liter

< = Analyte was not detected above the listed laboratory reporting limit

A temporary well was installed in the SVMW-1 borehole to facilitate the collection of a grab sample from the groundwater surface. After sampling, the well set was removed, and the borehole was completed as a nested soil vapor monitor well.

Table 9
Soil Vapor Monitor Well (SVMW-1) Results

Parameter	SVMW-1-30-40 11/13/2008	SVMW-1-90-100 11/13/2008	SVMW-1-140-150 11/13/2008	SVMW-1-190-200 11/13/2008
Volatile Organic Compounds (ppbv)				
1,1,1-Trichloroethane	<10	<10	<9.7	<9.8
1,1,2,2-Tetrachloroethane	<10	<10	<9.7	<9.8
1,1,2-Trichloroethane	<10	<10	<9.7	<9.8
1,1-Dichloroethane	<10	19	<9.7	<9.8
1,1-Dichloroethene	800	11000	3100	180
1,2,4-Trichlorobenzene	<40	<40	<39	<39
1,2,4-Trimethylbenzene	<10	<10	<9.7	<9.8
1,2-Dibromoethane (EDB)	<10	<10	<9.7	<9.8
1,2-Dichlorobenzene	<10	<10	<9.7	<9.8
1,2-Dichloroethane	<10	<10	<9.7	<9.8
1,2-Dichloropropane	<10	<10	<9.7	<9.8
1,3,5-Trimethylbenzene	<10	<10	<9.7	<9.8
1,3-Butadiene	<10	<10	<9.7	<9.8
1,3-Dichlorobenzene	<10	<10	<9.7	<9.8
1,4-Dichlorobenzene	<10	<10	<9.7	<9.8
2,2,4-Trimethylpentane	<10	<10	<9.7	<9.8
2-Butanone (MEK)	<20	<20	29	<20
2-Hexanone	<20	<20	<19	<20
2-Propanol	<40	<40	<39	<39
4-Ethyltoluene	<10	<10	<9.7	<9.8
4-Methyl-2-pentanone (MIBK)	<20	<20	<19	<20
Acetone	870	1200	1300	530
Allyl Chloride	<10	<10	<9.7	<9.8
Benzene	<10	<10	<9.7	<9.8
Benzyl Chloride	<40	<40	<39	<39
Bromodichloromethane	<10	<10	<9.7	<9.8
Bromoethene(Vinyl Bromide)	<10	<10	<9.7	<9.8
Bromoform	<10	<10	<9.7	<9.8
Bromomethane	<10	<10	<9.7	<9.8
Carbon disulfide	<10	32	160	15
Carbon tetrachloride	<10	<10	<9.7	<9.8
Chlorobenzene	<10	<10	<9.7	<9.8
Chloroethane	<10	<10	<9.7	<9.8
Chloroform	<10	<10	<9.7	<9.8
Chloromethane	<10	29	41	27
cis-1,2-Dichloroethene	<10	<10	<9.7	<9.8
cis-1,3-Dichloropropene	<10	<10	<9.7	<9.8
Cyclohexane	<10	<10	<9.7	<9.8
Dibromochloromethane	<10	<10	<9.7	<9.8
Dichlorodifluoromethane	<10	<10	<9.7	<9.8
Dichlorotetrafluoroethane(F-114)	<10	<10	<9.7	<9.8
Ethyl Acetate	<10	<10	<9.7	<9.8
Ethylbenzene	<10	<10	<9.7	<9.8
Freon 113	<10	<10	<9.7	<9.8
Heptane	<10	<10	17	<9.8
Hexachlorobutadiene	<20	<20	<19	<20
Hexane	<10	15	16	<9.8
m,p-Xylenes	<20	<20	<19	<20

Table 9
Soil Vapor Monitor Well (SVMW-1) Results

Parameter	SVMW-1-30-40 11/13/2008	SVMW-1-90-100 11/13/2008	SVMW-1-140-150 11/13/2008	SVMW-1-190-200 11/13/2008
Volatile Organic Compounds (ppbv)				
Methylene Chloride	<10	<10	<9.7	<9.8
Methyl-tert-butyl Ether (MTBE)	<20	<20	<19	<20
o-Xylene	<10	<10	<9.7	<9.8
Propene	<10	<10	<9.7	340
Styrene	<10	<10	<9.7	<9.8
Tetrachloroethene	<10	13	<9.7	<9.8
Tetrahydrofuran	<40	<40	<39	<39
Toluene	<10	17	34	<9.8
trans-1,2-Dichloroethene	<10	<10	<9.7	<9.8
trans-1,3-Dichloropropene	<10	<10	<9.7	<9.8
Trichloroethene	<10	43	14	<9.8
Trichlorofluoromethane	<10	<10	<9.7	<9.8
Vinyl Acetate	<10	<10	<9.7	<9.8
Vinyl chloride	<10	<10	<9.7	<9.8

Notes:
ppbv = parts per billion by volume
< = Analyte was not reported above the listed laboratory detection limit

Table 10
2009 UPCO Sampling and Analysis Schedule

Well ID	Quarter Sampled in 2009	Analyses Performed		
		Perchlorate	Metals	VOCs
MW-1	1	X (314.0)	(200.8) X	X
	2	X (314.0)		
	3	X (314.0)		X
	4	X (314.0)		
MW-2	1	X (314.0)	(200.8) X	X
	2	X (314.0)		
	3	X (314.0)		X
	4	X (314.0)		
MW-3	1	X (314.0 & 332)	(200.8) X	X
	2			
	3	X (314.0 & 332)		
	4			
MW-4	1	X (314.0 & 332)	(200.8) X	X
	2			
	3	X (314.0 & 332)		
	4			
MW-5	1	X (314.0)	(200.8) X	X
	2	X (314.0)		
	3	X (314.0)		
	4	X (314.0)		
MW-6	1	X (314.0)	(200.8) X	X
	2	X (314.0)		
	3	X (314.0)		
	4	X (314.0)		
MW-7	1	X (314.0 & 332)	(200.8) X	X
	2			
	3	X (314.0 & 332)		
	4			
MW-8	1	X (314 & 332)	(200.8) X	X
	2			
	3	X (314.0 & 332)	(200.8) X	
	4			
MW-9	1	X (314.0 & 332)	(200.8) X	X
	2			
	3	X (314.0 & 332)		
	4			
MW-10	1	X (314.0 & 332)	(200.8) X	X
	2			
	3	X (314.0 & 332)		
	4			

Table 10
2009 UPCO Sampling and Analysis Schedule

Well ID	Quarter Sampled in 2009	Analyses Performed		
		Perchlorate	Metals	VOCs
MW-11	1	X (314.0 & 332)	(200.8) X	X
	2			
	3	X (314.0 & 332)		
	4			
MW-12	1	X (314.0 & 332)	(200.8) X	X
	2			
	3	X (314.0 & 332)		
	4			
MW-13	1	X (314.0)	(200.8) X (+ Ca, Mg, K, Na)	X
	2	X (314.0)		
	3	X (314.0)		
	4	X (314.0)		
MW-14	1	X (314.0 & 332)	(200.8) X (+ Ca, Mg, K, Na	X
	2			
	3	X (314.0 & 332)		
	4			
MW-15	1	X (314.0 & 332)	(200.8) X (+ Ca, Mg, K, Na)	X
	2			
	3	X (314.0 & 332)		
	4			
PW-1	1	X (314.0)	(200.8) X (+ Ca, Mg, K, Na)	X
	2	X (314.0)	(200.8) X (+ Ca, Mg, K, Na)	X
	3	X (314.0)	(200.8) X (+ Ca, Mg, K, Na)	X
	4	X (314.0)	(200.8) X (+ Ca, Mg, K, Na)	X
SVMW-1*	1	-	-	X (TO-15)
	2	-	-	X (TO-15)
	3	-	-	X (TO-15)
	4	-	-	X (TO-15)
Private Wells	1			
	2	X (314.0 & 332)	-	-
	3			
	4	X (314.0 & 332)	-	-

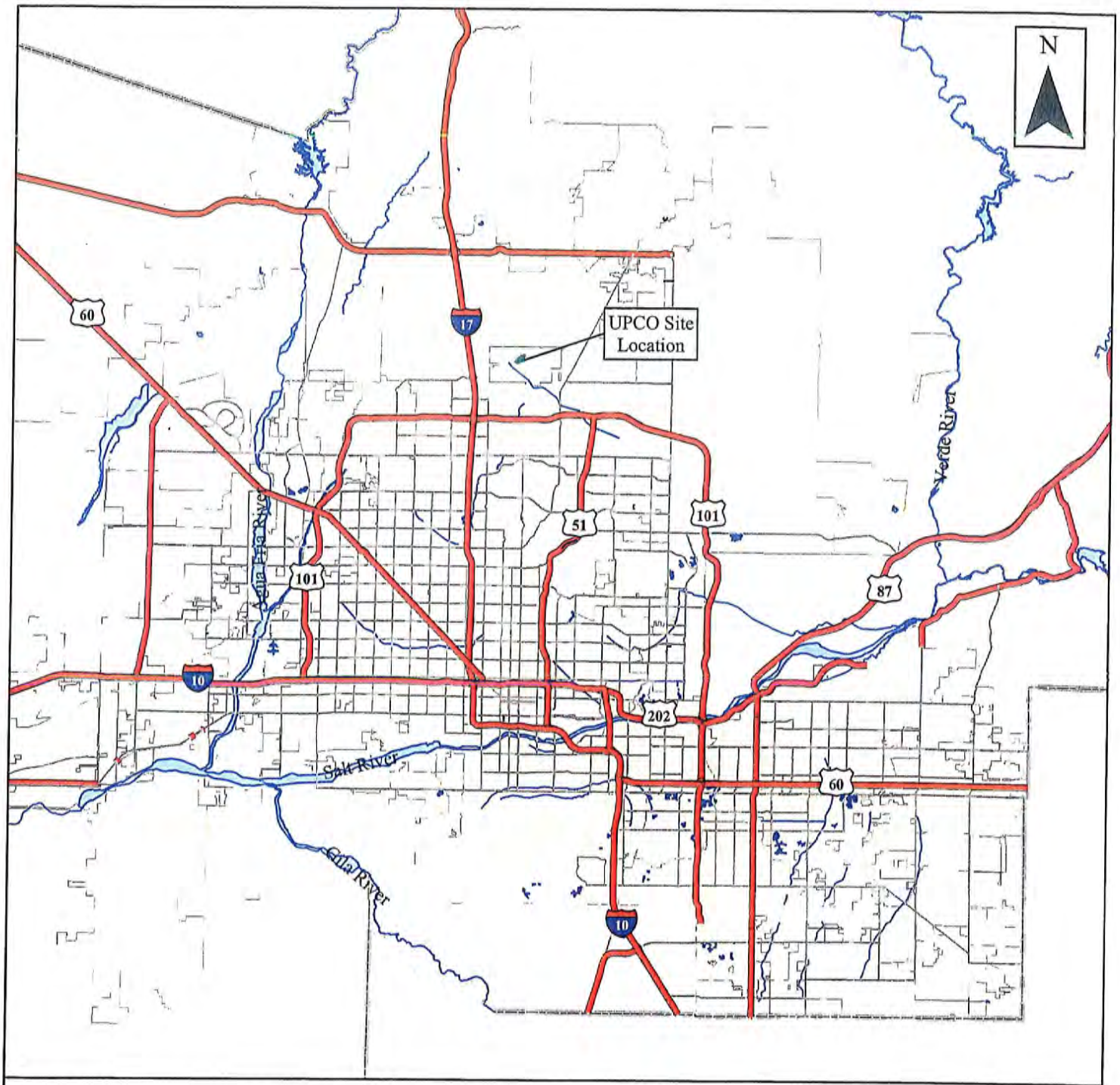
Notes:
Perchlorate = test as indicated
Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and as noted
VOCs = volatile organic compounds using EPA tests for 1,4-dioxane and 8260B, or as noted
- = not analyed
POE = point of entry sample collection located in building A-1 south cafateria sink post filtration
* = soil vapor monitoring well with sample collection in 1 liter Summa cannisters
MW-13, MW-14, and MW-15 also sampled for Cl, SO4, NO3, alkalinity, and total dissolved solids in the first quarter

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

Figures

Figures



Legend

- Site Location
- Primary Roads
- Highways, Freeways
- Rivers
- County Boundaries
- Lakes
- City Boundaries

0 2.5 5 10 15

Miles

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Site Location Map
2008 Annual Monitoring Report

December 2009

Figure 1

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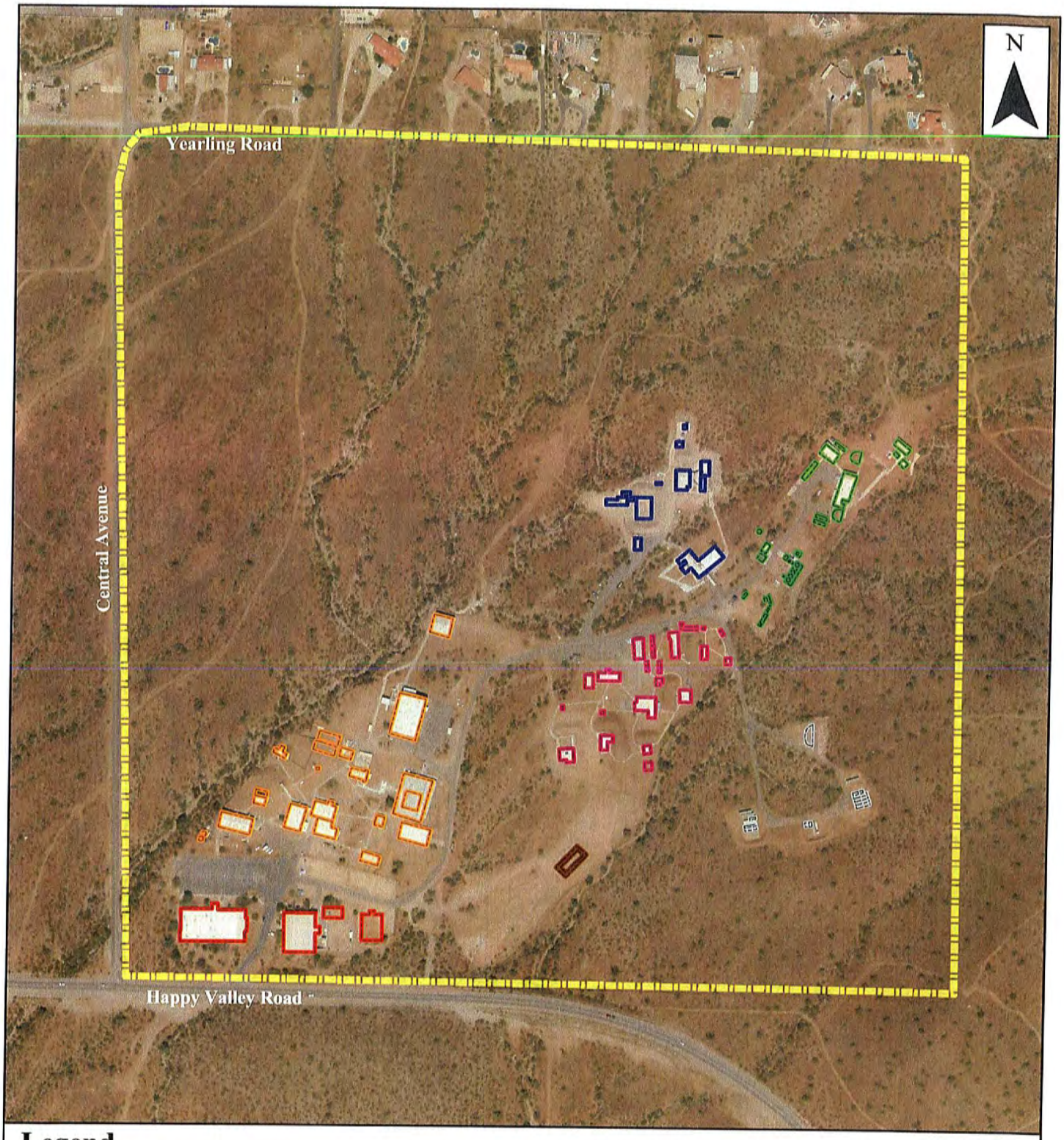

Legend

- A-Complex
- B-Complex
- C-Complex
- D-Complex
- E-Complex
- F-Complex
- Open Burn
- Lease Property Boundary

0 200 400 600 800
Feet

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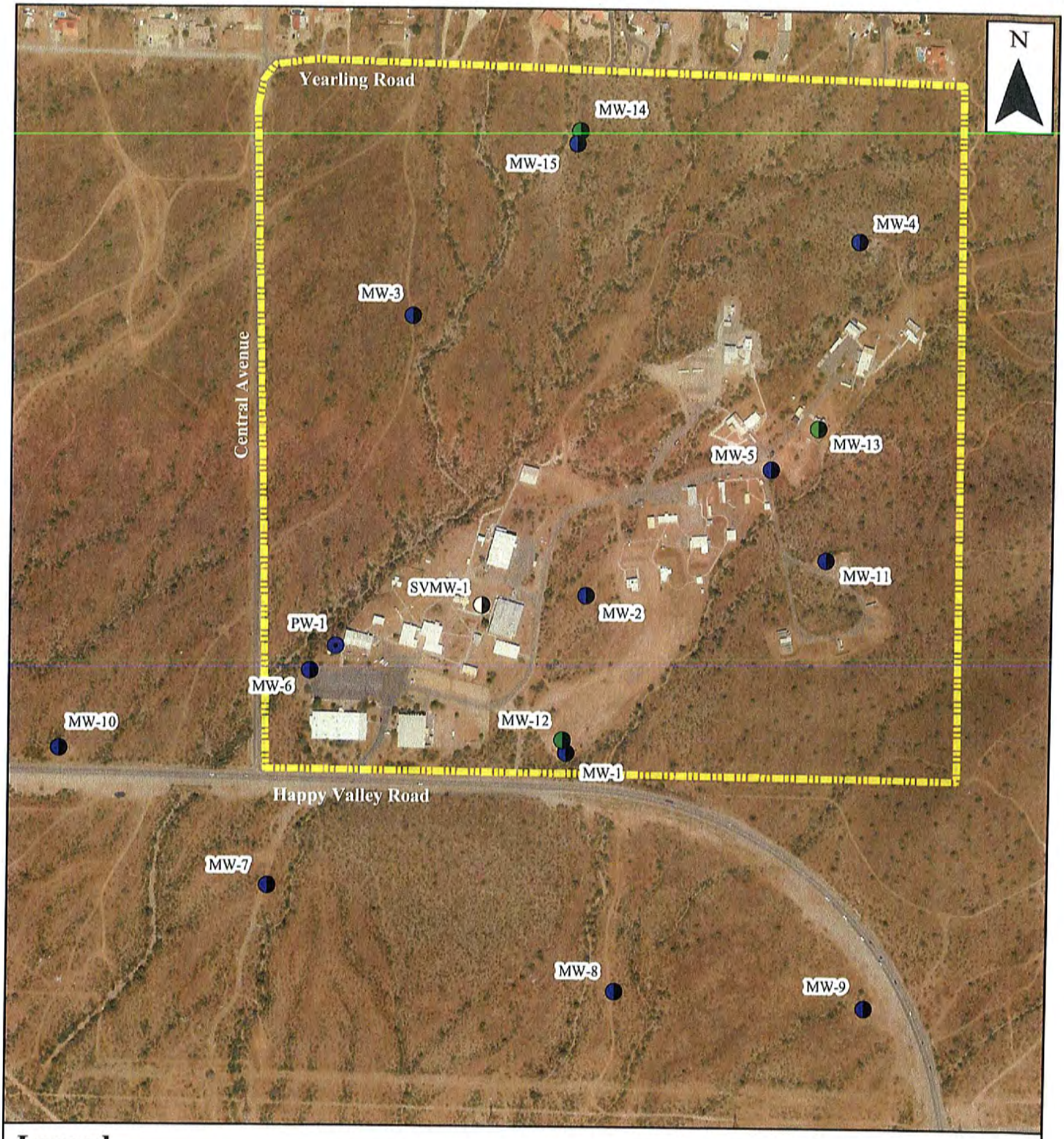
Site Facilities Map
2008 Annual Monitoring Report

December 2009

Figure 2

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure 2.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

Note: SVMW-1 is a soil vapor monitoring well installed above water level.

0 250 500 750 1,000
Feet

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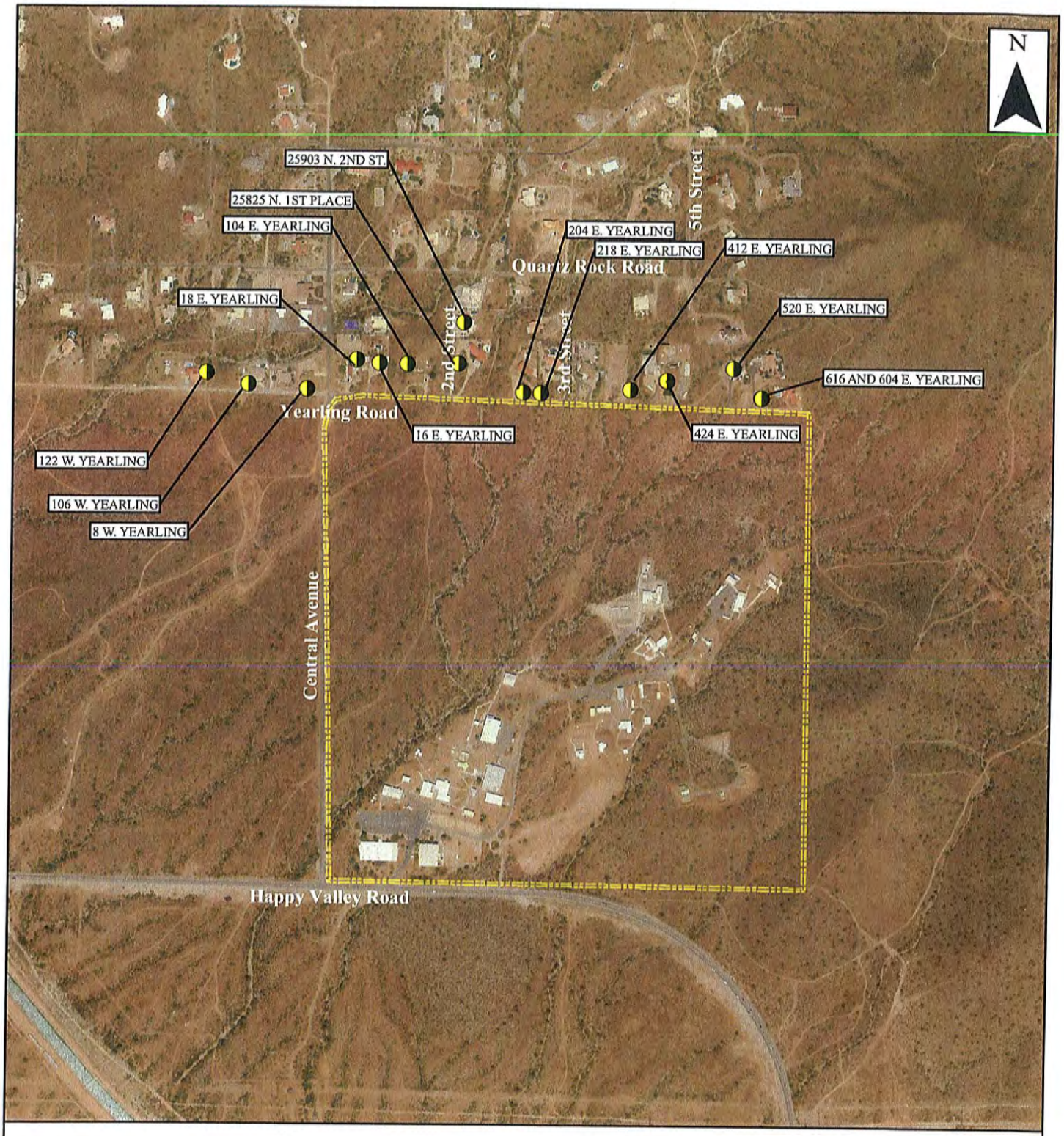
UPCO Monitor Wells
2008 Annual Monitoring Report

December 2009

Figure 3

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_3.mxd



Legend

Private Domestic Wells

Lease Property Boundary

0 250 500 750 1,000
Feet

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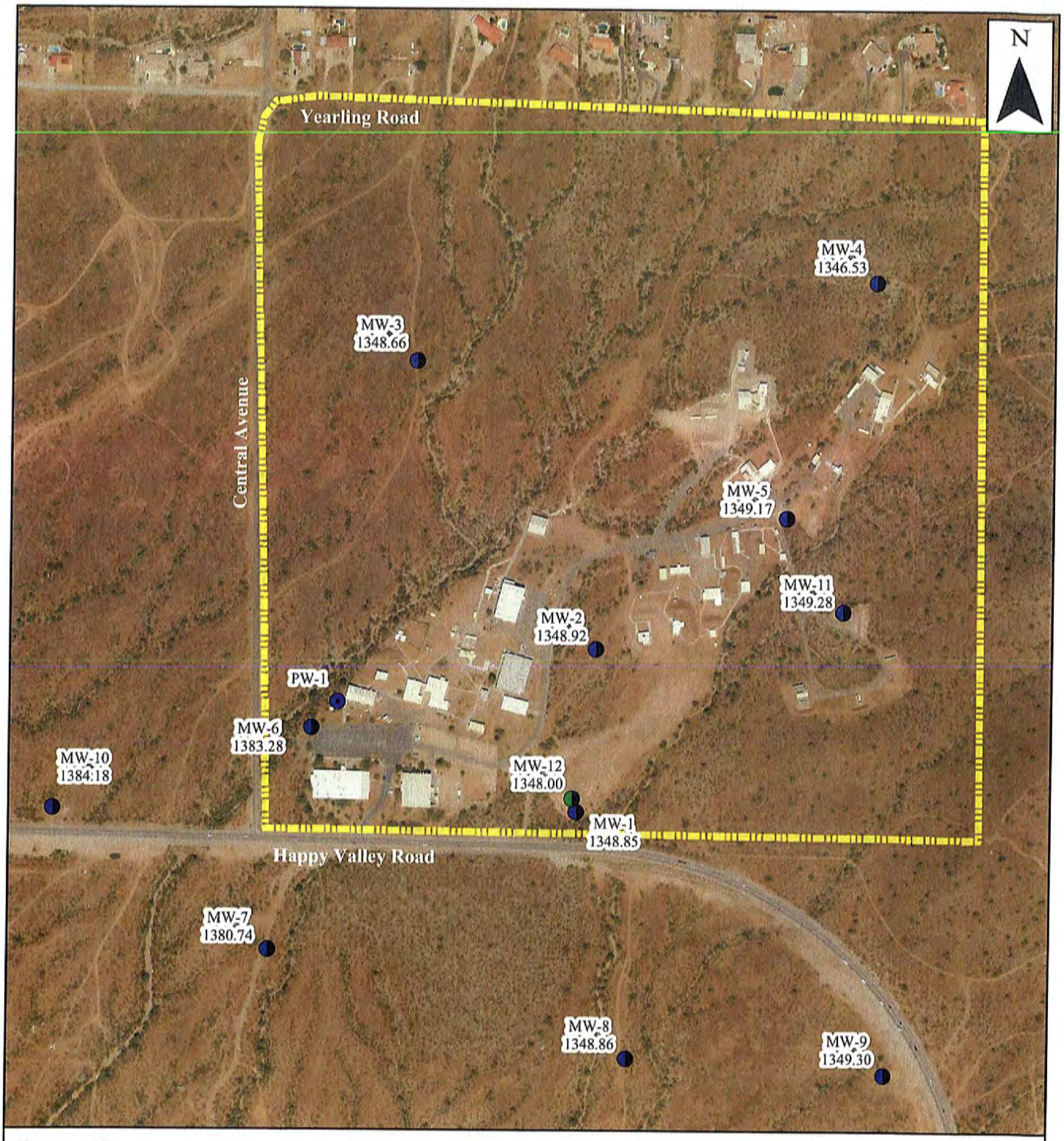
Private Wells
2008 Annual Monitoring Report

December 2009

Figure 4

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\ Figure 4



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 — Well ID
1348.85 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

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Groundwater Elevations
January 14, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 5**

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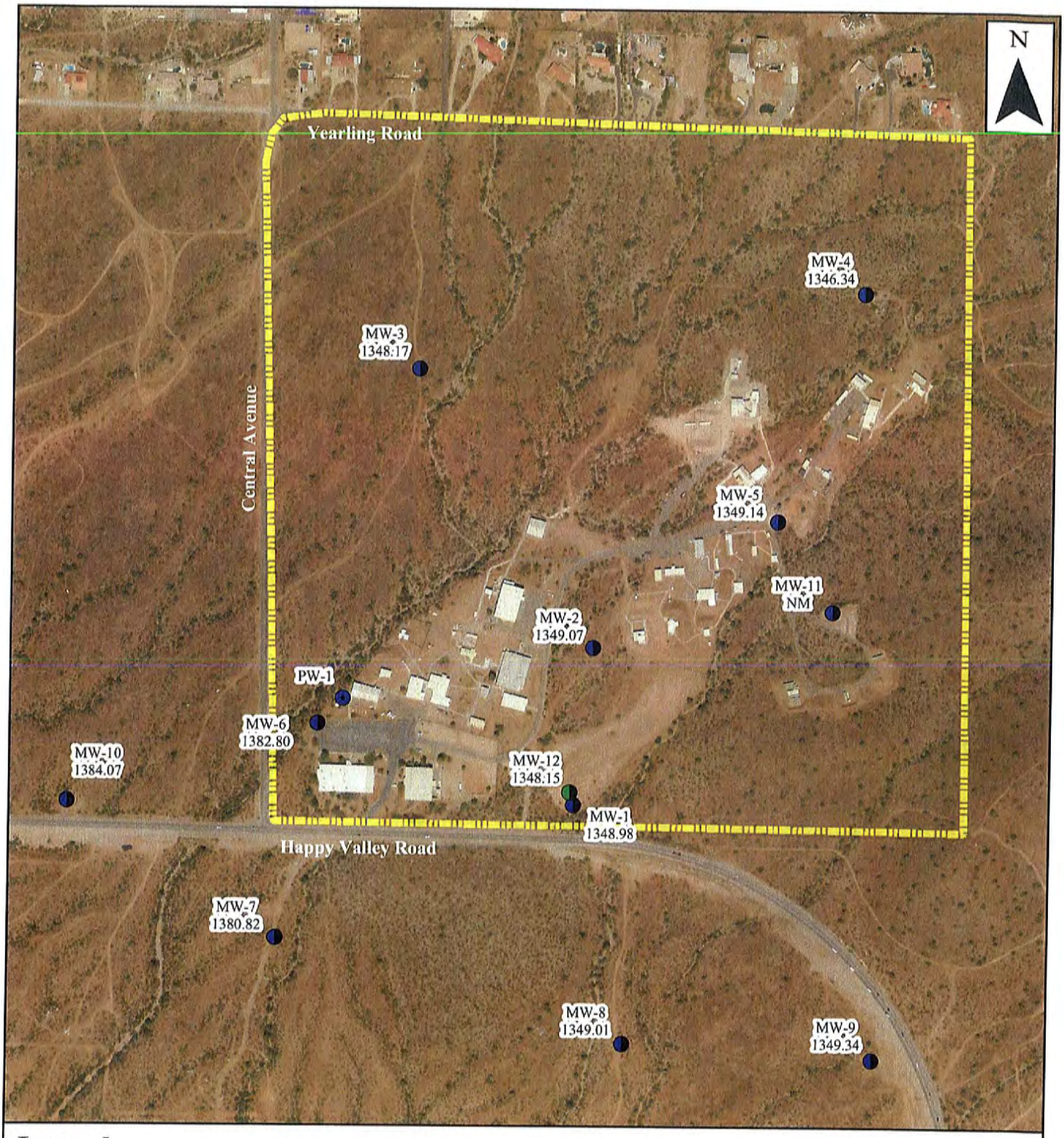

Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 — Well ID
1348.98 — Groundwater Elevation (ft amsl)

NM = not measured

0 250 500 750 1,000
Feet

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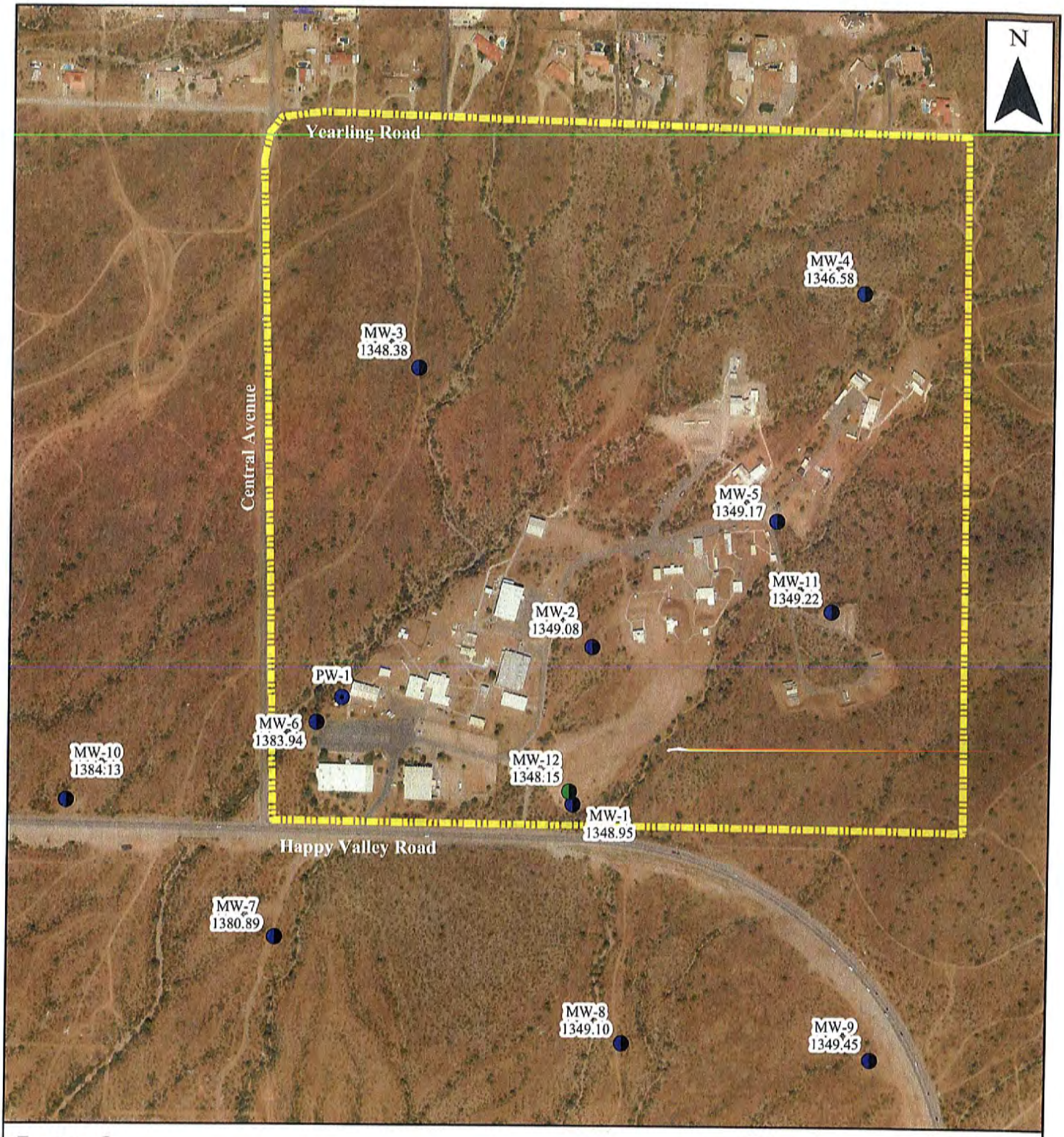
Groundwater Elevations
March 31, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 6**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_6.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 — Well ID
1348.95 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

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Groundwater Elevations
April 29, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 7**

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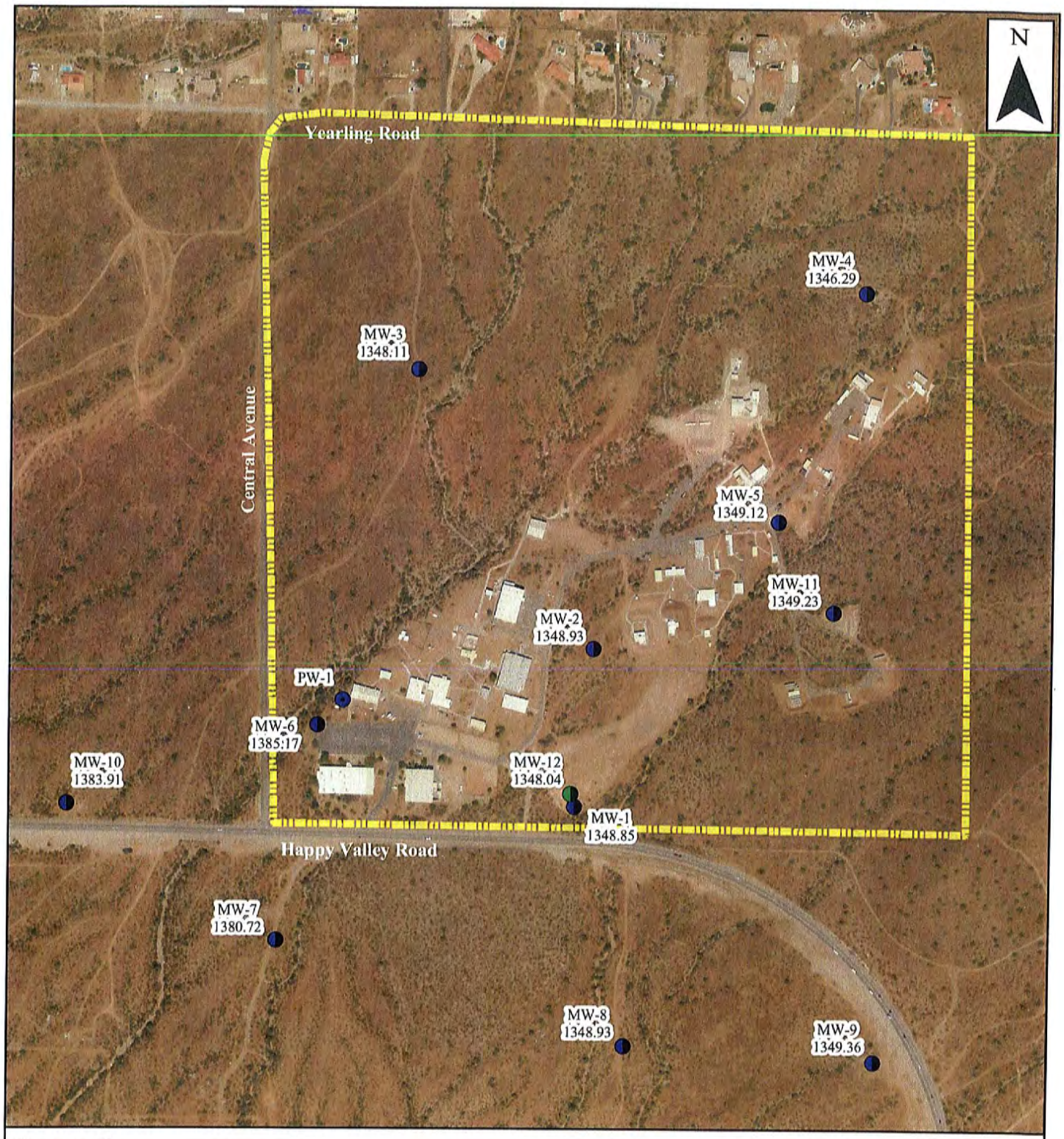

Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 — Well ID
1348.85 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

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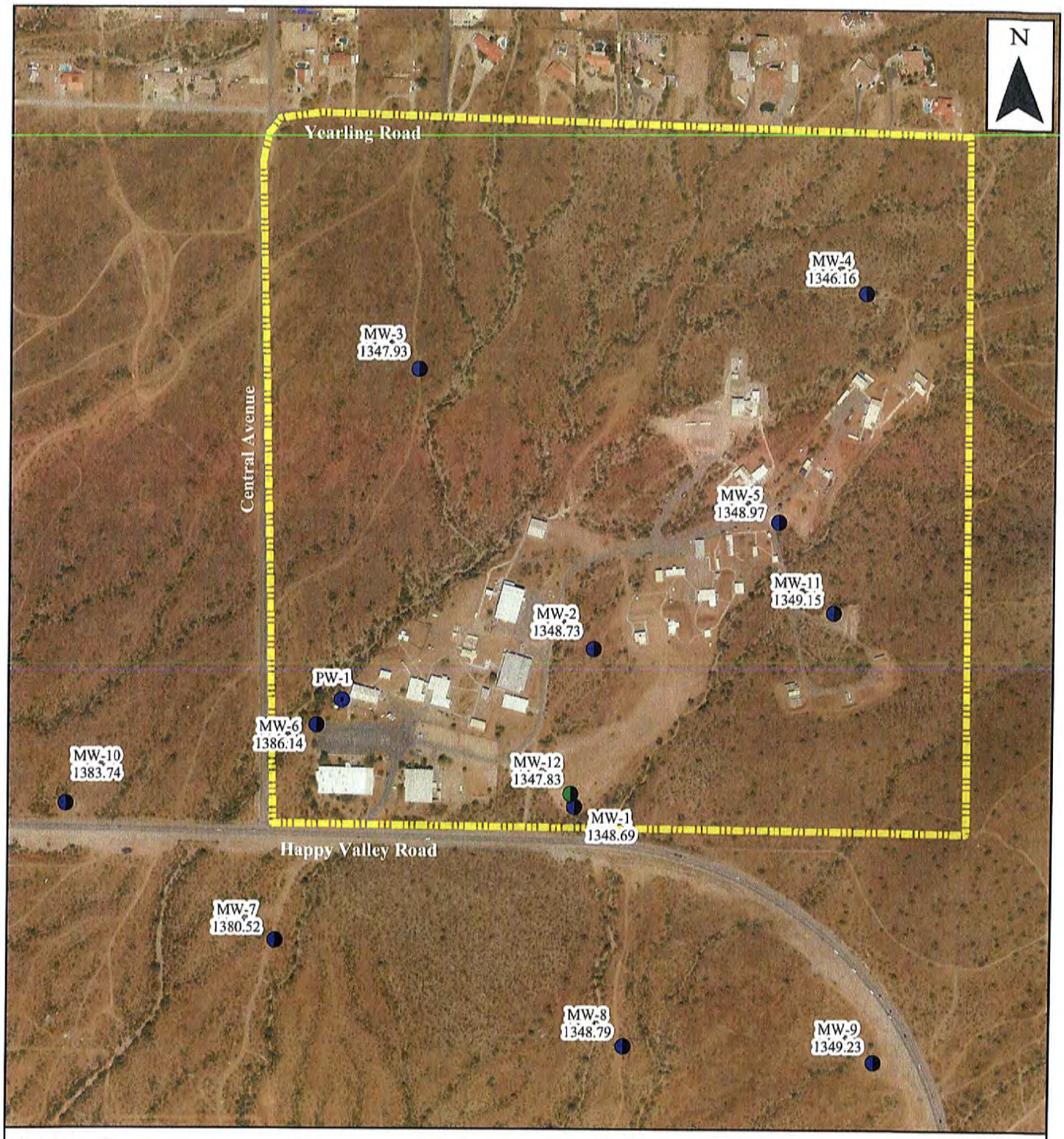
Groundwater Elevations
May 27, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 8**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_8.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 — Well ID
1348.69 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

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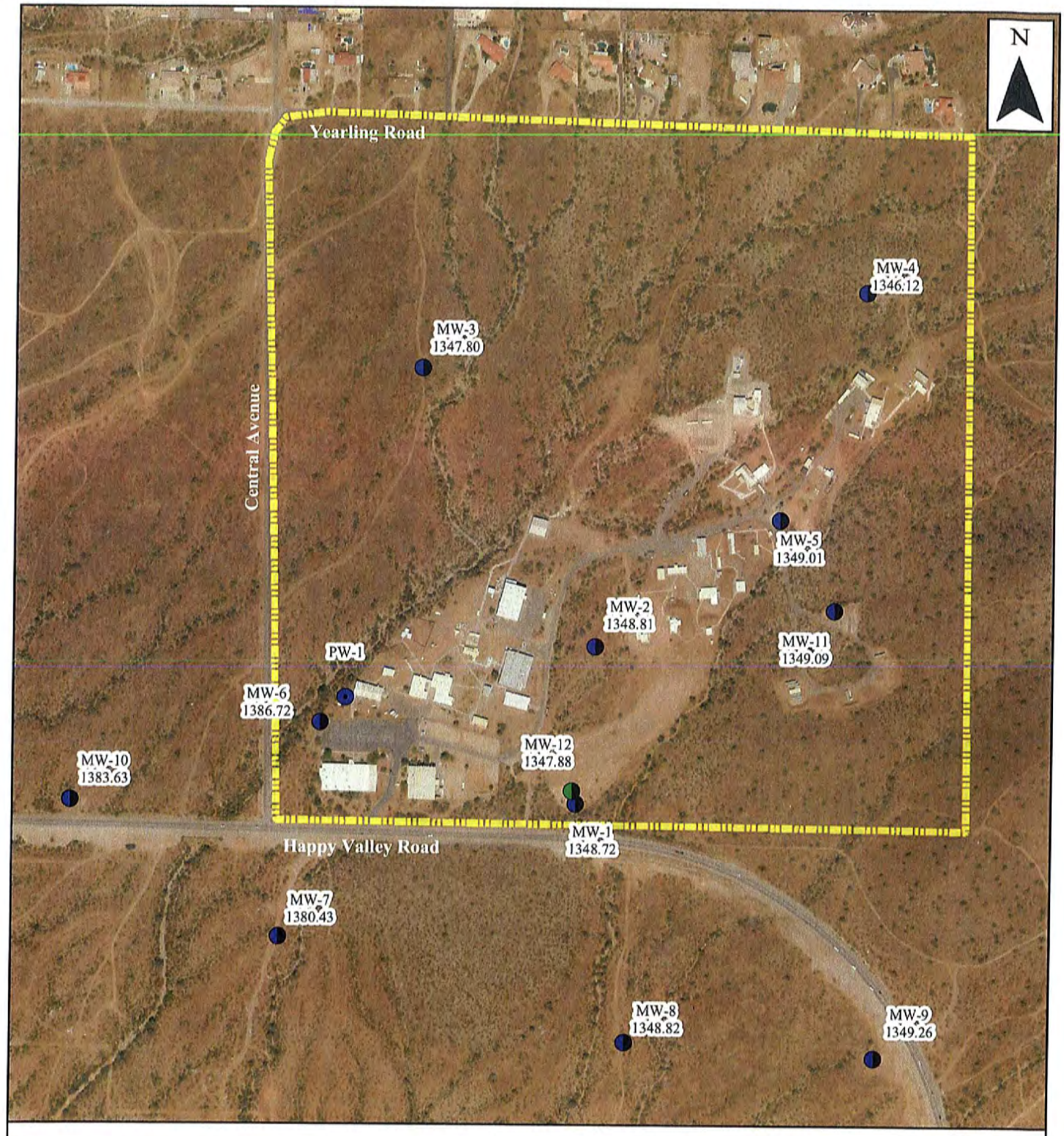
Groundwater Elevations
June 27, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 9**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_9.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 — Well ID
1348.72 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

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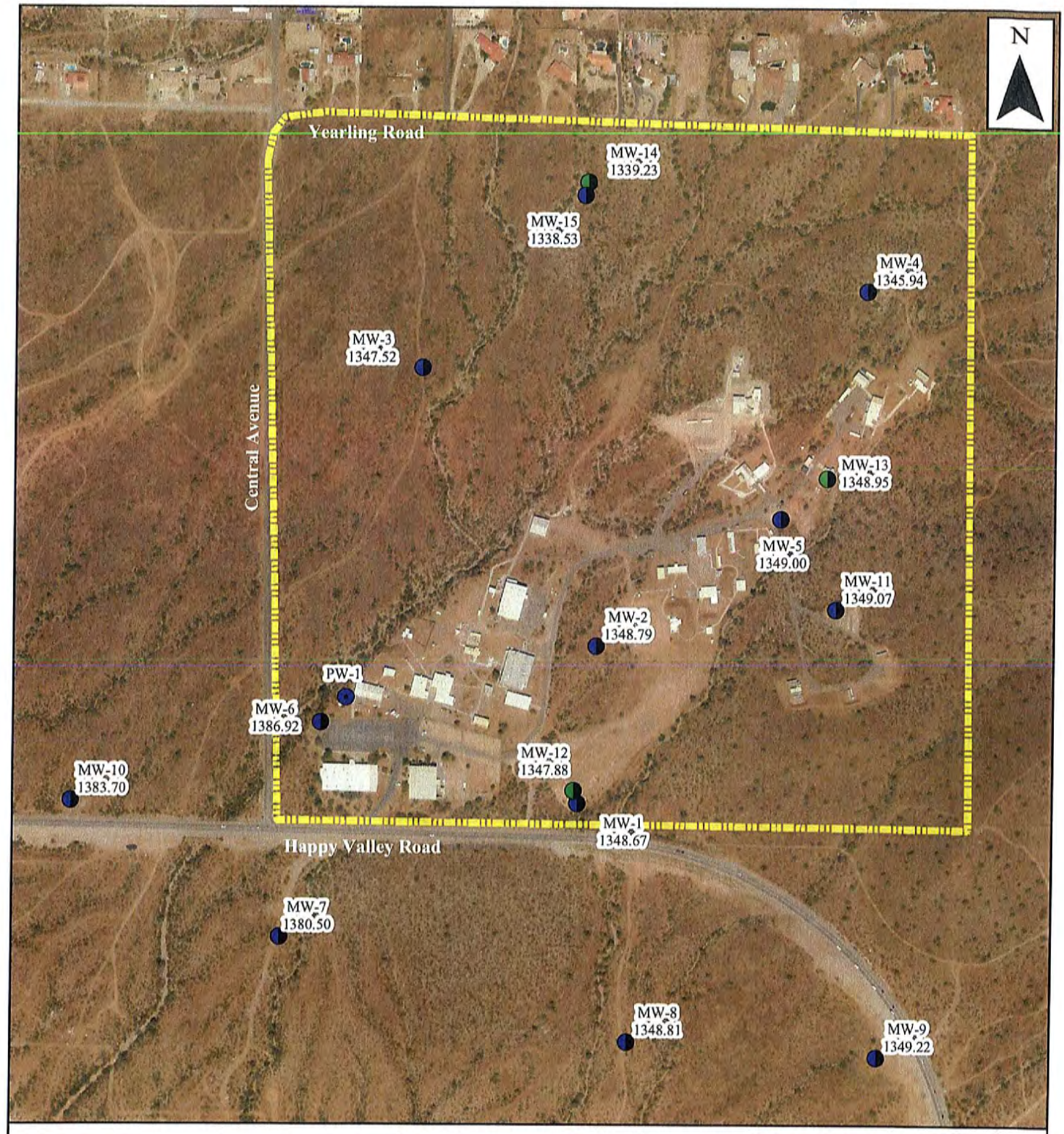
Phoenix, AZ 85008

Groundwater Elevations
July 28, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 10**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_10.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 — Well ID
1348.67 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

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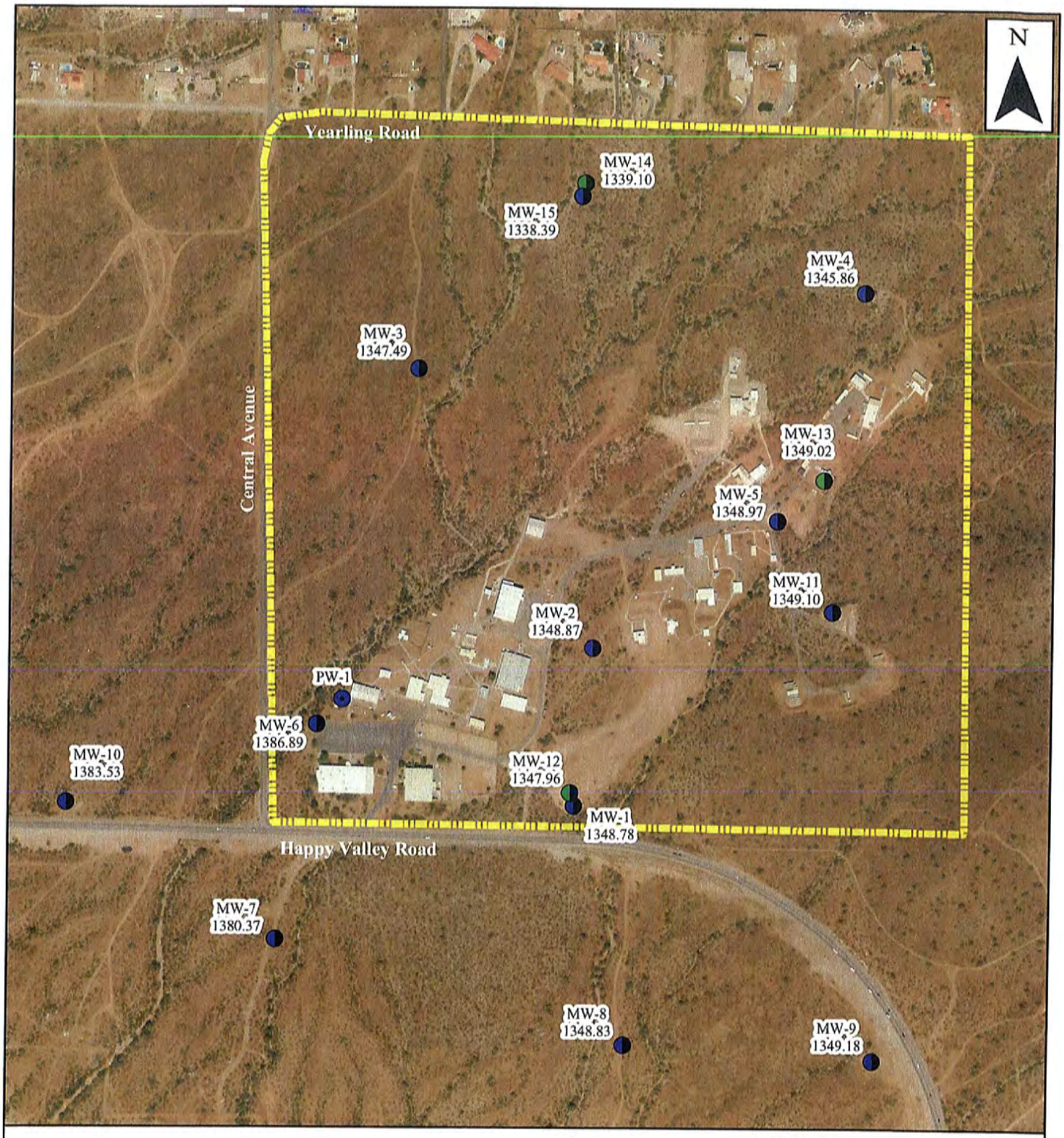
Groundwater Elevations
August 29, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 11**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_11.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 — Well ID
1348.78 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

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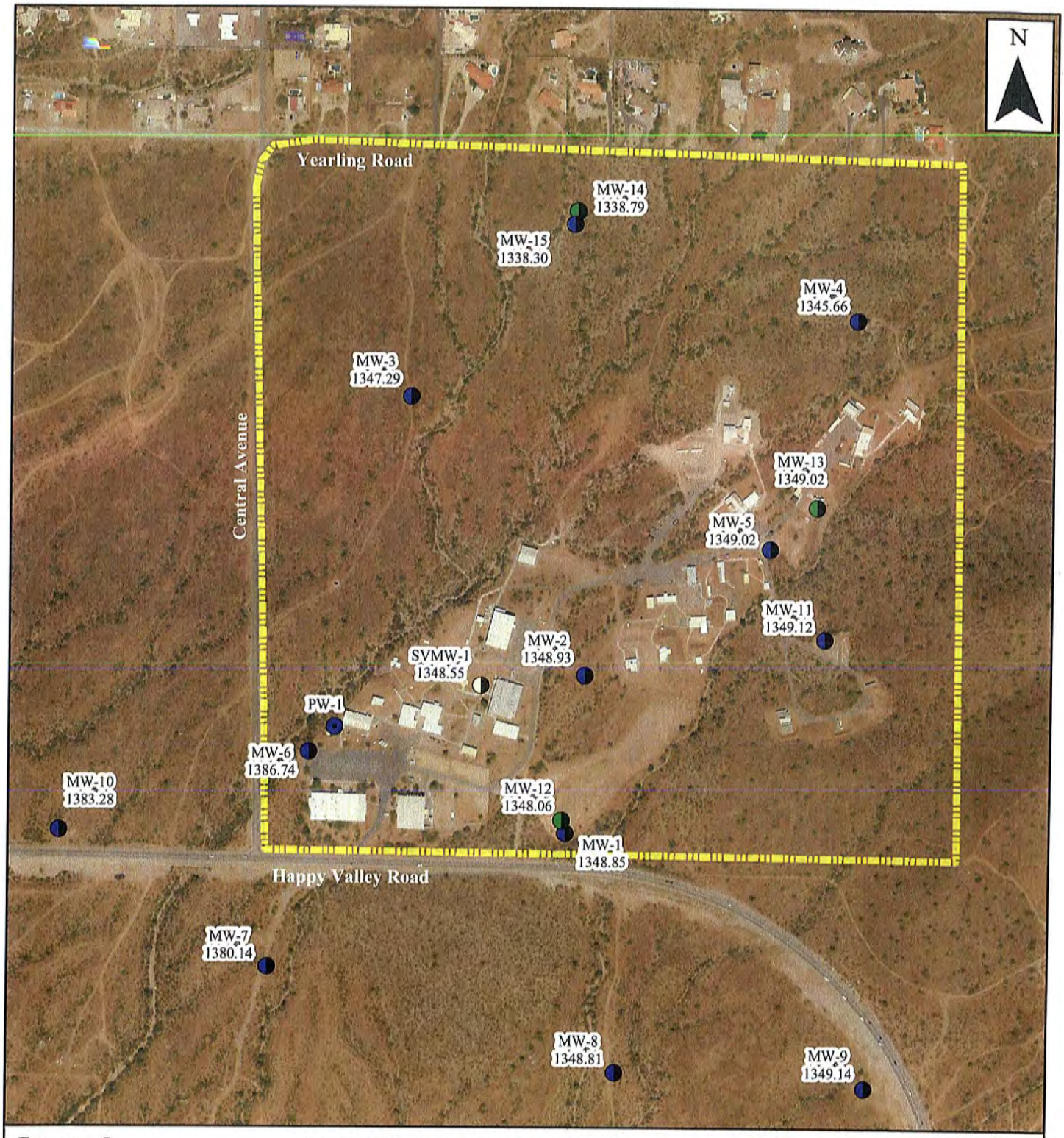
Groundwater Elevations
September 20, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 12**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_12.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

Note: Groundwater Elevation in boring at SVMW-1 was measured on October 29, 2008 prior to soil vapor well construction.

MW-1 — Well ID
1348.85 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

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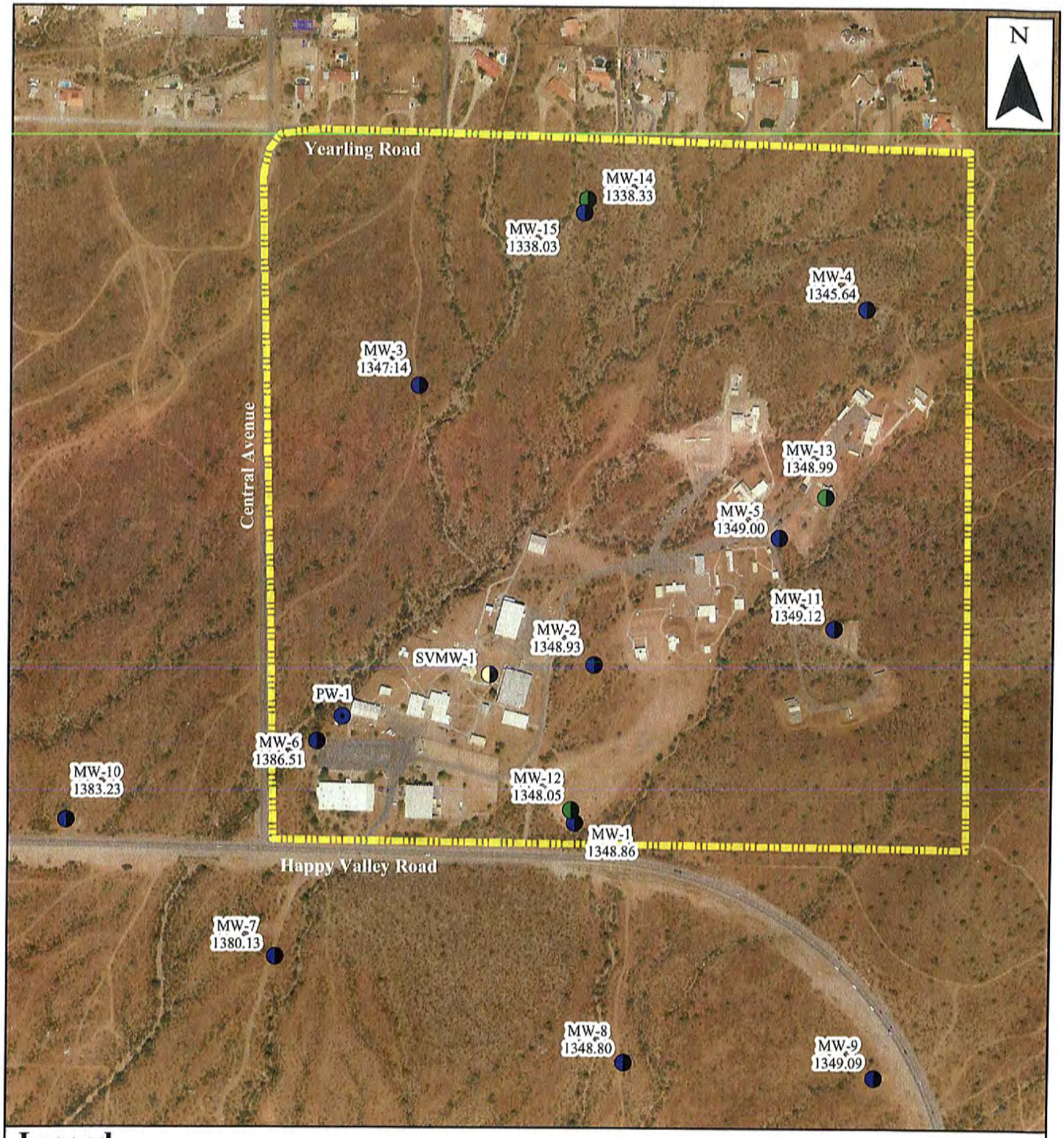
Groundwater Elevations
October 14, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 13**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_13.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 — Well ID
1348.86 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

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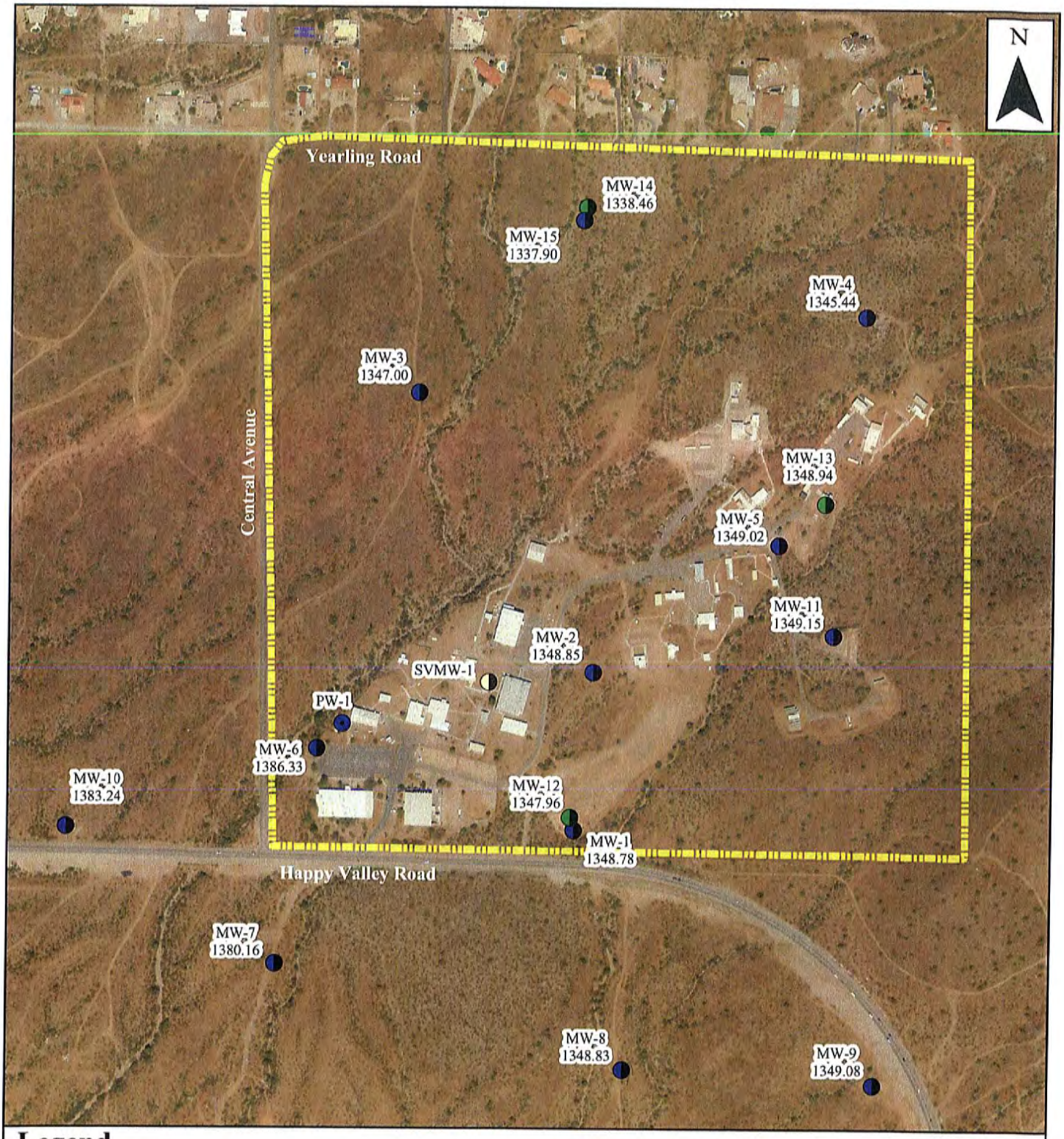
Groundwater Elevations
November 21, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 14**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_14.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 — Well ID
1348.78 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

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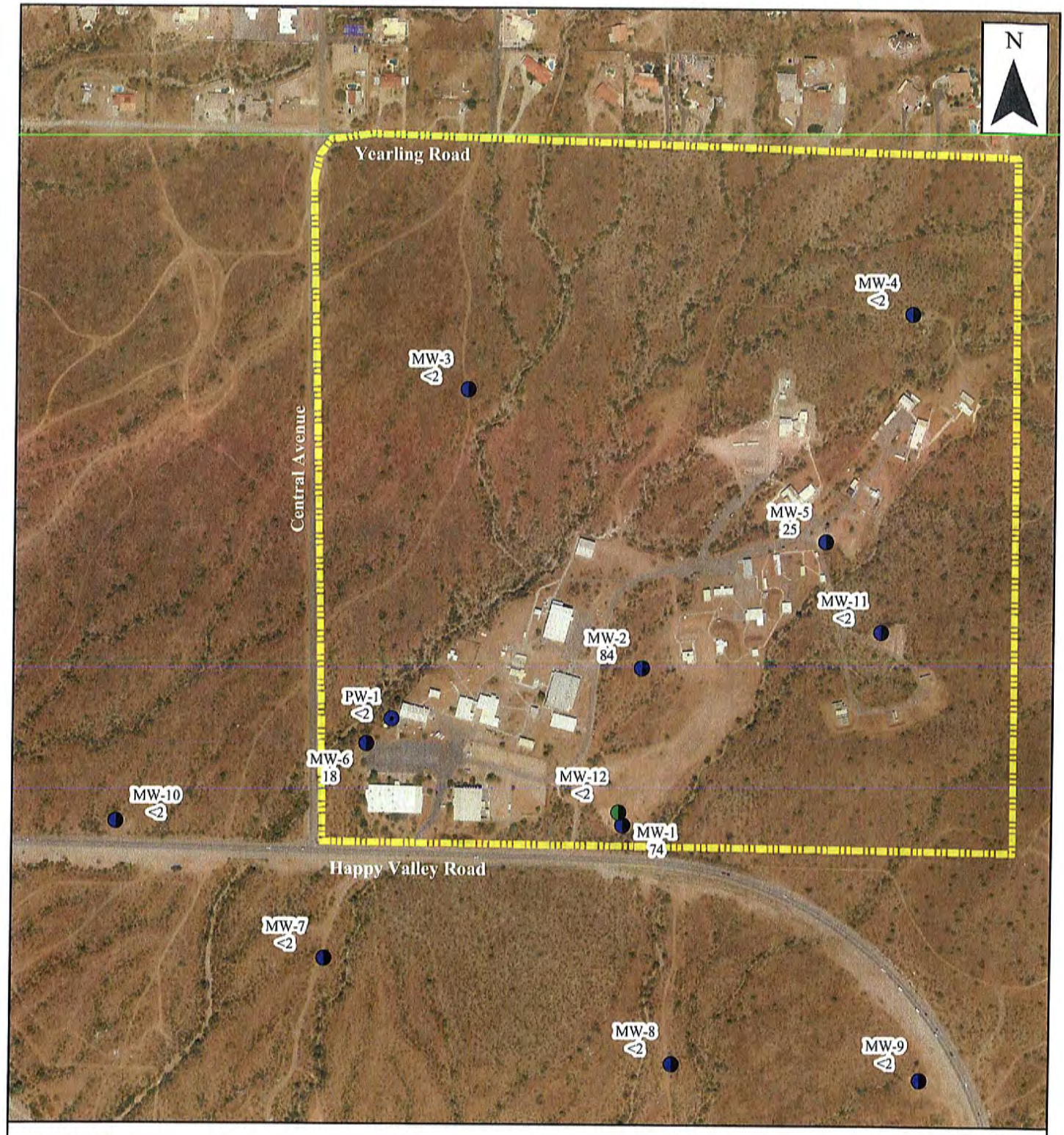
Groundwater Elevations
December 15, 2008
2008 Annual Monitoring Report

December 2009 | **Figure 15**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_15.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 — Well ID
74 — Perchlorate Concentration (µg/L)

0 250 500 750 1,000
Feet

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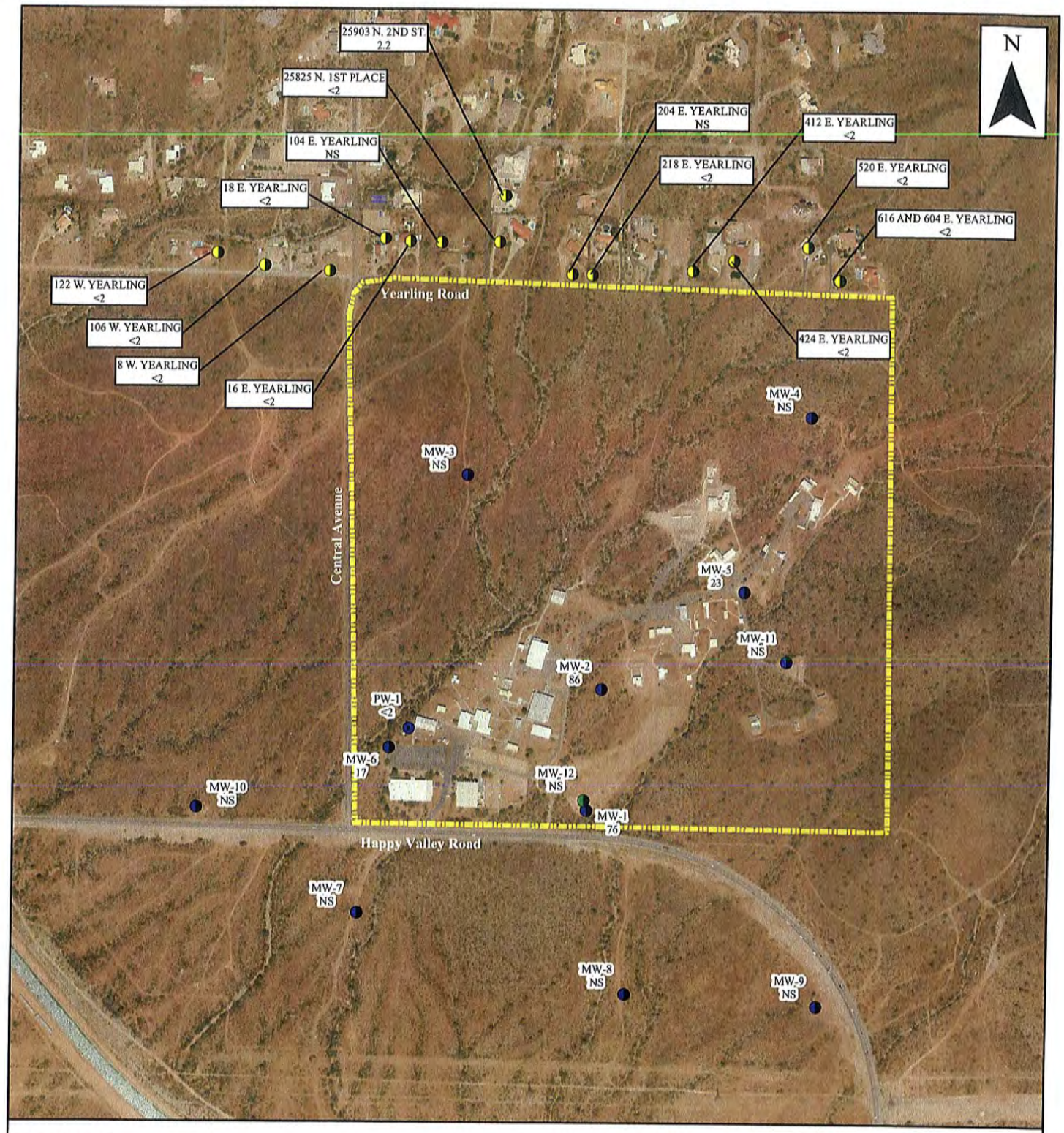
First Quarter 2008
Perchlorate Concentration Map
2008 Annual Monitoring Report

December 2009 | **Figure 16**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_16.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Private Domestic Wells
- Lease Property Boundary

MW-1 — Well ID
76 — Perchlorate Concentration (µg/L)

0 250 500 750 1,000
Feet

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Second Quarter 2008
Perchlorate Concentration Map
2008 Annual Monitoring Report

December 2009

Figure 17

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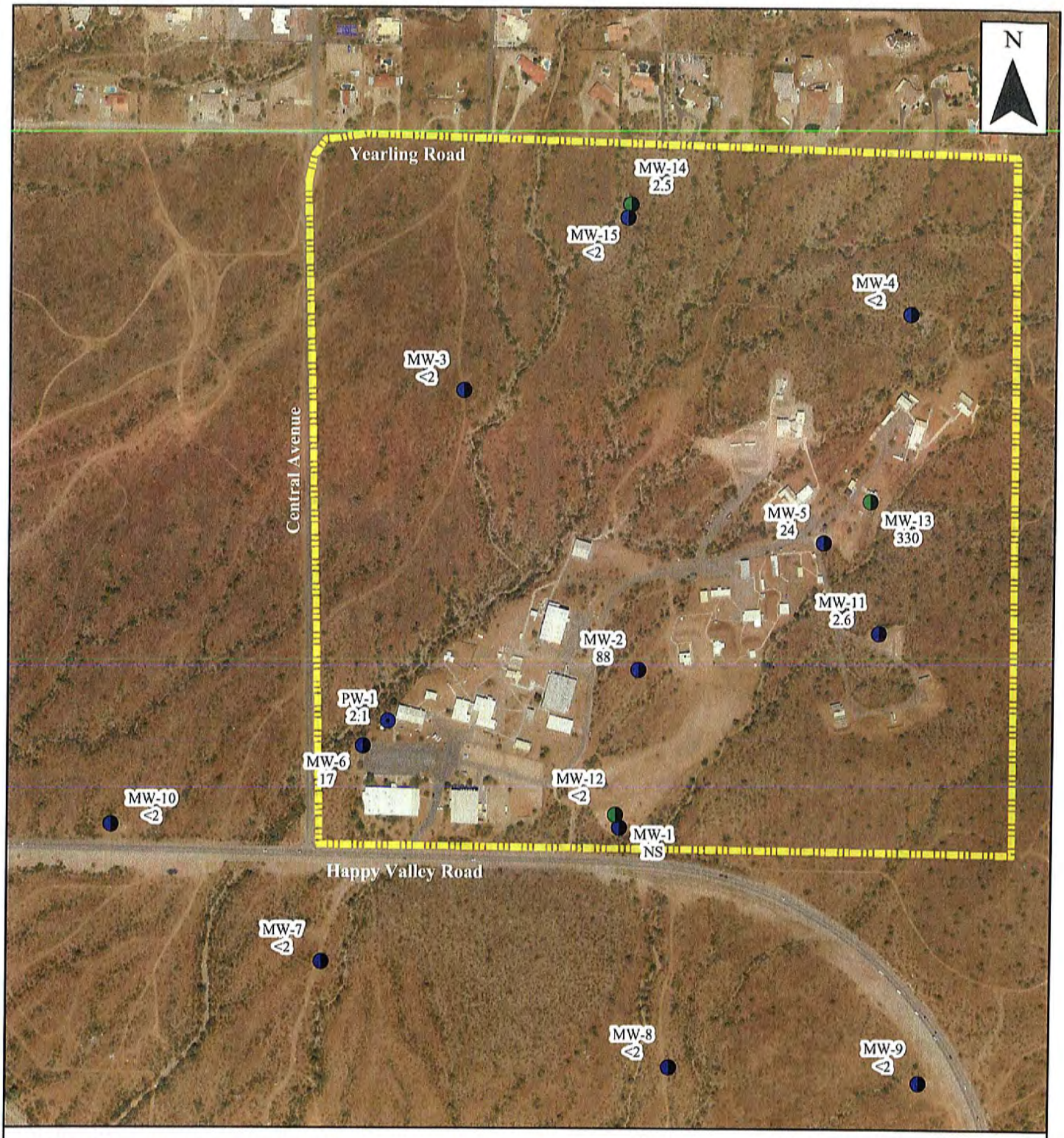

Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-2 — Well ID
88 — Perchlorate Concentration (µg/L)

0 250 500 750 1,000
Feet

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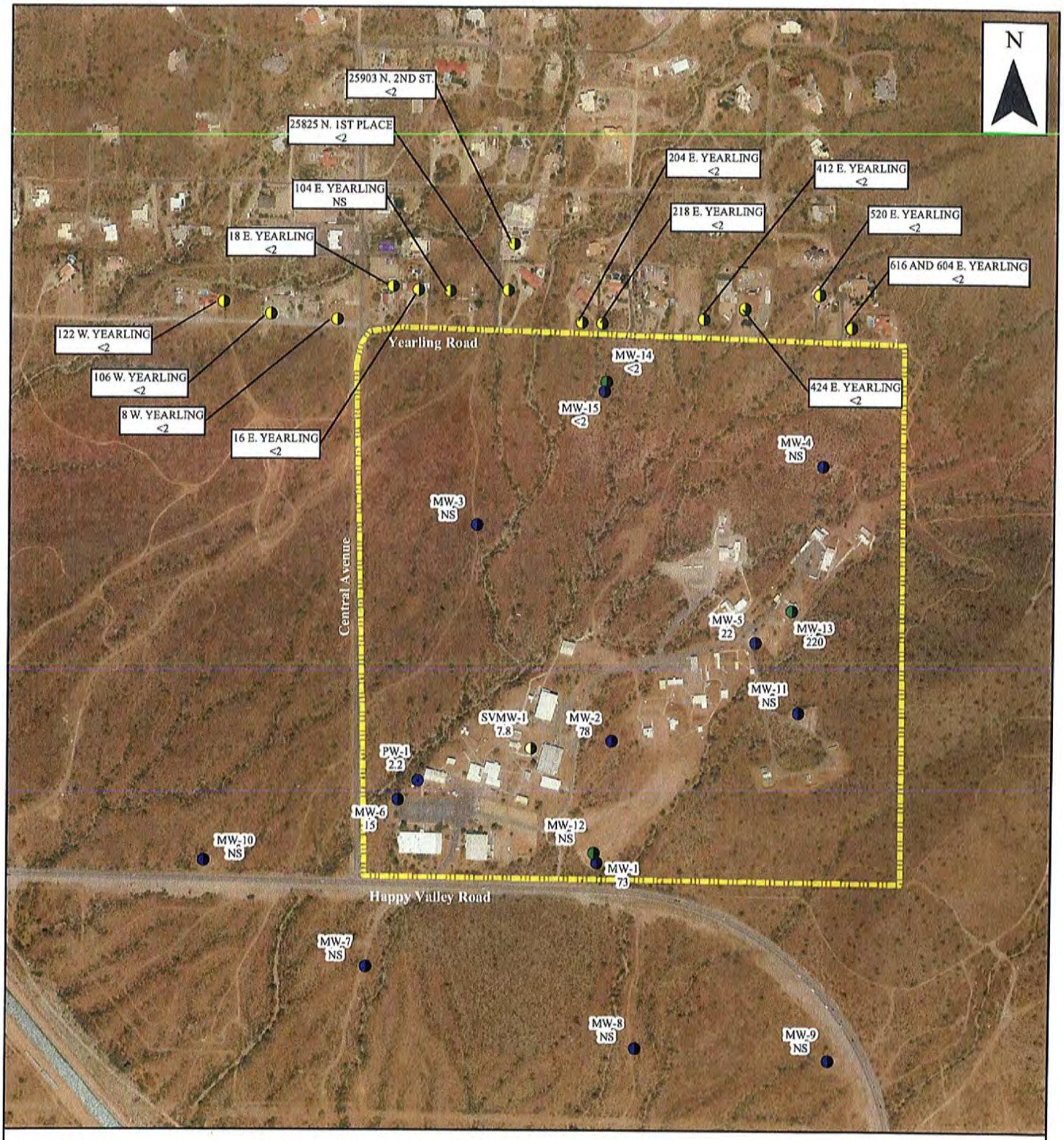
Third Quarter 2008
Perchlorate Concentration Map
2008 Annual Monitoring Report

December 2009 | **Figure 18**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2008 Report\Figure_18.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Well
- Private Domestic Wells
- Lease Property Boundary

Note: Grab groundwater sample collected from temporary well set at SVMW-1 on October 23, 2008 prior to soil vapor well construction

MW-1 — Well ID
73 — Perchlorate Concentration (µg/L)

0 250 500 750 1,000
Feet

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Fourth Quarter 2008
Perchlorate Concentration Map
2008 Annual Monitoring Report

December 2009

Figure 19

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MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

A

APPENDIX

MALCOLM PIRNIE GOODRICH

Lithologic Log for Monitor Well MW-13

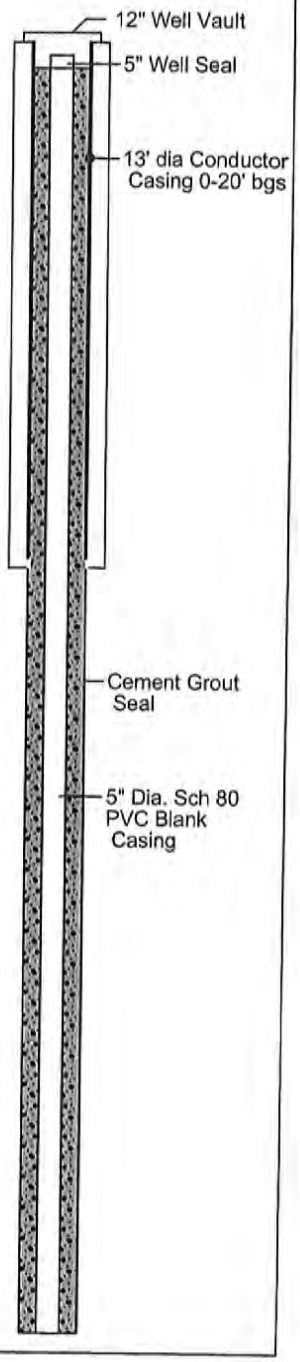
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 29, 2008	Drill Rig	: Core Rig
Finish Date	: June 25, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: Steve Stacy / M. Branche	Latitude	: 33 42' 59.7"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 3"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Core	Core: % Gravel	Core: % Sand	Core: % Fines	Time	Run (ft)	Recovery (ft)	% Recovery
0			No Cuttings.							
5	SW-SM									
10				40	55	5				
				40	55	5				
15	SW		Well-graded SAND with Gravel - tan, gravels are green, gravels are subrounded to sub angular, weak calcite cement, gravels are predominatly greenstone, sand is fine- to coarse- grained.	45	50	5				
20			Well-graded SAND with Gravel, tan, gravels are grayish green, sands are fine-coarse- grained, gravels < 40 mm (fine- to medium- grained), gravels are mostly greenstone, some rhyolite tuff, gravels subangular to subrounded, calcite cement.							
25				50	45	5				
30	GW		Well-graded GRAVEL with Sand, tan, gravels grayish green, sands fine-coarse- grained, gravels < 40 mm (fine- to medium- grained), gravels are mostly greenstone, some rhyolite tuff, gravels subangular to subrounded, calcite cement.							
35				50	45	5				
			Well-graded GRAVEL with Sand. 8-inch weathered purple GREENSTONE cobble.	50	45	5				
40			Well-graded GRAVEL with Sand, same as 25, but gravels mostly greenstone with some rhylotic clasts.							
45				40	55	5				
	SW		Well-graded SAND with Gravel, same as above, but clasts < 4 inches.							
50										

Well Name: MW-13
Borehole Dia: Nom. 10"



MALCOLM PIRNIE GOODRICH

Lithologic Log for Monitor Well MW-13

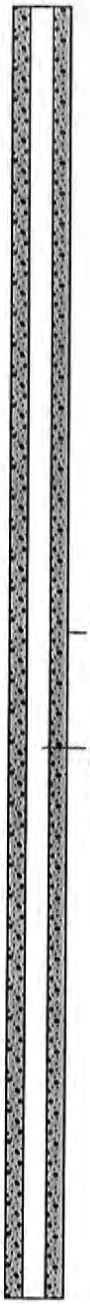
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 29, 2008	Drill Rig	: Core Rig
Finish Date	: June 25, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: Steve Stacy / M. Branche	Latitude	: 33 42' 59.7"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 3"

Well Name: MW-13
Borehole Dia: Nom. 10"

Depth in Feet	USCS	DESCRIPTION of Core	Core: % Gravel	Core: % Sand	Core: % Fines	Time	Run (ft)	Recovery (ft)	% Recovery
50	SW								
55	GW	Well-graded GRAVEL with Sand, well graded, same as above, but clasts < 6 inches, angular to rounded.	70	25	5				
60	GW	5-inch RHYOLITE TUFF cobble.							
65	SW	Well-graded SAND with Gravel , same as above.	45	50	5				
70	GW	Well-graded GRAVEL with Sand, same as above.	55	40	5				
75	SW	Well-graded SAND with Gravel , same as above.	45	50	5				
80	GW	Well-graded GRAVEL with Sand, same as above.	50	45	5				
		Well-graded GRAVEL with Sand, same as above, but gravels predominantly fine-grained.	50	45	5				
		8-inch weathered GREENSTONE cobble.							
85		Well-graded GRAVEL with Sand, same as above, but gravels are fine- to medium-grained.	50	45	5				
90									
95									
100	SW	Well-graded SAND with Gravel, same as above, but gravels mostly fine-grained.	40	55	5				



MALCOLM PIRNIE GOODRICH

Lithologic Log for Monitor Well MW-13

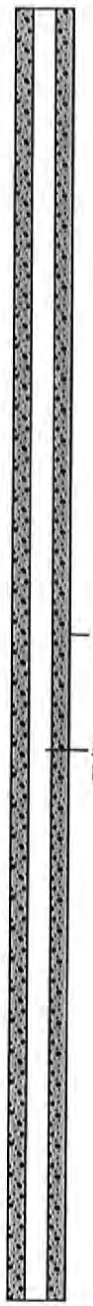
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 29, 2008	Drill Rig	: Core Rig
Finish Date	: June 25, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: Steve Stacy / M. Branche	Latitude	: 33 42' 59.7"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 3"

Well Name: MW-13
Borehole Dia: Nom. 10"

Depth in Feet	USCS	DESCRIPTION of Core	Core: % Gravel	Core: % Sand	Core: % Fines	Time	Run (ft)	Recovery (ft)	% Recovery
100	SW								
105	GW	Well-graded GRAVEL with Sand, gravels are mostly greenstone with some Granodiorite, clasts < 5 inches.	60	40					
	SW	SAND with Gravel, clasts < 3-inches.	40	55	5				
110	GW	Well-graded GRAVEL with Sand, sand brown, gravels green, maroon, gray (black/white), sand fine to medium-grained, gravels fine-grained, clasts < 9-inches, gravels mostly Greenstone with some Granodiorite and Rhyolite. Well cemented.	55	40	5				
115									
120	SW	Well-graded SAND with Gravel, same as above.	40	55	5				
		Well-graded SAND with Gravel, same as above, sand is fine to medium-grained, gravels are mostly fine to medium-grained, with about 5% coarse grains.	30	65	5				
125		Well-graded SAND with Gravel, same as above, clasts < 5-inches.	45	50	5				
130									
135	GW	Well-graded GRAVEL with Sand, same as above, clasts < 9-inches, more cobbles than previous zones.	50	45	5				
140									
145									
150									



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Lithologic Log for Monitor Well MW-13

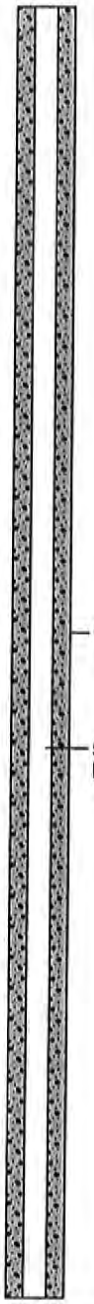
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 29, 2008	Drill Rig	: Core Rig
Finish Date	: June 25, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: Steve Stacy / M. Branche	Latitude	: 33 42' 59.7"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 3"

Well Name: MW-13
Borehole Dia: Nom. 10"

Depth in Feet	USCS	DESCRIPTION of Core	Core: % Gravel	Core: % Sand	Core: % Fines	Time	Run (ft)	Recovery (ft)	% Recovery
150–160	GW	Well-graded GRAVEL with Sand, same as 127.	60	40					
160–170	SW	Well-graded SAND with Gravel, clasts < 4-inches. several cobbles < 6-inches. several 3-4.5-inch cobbles.	45	55					
170–185	GW	Well-graded GRAVEL with Sand, same as above, clasts < 4-inches, sand is fine- to coarse-grained, gravel is fine- to coarse-grained, gravels angular to rounded, gravels are Greenstone and Granodiorite composition. 12-inch long weathered maroon Greenstone with Calcite in fractures.	55	45	0				
185–190	SW	Well-graded SAND with Gravel, clasts < 2-inches. Well-graded SAND with Gravel, same as above.	40 40	60 60					
190–195		SAND with Gravel same as 186.							
195–200	BR	Mostly granodiorite, some greenstone clasts, highly fractured, little to no iron oxidation, beginning of transition zone to Granodiorite bedrock.							



Lithologic Log for Monitor Well MW-13

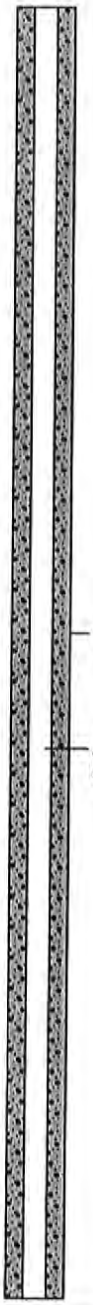
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 29, 2008	Drill Rig	: Core Rig
Finish Date	: June 25, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: Steve Stacy / M. Branche	Latitude	: 33 42' 59.7"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 3"

Well Name: MW-13
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Core	Core: % Gravel	Core: % Sand	Core: % Fines	Time	Run (ft)	Recovery (ft)	% Recovery
200			1-inch thick zone below and parallel to an apparent fracture, competent, weathering of Fe minerals in fracture zones.							
205			highly fractured and weathered, Fe oxidation along fracture surfaces, less competent.					2.4	1.4	59
210								5	3.8	77
215								5	2	40
			GRANODIORITE Bedrock, competent but heavily weathered and fractured, alteration of clay minerals.							
220			competent, not weathered has heavily.					5	5	100
225	BR							5	4.8	95
230								5	4.8	95
235			heavily weathered, high degree of Fe oxidation, CaCO3-filled fractures					5	4.5	90
240								5	4.7	93
245			incompetent layer.					5	5	100
250								5	5	100



MALCOLM PIRNIE GOODRICH

Lithologic Log for Monitor Well MW-13

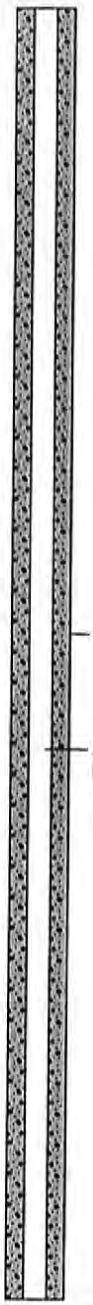
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 29, 2008	Drill Rig	: Core Rig
Finish Date	: June 25, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: Steve Stacy / M. Branche	Latitude	: 33 42' 59.7"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 3"

Well Name: MW-13
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Core	Core: % Gravel	Core: % Sand	Core: % Fines	Time	Run (ft)	Recovery (ft)	% Recovery
250			alternating competent and incompetent zones, all highly fractured, range in mafic minerals (e.g., mostly more basic, but with xenoliths or areas with more mafic minerology), heavy Fe oxidation and CaCO3-filled fractures.					5	5	100
255								5	4.5	90
260			GRANODIORITE Bedrock, competent.					5	4.8	95
			heavily fractured.							
265								5	5	100
270								5	4.5	90
275	BR		highly competent, CACO3 filled fractures, low- and high-angle fractures, some Fe oxidation but less than above.					5	5	100
			highly fractured.							
280			slickensides on low-angle fracture plane, smooth.					5	3.7	73
285								5	4.6	92
			GRANODIORITE Bedrock, heavily fractured.							
290								5	4.8	95
			heavily fractured, incompetent.							
295								5	5	100
			slightly more mafic composition.							
300			heavily fractured.					5	5	100



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Lithologic Log for Monitor Well MW-13

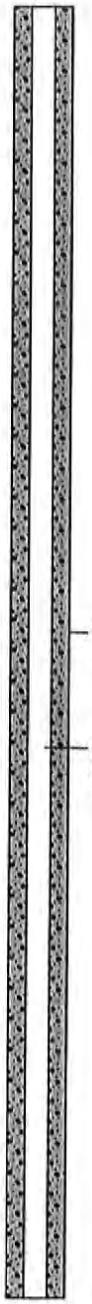
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 29, 2008	Drill Rig	: Core Rig
Finish Date	: June 25, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: Steve Stacy / M. Branche	Latitude	: 33 42' 59.7"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 3"

Well Name: MW-13
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Core	Core: % Gravel	% Sand	% Fines	Time	Run (ft)	Recovery (ft)	% Recovery
300								5	5	100
305			GRANODIORITE Bedrock, heavily fractured, some slightly more mafic composition.					5	5	100
310								5	5	100
315			less fractured and more competent.					5	4.7	93
320			competent.					5	4.8	97
325	BR		heavily fractured, competent and incompetent zones, CaCO3-filled fractures.					5	4.7	93
330								5	5	100
335								5	4.2	83
340			slickenslides.					5	4.3	87
345			GRANODIORITE Bedrock, some xenoliths or areas of more mafic composition, competent and highly fractured, fractures mostly high-angle (e.g., 60 degrees), CaCO3-filled fractures.					5	4.4	88
350								5	4.9	97



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Lithologic Log for Monitor Well MW-13

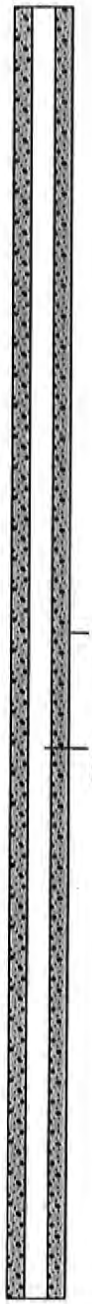
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 29, 2008	Drill Rig	: Core Rig
Finish Date	: June 25, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: Steve Stacy / M. Branche	Latitude	: 33 42' 59.7"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 3"

Well Name: MW-13
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Core	Core: % Gravel	Core: % Sand	Core: % Fines	Time	Run (ft)	Recovery (ft)	% Recovery
350								5	4.9	97
355								5	5	100
360								5	4.8	97
365								5	4.7	93
370								5	5	100
375	BR							5	5	100
380								5	5	100
385								5	5	100
390								5	5	100
395								5	4.8	97
400								5	4	80



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Lithologic Log for Monitor Well MW-13

Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 29, 2008	Drill Rig	: Core Rig
Finish Date	: June 25, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: Steve Stacy / M. Branche	Latitude	: 33 42' 59.7"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 3"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Core	Core: % Gravel	% Sand	% Fines	Time	Run (ft)	Recovery (ft)	% Recovery
400								5	4	80
405								5	4.7	93
410								5	5	100
415								5	4.7	93
420								5	5	100
425	BR							3	2.7	89
								2	1.7	83
430								5	4.2	100
435										
440								5	5	100
445								5	4.7	93
450								5	5	100

Well Name: MW-13
Borehole Dia: Nom. 10"

MALCOLM PIRNIE GOODRICH

Lithologic Log for Monitor Well MW-13

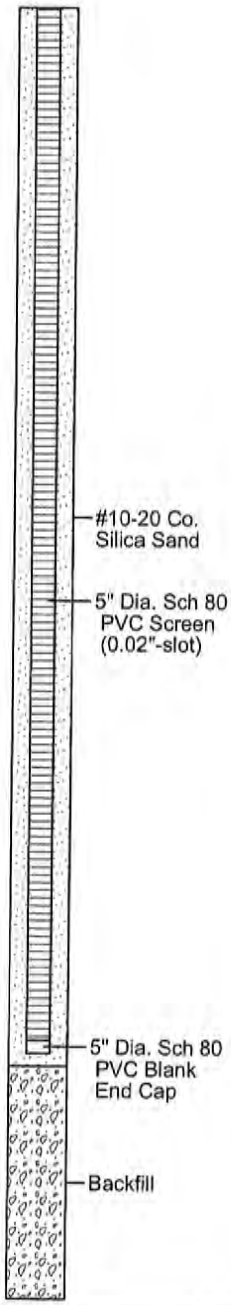
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 29, 2008	Drill Rig	: Core Rig
Finish Date	: June 25, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: Steve Stacy / M. Branche	Latitude	: 33 42' 59.7"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 3"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Core	Core: % Gravel	Core: % Sand	Core: % Fines	Time	Run (ft)	Recovery (ft)	% Recovery
450	BR							5	5	100
455								5	5	100
460								5	4.5	90
465								5	5	100
470								5	5	100
475								5	5	100
480								5	4.7	93
485								5	4.8	97
490								5	4.7	93
495								5	5	100
500								5	4.8	97

Well Name: MW-13
Borehole Dia: Nom. 10"



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Lithologic Log for Monitor Well MW-14

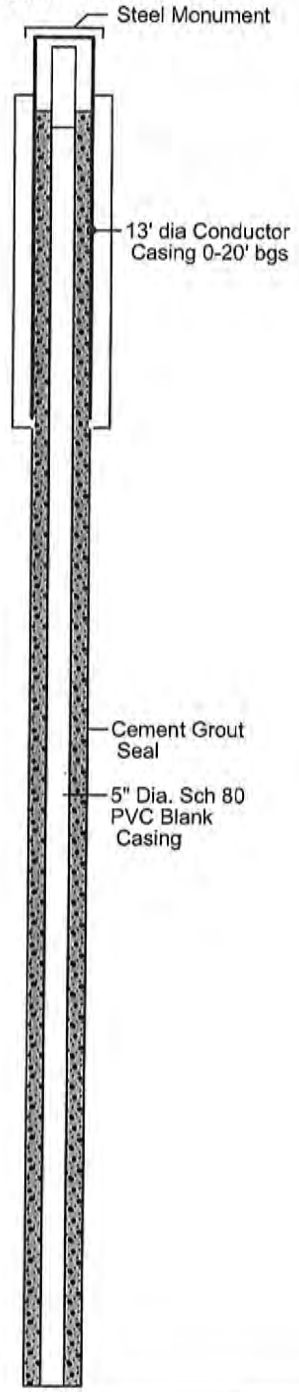
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: June 5, 2008	Drill Rig	: Air Rotary
Finish Date	: June 6, 2008	Driller & Helper	: Marion
Location	: UPCO		
Logged By	: A. Ezeagu	Latitude	: 33 43' 10"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 14"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines	Time
0	SW		Well-graded SAND, olive brown, gravel clasts are less than 3", subrounded to subangular.	10	85	5	
10	SM		Silty SAND, olive brown. Sand is fine to medium grained, subrounded to subangular.	5	60	35	
20	SW		Well-graded SAND With Gravel, light red. sand is fine to coarse-grained, and rounded to subrounded, gravel clasts are less than 3".	15	85	T	6-5-08 1320
30	BR		GRANODIORITE, weathered.				1330
40							1343
50			GRANODIORITE, weathered.				1354
60							1405
70							1410
80							

Well Name: MW-14
Borehole Dia: Nom. 10"



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Lithologic Log for Monitor Well MW-14

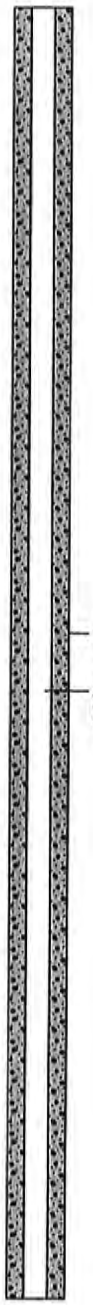
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: June 5, 2008	Drill Rig	: Air Rotary
Finish Date	: June 6, 2008	Driller & Helper	: Marion
Location	: UPCO		
Logged By	: A. Ezeagu	Latitude	: 33 43' 10"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 14"

Well Name: MW-14
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines	Time
80							
							1421
90							
							1440
100			GRANODIORITE, weathered.				
110							1453
120	BR						
130			GRANODIORITE, some Greenstone cuttings, weathered.				1510
140							
150							1535
160							



MALCOLM PIRNIE GOODRICH

Lithologic Log for Monitor Well MW-14

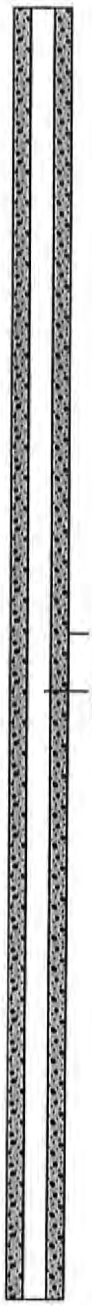
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: June 5, 2008	Drill Rig	: Air Rotary
Finish Date	: June 6, 2008	Driller & Helper	: Marion
Location	: UPCO		
Logged By	: A. Ezeagu	Latitude	: 33 43' 10"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 14"

Well Name: MW-14
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines	Time
160							
170			GRANODIORITE, some greenstone cuttings, possibly xenoliths, weathered.				1557
180			GRANODIORITE Bedrock, weathered.				
190							1619
200	BR						
210							1640
220							
230							6-6-08 0902
240							



Lithologic Log for Monitor Well MW-14

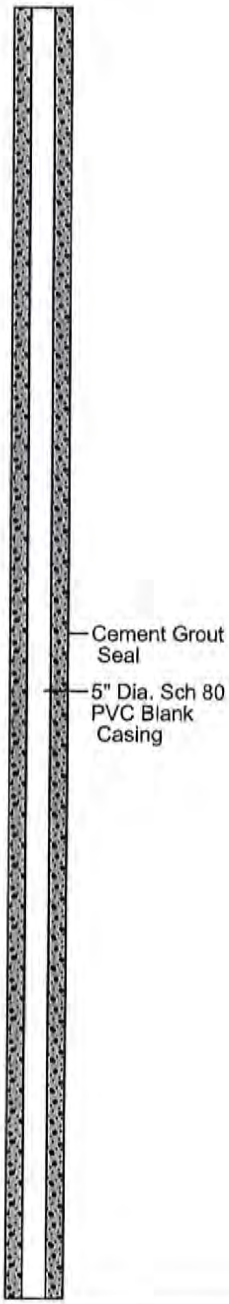
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: June 5, 2008	Drill Rig	: Air Rotary
Finish Date	: June 6, 2008	Driller & Helper	: Marion
Location	: UPCO		
Logged By	: A. Ezeagu	Latitude	: 33 43' 10"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 14"

Well Name: MW-14
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines	Time
240							
250							945
260							
270							1005
280	BR						
290							1025
300			GRANODIORITE Bedrock, weathered.				
310							1045
320							



Lithologic Log for Monitor Well MW-14

Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: June 5, 2008	Drill Rig	: Air Rotary
Finish Date	: June 6, 2008	Driller & Helper	: Marion
Location	: UPCO		
Logged By	: A. Ezeagu	Latitude	: 33 43' 10"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 14"

Well Name: MW-14
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines	Time
320							
330							1105
340							
350							1126
360	BR		GRANODIORITE Bedrock, some Greenstone cuttings.				
370							1158
380							
390							1220
400			GRANODIORITE Bedrock.				

Lithologic Log for Monitor Well MW-14

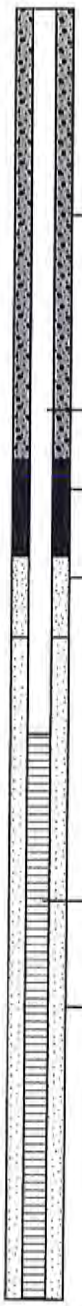
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: June 5, 2008	Drill Rig	: Air Rotary
Finish Date	: June 6, 2008	Driller & Helper	: Marion
Location	: UPCO		
Logged By	: A. Ezeagu	Latitude	: 33 43' 10"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 14"

Well Name: MW-14
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines	Time
400							
410	BR						1355
420			GREENSTONE Bedrock.				
430							1438
440							
450	BR		GREENSTONE Bedrock, heavily weathered.				1518
460							
470							1552
480							



Lithologic Log for Monitor Well MW-14

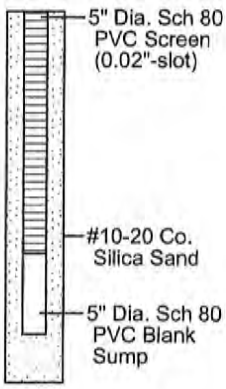
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: June 5, 2008	Drill Rig	: Air Rotary
Finish Date	: June 6, 2008	Driller & Helper	: Marion
Location	: UPCO		
Logged By	: A. Ezeagu	Latitude	: 33 43' 10"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 14"

Well Name: MW-14
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	% Sand	% Fines	Time
480–500	BR						1630



480 490 500 510 520 530 540 550 560

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Lithologic Log for Monitor Well MW-15

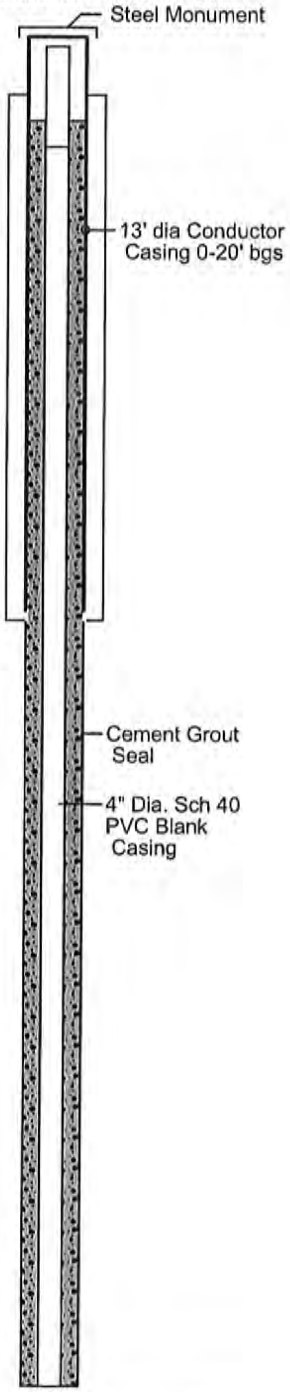
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 23, 2008	Drill Rig	: Air Rotary
Finish Date	: May 29, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: M. Branche	Latitude	: 33 43' 9.87"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13.78"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines
0	SW		DESCRIPTION OF CUTTINGS BASED ON MW-14. Well-graded SAND, olive brown, gravel clasts are less than 3", subrounded to subangular.	10	85	5
10	SM		Silty SAND, olive brown. Sand is fine to medium grained, subrounded to subangular.	5	60	35
20	SW		Well-graded SAND With Gravel, light red. sand is fine to coarse-grained, and rounded to subrounded, gravel clasts are less than 3".	15	85	T
30	BR		GRANODIORITE, weathered.			
40						
50			GRANODIORITE, weathered.			

Well Name: MW-15
Borehole Dia: Nom. 10"



Lithologic Log for Monitor Well MW-15

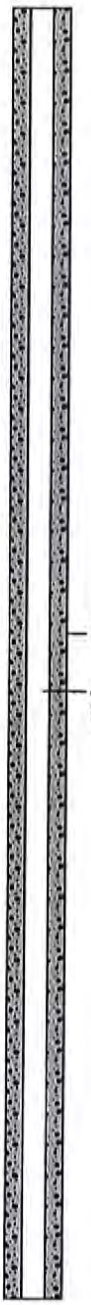
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 23, 2008	Drill Rig	: Air Rotary
Finish Date	: May 29, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: M. Branche	Latitude	: 33 43' 9.87"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13.78"

Well Name: MW-15
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines
50						
60						
70						
	BR					
80						
90						
100			GRANODIORITE, weathered.			



Lithologic Log for Monitor Well MW-15

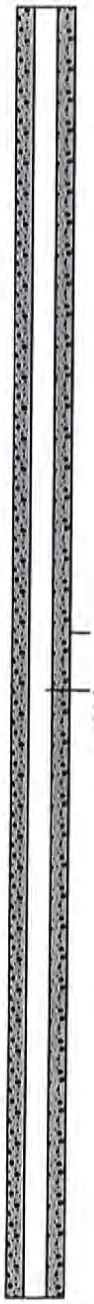
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 23, 2008	Drill Rig	: Air Rotary
Finish Date	: May 29, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: M. Branche	Latitude	: 33 43' 9.87"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13.78"

Well Name: MW-15
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines
100						
110						
120	BR					
130			GRANODIORITE, some Greenstone cuttings, weathered.			
140						
150						



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Lithologic Log for Monitor Well MW-15

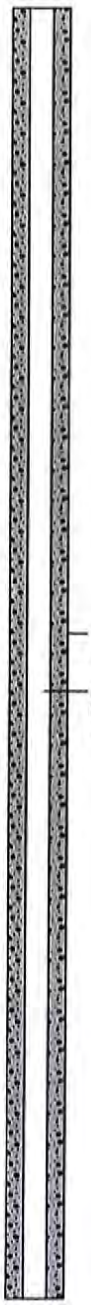
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 23, 2008	Drill Rig	: Air Rotary
Finish Date	: May 29, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: M. Branche	Latitude	: 33 43' 9.87"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13.78"

Well Name: MW-15
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines
150						
160						
170	BR		GRANODIORITE, some greenstone cuttings, possibly xenoliths, weathered.			
180			GRANODIORITE Bedrock, weathered.			
190						
200						



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Lithologic Log for Monitor Well MW-15

Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 23, 2008	Drill Rig	: Air Rotary
Finish Date	: May 29, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: M. Branche	Latitude	: 33 43' 9.87"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13.78"

Well Name: MW-15
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines
200						
210						
220						
	BR					
230						
240						
250			GRANODIORITE Bedrock.			

Lithologic Log for Monitor Well MW-15

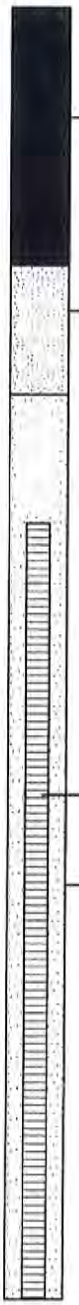
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 23, 2008	Drill Rig	: Air Rotary
Finish Date	: May 29, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: M. Branche	Latitude	: 33 43' 9.87"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13.78"

Well Name: MW-15
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines
250						
260						
270						
	BR					
280						
290						
300			GRANODIORITE Bedrock, weathered.			



Lithologic Log for Monitor Well MW-15

Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: May 23, 2008	Drill Rig	: Air Rotary
Finish Date	: May 29, 2008	Driller & Helper	: Jake, Javier
Location	: UPCO		
Logged By	: M. Branche	Latitude	: 33 43' 9.87"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13.78"

Well Name: MW-15
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	Cuttings % Gravel	Cuttings % Sand	Cuttings % Fines
300						
310						
320						
	BR					
330						
340						
350						

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Lithologic Log for Monitor Well SVMW-1

Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: October 21, 2008	Drill Rig	: Air Rotary
Finish Date	: October 22, 2008	Driller & Helper	: Mike and Cole
Location	: UPCO		
Logged By	: S. Stacy / M. Branche	Latitude	: 33 42' 52"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 18"

See As-Built Well Construction Diagram

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS % Gravel	% Sand	% Fines	Time
0	SP		Poorly graded SAND, tan, Sand is fine to coarse-grained, subrounded to rounded.	5	95		1115
10	SM		Silty SAND, tan. Sand is mostly fine to medium-grained, some Granodiorite Gravels. Gravels are subangular and <1.5", and cemented with calcite.	5	80	15	1200
20	SW		Well-graded SAND with Gravel, tan. Sand is fine to medium-grained, cemented with calcite. Gravels are grayish-green and gray (black and white), subangular to subrounded and composed of Greenstone and Granodiorite. Fines are of low to medium plasticity.	10	85	5	1030
30				10	60	30	1045
40	SW		Well-graded SAND with Gravel, Sands are fine to coarse-grained. Gravels are of varied rock types, and are < 1.3 ". Sands are fine to medium-grained, trace Sands adhering to Gravels. Gravels are subangular to subrounded. Calcite cement present.	25	75	T	1055
50							

MALCOLM PIRNIE GOODRICH

Lithologic Log for Monitor Well SVMW-1

Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: October 21, 2008	Drill Rig	: Air Rotary
Finish Date	: October 22, 2008	Driller & Helper	: Mike and Cole
Location	: UPCO		
Logged By	: S. Stacy / M. Branche	Latitude	: 33 42' 52"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 18"

See As-Built Well Construction Diagram

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS % Gravel	% Sand	% Fines	Time
50	GW		Well-graded GRAVEL with Sand, tan, greenish gray. Gravels are angular to rounded, less than 2", mostly Greenstone with some Granodiorite. Sands are rounded to subrounded, fine to coarse-grained, fines adhering to Gravels, calcite cement.	50	45	5	
55							1102
60				60	35	5	
65							1120
70	SW		Well-graded SAND with Gravel, tan. Sands are fine to coarse-grained. Gravels are fine-grained. Gravels are subangular to subrounded, calcite cement present.	45	50	5	
75							1130
80	SW-SM		Well-graded SAND with Silt and Gravel. Gravels are mostly fine-grained, calcite cement.	25	65	10	
85							1142
90				15	75	10	
95							1154
100							

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Lithologic Log for Monitor Well SVMW-1

Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: October 21, 2008	Drill Rig	: Air Rotary
Finish Date	: October 22, 2008	Driller & Helper	: Mike and Cole
Location	: UPCO		
Logged By	: S. Stacy / M. Branche	Latitude	: 33 42' 52"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 18"

See As-Built Well Construction Diagram

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS % Gravel	% Sand	% Fines	Time
100							
105	SW-SM						1352
110			Well-graded GRAVEL with Sand, tan to greenish gray. Gravels are angular to subrounded, mostly Greenstone with some rhyolite tuff, calcite cement. Sands are fine to coarse-grained.	70	25	5	
115							
120			Gravels mostly fine-grained.	60	40		
125							
130	GW						1510
135							
140				70	30		
145							
150							

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Lithologic Log for Monitor Well SVMW-1

Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: October 21, 2008	Drill Rig	: Air Rotary
Finish Date	: October 22, 2008	Driller & Helper	: Mike and Cole
Location	: UPCO		
Logged By	: S. Stacy / M. Branche	Latitude	: 33 42' 52"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 18"

See As-Built Well Construction Diagram

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS % Gravel	% Sand	% Fines	Time
150			Well-graded SAND with Gravel, tan to greenish gray. Gravels are angular to subrounded, mostly Greenstone with some rhyolite tuff, calcite cement. Sands are fine to coarse-grained.	40	60		
155							1528
160							
165	SW						1605
170							
175							1615
180			GRANODIORITE Bedrock. Cuttings are fine-grained, some weathering, iron oxidation.				1630
185							
190	BR						
195							0905
200			Cuttings are medium-grained to <3" in size.				

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Lithologic Log for Monitor Well SVMW-1

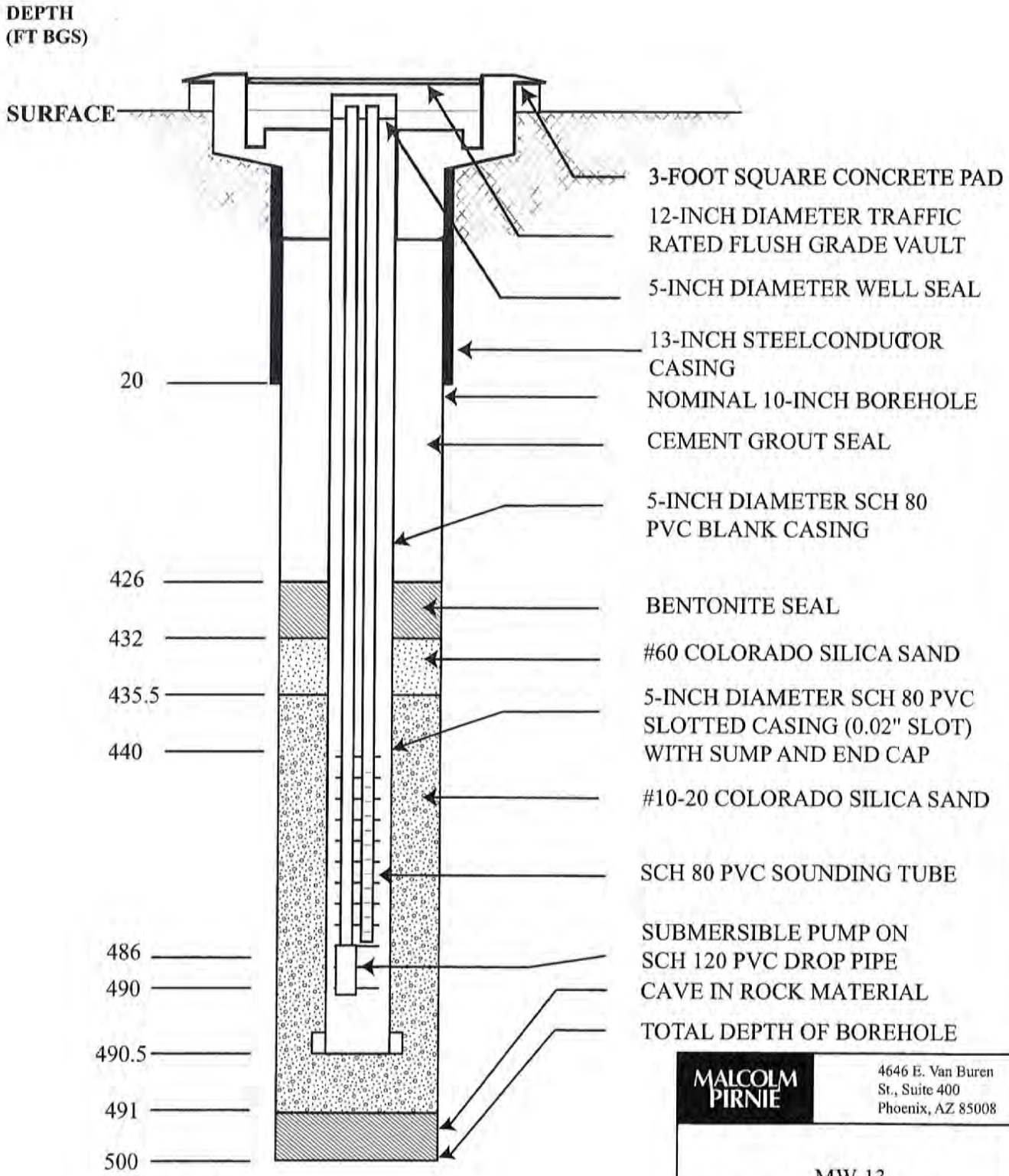
Appendix A
2008 Annual Monitoring Report

December 2009

Start Date	: October 21, 2008	Drill Rig	: Air Rotary
Finish Date	: October 22, 2008	Driller & Helper	: Mike and Cole
Location	: UPCO		
Logged By	: S. Stacy / M. Branche	Latitude	: 33 42' 52"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 18"

See As-Built Well Construction Diagram

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS % Gravel	% Sand	% Fines	Time
200							
205							0930
210							
215							0945
220	BR						
225							0955
230			Cuttings mostly Gravel				
235							1010
240							
245							
250							



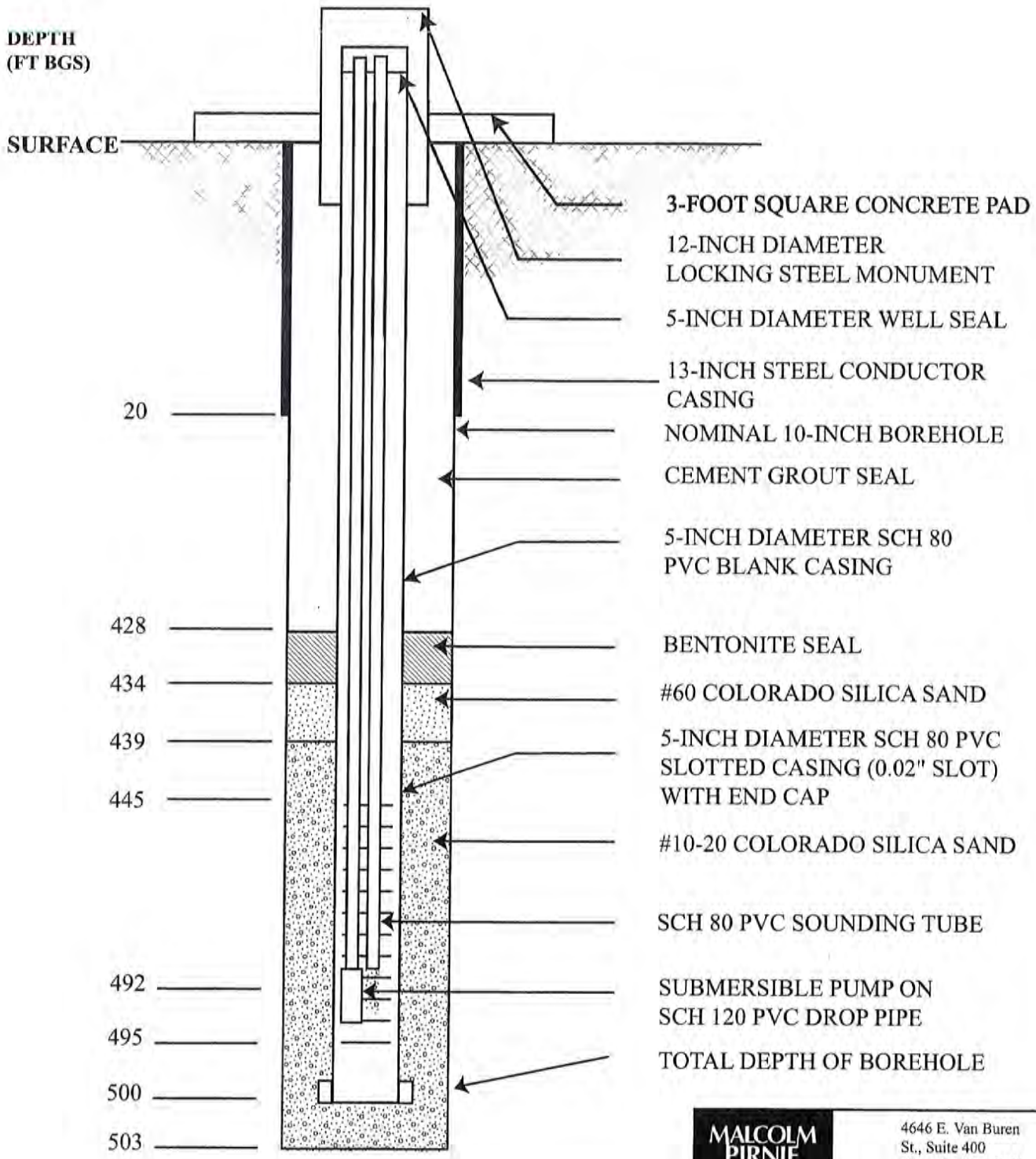
MALCOLM PIRNIE

4646 E. Van Buren St., Suite 400
Phoenix, AZ 85008

MW-13
As-Built Construction Diagram
2008 Annual Monitoring Report

December 2009 | **Appendix A**

M:\3994003\300 Monitor Well Install\As Builts



NOT TO SCALE

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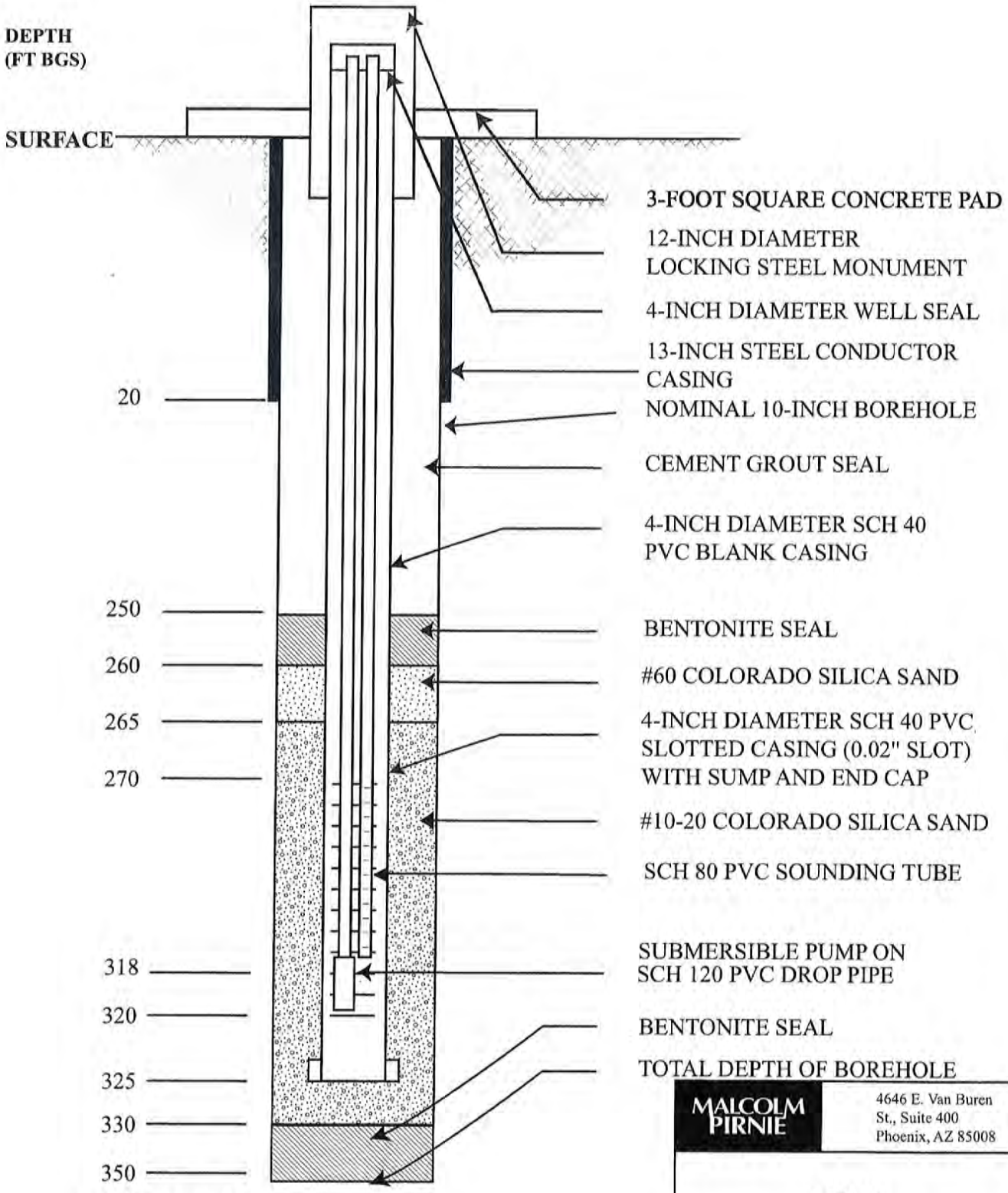
St., Suite 400
Phoenix, AZ 85008

MW-14
As-Built Construction Diagram
2008 Annual Monitoring Report

December 2009	**Appendix A**

M:\3994003\300 Monitor Well Install\As Builts



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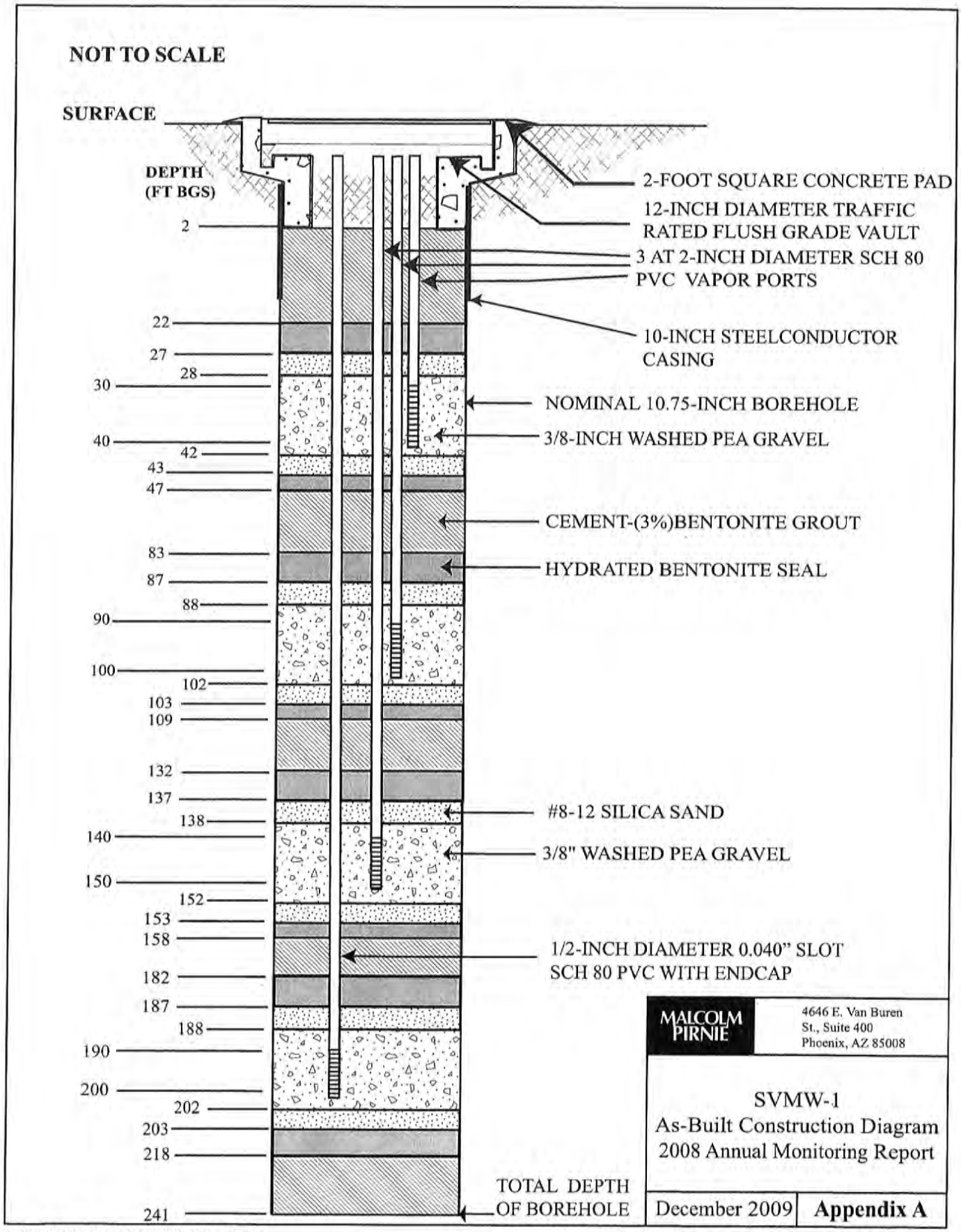
St., Suite 400
Phoenix, AZ 85008

MW-15
As-Built Construction Diagram
2008 Annual Monitoring Report

December 2009 | **Appendix A**

M:\3994003\300 Monitor Well Install\As Builts



M:\3994003\300 Monitor Well Install\As Builts

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

B

APPENDIX

B

APPENDIX

GREEN SEAL

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

GENERATOR

WM- 158319

Name: Universal Propulsion Co. Inc

Address: 25401 N. Central Ave.
Phoenix AZ 85027

Phone No.: Terry

Generating Location: _____

I.D. No.: Control # 6526

WR	101432	AZ	Soil	20 Y

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

Hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

Jerry L. McPherson — AUTHORIZED AGENT'S NAME (PRINT)
3-05-08 — DATE
Jerry McPherson — SIGNATURE

CONTRACTOR

Name: _____ Phone No.: _____

Address: _____

Hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) _____ DATE _____ SIGNATURE _____

TRANSPORTER

Name: MPE

Address: 3045 S. 51st Ave.
Phoenix AZ 85043

Phone No.: 602-275-6233

Driver's Name: O. Alva 696

Vehicle's No.: B-H 415

Hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

6/20/08 — SHIPMENT DATE
O. Alva — DRIVER'S SIGNATURE
6/20 — DELIVERY DATE
O. Alva — DRIVER'S SIGNATURE

DISPOSAL FACILITY

BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

Hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT) _____ DATE 6/30/08 SIGNATURE _____

ORIGINAL – WHITE DISPOSAL FACILITY – YELLOW TRANSPORTER – PINK GENERATOR – GOLDENROD

WASTE MANAGEMENT

Northwest Regional Landfill
19401 Deer Valley Road
Surprise, AZ, 85387
Ph: 6235846065

Original
Ticket# 574671

Customer Name MPEnviro MP Environmental
Ticket Date 06/30/2008
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 158319
Destination
PO
Profile 101432AZ (Universal Propulsion Co Inc)
Generator 160-UNIVERSALPROPULSION Universal Propulsion CO

Carrier MP Environmental
Vehicle# 696
Container 20
Driver
Check#
Billing # 0000086
Gen EPA ID

Volume

Grid

	Time	Scale	Operator	Inbound		
In	06/30/2008 10:59:37	Inbound	cangel		Gross	60840 lb*
Out	06/30/2008 11:13:04	Outbound	cangel		Tare	35940 lb
					Net	24900 lb
			* Manual Weight		Tons	12.45

Comments Control # 6526

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Non Reg Soil -Tons	100	12.45	Tons				
2	Pcenv-Env Fee - Cu	100		%				
3	FUEL-Fuel Surcharg	100		%				
4	ADE-ADEQ Fee	100	12.45	Tons				
5	PFL-Profile Fee	100	1	Each				

Total Tax
Total Ticket

Driver's Signature
403WM

WASTE MANAGEMENT

NON - HAZARDOUS
WASTE MANIFEST

Customer Acct. No.
Ticket No.

GENERATOR

WM- 164525

Name: Universal Propulsion Co.
Address: 25401 N. Central Ave.
Phoenix, AZ 85027-7537
Phone No. 623-516-3340 Ext 2289

Generating Location: Same
I.D. No.: Jerry

NWR	100791	AZ	Soil	20	Y
		# 4119			

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

Jerry L. McPherson — AUTHORIZED AGENT'S NAME (PRINT)
25 APR 08 — DATE
SIGNATURE

CONTRACTOR

Name: ~~Jerry L. McPherson~~
Phone No.
Address

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

TRANSPORTER

Name: MPE
Address: 3045 S. 51st Ave.
Phoenix AZ 85043

Phone No. 602-278-6233
Driver's Name: Don Hedges
Vehicle's No. Bin # 4119

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

4/25/08 — SHIPMENT DATE
DRIVER'S SIGNATURE
4/25/08 — DELIVERY DATE
DRIVER'S SIGNATURE

DISPOSAL FACILITY

- ☐ BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
- ☒ NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
- ☐ PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
- ☐ GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
- ☐ LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
- ☐ IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778
- ☐

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT)
4-25-08 — DATE
SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

WM- 164549

GENERATOR

Name: Universal Propulsion Co.

Address: 25401 N. Central Ave.

Phoenix AZ 85085

Phone No. 623-516-3340 Jerry

Generating Location _____

I.D. No. Control # 6575

WR	101432	AZ-Soil-Drill Cuttings	20	Y

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

Jerry L. McPheron — AUTHORIZED AGENT'S NAME (PRINT)

8/19/2008 — DATE

Jerry L McPheron — SIGNATURE

CONTRACTOR

Name _____

Phone No. _____

Address _____

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) _____ DATE _____ SIGNATURE _____

TRANSPORTER

Name: MPE

Address: 3045 S. 51st Ave.

Phoenix AZ 85043

Phone No. 602-278-6233

Driver's Name: Dave

Vehicle's No. Bin #5049 / 696

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

8-19-8 — SHIPMENT DATE

Dave — DRIVER'S SIGNATURE

8-19-8 — DELIVERY DATE

Dave — DRIVER'S SIGNATURE

DISPOSAL FACILITY

- ☐ BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
- ☒ NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
- ☐ PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
- ☐ GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
- ☐ LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
- ☐ IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

☐ I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT) _____ DATE 8-19-08 SIGNATURE Lupe Garcia

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

Northwest Regional Landfill
19401 Deer Valley Road
Surprise, AZ, 85387
Ph: 6235845065

Original
Ticket# 582903

Customer Name MPEnviro MP Environmental
Ticket Date 08/19/2008
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 164549
Destination
PO
Profile 101432AZ (Universal Propulsion Co Inc)
Generator 160-UNIVERSALPROPULSION Universal Propulsion CO

Carrier MP Environmental
Vehicle# 696
Container 20
Driver
Check#
Billing # 0000086
Gen EPA ID

Grid

Volume

	Time	Scale	Operator	Inbound		
In	08/19/2008 07:50:17	Inbound	LMGarcia		Gross	73280 lb
Out	08/19/2008 08:20:09	Outbound	LMGarcia		Tare	36820 lb
					Net	36460 lb
					Tons	18.23

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Non Reg Soil -Tons	100	18.23	Tons				
2	Pcenv-Env Fee - Cu	100		%				
3	FUEL-Fuel Surcharg	100		%				
4	ADE-ADEQ Fee	100	18.23	Tons				

Total Tax
Total Ticket

Driver's Signature

403WM

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

GENERATOR

WM- 164550

Name: Universal Propulsion Co.

Generating Location: _____

Address: 25401 N. Central Ave.

Phoenix AZ 85085

Phone No. 623-516-3340 Jerry

I.D. No. Control #6575

QUAR	101432	AZ	Soil - Drill Cuttings	20	Y

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

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Jerry L. McPherson — AUTHORIZED AGENT'S NAME (PRINT)

8/19/2008 — DATE

SIGNATURE

CONTRACTOR

Name: _____

Phone No. _____

Address: _____

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

TRANSPORTER

Name: MPE

Phone No. 602-278-6233

Address: 3045 S. 51st Ave.

Phoenix AZ 85043

Driver's Name: C-4397

Vehicle's No. Bin # 419T / 696

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

8-19-8 — SHIPMENT DATE — DRIVER'S SIGNATURE

8-19-8 — DELIVERY DATE — DRIVER'S SIGNATURE

DISPOSAL FACILITY

- BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 258-0630
- SOUTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
- MOUNTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3606
- GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
- LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
- IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT) — 8/19/08 DATE — SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

Northwest Regional Landfill
19401 Deer Valley Road
Surprise, AZ. 85387
Ph: 6235846065

Original
Ticket# 583027

Customer Name MPEnviro-MP Environmental
Ticket Date 08/19/2008
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 164550A
Destination
PO
Profile 101432AZ (Universal Propulsion Co Inc)
Generator 160-UNIVERSALPROPULSION Universal Propulsion CO

Carrier MP Environmental
Vehicle# 696
Container 20
Driver
Check#
Billing # 0000086
Gen EPA ID
Grid

Volume

	Time	Scale	Operator	Inbound		
In	08/19/2008 12:52:36	Inbound	LMGarcia		Gross	67440 lb
Out	08/19/2008 12:52:52	Inbound	LMGarcia		Tare	36820 lb*
			* Manual Weight		Net	30620 lb
					Tons	15.31

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Non Reg Soil -Tons	100	15.31	Tons				
2	Pcenv-Env Fee - Cu	100		%				
3	FUEL-Fuel Surcharg	100		%				
4	ADE-ADEQ Fee	100	15.31	Tons				

Total Tax
Total Ticket

Driver's Signature

403WM

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

GENERATOR

WM- 164551

Name: Universal Propulsion Co.

Address: 25401 N. Central Ave.

Phoenix AZ 85085

Phone No. 623-516-3340 Jerry

Generating Location _____

I.D. No. Control # 6575

DR	101432	AZ	Soil - Drill Cuttings	20	Y

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

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Gary C. McPherson — AUTHORIZED AGENT'S NAME (PRINT)

8/19/2008 — DATE

SIGNATURE

CONTRACTOR

Name _____

Phone No. _____

Address _____

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

TRANSPORTER

Name: MPB

Address: 3045 S. 51st. Ave.

Phoenix AZ 85043

Phone No. 602-278-6233

Driver's Name: Dave # 4779

Vehicle's No. Bin # ~~4779~~ / 696

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

8-19-8 — SHIPMENT DATE — DRIVER'S SIGNATURE

8-19-8 — DELIVERY DATE — DRIVER'S SIGNATURE

DISPOSAL FACILITY

- BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
- NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-8065
- PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
- GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
- LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
- IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT) — DATE — SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

Northwest Regional Landfill
19401 Deer Valley Road
Surprise, AZ, 85387
Ph: 6235846065

Original
Ticket# 583016

Customer Name MPEnviro MP Environmental
Ticket Date 08/19/2008
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 164551
Destination
PO
Profile 101432AZ (Universal Propulsion Co Inc)
Generator 160-UNIVERSALPROPULSION Universal Propulsion CO

Carrier MP Environmental
Vehicle# 696
Container
Driver
Check#
Billing # 0000086
Gen EPA ID

Volume

Grid

A-769051

	Time	Scale	Operator
In	08/19/2008 12:16:28	Inbound	LMGarcia
Out	08/19/2008 12:33:28	Outbound	LMGarcia

Inbound

Gross	73280 lb
Tare	70400 lb
Net	2880 lb
Tons	1.44

4191
4779
5041

Comments 6575 CONTROL #

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Non Reg Soil -Tons	100	1.44	Tons				
2	Pcenv-Env Fee - Cu	100		%				
3	FUEL-Fuel Surcharg	100		%				
4	ADE-ADEQ Fee	100	1.44	Tons				

Pound 3-20 y.d. O.T. 44.T MP
YARD

Total Tax
Total Ticket

Driver's Signature

403WM

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

GENERATOR

WM- 164552

ame Universal Propulsion Co

Generating Location _____

ddress 25401 N. Central Ave.

Phoenix, AZ 85085

hone No. 623-516-3340

I.D. No. Control # 6575

WR	101432	AZ	Soil/Drill Cuttings	2-20 Y

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) | DATE | SIGNATURE

CONTRACTOR

ame _____

Phone No. _____

ddress _____

hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That ach waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) | DATE | SIGNATURE

TRANSPORTER

ame MPB

Phone No. 602-278-6233

ddress 3045 S. 51st Ave.

Phoenix AZ 85043

Driver's Name _____

Vehicle's No. Bin # 3109

hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That ach waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

SHIPMENT DATE | DRIVER'S SIGNATURE | DELIVERY DATE | DRIVER'S SIGNATURE

DISPOSAL FACILITY

BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT) | DATE | SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

Northeast Regional Landfill
15401 Deer Valley Road
Surprise, AZ, 85387
Ph: 6235846065

Original
Ticket# 585097

Customer Name MPEnviro MP Environmental
Ticket Date 09/02/2008
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 164553-164552
Destination
PO
Profile 101432AZ (Universal Propulsion Co Inc)
Generator 160-UNIVERSALPROPULSION Universal Propulsion CO

Carrier MP Environmental
Vehicle# 881
Container 20
Driver
Check#
Billing # 0000086
Gen EPA ID

Grid

Volume

	Time	Scale	Operator	Inbound		
In	09/02/2008 08:59:33	Inbound	LMGarcia		Gross	84040 lb
Out	09/02/2008 10:47:35	Outbound	LMGarcia		Tare	37540 lb*
			* Manual Weight		Net	46500 lb
					Tons	23.25

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Non Reg Soil -Tons	100	23.25	Tons				
2	Pcenv-Env Fee - Cu	100		%				
3	FUEL-Fuel Surcharg	100		%				
4	ADE-ADEQ Fee	100	23.25	Tons				

Total Tax
Total Ticket

Driver's Signature

WM

84040

ASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY
Customer Acct. No. ____
Ticket No. ____

WM- 164553

GENERATOR

ne Universal Propulsion Co.
Iress 25401 N. Central Ave.
Phoenix, AZ 85085
one No. 623-516-3340

Generating Location ____
I.D. No. Control # 6575

WR	101432	AZ	Soil/Drill Cuttings	2-20	Y

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

ereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been perly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) ____ DATE ____ SIGNATURE ____

CONTRACTOR

me ____
Phone No. ____
Idress ____

ereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That ch waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) ____ DATE ____ SIGNATURE ____

TRANSPORTER

me MPB
Idress 3045 S. 51st Ave.
Phoenix AZ 85043

Phone No. 602-278-6233
Driver's Name ____
Vehicle's No. Bin # 5170

ereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That ch waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

SHIPMENT DATE ____ DRIVER'S SIGNATURE ____ DELIVERY DATE ____ DRIVER'S SIGNATURE ____

DISPOSAL FACILITY

] BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
[NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
] PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
] GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
] LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
] IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778
]

hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT) ____ 9/2/10 DATE ____ SIGNATURE ____

ORIGINAL – WHITE DISPOSAL FACILITY – YELLOW TRANSPORTER – PINK GENERATOR – GOLDENROD

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS - WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

GENERATOR

WM- 164827

Name: Universal Propulsion Co. Inc.

Address: 25401 N. Central Ave. Phoenix AZ 85027

Phone No.: Jerry

Generating Location: _____

I.D. No.: Control #6526

TWR	101432	AZ	Soil	20	Y

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

JERRY L. WOLF AGENT — 30 Jun 08 — [signature]

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

CONTRACTOR

Name: _____ Phone No.: _____

Address: _____

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That such waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

TRANSPORTER

Name: MPE

Address: 3245 S. 51st Ave. Phoenix AZ 85043

Phone No.: 602-278-6233

Driver's Name: JUAN DE LA CRUZ

Vehicle's No.: Bin# 4296. TR.# 881

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That such waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

6/30/08 — [signature] — 6-30-08 — [signature]

SHIPMENT DATE — DRIVER'S SIGNATURE — DELIVERY DATE — DRIVER'S SIGNATURE

DISPOSAL FACILITY

- BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
- NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
- PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
- GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
- LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
- IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT) — DATE 6-30-08 — SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

WASTE MANAGEMENT

Northwest Regional Landfill
19401 Deer Valley Road
Surprise, AZ, 85387
Ph: 6235846065

Original
Ticket# 574673

Customer Name MPEnviro MP Environmental
Ticket Date 06/30/2008
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 164827
Destination
PO
Profile 101432AZ (Universal Propulsion Co Inc)
Generator 160-UNIVERSALPROPULSION Universal Propulsion CO

Carrier MP Environmental
Vehicle# 881
Container 20
Driver
Check#
Billing # 0000086
Gen EPA ID

Grid

Volume

	Time	Scale	Operator	Inbound	Gross	52200 lb*
In	06/30/2008 11:00:33	Inbound	carmel		Tare	25680 lb
Out	06/30/2008 11:14:47	Outbound	carmel		Net	26520 lb
			Manual Weight		Tons	13.26

Comments Control # 6526

WASTE MANAGEMENT

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Non Reg Soil -Tons	100	13.26	Tons				
2	Pcenv-Env Fee - Cu	100		%				
3	FUEL-Fuel Surcharg	100		%				
4	ADE-ADEQ Fee	100	13.26	Tons				

Total Tax
Total Ticket

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY
Customer Acct. No. _____
Ticket No. _____

GENERATOR

WM- 165164

ame Universal Propulsion Co.
Generating Location _____
ddress 25401 N. Central
Phoenix AZ 85085
one No. 623-516-3340
I.D. No. Control # 6679

TWR	101483	Soil	10	T

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

ereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been operly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

Jerry McPhuner — AUTHORIZED AGENT'S NAME (PRINT)
21 Nov 08 — DATE
SIGNATURE

CONTRACTOR

ame Malcolm Picnic
Phone No. 602-797-4634
ddress _____

ereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That ch waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

TRANSPORTER

ame MPB
Phone No. 602-278-6233
ddress 3045 S. 51st Ave.
Phoenix AZ 85043
Driver's Name JAMAD CHAK
Vehicle's No. Bin # 4429

ereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That ch waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

SHIPMENT DATE — DRIVER'S SIGNATURE — DELIVERY DATE — DRIVER'S SIGNATURE

DISPOSAL FACILITY

BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

ereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT) — 11-21-08 DATE — SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

WASTE MANAGEMENT

Northwest Regional Landfill
19401 Deer Valley Road
Surprise, AZ, 85387
Phs 6235846065

Original
Ticket# 593705

Customer Name MPEnviro MP Environmental
Ticket Date 11/21/2008
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 165164 165170
Destination
PO
Profile 101483AZ (Unversial Propulsion)
Generator 150-UNIVERSALPROPULSION Universal Propulsion CO

Carrier MP Environmental
Vehicle# 630
Container 20
Driver
Check#
Billing # 0000086
Gen EPA ID
Grid

Volume

	Time	Scale	Operator	Inbound		
In	11/21/2008 08:58:28	Inbound	LMGarcia		Gross	71920 lb
Out	11/21/2008 08:58:45	Inbound	LMGarcia		Tare	37500 lb*
			* Manual Weight		Net	34420 lb
					Tons	17.21

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Cont Soil Pet-Tons	100	17.21	Tons				
2	Pcenv-Env Fee - Cu	100		%				
3	FUEL-Fuel Surcharg	100		%				
4	ADE-ADEQ Fee	100	17.21	Tons				

Total Tax
Total Ticket

Driver's Signature

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

GENERATOR

WM- 165170

Name: Universal Propulsion Co.

Address: 25401 N. Central

Phoenix AZ 85085

Phone No.: 623-516-3340

Generating Location: _____

I.D. No.: Control # 6679

WR	101483	Soil	10.	T

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

Jerry L. McPhee — AUTHORIZED AGENT'S NAME (PRINT)

21 Nov 08 — DATE

SIGNATURE

CONTRACTOR

Name: Malcolm Pirnie Co.

Phone No.: 602-797-4634

Address: _____

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

TRANSPORTER

Name: MPB

Address: 3045 S. 51st Ave.

Phoenix AZ 85043

Phone No.: 602-278-6233

Driver's Name: JAVAD CHAK

Vehicle's No.: Bin # 4296

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

11.21.08 — SHIPMENT DATE

Javad — DRIVER'S SIGNATURE

11.21.08 — DELIVERY DATE

Javad — DRIVER'S SIGNATURE

DISPOSAL FACILITY

BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
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IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT) — 11-21-08 DATE — Jose G. Garcia SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

WASTE MANAGEMENT

Northwest Regional Landfill
19401 Deer Valley Road
Surprise, AZ, 85387
Phs 6235846065

Original
Ticket# 599705

Customer Name MPEnviro MP Environmental
Ticket Date 11/21/2008
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 165164 165170
Destination
PO
Profile 1014830Z (Unversial Propulsion)
Generator 160-UNIVERSALPROPULSION Universal Propulsion CO

Carrier * MP Environmental
Vehicle# 630
Container 20
Driver
Check#
Billing # 0000086
Gen EPA ID
Grid

Volume

	Time	Scale	Operator	Inbound		
In	11/21/2008 08:58:28	Inbound	LMGarcia		Gross	71920 lb
Out	11/21/2008 08:58:45	Inbound	LMGarcia		Tare	37500 lb*
			* Manual Weight		Net	34420 lb
					Tons	17.21

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Cont Soil Pet-Tons	100	17.21	Tons				
2	Pcsnv-Env Fee - Cu	100		%				
3	FUEL-Fuel Surcharg	100		%				
4	ADE-ADEQ Fee	100	17.21	Tons				

Total Tax
Total Ticket

Driver's Signature

YOU MUST INDICATE YOUR PROFILE NUMBER

NON-HAZARDOUS LIQUID WASTE TRANSPORTATION TRIP TICKET

173176

195699

GENERATOR INFORMATION

(MUST BE COMPLETED BY GENERATOR)

MPB Job # 11843

BUSINESS NAME: UPCO LESOA GENERATOR I.D. #

ADDRESS: 25401 N. Central Ave. TELEPHONE: (602)

CITY: Phoenix STATE: AZ ZIP CODE: 85027

WASTE REMOVED FROM:

_____ SEPTIC / CHEMICAL TOILET _____ NON-INDUSTRIAL

_____ GREASE TRAP _____ INDUSTRIAL

_____ GRIT TRAP ✓ SPECIAL Drilling mud waste.

WASTE TANK OR TRAP CAPACITY: _____ GALLONS

I CERTIFY THAT THE WASTE MATERIAL REMOVED FROM THE ABOVE PREMISES CONTAINS NO HAZARDOUS MATERIALS.

GENERATOR / REPRESENTATIVE NAME: Jerry McFerron (PLEASE PRINT)

7/10/08 (DATE SERVICED) (GENERATOR / REPRESENTATIVE SIGNATURE)

TRANSPORTER INFORMATION

(MUST BE COMPLETED BY GENERATOR)

BUSINESS NAME: MPB LESOA TRANPORTER I.D.#

ADDRESS: 3045 S. 51st. Ave. TELEPHONE: (602) 278-6233

CITY: Phoenix STATE: AZ ZIP CODE: 85043

GALLONS REMOVED: 4000 TRAILER LICENSE PLATE #:

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS CORRECT, AND THAT ONLY THE WASTE CERTIFIED FOR REMOVAL BY THE GENERATOR IS CONTAINED IN THE SERVICE VEHICLE. I AM AWARE THAT FALSIFICATION OF THIS TRIP TICKET MAY RESULT IN PROSECUTION.

DRIVER NAME: Don (PLEASE PRINT)

7-10-08 (DATE AND TIME WASTE TRANSPORTED) (DRIVER SIGNATURE)

TREATMENT / DISPOSAL INFORMATION

LIQUID ENVIRONMENTAL SOLUTIONS
5159 WEST VAN BUREN STREET • PHOENIX, ARIZONA 85043 • (602) 278-3442

ADEQ PERMIT #: PRU96-172

I CERTIFY THAT I HAVE BEEN AUTHORIZED BY THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY TO ACCEPT THE ABOVE SPECIFIED WASTE AND THAT I HAVE HANDLED THE WASTE IN ACCORDANCE WITH THE REQUIREMENTS OUTLINED IN THAT AUTHORIZATION.

SITE OPERATOR NAME: Kevin Brandt (PLEASE PRINT)

7-10-08 (DATE AND TIME WASTE RECEIVED) K Brandt (SITE OPERATOR SIGNATURE)

(WHITE) FINAL GENERATOR • (PINK) FACILITY • (GOLD) TRANSPORTER • (CANARY) FIRST GENERATOR

LIQUID ENVIRONMENTAL SOLUTIONS OF TEXAS, LP
5159 WEST VAN BUREN ST
PHOENIX, AZ 85043
602-278-3442

liquid ENVIRONMENTAL SOLUTIONS

Thursday, July 10, 2008

Work Order #

Scheduled Date: 7/10/2008 09:03 AM

122871

UNIVERSAL PROPULTION
25401 N CENTRAL AVE

PHOENIX, AZ 85085
623-516-3340 017747

MP ENVIRONMENTAL SVCS, INC.
3045 S. 51ST AVE.

PHOENIX, AZ 85043
800-458-3036 000447

Transporter
MP ENVIRONMENTAL SERVICE

Facility
LES-PHOENIX PLANT

NON-INDUSTRIAL	173176	195699	4000.00	GALLONS
Total This Work Order:			**4,000.00**	

Driver Name: Dan **Signature:**

Work Order #
122871

OU MUST INDICATE
OUR PROFILE NUMBER

NON-HAZARDOUS LIQUID WASTE TRANSPORTATION TRIP TICKET

173179

195699 017747

GENERATOR INFORMATION

(MUST BE COMPLETED BY GENERATOR)

MPE Job # 11843

USINESS NAME: UPCO LESOA GENERATOR I.D. #

DDRESS: 25401 N. Central Ave. TELEPHONE: (623) 516-3340

ITY: Phoenix STATE: AZ ZIP CODE: 85085

VASTE REMOVED FROM:

- ____ SEPTIC / CHEMICAL TOILET
- ____ NON-INDUSTRIAL
- ____ GREASE TRAP
- ____ INDUSTRIAL
- ____ GRIT TRAP
- X SPECIAL Drilling Water

VASTE TANK OR TRAP CAPACITY: ____ GALLONS

CERTIFY THAT THE WASTE MATERIAL REMOVED FROM THE ABOVE PREMISES CONTAINS NO HAZARDOUS MATERIALS.

ENERATOR / REPRESENTATIVE NAME: Jerry McFerron (PLEASE PRINT)

8/19/2008 (DATE SERVICED)

(GENERATOR / REPRESENTATIVE SIGNATURE)

TRANSPORTER INFORMATION

(MUST BE COMPLETED BY GENERATOR)

USINESS NAME: MPE LESOA TRANPORTER I.D.#

DDRESS: 3045 S 51st Ave TELEPHONE: (602) 278-6233

ITY: Phoenix STATE: AZ ZIP CODE: 85043

ALLONS REMOVED: 5000 TRAILER LICENSE PLATE #: 1WE1550

CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS CORRECT, AND THAT ONLY THE WASTE CERTIFIED FOR REMOVAL BY HE GENERATOR IS CONTAINED IN THE SERVICE VEHICLE. I AM AWARE THAT FALSIFICATION OF THIS TRIP TICKET MAY RESULT N PROSECUTION.

RIVER NAME: Dan Slone (PLEASE PRINT)

8-19-08 (DATE AND TIME WASTE TRANSPORTED)

(DRIVER SIGNATURE)

TREATMENT / DISPOSAL INFORMATION

LIQUID ENVIRONMENTAL SOLUTIONS
5159 WEST VAN BUREN STREET • PHOENIX, ARIZONA 85043 • (602) 278-3442

ADEQ PERMIT #: PRU96-172

I CERTIFY THAT I HAVE BEEN AUTHORIZED BY THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY TO ACCEPT THE ABOVE SPECIFIED WASTE AND THAT I HAVE HANDLED THE WASTE IN ACCORDANCE WITH THE REQUIREMENTS OUTLINED IN THAT AUTHORIZATION.

SITE OPERATOR NAME: Pat Genuoso (PLEASE PRINT)

08-19-08 @ 0943hr (DATE AND TIME WASTE RECEIVED)

(SITE OPERATOR SIGNATURE)

(WHITE) FINAL GENERATOR • (PINK) FACILITY • (GOLD) TRANSPORTER • (CANARY) FIRST GENERATOR

LIQUID ENVIRONMENTAL SOLUTIONS OF TEXAS, LP
5159 WEST VAN BUREN ST
PHOENIX, AZ 85043
602-278-3442

liquid ENVIRONMENTAL SOLUTIONS

Tuesday, August 19, 2008

Work Order #

Scheduled Date: 8/19/2008 09:46 AM

124711

UNIVERSAL PROPULTION
25401 N CENTRAL AVE

PHOENIX, AZ 85085
623-516-3340 017747

MP ENVIRONMENTAL SVCS, INC.
3045 S. 51ST AVE.

PHOENIX, AZ 85043
800-458-3036 000447

Transporter
MP ENVIRONMENTAL SERVICE

Facility
LES-PHOENIX PLANT

NON-INDUSTRIAL	173179	195699	5000.00	GALLONS
Total This Work Order:			**5,000.00**	

Driver Name: DW **Signature:**

Work Order #
124711

LIQUID ENVIRONMENTAL SOLUTIONS

liquid ENVIRONMENTAL SOLUTIONS

NON-HAZARDOUS WASTE MANIFEST

31995

195699

Generator Name	Name: Universal Propulsion Phone: (623) 576-3340	Generator Address	Address: 25401 Central Ave. City: Phoenix State: AZ Zip: 85085

Waste Type	☐ Grease Trap ☐ Grit Trap ☐ Septic/Chemical Toilet ☒ Non-Industrial ☐ Industrial ☐ Special

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pusuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	Jerry L. McPhee	Generator Rep. Signature	

Transporter Name	Name: MPE Phone: (602) 278-6233	Transporter Address	Address: 3045 S. 51st Ave. City: Phoenix State: AZ Zip: 85043

Waste Removed (Gallons)	2650	Date: 9/17/2008	Time: 830A

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	Chad Tucker	Driver Signature	

Disposal Facility	Liquid Environmental Solutions of Arizona	Address	5159 West Van Buren Street Phoenix, AZ 85043
Waste Received (Gallons)	2650	Date: 09.17.08	Time: 0956
Facility Rep. Name (please print)	Pat Gallegos	Facility Rep. Signature	

WHITE - Generator Final Copy YELLOW - Liquid Environmental Solutions Copy GOLDENROD - Transporter Copy PINK - Generator 1st Copy

LIQUID ENVIRONMENTAL SOLUTIONS OF TEXAS, LP
5159 WEST VAN BUREN ST
PHOENIX, AZ 85043
602-278-3442

liquid ENVIRONMENTAL SOLUTIONS

Wednesday, September 17, 2008

Work Order #
125907

Scheduled Date: 9/17/2008 09:54 AM

Service For	Billing Information
UNIVERSAL PROPULTION 25401 N CENTRAL AVE PHOENIX, AZ 85085 623-516-3340 017747	MP ENVIRONMENTAL SVCS, INC. 3045 S. 51ST AVE. PHOENIX, AZ 85043 800-458-3036 000447

Transporter
MP ENVIRONMENTAL SERVICE

Facility
LES-PHOENIX PLANT

Comments

Notes

Svc Description	Manifest #	Profile #	Qty	UofM
NON-INDUSTRIAL	31995	195699	2650.00	GALLONS
Total This Work Order:			2,650.00	

Driver Name: _____ **Signature:** _____

Work Order #
125907

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: A Z D 9 8 0 5 [illegible]
2. Page 1 of
3. Emergency Response Phone: (800) 483-8718
4. Manifest Tracking Number: 000527689 FLE

5. Generator's Name and Mailing Address
Universal Propulsion Co
2440 N Central
Phoenix, AZ
Generator's Phone: 602 318-3340 Attn: Jim Sedgwick

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Clean Harbors Environmental Services Inc — U.S. EPA ID Number: MAL000[illegible]

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Clean Harbors Arizona LLC
1940 West Lincoln Street
Phoenix, AZ, 85007
Facility's Phone: (602) 258-8155
U.S. EPA ID Number: AZD049[illegible]

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. NONE, NON RCRA HAZARDOUS WASTE LIQUIDS, (WATER)	001	TT	5000	G	NONE
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information 1 3056758

40,000 ~~41,725~~ lbs

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Jerry McPheron — Signature: [signature] — Month 02 Day 05 Year 08

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: JEFFREY HINDERLITER — Signature: [signature] — Month 2 Day 5 Year 08
Transporter 2 Printed/Typed Name — Signature — Month Day Year

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number: U.S. EPA ID Number
18b. Alternate Facility (or Generator)
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H141 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: [illegible] — Signature: [signature] — Month 2 Day 5 Year 08

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

Clean Harbors has the authorization permits for and will accept the waste the generator is shipping

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

C

APPENDIX

C

APPENDIX

GREEN SEAL

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-1	12/15/2008	1557.22	208.44	1348.78
	11/21/2008	1557.22	208.36	1348.86
	10/14/2008	1557.22	208.37	1348.85
	9/20/2008	1557.22	208.44	1348.78
	8/29/2008	1557.22	208.55	1348.67
	7/28/2008	1557.22	208.50	1348.72
	6/27/2008	1557.22	208.53	1348.69
	5/27/2008	1557.22	208.37	1348.85
	4/29/2008	1557.22	208.27	1348.95
	3/31/2008	1557.22	208.24	1348.98
	1/14/2008	1557.22	208.37	1348.85
	10/15/2007	1557.22	208.16	1349.06
	7/30/2007	1557.22	207.84	1349.38
	4/9/2007	1557.22	208.03	1349.19
	2/12/2007	1557.22	208.08	1349.14
	11/13/2006	1557.22	208.04	1349.18
	8/28/2006	1557.22	208.04	1349.18
	5/22/2006	1557.22	208.08	1349.14
	3/20/2006	1557.22	207.98	1349.24
	12/22/2005	1557.22	208.15	1349.07
	12/2/2005	1557.22	207.97	1349.25
	10/24/2005	1557.22	208.03	1349.19
	9/22/2005	1557.22	208.03	1349.19
	8/22/2005	1557.22	208.04	1349.18
	7/18/2005	1557.22	208.13	1349.09
	6/27/2005	1557.22	207.82	1349.40
	5/20/2005	1557.22	207.69	1349.53
	4/25/2005	1557.22	207.47	1349.75
	3/15/2005	1557.22	207.36	1349.86
	2/14/2005	1557.22	207.52	1349.70
	1/17/2005	1557.22	207.62	1349.60
	12/7/2004	1557.22	207.80	1349.42
	11/22/2004	1557.22	207.71	1349.51
	10/22/2004	1557.22	207.42	1349.80
	9/7/2004	1557.22	207.79	1349.43
	4/16/2004	1557.22	206.66	1350.61
	3/19/2004	1557.22	206.70	1350.57
	1/6/2004	1557.19	206.64	1350.55

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-2	12/15/2008	1567.62	218.77	1348.85
	11/21/2008	1567.62	218.69	1348.93
	10/14/2008	1567.62	218.69	1348.93
	9/20/2008	1567.62	218.75	1348.87
	8/29/2008	1567.62	218.83	1348.79
	7/28/2008	1567.62	218.81	1348.81
	6/27/2008	1567.62	218.89	1348.73
	5/27/2008	1567.62	218.69	1348.93
	4/29/2008	1567.62	218.54	1349.08
	3/31/2008	1567.62	218.55	1349.07
	1/14/2008	1567.62	218.70	1348.92
	10/15/2007	1567.62	218.45	1349.17
	7/30/2007	1567.62	218.19	1349.43
	4/9/2007	1567.62	218.41	1349.21
	2/12/2007	1567.62	218.48	1349.14
	11/13/2006	1567.62	218.38	1349.24
	8/28/2006	1567.62	218.35	1349.27
	5/22/2006	1567.62	218.43	1349.19
	3/20/2006	1567.62	218.33	1349.29
	12/22/2005	1567.62	218.48	1349.14
	12/2/2005	1567.62	218.34	1349.28
	10/24/2005	1567.62	218.44	1349.18
	9/22/2005	1567.62	218.44	1349.18
	8/22/2005	1567.62	218.43	1349.19
	7/18/2005	1567.62	218.53	1349.09
	6/27/2005	1567.62	218.20	1349.42
	5/20/2005	1567.62	218.06	1349.56
	4/25/2005	1567.62	217.88	1349.74
	3/15/2005	1567.62	217.83	1349.79
	2/14/2005	1567.62	217.93	1349.69
	1/17/2005	1567.62	218.02	1349.60
	12/7/2004	1567.62	218.15	1349.47
	11/22/2004	1567.62	218.10	1349.52
	10/22/2004	1567.62	217.62	1350.00
	9/7/2004	1567.62	218.06	1349.56
	4/16/2004	1567.67	217.06	1350.61
	3/19/2004	1567.67	217.40	1350.27
	1/6/2004	1567.51	216.90	1350.61

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-3	12/15/2008	1583.59	236.59	1347.00
	11/21/2008	1583.59	236.45	1347.14
	10/14/2008	1583.59	236.30	1347.29
	9/20/2008	1583.59	236.10	1347.49
	8/29/2008	1583.59	236.07	1347.52
	7/28/2008	1583.59	235.79	1347.80
	6/27/2008	1583.59	235.66	1347.93
	5/27/2008	1583.59	235.48	1348.11
	4/29/2008	1583.59	235.21	1348.38
	3/31/2008	1583.59	235.42	1348.17
	1/14/2008	1583.59	234.93	1348.66
	10/15/2007	1583.59	234.45	1349.14
	7/30/2007	1583.59	233.52	1350.07
	4/9/2007	1583.59	233.11	1350.48
	2/12/2007	1583.59	232.76	1350.83
	11/13/2006	1583.59	232.82	1350.77
	8/28/2006	1583.59	232.24	1351.35
	5/22/2006	1583.59	231.91	1351.68
	3/21/2006	1583.59	231.59	1352.00
	12/22/2005	1583.59	231.15	1352.44
	11/30/2005	1583.59	231.12	1352.47
	10/24/2005	1583.59	230.94	1352.65
	9/22/2005	1583.59	231.67	1351.92
	8/22/2005	1583.59	230.63	1352.96
	7/18/2005	1583.59	230.61	1352.98
	6/27/2005	1583.59	230.30	1353.29
	5/20/2005	1583.59	230.21	1353.38
	4/25/2005	1583.59	229.94	1353.65
	3/15/2005	1583.59	229.86	1353.73
	2/14/2005	1583.59	229.73	1353.86
	1/17/2005	1583.59	229.35	1354.24
	12/7/2004	1583.59	229.03	1354.56
	11/22/2004	1583.59	228.91	1354.68
	10/22/2004	1583.59	227.92	1355.67
	9/7/2004	1583.59	229.10	1354.50

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-4	12/15/2008	1620.34	274.90	1345.44
	11/21/2008	1620.34	274.70	1345.64
	10/14/2008	1620.34	274.68	1345.66
	9/20/2008	1620.34	274.48	1345.86
	8/29/2008	1620.34	274.40	1345.94
	7/28/2008	1620.34	274.22	1346.12
	6/27/2008	1620.34	274.18	1346.16
	5/27/2008	1620.34	274.05	1346.29
	4/29/2008	1620.34	273.76	1346.58
	3/31/2008	1620.34	274.00	1346.34
	1/14/2008	1620.34	273.81	1346.53
	10/15/2007	1620.34	273.35	1346.99
	7/30/2007	1620.34	272.63	1347.71
	4/9/2007	1620.34	271.66	1348.68
	2/12/2007	1620.34	271.51	1348.83
	11/13/2006	1620.34	271.33	1349.01
	8/28/2006	1620.34	271.82	1348.52
	5/22/2006	1620.34	271.43	1348.91
	3/20/2006	1620.34	271.28	1349.06
	12/22/2005	1620.34	270.80	1349.54
	11/30/2005	1620.34	270.82	1349.52
	10/24/2005	1620.34	270.78	1349.56
	9/22/2005	1620.34	270.44	1349.90
	8/22/2005	1620.34	270.40	1349.94
	7/18/2005	1620.34	270.56	1349.78
	6/27/2005	1620.34	270.26	1350.08
	5/20/2005	1620.34	270.22	1350.12
	4/25/2005	1620.34	270.12	1350.22
	3/15/2005	1620.34	270.15	1350.19
	2/14/2005	1620.34	270.04	1350.30
	1/17/2005	1620.34	269.84	1350.50
	12/7/2004	1620.34	269.83	1350.51
	11/22/2004	1620.34	269.58	1350.76
	10/22/2004	1620.34	268.92	1351.42
	9/7/2004	1620.34	269.13	1351.21

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-5	12/15/2008	1590.45	241.43	1349.02
	11/21/2008	1590.45	241.45	1349.00
	10/14/2008	1590.45	241.43	1349.02
	9/20/2008	1590.45	241.48	1348.97
	8/29/2008	1590.45	241.45	1349.00
	7/28/2008	1590.45	241.44	1349.01
	6/27/2008	1590.45	241.48	1348.97
	5/27/2008	1590.45	241.33	1349.12
	4/29/2008	1590.45	241.28	1349.17
	3/31/2008	1590.45	241.31	1349.14
	1/14/2008	1590.45	241.28	1349.17
	10/15/2007	1590.45	241.12	1349.33
	7/30/2007	1590.45	240.81	1349.64
	4/9/2007	1590.45	241.10	1349.35
	2/12/2007	1590.45	241.09	1349.36
	11/13/2006	1590.45	241.04	1349.41
	8/28/2006	1590.45	240.97	1349.48
	5/22/2006	1590.45	241.07	1349.38
	3/20/2006	1590.45	240.92	1349.53
	12/22/2005	1590.45	240.90	1349.55
	11/30/2005	1590.45	240.81	1349.64
	10/24/2005	1590.45	240.85	1349.60
	9/22/2005	1590.45	240.81	1349.64
	8/22/2005	1590.45	240.81	1349.64
	7/18/2005	1590.45	240.90	1349.55
	6/27/2005	1590.45	240.58	1349.87
	5/20/2005	1590.45	240.48	1349.97
	4/25/2005	1590.45	240.38	1350.07
	3/15/2005	1590.45	240.36	1350.09
	2/14/2005	1590.45	240.44	1350.01
	1/17/2005	1590.45	240.47	1349.98
	12/7/2004	1590.45	240.49	1349.96
	11/22/2004	1590.45	240.40	1350.05
	10/22/2004	1590.45	239.67	1350.78
	9/7/2004	1590.45	240.17	1350.28

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-6	12/15/2008	1548.22	161.89	1386.33
	11/21/2008	1548.22	161.71	1386.51
	10/14/2008	1548.22	161.48	1386.74
	9/20/2008	1548.22	161.33	1386.89
	8/29/2008	1548.22	161.30	1386.92
	7/28/2008	1548.22	161.50	1386.72
	6/27/2008	1548.22	162.08	1386.14
	5/27/2008	1548.22	163.05	1385.17
	4/29/2008	1548.22	164.28	1383.94
	3/31/2008	1548.22	165.42	1382.80
	1/14/2008	1548.22	164.94	1383.28
	10/15/2007	1548.22	163.95	1384.27
	7/30/2007	1548.22	162.92	1385.30
	4/9/2007	1548.22	161.63	1386.59
	2/12/2007	1548.22	161.95	1386.27
	11/13/2006	1548.22	161.11	1387.11
	8/28/2006	1548.22	159.64	1388.58
	5/22/2006	1548.22	157.80	1390.42
	3/20/2006	1548.22	156.61	1391.61
	12/22/2005	1548.22	154.68	1393.54
	11/30/2005	1548.22	154.16	1394.06
	10/24/2005	1548.22	153.11	1395.11
	9/22/2005	1548.22	151.89	1396.33
	8/22/2005	1548.22	150.88	1397.34
	7/18/2005	1548.22	149.61	1398.61
	6/27/2005	1548.22	148.82	1399.40
	5/20/2005	1548.22	148.31	1399.91
	4/25/2005	1548.22	149.74	1398.48
	3/15/2005	1548.22	160.38	1387.84
	2/14/2005	1548.22	162.50	1385.72
	1/17/2005	1548.22	162.32	1385.90
	12/7/2004	1548.22	161.99	1386.23
	11/22/2004	1548.22	161.77	1386.45
	10/22/2004	1548.22	161.27	1386.95
	9/7/2004	1548.22	162.22	1386.00

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-7	12/15/2008	1541.35	161.19	1380.16
	11/21/2008	1541.35	161.22	1380.13
	10/14/2008	1541.35	161.21	1380.14
	9/20/2008	1541.35	160.98	1380.37
	8/29/2008	1541.35	160.85	1380.50
	7/28/2008	1541.35	160.92	1380.43
	6/27/2008	1541.35	160.83	1380.52
	5/27/2008	1541.35	160.63	1380.72
	4/29/2008	1541.35	160.46	1380.89
	3/31/2008	1541.35	160.53	1380.82
	1/14/2008	1541.35	160.61	1380.74
	10/15/2007	1541.35	160.12	1381.23
	7/30/2007	1541.35	159.48	1381.87
	4/9/2007	1541.35	159.30	1382.05
	2/12/2007	1541.35	159.37	1381.98
	11/13/2006	1541.35	159.48	1381.87
	8/28/2006	1541.35	159.54	1381.81
	5/22/2006	1541.35	159.39	1381.96
	3/20/2006	1541.35	158.83	1382.52
	12/22/2005	1541.35	157.73	1383.62
	11/30/2005	1541.35	157.41	1383.94
	10/24/2005	1541.35	157.01	1384.34
	9/22/2005	1541.35	156.37	1384.98
	8/22/2005	1541.35	156.09	1385.26
	7/18/2005	1541.35	155.94	1385.41
	6/27/2005	1541.35	155.60	1385.75
	5/20/2005	1541.35	155.56	1385.79
	4/25/2005	1541.35	155.56	1385.79
	3/15/2005	1541.35	155.48	1385.87
	2/14/2005	1541.35	155.20	1386.15
	1/17/2005	1541.35	155.02	1386.33
	12/7/2004	1541.35	154.55	1386.80
	11/22/2004	1541.35	154.14	1387.21
	10/22/2004	1541.35	157.21	1384.14

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-8	12/15/2008	1542.18	193.35	1348.83
	11/21/2008	1542.18	193.38	1348.80
	10/14/2008	1542.18	193.37	1348.81
	9/20/2008	1542.18	193.35	1348.83
	8/29/2008	1542.18	193.37	1348.81
	7/28/2008	1542.18	193.36	1348.82
	6/27/2008	1542.18	193.39	1348.79
	5/27/2008	1542.18	193.25	1348.93
	4/29/2008	1542.18	193.08	1349.10
	3/31/2008	1542.18	193.17	1349.01
	1/14/2008	1542.18	193.32	1348.86
	10/15/2007	1542.18	193.18	1349.00
	7/30/2007	1542.18	192.71	1349.47
	4/9/2007	1542.18	192.79	1349.39
	2/12/2007	1542.18	193.01	1349.17
	11/13/2006	1542.18	192.98	1349.20
	8/28/2006	1542.18	192.95	1349.23
	5/22/2006	1542.18	192.97	1349.21
	3/20/2006	1542.18	192.83	1349.35
	12/22/2005	1542.18	192.91	1349.27
	11/30/2005	1542.18	192.84	1349.34
	10/24/2005	1542.18	192.89	1349.29
	9/22/2005	1542.18	192.84	1349.34
	8/22/2005	1542.18	192.90	1349.28
	7/18/2005	1542.18	192.88	1349.30
	6/27/2005	1542.18	192.57	1349.61
	5/20/2005	1542.18	192.50	1349.68
	4/25/2005	1542.18	192.29	1349.89
	3/15/2005	1542.18	192.27	1349.91
	2/14/2005	1542.18	192.29	1349.89
	1/17/2005	1542.18	192.27	1349.91
	12/7/2004	1542.18	192.29	1349.89
	11/22/2004	1542.18	192.27	1349.91
	10/22/2004	1542.18	193.21	1348.97

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-9	12/15/2008	1565.60	216.52	1349.08
	11/21/2008	1565.60	216.51	1349.09
	10/14/2008	1565.60	216.46	1349.14
	9/20/2008	1565.60	216.42	1349.18
	8/29/2008	1565.60	216.38	1349.22
	7/28/2008	1565.60	216.34	1349.26
	6/27/2008	1565.60	216.37	1349.23
	5/27/2008	1565.60	216.24	1349.36
	4/29/2008	1565.60	216.15	1349.45
	3/31/2008	1565.60	216.26	1349.34
	1/14/2008	1565.60	216.30	1349.30
	10/15/2007	1565.60	216.16	1349.44
	7/30/2007	1565.60	215.83	1349.77
	4/9/2007	1565.60	216.19	1349.41
	2/12/2007	1565.60	216.12	1349.48
	11/13/2006	1565.60	216.07	1349.53
	8/28/2006	1565.60	215.95	1349.65
	5/22/2006	1565.60	216.03	1349.57
	3/20/2006	1565.60	215.82	1349.78
	12/22/2005	1565.60	215.64	1349.96
	11/30/2005	1565.60	215.70	1349.90
	10/24/2005	1565.60	215.72	1349.88
	9/22/2005	1565.60	215.59	1350.01
	8/22/2005	1565.60	215.57	1350.03
	7/18/2005	1565.60	215.68	1349.92
	6/27/2005	1565.60	215.41	1350.19
	5/20/2005	1565.60	215.36	1350.24
	4/25/2005	1565.60	215.34	1350.26
	3/15/2005	1565.60	215.36	1350.24
	2/14/2005	1565.60	215.29	1350.31

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-10	12/15/2008	1536.11	152.87	1383.24
	11/21/2008	1536.11	152.88	1383.23
	10/14/2008	1536.11	152.83	1383.28
	9/20/2008	1536.11	152.58	1383.53
	8/29/2008	1536.11	152.41	1383.70
	7/28/2008	1536.11	152.48	1383.63
	6/27/2008	1536.11	152.37	1383.74
	5/27/2008	1536.11	152.20	1383.91
	4/29/2008	1536.11	151.98	1384.13
	3/31/2008	1536.11	152.04	1384.07
	1/14/2008	1536.11	151.93	1384.18
	10/15/2007	1536.11	151.45	1384.66
	7/30/2007	1536.11	150.88	1385.23
	4/9/2007	1536.11	150.75	1385.36
	2/12/2007	1536.11	150.63	1385.48
	11/13/2006	1536.11	150.45	1385.66
	8/28/2006	1536.11	150.05	1386.06
	5/22/2006	1536.11	149.66	1386.45
	3/20/2006	1536.11	149.54	1386.57
	12/22/2005	1536.11	149.33	1386.78
	11/30/2005	1536.11	149.27	1386.84
	10/24/2005	1536.11	149.20	1386.91
	9/22/2005	1536.11	148.88	1387.23
	8/22/2005	1536.11	149.02	1387.09
	7/18/2005	1536.11	149.08	1387.03
	6/27/2005	1536.11	149.04	1387.07
	5/20/2005	1536.11	149.33	1386.78
	4/25/2005	1536.11	149.56	1386.55
	3/15/2005	1536.11	149.71	1386.40
	2/14/2005	1536.11	149.92	1386.19

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-11	12/15/2008	1603.35	254.20	1349.15
	11/21/2008	1603.35	254.23	1349.12
	10/14/2008	1603.35	254.23	1349.12
	9/20/2008	1603.35	254.25	1349.10
	8/29/2008	1603.35	254.28	1349.07
	7/28/2008	1603.35	254.26	1349.09
	6/27/2008	1603.35	254.20	1349.15
	5/27/2008	1603.35	254.12	1349.23
	4/29/2008	1603.35	254.13	1349.22
	1/14/2008	1603.35	254.07	1349.28
	10/15/2007	1603.35	253.90	1349.45
	7/30/2007	1603.35	253.51	1349.84
	4/9/2007	1603.35	253.87	1349.48
	2/12/2007	1603.35	253.86	1349.49
	11/13/2006	1603.35	253.80	1349.55
	8/28/2006	1603.35	253.78	1349.57
	5/22/2006	1603.35	253.83	1349.52
	3/20/2006	1603.35	253.71	1349.64
	12/22/2005	1603.35	253.68	1349.67
MW-12	12/15/2008	1557.46	209.50	1347.96
	11/21/2008	1557.46	209.41	1348.05
	10/14/2008	1557.46	209.40	1348.06
	9/20/2008	1557.46	209.50	1347.96
	8/29/2008	1557.46	209.58	1347.88
	7/28/2008	1557.46	209.58	1347.88
	6/27/2008	1557.46	209.63	1347.83
	5/27/2008	1557.46	209.42	1348.04
	4/29/2008	1557.46	209.31	1348.15
	3/31/2008	1557.46	209.31	1348.15
	1/14/2008	1557.46	209.46	1348.00
	10/15/2007	1557.46	209.23	1348.23
	7/30/2007	1557.46	208.85	1348.61
	4/9/2007	1557.46	209.16	1348.30
	2/12/2007	1557.46	209.23	1348.23
	11/13/2006	1557.46	209.14	1348.32
	8/28/2006	1557.46	209.12	1348.34
	5/22/2006	1557.46	209.17	1348.29
	3/20/2006	1557.46	209.09	1348.37
	12/22/2005	1557.46	209.16	1348.30

Appendix C
Water Level Data UPCO Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-13	12/15/2008	1595.77	246.83	1348.94
	11/21/2008	1595.77	246.78	1348.99
	10/14/2008	1595.77	246.75	1349.02
	9/20/2008	1595.77	246.75	1349.02
	8/29/2008	1595.77	246.82	1348.95
MW-14	12/15/2008	1602.48	264.02	1338.46
	11/21/2008	1602.48	264.15	1338.33
	10/14/2008	1602.48	263.69	1338.79
	9/20/2008	1602.48	263.38	1339.10
	8/29/2008	1602.48	263.25	1339.23
MW-15	12/15/2008	1600.48	262.58	1337.90
	11/21/2008	1600.48	262.45	1338.03
	10/14/2008	1600.48	262.18	1338.30
	9/20/2008	1600.48	262.09	1338.39
	8/29/2008	1600.48	261.95	1338.53

Appendix C
Water Level Data
Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
18 East Yearling	3/30/07	1596.79	NA	NA
	5/25/07	1596.79	NA	NA
	6/4/07	1596.79	NA	NA
	6/20/2007	1596.79	NA	NA
	7/30/2007	1596.79	NA	NA
	8/2/2007	1596.79	351.13	1245.66
	8/30/2007	1596.79	346.66	1250.13
	9/12/2007	1596.79	365.49	1231.30
	9/24/2007	1596.79	358.82	1237.97
	9/27/2007	1596.79	365.22	1231.57
	10/15/2007	1596.79	362.45	1234.34
	11/19/2007	1596.79	363.82	1232.97
	12/11/2007	1596.79	360.47	1236.32
	1/14/2008	1596.79	354.74	1242.05
	3/13/2008	1596.79	358.96	1237.83
	5/16/2008	1596.79	350.67	1246.12
	7/28/2008	1596.79	below transducer	NM
	8/29/2008	1596.79	258.19	1338.60
	10/14/2008	1596.79	362.65	1234.14
	12/3/2008	1596.79	358.64	1238.15
	12/15/2008	1596.79	358.88	1237.91
218 East Yearling	3/30/07	1617.01	325.20	1291.81
	5/25/07	1617.01	313.19	1303.82
	6/4/07	1617.01	325.92	1291.09
	6/20/2007	1617.01	317.50	1299.51
	7/30/2007	1617.01	NA	NA
	8/2/2007	1617.01	NA	NA
	8/30/2007	1617.01	313.80	1303.21
	9/12/2007	1617.01	334.26	1282.75
	9/24/2007	1617.01	NA	NA
	9/27/2007	1617.01	317.38	1299.63
	10/15/2007	1617.01	323.81	1293.20
	11/19/2007	1617.01	322.32	1294.69
	12/11/2007	1617.01	315.75	1301.26
	1/14/2008	1617.01	313.32	1303.69
	3/13/2008	1617.01	obstruction	NM
	5/16/2008	1617.01	344.85	1272.16
	7/28/2008	1617.01	316.35	1300.66
	8/29/2008	1617.01	329.46	1287.55
	10/14/2008	1617.01	340.00	1277.01
	12/3/2008	1617.01	317.34	1299.67
	12/15/2008	1617.01	313.89	1303.12

Appendix C
Water Level Data
Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
520 East Yearling	3/30/07	1635.71	293.60	1342.11
	5/25/07	1635.71	293.68	1342.03
	6/4/07	1635.71	292.33	1343.38
	6/20/2007	1635.71	292.54	1343.17
	7/30/2007	1635.71	293.69	1342.02
	8/2/2007	1635.71	NA	NA
	8/30/2007	1635.71	292.04	1343.67
	9/12/2007	1635.71	294.56	1341.15
	9/24/2007	1635.71	294.59	1341.12
	9/27/2007	1635.71	295.18	1340.53
	10/15/2007	1635.71	294.94	1340.77
	11/19/2007	1635.71	295.66	1340.05
	12/11/2007	1635.71	295.41	1340.30
	1/14/2008	1635.71	295.30	1340.41
	3/13/2008	1635.71	294.71	1341.00
	5/16/2008	1635.71	295.80	1339.91
	7/28/2008	1635.71	296.54	1339.17
	8/29/2008	1635.71	305.50	1330.21
	10/14/2008	1635.71	297.20	1338.51
	12/3/2008	1635.71	297.37	1338.34
	12/15/2008	1635.71	297.42	1338.29

Note:
Measured depth to water and calculated groundwater elevations may not represent actual static water levels because these are active pumping wells, subject to frequent water level fluctuations
NM = not measured
NA = no access

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D

APPENDIX

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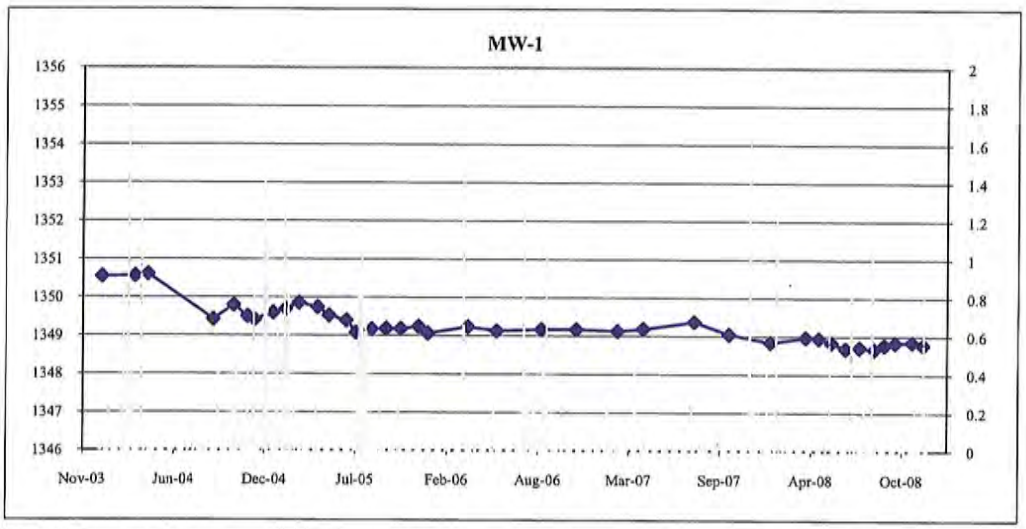
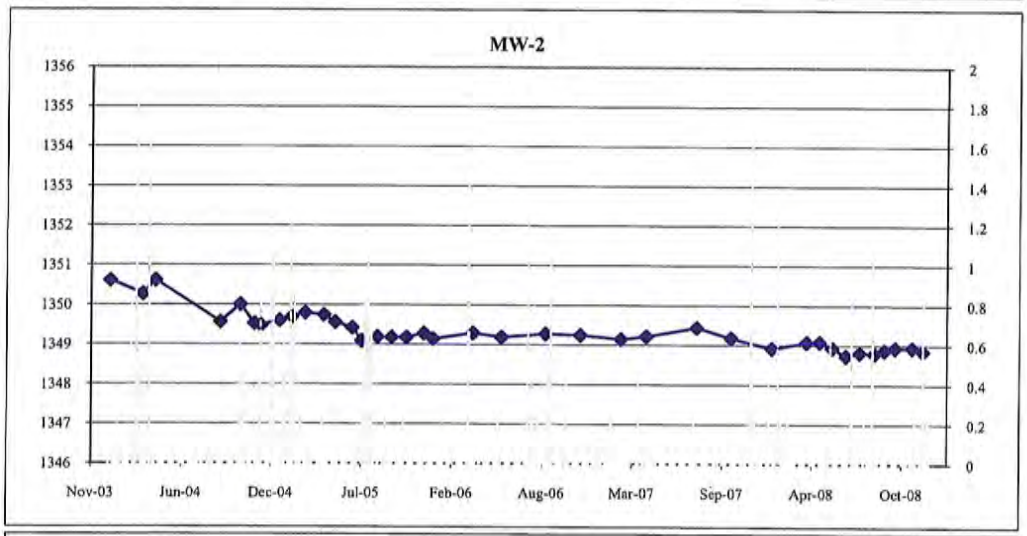
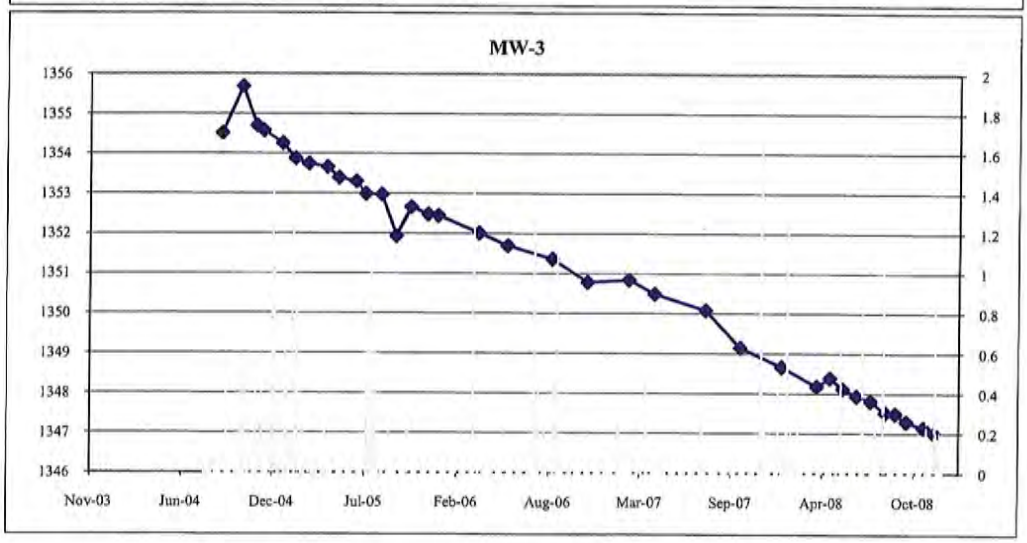
APPENDIX

GREEN SEAL

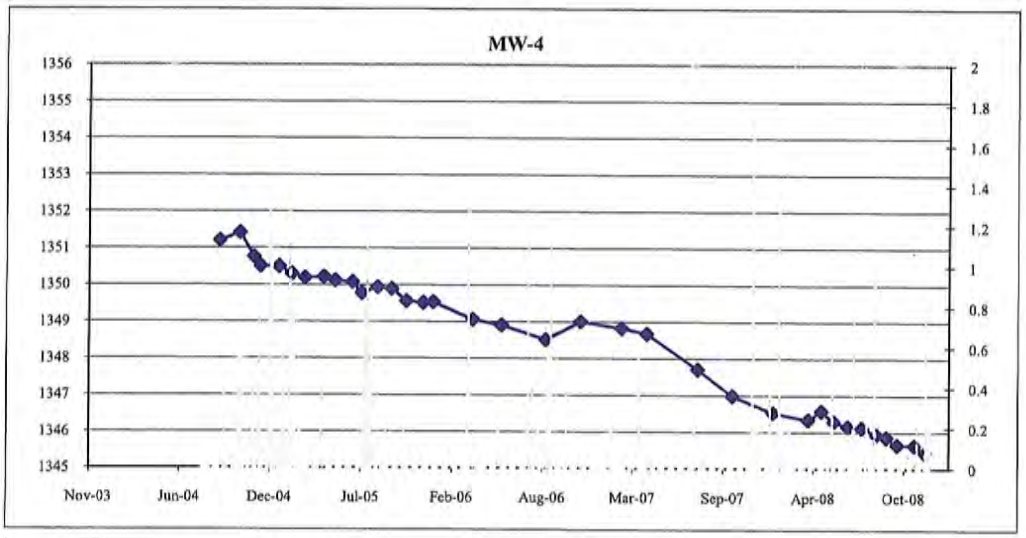
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)

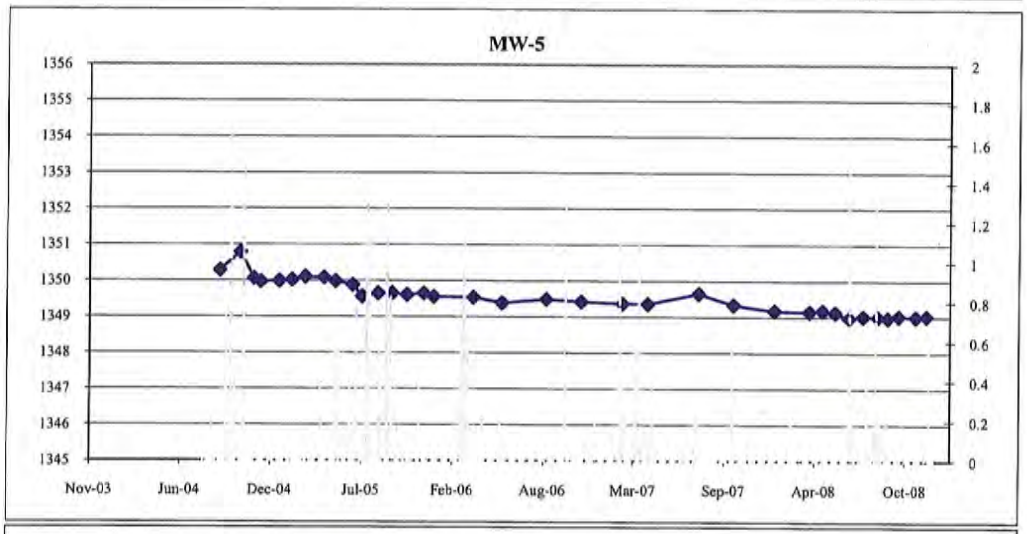


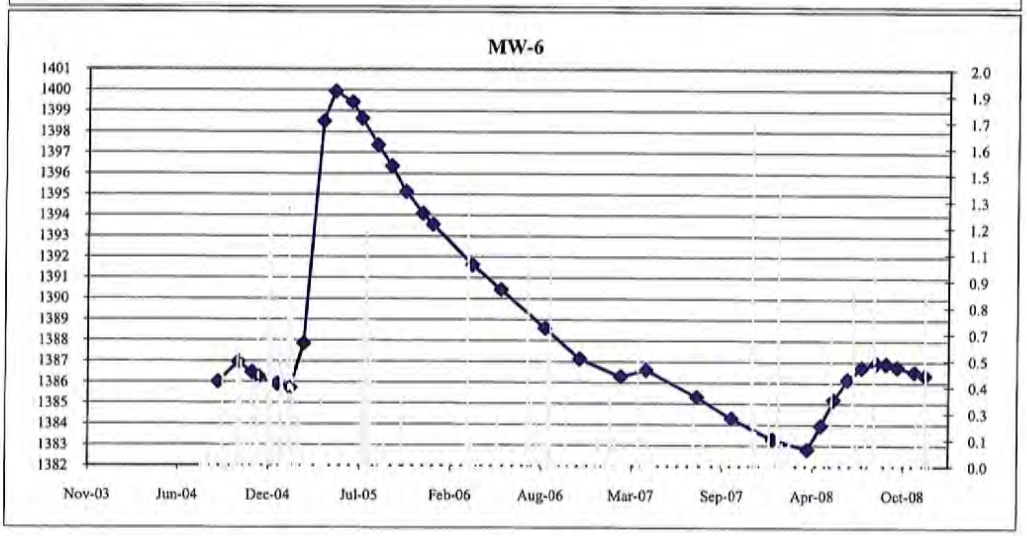




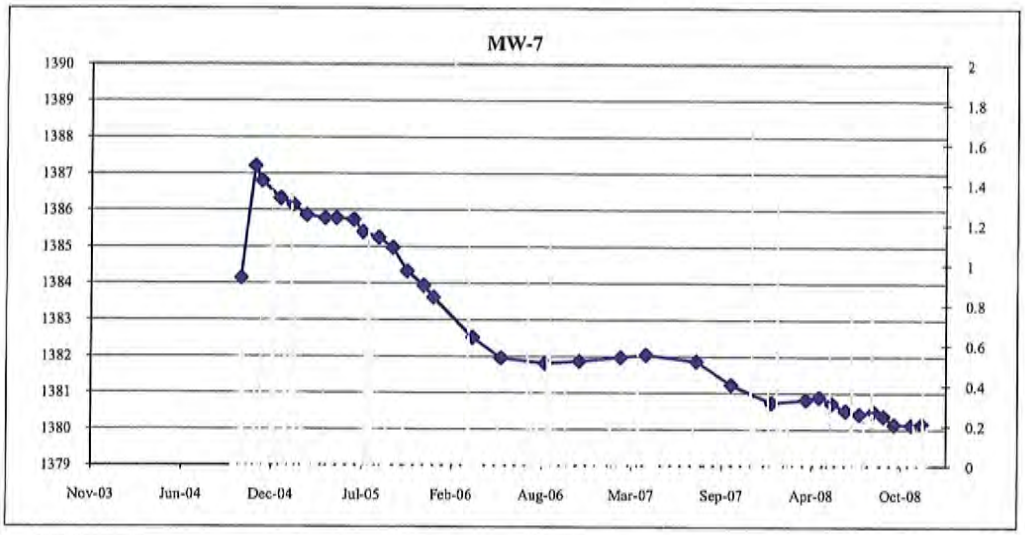
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)

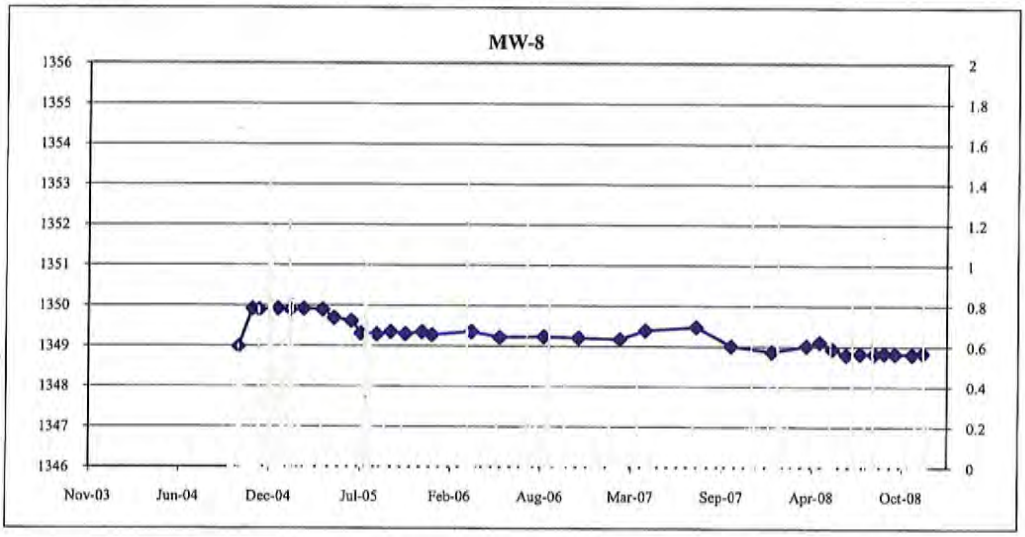


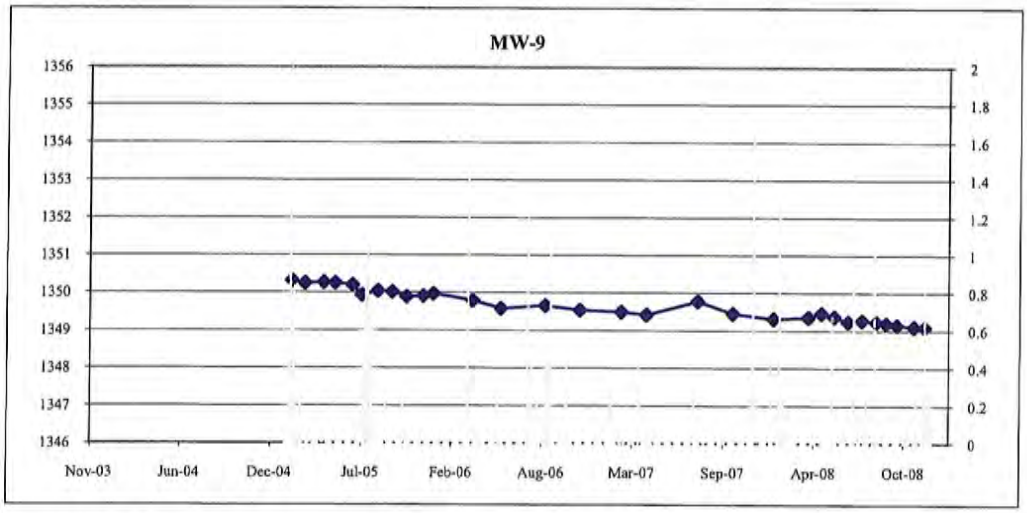




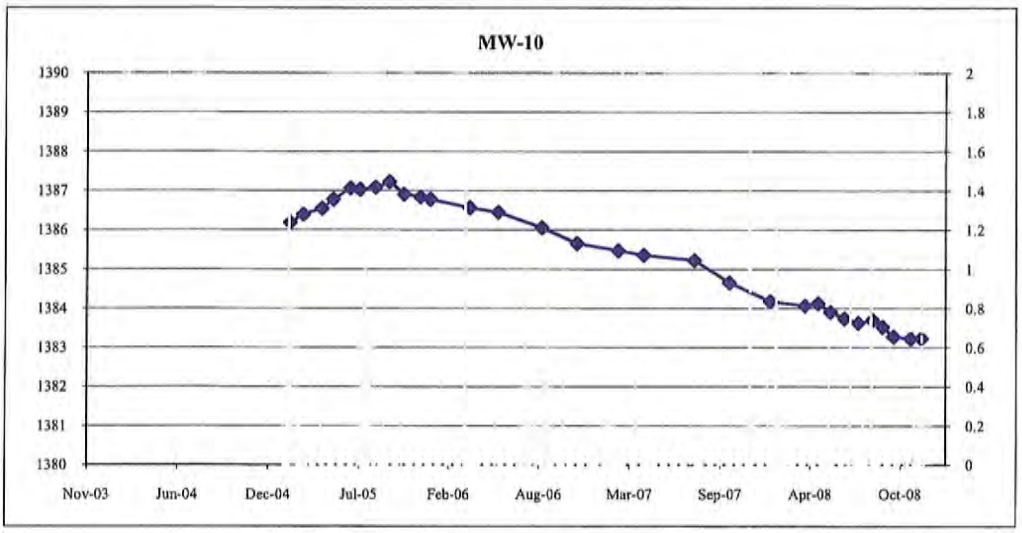
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)

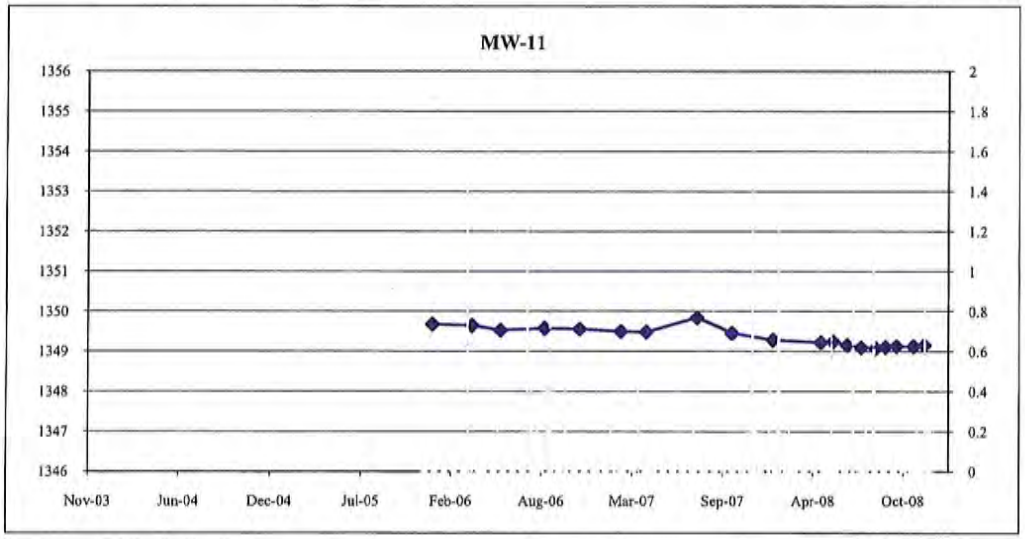


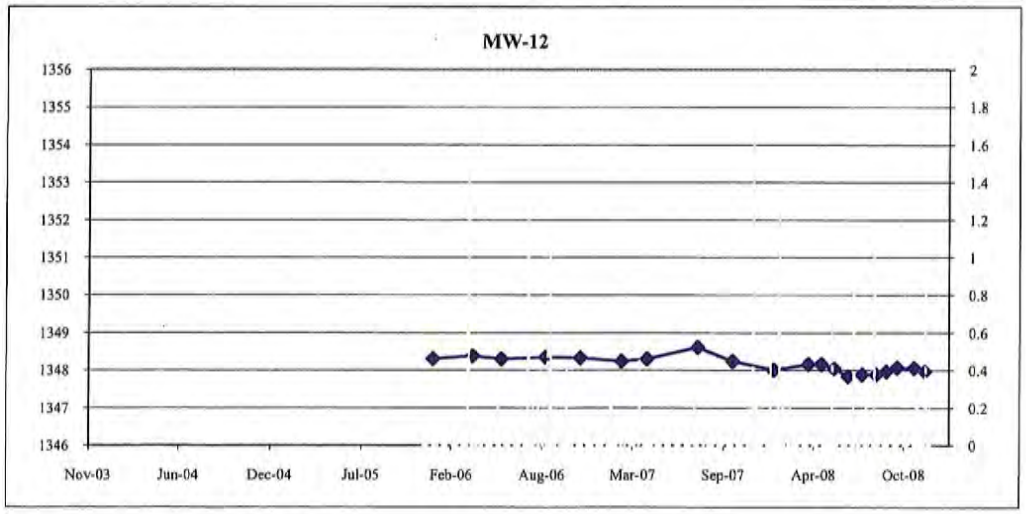




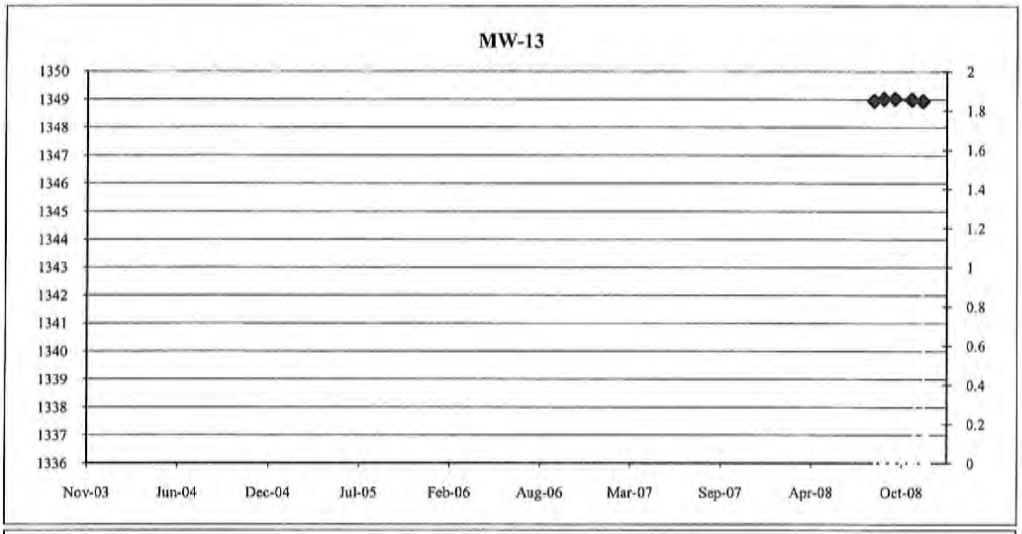
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)

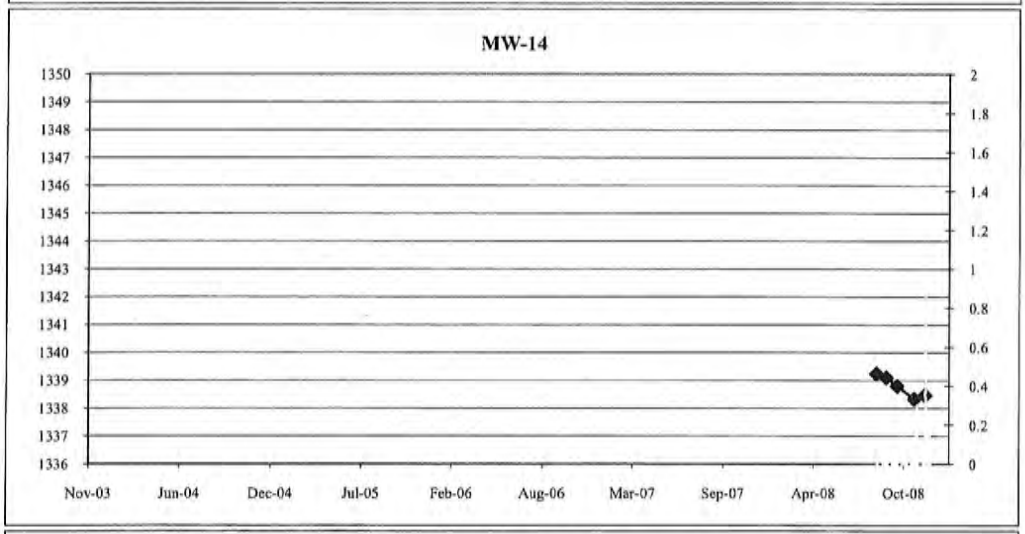


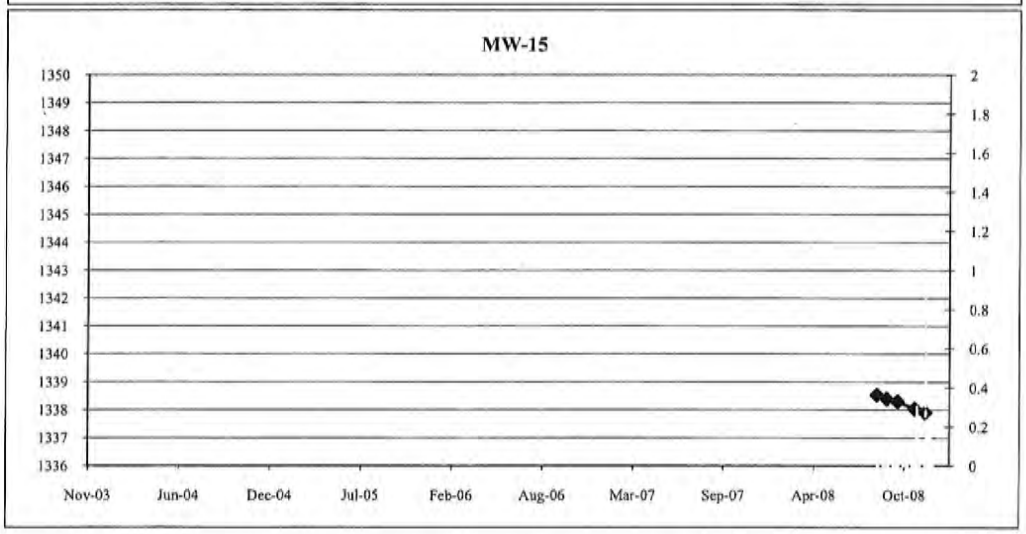




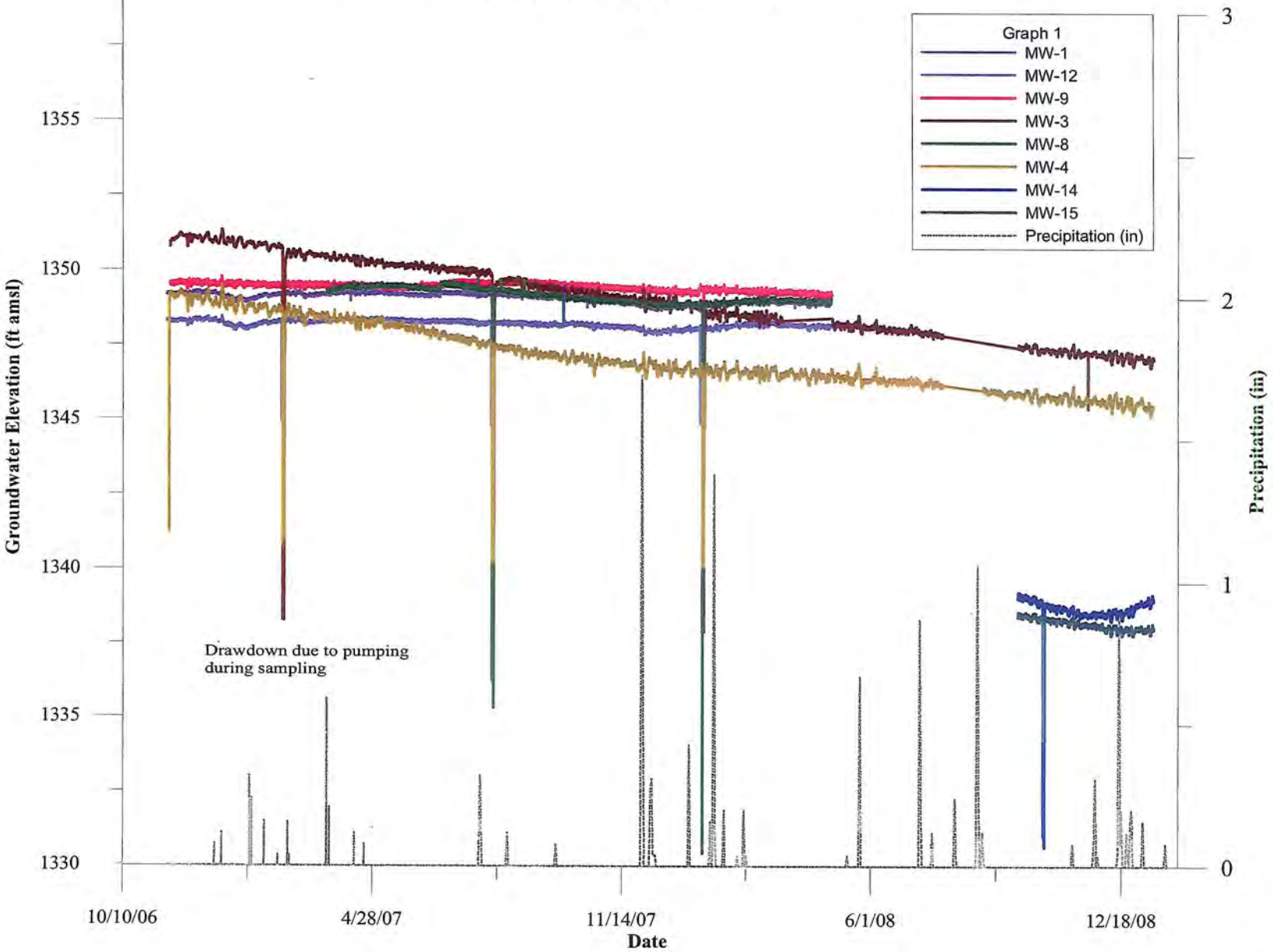
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)



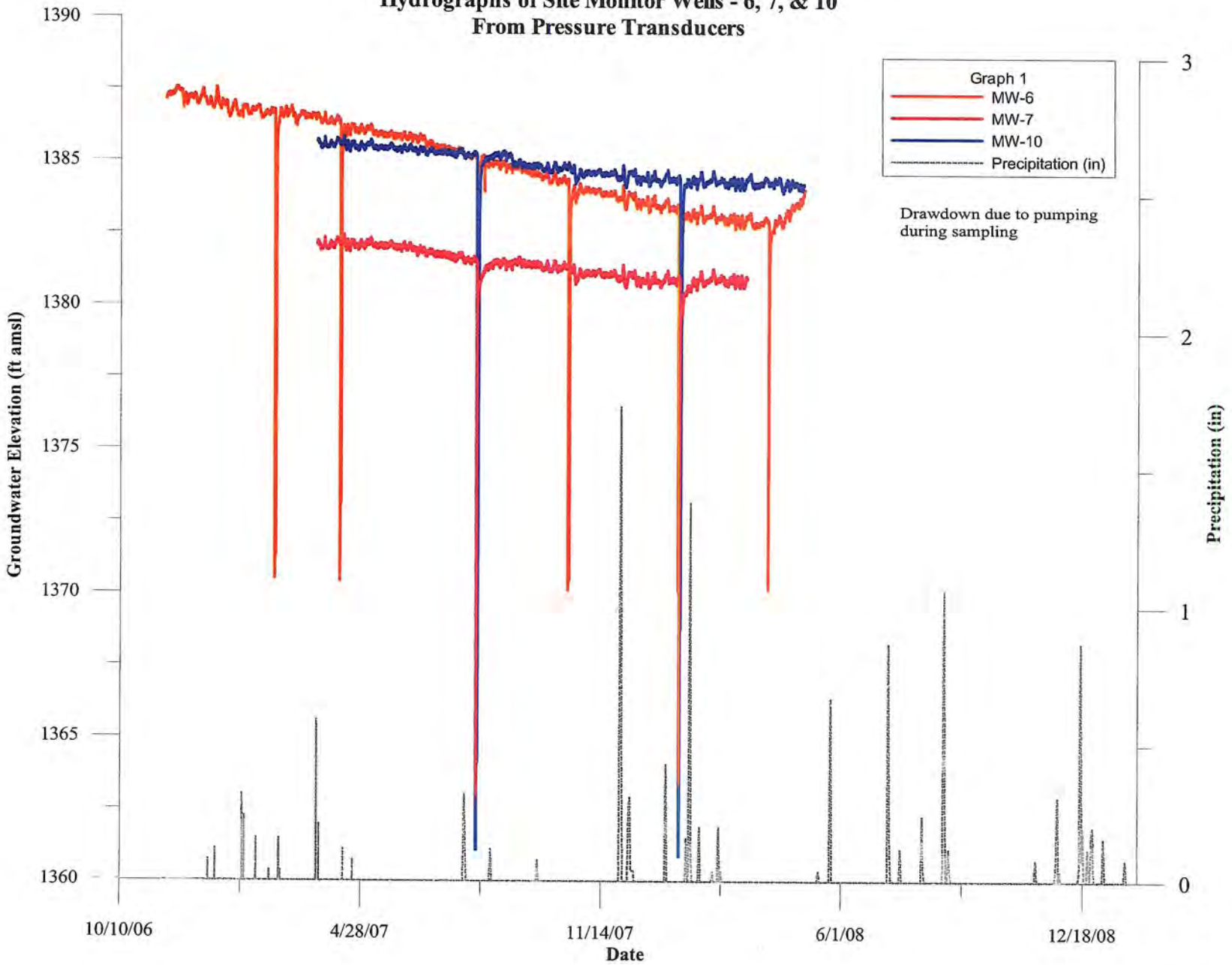




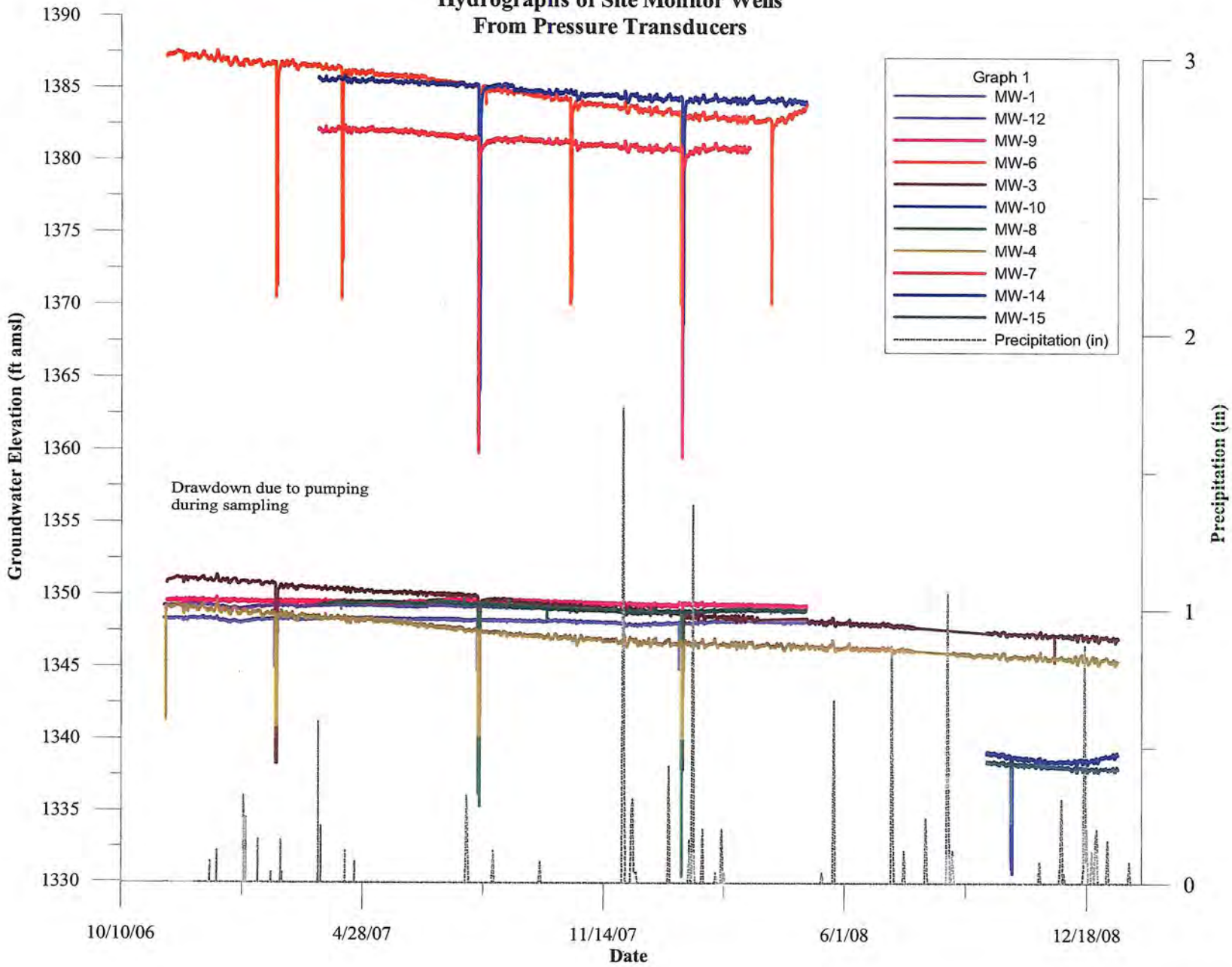
Appendix D
Hydrographs of Site Monitor Wells - 1, 3, 4, 8, 9, 12, 14, & 15
From Pressure Transducers



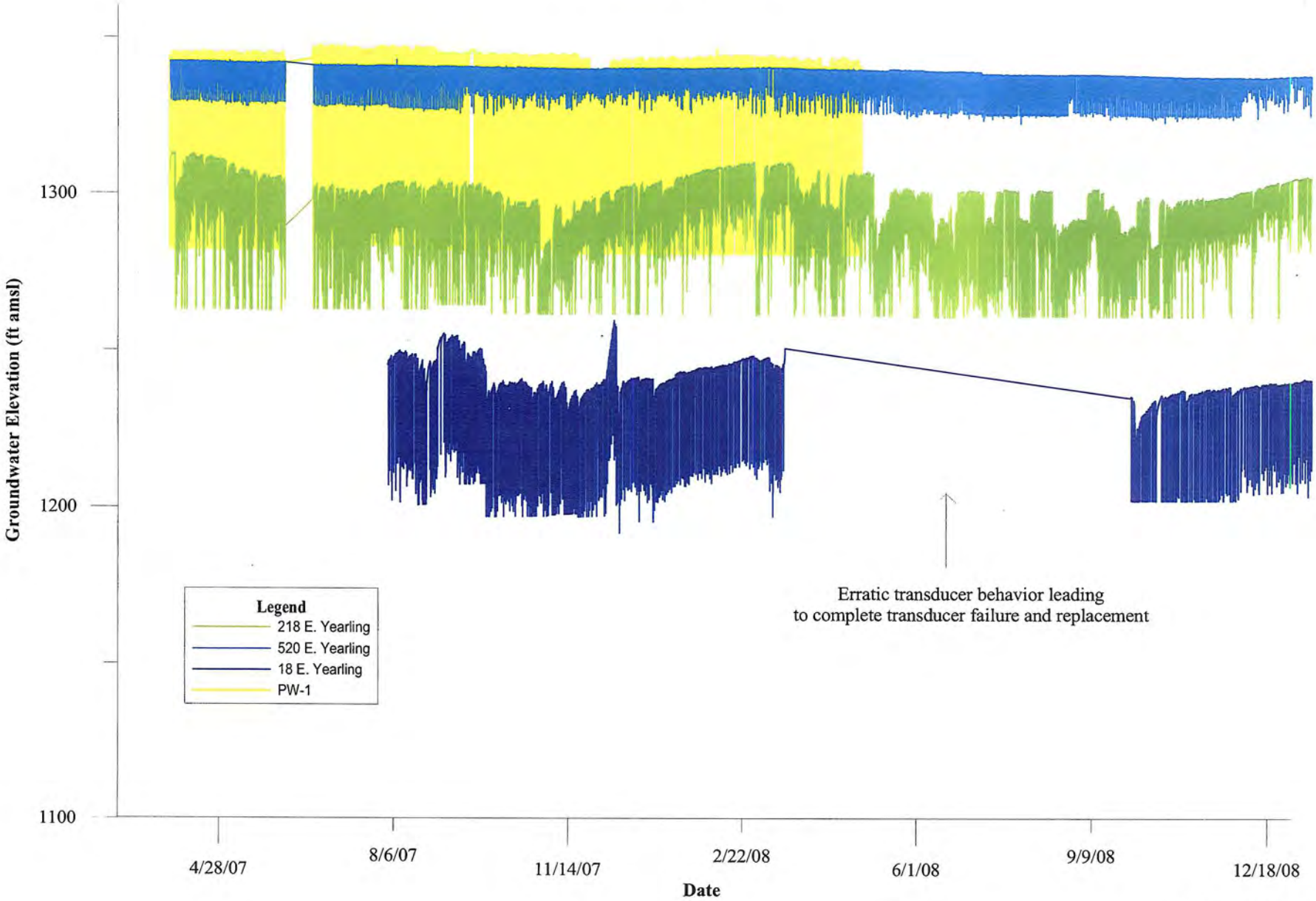
Appendix D
Hydrographs of Site Monitor Wells - 6, 7, & 10
From Pressure Transducers



Appendix D
Hydrographs of Site Monitor Wells From Pressure Transducers



Appendix D
Hydrographs of PW-1 and Private Wells
From Pressure Transducers



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E

APPENDIX

E
APPENDIX

Appendix E
Monitor Well Groundwater Quality Summary

Parameters	MW-1 1/15/2008	MW-1 3/31/2008	MW-1 10/17/2008	MW-2 1/19/2008	MW-2 3/31/2008	MW-2 7/30/2008	MW-2 10/17/2008	MW-3 1/18/2008	MW-3 7/30/2008	MW-4 1/19/2008	MW-4 7/30/2008	MW-5 1/16/2008	MW-5 3/31/2008	MW-5 7/30/2008	MW-5 10/17/2008	MW-6 1/17/2008
Inorganics (mg/L)																
Arsenic	<0.050	NA	NA	0.0076	NA	NA	NA	0.0053	NA	0.0023	NA	<0.050	NA	NA	NA	<0.050
Barium	0.047	NA	NA	0.081	NA	NA	NA	0.021	NA	0.08	NA	0.051	NA	NA	NA	0.011
Cadmium	<0.0050	NA	NA	0.001	NA	NA	NA	0.001	NA	0.001	NA	<0.0050	NA	NA	NA	<0.0050
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	<0.010	NA	NA	0.014	NA	NA	NA	0.002	NA	0.002	NA	0.022	NA	NA	NA	<0.010
Lead	<0.050	NA	NA	0.0015	NA	NA	NA	0.0016	NA	0.0037	NA	<0.050	NA	NA	NA	<0.050
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	<0.00020	NA	NA	<0.00020	NA	NA	NA	<0.00020	NA	<0.00020	NA	<0.00020	NA	NA	NA	<0.00020
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	<0.050	NA	NA	0.002	NA	NA	NA	0.002	NA	0.002	NA	<0.050	NA	NA	NA	<0.050
Silver	<0.0050	NA	NA	0.001	NA	NA	NA	0.001	NA	0.001	NA	<0.0050	NA	NA	NA	<0.0050
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perchlorate (ug/L; EPA Method 314.0)	74	76	73	84	86	88	78	<2.0	<2.0	<2.0	<2.0	25	23	24	22	18
Perchlorate (ug/L; EPA Method 332)	NA	NA	NA	NA	NA	NA	NA	0.46	0.69	0.53	0.74	NA	NA	NA	NA	NA
Volatile Organic Compounds (ug/L)																
1,1,1,2-Tetrachloroethane	<1.0	NA	<0.50	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,1,1-Trichloroethane	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,1,2,2-Tetrachloroethane	<2.0	NA	<0.50	<2.0	NA	<0.50	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA	NA	<2.0
1,1,2-Trichloroethane	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,1-Dichloroethane	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,1-Dichloroethene	<2.0	NA	<0.50	<2.0	NA	<0.50	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA	NA	<2.0
1,1-Dichloropropene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,2,3-Trichlorobenzene	<1.0	NA	<1.0	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,2,3-Trichloropropane	<1.0	NA	<1.0	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,2,4-Trichlorobenzene	<1.0	NA	<1.0	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,2,4-Trimethylbenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,2-Dibromo-3-chloropropane	<2.0	NA	<2.5	<2.0	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA	NA	<2.0
1,2-Dibromoethane (EDB)	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,2-Dichlorobenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,2-Dichloroethane	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,2-Dichloropropane	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,3,5-Trimethylbenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,3-Dichlorobenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,3-Dichloropropane	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,4-Dichlorobenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
1,4-Dioxane	<1.0	NA	<1.0	2.7	NA	2.6 J	NA	<2.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
2,2-Dichloropropane	<1.0	NA	<1.0	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
2-Butanone (MEK)	<10	NA	<2.5	<10	NA	<2.5	NA	<10	NA	<10	NA	<10	NA	NA	NA	<10
2-Chlorotoluene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
2-Hexanone	<10	NA	<2.5	<10	NA	<2.5	NA	<10	NA	<10	NA	<10	NA	NA	NA	<10
4-Chlorotoluene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
4-Methyl-2-pentanone (MIBK)	<10	NA	<2.5	<10	NA	<2.5	NA	<10	NA	<10	NA	<10	NA	NA	NA	<10
Acetone	<20	NA	<10	<20	NA	<10	NA	<20	NA	<20	NA	<20	NA	NA	NA	<20
Benzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Bromobenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Bromochloromethane	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Bromodichloromethane	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Bromoform	<2.0	NA	<1.0	<2.0	NA	<1.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA	NA	<2.0

Appendix E
Monitor Well Groundwater Quality Summary

Parameters	MW-1 1/15/2008	MW-1 3/31/2008	MW-1 10/17/2008	MW-2 1/19/2008	MW-2 3/31/2008	MW-2 7/30/2008	MW-2 10/17/2008	MW-3 1/18/2008	MW-3 7/30/2008	MW-4 1/19/2008	MW-4 7/30/2008	MW-5 1/16/2008	MW-5 3/31/2008	MW-5 7/30/2008	MW-5 10/17/2008	MW-6 1/17/2008
Volatile Organic Compounds (ug/L)																
Bromomethane	<4.0	NA	<1.0	<4.0	NA	<1.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	NA	NA	<4.0
Carbon Disulfide	<5.0	NA	<0.50	<5.0	NA	NA	NA	<5.0	NA	<5.0	NA	<5.0	NA	NA	NA	<5.0
Carbon tetrachloride	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Chlorobenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Chloroethane	<4.0	NA	<1.0	<4.0	NA	<1.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	NA	NA	<4.0
Chloroform	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Chloromethane	<4.0	NA	<1.0	<4.0	NA	<1.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	NA	NA	<4.0
cis-1,2-Dichloroethene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
cis-1,3-Dichloropropene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Dibromochloromethane	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Dibromomethane	<1.0	NA	<0.50	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Dichlorodifluoromethane	<4.0	NA	<0.50	<4.0	NA	<0.50	NA	<4.0	NA	<4.0	NA	<4.0	NA	NA	NA	<4.0
Ethylbenzene	<2.0	NA	<0.50	<2.0	NA	<0.50	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA	NA	<2.0
Hexachlorobutadiene	<1.0	NA	<1.0	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Iodomethane	<2.0	NA	<2.5	<2.0	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA	NA	<2.0
Isopropylbenzene	<1.0	NA	<0.50	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
m,p-Xylenes	NA	NA	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	<5.0	NA	<1.0	<5.0	NA	<1.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	NA	NA	<5.0
Methyl-tert-butyl Ether (MTBE)	<5.0	NA	<0.50	<5.0	NA	<0.50	NA	<5.0	NA	<5.0	NA	<5.0	NA	NA	NA	<5.0
Naphthalene	<2.0	NA	<2.5	<2.0	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA	NA	<2.0
n-Butylbenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
n-Propylbenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
o-Xylene	NA	NA	NA	NA	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
sec-Butylbenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Styrene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
tert-Butylbenzene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Tetrachloroethene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Toluene	<2.0	NA	<0.50	<2.0	NA	<0.50	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA	NA	<2.0
trans-1,2-Dichloroethene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
trans-1,3-Dichloropropene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Trichloroethene	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Trichlorofluoromethane	<4.0	NA	<0.50	<4.0	NA	<0.50	NA	<4.0	NA	<4.0	NA	<4.0	NA	NA	NA	<4.0
Trihalomethanes, Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Acetate	<5.0	NA	<0.50	<5.0	NA	<0.50	NA	<5.0	NA	<5.0	NA	<5.0	NA	NA	NA	<5.0
Vinyl chloride	<1.0	NA	<0.50	<1.0	NA	<0.50	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA	<1.0
Xylenes, Total	<3.0	NA	<1.0	<3.0	NA	NA	NA	<3.0	NA	<3.0	NA	<3.0	NA	NA	NA	<3.0

Notes
* = samples collected during additional development
mg/L = milligrams per liter
UJ = the reporting limit is considered an estimated value
J = the analyte was positively identified; however, the result should be condsidered an estimated value
ug/L = microgram per liter
NA = not analyzed
< = analyte not reported above laboratory detection limit

Appendix E
Monitor Well Groundwater Quality Summary

Parameters	MW-6 3/31/2008	MW-6 7/30/2008	MW-6 10/17/2008	MW-7 1/17/2008	MW-7 8/1/2008	MW-8 1/18/2008	MW-8 7/31/2008	MW-9 1/18/2008	MW-9 8/1/2008	MW-10 1/18/2008	MW-10 7/31/2008	MW-11 1/16/2008	MW-11 8/1/2008	MW-12 1/15/2008	MW-12 7/31/2008	MW-13 8/8/2008
Inorganics (mg/L)																
Arsenic	NA	NA	NA	<0.050	NA	0.047	<0.10	0.0072	NA	0.018	NA	<0.050	NA	<0.050	NA	<0.10
Barium	NA	NA	NA	<0.010	NA	0.0035	<0.010	0.059	NA	0.0094	NA	0.13	NA	0.026	NA	0.071
Cadmium	NA	NA	NA	<0.0050	NA	0.001	<0.0010	0.001	NA	0.001	NA	<0.0050	NA	<0.0050	NA	<0.0010
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	<0.010	NA	0.024	0.019	0.002	NA	0.0021	NA	<0.010	NA	<0.010	NA	<0.010
Lead	NA	NA	NA	<0.050	NA	0.0018	<0.015	0.002	NA	0.0015	NA	<0.050	NA	<0.050	NA	<0.015
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	<0.00020	NA	<0.00020	<0.00020	<0.00020	NA	<0.00020	NA	<0.00020	NA	<0.00020	NA	<0.00020
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	<0.050	NA	0.002	<0.10	0.002	NA	0.002	NA	<0.050	NA	<0.050	NA	<0.10
Silver	NA	NA	NA	<0.0050	NA	0.001	<0.010	0.001	NA	0.001	NA	<0.0050	NA	<0.0050	NA	<0.010
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perchlorate (ug/L; EPA Method 314.0)	17	17	15	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.6	<2.0	<2.0	330
Perchlorate (ug/L; EPA Method 332)	NA	NA	NA	0.49	0.73	0.92	0.88	0.68	0.86	0.75	0.87	2.6	2.2	0.66	1.2	250
Volatile Organic Compounds (ug/L)																
1,1,1,2-Tetrachloroethane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA
1,1,1-Trichloroethane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,1,2,2-Tetrachloroethane	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<0.50
1,1,2-Trichloroethane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,1-Dichloroethane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,1-Dichloroethene	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<0.50
1,1-Dichloropropene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,2,3-Trichlorobenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0
1,2,3-Trichloropropane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0
1,2,4-Trichlorobenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0
1,2,4-Trimethylbenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,2-Dibromo-3-chloropropane	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA
1,2-Dibromoethane (EDB)	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,2-Dichlorobenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,2-Dichloroethane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,2-Dichloropropane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,3,5-Trimethylbenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,3-Dichlorobenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,3-Dichloropropane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,4-Dichlorobenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
1,4-Dioxane	NA	NA	NA	<1.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<1.0	NA	<1.0	NA	<1.0
2,2-Dichloropropane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0
2-Butanone (MEK)	NA	NA	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<2.5
2-Chlorotoluene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
2-Hexanone	NA	NA	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<2.5
4-Chlorotoluene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
4-Methyl-2-pentanone (MIBK)	NA	NA	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<2.5
Acetone	NA	NA	NA	<20	NA	<20	NA	<20	NA	<20	NA	<20	NA	<20	NA	<10
Benzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Bromobenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Bromochloromethane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Bromodichloromethane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Bromoform	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<1.0

Appendix E
Monitor Well Groundwater Quality Summary

Parameters	MW-6 3/31/2008	MW-6 7/30/2008	MW-6 10/17/2008	MW-7 1/17/2008	MW-7 8/1/2008	MW-8 1/18/2008	MW-8 7/31/2008	MW-9 1/18/2008	MW-9 8/1/2008	MW-10 1/18/2008	MW-10 7/31/2008	MW-11 1/16/2008	MW-11 8/1/2008	MW-12 1/15/2008	MW-12 7/31/2008	MW-13 8/8/2008
Volatile Organic Compounds (ug/L)																
Bromomethane	NA	NA	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<1.0
Carbon Disulfide	NA	NA	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	NA
Carbon tetrachloride	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Chlorobenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Chloroethane	NA	NA	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<1.0
Chloroform	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Chloromethane	NA	NA	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<1.0
cis-1,2-Dichloroethene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
cis-1,3-Dichloropropene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Dibromochloromethane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Dibromomethane	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA
Dichlorodifluoromethane	NA	NA	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<0.50
Ethylbenzene	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<0.50
Hexachlorobutadiene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA
Iodomethane	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA
Isopropylbenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA
m,p-Xylenes	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1.0
Methylene Chloride	NA	NA	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<1.0
Methyl-tert-butyl Ether (MTBE)	NA	NA	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<0.50
Naphthalene	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA
n-Butylbenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
n-Propylbenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
o-Xylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.50
p-Isopropyltoluene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
sec-Butylbenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Styrene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
tert-Butylbenzene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Tetrachloroethene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Toluene	NA	NA	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	0.58
trans-1,2-Dichloroethene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
trans-1,3-Dichloropropene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Trichloroethene	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Trichlorofluoromethane	NA	NA	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<4.0	NA	<0.50
Trihalomethanes, Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Acetate	NA	NA	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA	<0.50
Vinyl chloride	NA	NA	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<0.50
Xylenes, Total	NA	NA	NA	<3.0	NA	<3.0	NA	<3.0	NA	<3.0	NA	<3.0	NA	<3.0	NA	NA

Notes
* = samples collected during additional development
mg/L = milligrams per liter
UJ = the reporting limit is considered an estimated value
J = the analyte was positively identified; however, the result should be condsidered an estimated value
ug/L = microgram per liter
NA = not analyzed
< = analyte not reported above laboratory detection limit

Appendix E
Monitor Well Groundwater Quality Summary

Parameters	MW-13 10/17/2008	MW-14 8/19/2008	MW-14 10/17/2008	MW-15 8/8/2008	MW-15 10/16/2008	POE 1/18/2008	POE 4/2/2008	POE 8/1/2008	POE 10/20/2008	PW-1 1/18/2008	PW-1 4/2/2008	PW-1 8/1/2008	PW-1 10/20/2008
Inorganics (mg/L)													
Arsenic	NA	<0.10	NA	<0.10	NA	0.0092	<0.10	<0.10	<0.10	0.0092	<0.10	<0.10	<0.10
Barium	NA	0.16	NA	0.23	NA	0.0071	<0.010	<0.010	<0.010	0.0043	<0.010	<0.010	<0.010
Cadmium	NA	<0.0010	NA	<0.0010	NA	0.001	<0.0010	<0.0010	<0.0010	0.001	<0.0010	<0.0010	<0.0010
Calcium	NA	NA	NA	NA	NA	26	24	24	23	25	23	22	23
Chromium	NA	0.012	NA	<0.010	NA	0.0026	<0.010	<0.010	<0.010	0.0025	<0.010	<0.010	<0.010
Lead	NA	<0.015	NA	<0.015	NA	0.001	<0.015	<0.015	<0.015	0.001	<0.015	<0.015	<0.015
Magnesium	NA	NA	NA	NA	NA	11	11	11	11	11	10	9.9	11
Mercury	NA	<0.00020	NA	<0.00020	NA	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Potassium	NA	NA	NA	NA	NA	3.7	3.7	4.2	3.9	3.6	3.5	3.9	3.9
Selenium	NA	<0.10	NA	<0.10	NA	0.002	<0.10	<0.10	<0.10	0.0032	<0.10	<0.10	<0.10
Silver	NA	<0.010	NA	<0.010	NA	0.001	<0.010	<0.010	<0.010	0.001	<0.010	<0.010	<0.010
Sodium	NA	NA	NA	NA	NA	59	61	59	58	57	60	65	58
Perchlorate (ug/L; EPA Method 314.0)	220	2.5	<2.0	<2.0	<2.0	2.5	2.4	2.5	2.0	<2.0	<2.0	2.1	2.2
Perchlorate (ug/L; EPA Method 332)	210	2.6	1.1	0.88	0.82	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds (ug/L)													
1,1,1,2-Tetrachloroethane	NA	<1.0	NA	NA	NA	NA	<0.5	<0.5	<0.5	<1.0	NA	NA	<0.50
1,1,1-Trichloroethane	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,1,2,2-Tetrachloroethane	NA	<2.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<2.0	<0.50	<0.50 UJ	<0.50
1,1,2-Trichloroethane	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,1-Dichloroethane	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	0.52
1,1-Dichloroethene	NA	<2.0	NA	<0.50	NA	2.5	<0.5	<0.5	<0.5	4.3	3.5	<0.50 UJ	<0.50
1,1-Dichloropropene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,2,3-Trichlorobenzene	NA	<1.0	NA	<1.0	NA	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0 UJ	<1.0
1,2,3-Trichloropropane	NA	<1.0	NA	<1.0	NA	NA	<2	<2	<2	<1.0	<1.0	<1.0 UJ	<1.0
1,2,4-Trichlorobenzene	NA	<1.0	NA	<1.0	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0 UJ	<1.0
1,2,4-Trimethylbenzene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,2-Dibromo-3-chloropropane	NA	<2.0	NA	NA	NA	NA	<2	<2	<2	<2.0	NA	NA	<2.5
1,2-Dibromoethane (EDB)	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,2-Dichlorobenzene	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,2-Dichloroethane	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,2-Dichloropropane	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,3,5-Trimethylbenzene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,3-Dichlorobenzene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,3-Dichloropropane	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,4-Dichlorobenzene	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
1,4-Dioxane	NA	1.3	NA	2.7	NA	2.3	3.7	2.5	2.4	2.2	3.0	1.8	1.8
2,2-Dichloropropane	NA	<1.0	NA	<1.0	NA	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0 UJ	<1.0
2-Butanone (MEK)	NA	<10	NA	<2.5	NA	NA	NA	NA	NA	<10	<2.5	<2.5 UJ	<2.5
2-Chlorotoluene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
2-Hexanone	NA	<10	NA	<2.5	NA	NA	NA	NA	NA	<10	<2.5	<2.5 UJ	<2.5
4-Chlorotoluene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
4-Methyl-2-pentanone (MIBK)	NA	<10	NA	<2.5	NA	NA	NA	NA	NA	<10	<2.5	<2.5 UJ	<2.5
Acetone	NA	<20	NA	<10	NA	NA	NA	NA	NA	<20	<10	<10 UJ	<10
Benzene	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Bromobenzene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Bromochloromethane	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Bromodichloromethane	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Bromoform	NA	<2.0	NA	2.2	NA	2.2	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0 UJ	<1.0

Appendix E
Monitor Well Groundwater Quality Summary

Parameters	MW-13 10/17/2008	MW-14 8/19/2008	MW-14 10/17/2008	MW-15 8/8/2008	MW-15 10/16/2008	POE 1/18/2008	POE 4/2/2008	POE 8/1/2008	POE 10/20/2008	PW-1 1/18/2008	PW-1 4/2/2008	PW-1 8/1/2008	PW-1 10/20/2008
Volatile Organic Compounds (ug/L)													
Bromomethane	NA	<4.0	NA	<1.0	NA	NA	<0.5	<0.5	<0.5	<4.0	<1.0	<1.0 UJ	<1.0
Carbon Disulfide	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	<5.0	NA	NA	<0.50
Carbon tetrachloride	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Chlorobenzene	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Chloroethane	NA	<4.0	NA	<1.0	NA	NA	<0.5	<0.5	<0.5	<4.0	<1.0	<1.0 UJ	<1.0
Chloroform	NA	<1.0	NA	0.67	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	14 J	1.6
Chloromethane	NA	<4.0	NA	<1.0	NA	NA	<0.5	<0.5	<0.5	<4.0	<1.0	<1.0 UJ	<1.0
cis-1,2-Dichloroethene	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
cis-1,3-Dichloropropene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Dibromochloromethane	NA	<1.0	NA	<0.50	NA	0.99	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Dibromomethane	NA	<1.0	NA	NA	NA	NA	<0.5	<0.5	<0.5	<1.0	NA	NA	<0.50
Dichlorodifluoromethane	NA	<4.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<4.0	<0.50	<0.50 UJ	<0.50
Ethylbenzene	NA	<2.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<2.0	<0.50	<0.50 UJ	<0.50
Hexachlorobutadiene	NA	<1.0	NA	NA	NA	NA	<0.5	<0.5	<0.5	<1.0	NA	NA	<1.0
Iodomethane	NA	<2.0	NA	NA	NA	NA	NA	NA	NA	<2.0	NA	NA	<2.5
Isopropylbenzene	NA	<1.0	NA	NA	NA	NA	<0.5	<0.5	<0.5	<1.0	NA	NA	<0.50
m,p-Xylenes	NA	NA	NA	<1.0	NA	<0.5	<1	<1	<1	NA	<1.0	<1.0 UJ	NA
Methylene Chloride	NA	<5.0	NA	<1.0	NA	<0.5	<0.5	<0.5	<0.5	<5.0	<1.0	<1.0 UJ	<1.0
Methyl-tert-butyl Ether (MTBE)	NA	<5.0	NA	<0.50	NA	NA	NA	NA	NA	<5.0	<0.50	<0.50 UJ	<0.50
Naphthalene	NA	<2.0	NA	NA	NA	NA	<0.5	<0.5	<0.5	<2.0	NA	NA	<2.5
n-Butylbenzene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
n-Propylbenzene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
o-Xylene	NA	NA	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	NA	<0.50	<0.50 UJ	NA
p-Isopropyltoluene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
sec-Butylbenzene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Styrene	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
tert-Butylbenzene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Tetrachloroethene	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Toluene	NA	<2.0	NA	0.77	NA	<0.5	<0.5	<0.5	<0.5	<2.0	<0.50	<0.50 UJ	<0.50
trans-1,2-Dichloroethene	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
trans-1,3-Dichloropropene	NA	<1.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Trichloroethene	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Trichlorofluoromethane	NA	<4.0	NA	<0.50	NA	NA	<0.5	<0.5	<0.5	<4.0	<0.50	<0.50 UJ	<0.50
Trihalomethanes, Total	NA	NA	NA	NA	NA	3.2	NA	NA	NA	NA	NA	NA	NA
Vinyl Acetate	NA	<5.0	NA	<0.50	NA	NA	NA	NA	NA	<5.0	<0.50	<0.50 UJ	<0.50
Vinyl chloride	NA	<1.0	NA	<0.50	NA	<0.5	<0.5	<0.5	<0.5	<1.0	<0.50	<0.50 UJ	<0.50
Xylenes, Total	NA	<3.0	NA	NA	NA	<1.5	NA	NA	NA	<3.0	NA	NA	<1.0

Notes

* = samples collected during additional development

mg/L = milligrams per liter

UJ = the reporting limit is considered an estimated value

J = the analyte was positively identified; however, the result should be condsidered an estimated value

ug/L = microgram per liter

NA = not analyzed

< = analyte not reported above laboratory detection limit

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APPENDIX

GREEN SEAL

APPENDIX F
Historic Private Well Water Quality Data

Sample ID	Collection Date	Perchlorate (Method 314.0) (ug/L)	Perchlorate (Method 332.0) (ug/L)
16 E. YEARLING	10/15/2008	<2	0.77
	4/1/2008*	<2	2.6
	4/1/2008	<2	2.9
	10/16/2007	<2	0.64
	11/14/2006	<2	0.68
	5/23/2006	<2	NA
	10/28/2005	<2	NA
	4/29/2005	<2	NA
	11/19/2004	<2	NA
18 E. YEARLING	10/15/2008	<2	1.1
	4/1/2008	<2	1.0
	10/16/2007	<2	0.77
	4/4/2007	<2	0.98
	11/14/2006	<2	0.94
	5/23/2006	<2	NA
	10/27/2005	<2	NA
204 E. YEARLING	10/15/2008**	<2	0.73
	10/27/2005	<2	NA
218 E. YEARLING	10/15/2008	<2	0.80
	4/1/2008	<2	1.3
	10/16/2007	<2	0.67
	4/4/2007	<2	0.67
	11/14/2006	<2	0.68
	5/23/2006	<2	NA
	10/28/2005	<2	NA
	11/19/2004	<2	NA
25825 N. 1st PLACE	10/15/2008	<2	0.97
	4/1/2008	<2	1.1
	10/16/2007	<2	0.89
	4/4/2007	<2	0.93
	11/14/2006	<2	1.0
	5/23/2006	<2	NA
	10/28/2005	<2	NA
	4/28/2005	<2	NA
	11/17/2004	<2	NA
25825 N. 1st - TAP	4/28/2005	<2	NA
	11/17/2004	<2	NA
25903 N. 2ND ST	10/15/2008	<2	0.84
	4/1/2008	2.2	3.1
	4/4/2007	<2	0.76
	11/14/2006	<2	0.78
	5/23/2006	<2	NA
	10/28/2005	<2	NA
	11/19/2004	<2	NA

APPENDIX F
Historic Private Well Water Quality Data

Sample ID	Collection Date	Perchlorate (Method 314.0) (ug/L)	Perchlorate (Method 332.0) (ug/L)
412 E. YEARLING	10/15/2008	<2	1.5
	4/1/2008	<2	2.1
	5/23/2006	<2	NA
	10/28/2005	<2	NA
	4/29/2005	<2	NA
	11/19/2004	<2	NA
520 E. YEARLING	10/15/2008	<2	1.3
	4/1/2008	<2	2.2
	10/16/2007	<2	1.4
	4/4/2007	2.4	1.3
	11/14/2006	<2	1.5
	5/23/2006	<2	NA
	4/28/2005	<2	NA
	11/17/2004	<2	NA
604/616 E YEARLING	10/15/2008	<2	1.1
	4/1/2008	<2	1.5
	10/16/2007	<2	1.0
	4/6/2007	<2	1.2
	11/14/2006	<2	1.1
	5/23/2006	<2	NA
	10/28/2005	<2	NA
	4/29/2005	<2	NA
	11/17/2004	<2	NA
104 E. YEARLING	11/15/2006	<2	2.0
8/20 W. YEARLING	10/15/2008	<2	1.1
	4/4/2008	<2	0.78
	12/28/2007	<2	1.2
106 W. YEARLING	10/15/2008	<2	0.75
	4/1/2008	<2	1.1
	12/28/2007	<2	1.3
122 W. YEARLING	10/13/2008	<2	0.72
	4/1/2008	<2	1.2
	12/28/2007	<2	1.4
424 E. YEARLING	10/15/2008	<2	1.6
	4/1/2008	<2	2.2
	1/19/2008	<2	1.2

Notes:

ug/L = micrograms per liter

< = analyte not reported above laboratory detection limit

* = well in front yard sampled for comparison purposes, labeled as 16 E. Yearling - N

** = no access to 204 E. Yearling. Well head for 204 E. Yearling located on 218 E. Yearling property. Sample collected from this location.

NA = not analyzed

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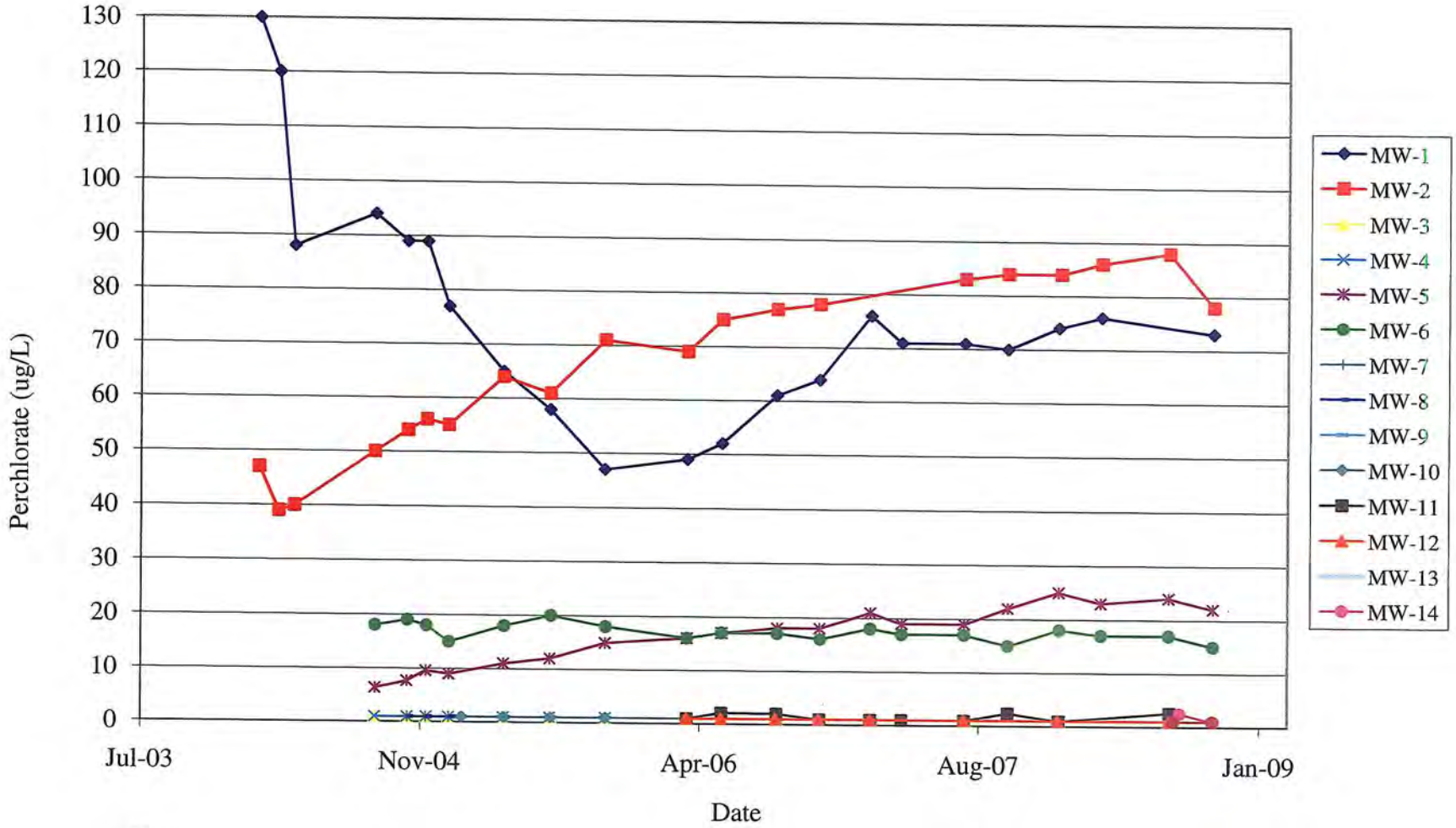
GREEN SEAL

Appendix G
Historic Monitor Well Perchlorate Concentration Graph



Note:
Perchlorate concentration for Monitor Well MW-13
8/8/2008 = 330 ug/L and
10/17/2008 = 220 ug/L

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Appendix H
2008 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time	Temperature (°C)	Conductivity (µs/cm)	pH
First Quarter 2008	MW-1	1/15/2008	38	14:49	27.93	489	7.64
	MW-1	1/15/2008	75	14:54	28.28	507	7.59
	MW-1	1/15/2008	113	14:59	28.28	508	7.58
	MW-1	1/15/2008	150	15:04	28.25	509	7.57
	MW-2	1/19/2008	36	12:02	27.42	452	7.66
	MW-2	1/19/2008	64	12:05	27.89	453	7.69
	MW-2	1/19/2008	91	12:08	28.01	452	7.70
	MW-2	1/19/2008	118	12:11	27.99	450	7.64
	MW-2	1/19/2008	137	12:13	27.96	450	7.74
	MW-3	1/17/2008	35	8:51	27.27	327	7.88
	MW-3	1/17/2008	63	8:55	27.62	330	8.48
	MW-3	1/17/2008	84	8:58	27.63	330	7.80
	MW-4	1/17/2008	3	10:28	26.09	440	7.74
	MW-4	1/17/2008	7	10:32	26.74	445	7.65
	MW-4	1/17/2008	12	10:36	27.13	448	7.61
	MW-5	1/16/2008	30	9:00	27.31	408	7.81
	MW-5	1/16/2008	55	9:05	27.61	403	7.76
	MW-5	1/16/2008	80	9:10	27.78	400	7.81
	MW-5	1/16/2008	105	9:15	27.78	400	7.86
	MW-5	1/16/2008	135	9:21	27.84	398	7.87
	MW-5	1/16/2008	155	9:25	27.79	396	7.88
	MW-6	1/16/2008	11	11:29	27.22	454	8.05
	MW-6	1/16/2008	22	11:31	27.40	455	7.92
	MW-6	1/16/2008	33	11:33	27.49	458	7.84
	MW-6	1/16/2008	44	11:35	27.30	449	7.82
	MW-6	1/16/2008	55	11:37	26.75	420	7.80
	MW-6	1/16/2008	76	11:41	27.07	447	7.75
	MW-7	1/17/2008	36	15:19	27.45	359	7.76
	MW-7	1/17/2008	60	15:23	27.58	359	7.82
	MW-7	1/17/2008	78	15:26	27.50	358	7.86
	MW-7	1/17/2008	102	15:30	27.51	358	7.87
	MW-7	1/17/2008	126	15:34	27.64	359	7.87
	MW-7	1/17/2008	150	15:38	27.59	358	7.88
	MW-8	1/17/2008	0	11:17	27.82	235	8.69
	MW-8	1/17/2008	5	11:19	28.07	238	8.89
	MW-8	1/17/2008	11	11:21	28.11	235	8.99
	MW-8	1/17/2008	16	11:23	28.02	239	9.01
	MW-9	1/18/2008	21	9:22	27.46	458	7.61
	MW-9	1/18/2008	41	9:26	27.87	460	7.64

Appendix H
2008 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time	Temperature (°C)	Conductivity (µs/cm)	pH
First Quarter 2008 (continued)	MW-9	1/18/2008	62	9:30	27.94	460	7.65
	MW-9	1/18/2008	83	9:34	27.99	458	7.64
	MW-9	1/18/2008	103	9:38	28.04	458	7.66
	MW-9	1/18/2008	124	9:42	27.90	455	7.66
	MW-10	1/17/2008	4	12:30	27.12	383	7.79
	MW-10	1/17/2008	8	12:33	27.8	388	7.72
	MW-10	1/17/2008	11	12:36	28.24	391	7.66
	MW-10	1/17/2008	15	12:39	28.67	393	7.61
	MW-10	1/17/2008	19	12:42	28.70	394	7.59
	MW-10	1/17/2008	23	12:45	28.81	397	7.59
	MW-11	1/16/2008	58	14:30	28.10	625	7.96
	MW-11	1/16/2008	87	14:35	28.33	630	7.74
	MW-11	1/16/2008	115	14:40	28.35	630	7.69
	MW-11	1/16/2008	144	14:45	28.40	632	7.65
	MW-11	1/16/2008	173	14:50	28.46	632	7.65
	MW-11	1/16/2008	202	14:55	28.45	633	7.63
	MW-12	1/15/2008	43	10:19	29.08	509	7.12
	MW-12	1/15/2008	139	10:28	29.10	500	7.41
	MW-12	1/15/2008	182	10:32	29.15	488	7.48
	MW-12	1/15/2008	268	10:40	29.22	479	7.54
	MW-12	1/15/2008	321	10:45	29.34	474	7.56
	MW-12	1/15/2008	375	10:50	29.43	472	7.58
Second Quarter 2008	MW-1	3/31/2008	20	15:01	27.97	517	7.18
	MW-1	3/31/2008	47	15:05	28.60	522	7.23
	MW-1	3/31/2008	73	15:09	28.61	524	7.24
	MW-1	3/31/2008	100	15:13	28.62	526	7.21
	MW-1	3/31/2008	127	15:17	28.66	529	7.18
	MW-2	3/31/2008	30	16:02	28.50	488	7.40
	MW-2	3/31/2008	60	16:06	28.55	483	7.41
	MW-2	3/31/2008	90	16:10	28.59	481	7.43
	MW-2	3/31/2008	120	16:14	28.72	481	7.42
	MW-5	3/31/2008	15	11:15	28.66	438	7.44
	MW-5	3/31/2008	40	11:20	28.81	430	7.48
	MW-5	3/31/2008	65	11:25	28.91	428	7.48
	MW-5	3/31/2008	90	11:30	28.86	428	7.50
	MW-5	3/31/2008	115	11:35	28.85	428	7.52
	MW-5	3/31/2008	140	11:40	28.93	525	7.49
	MW-6	3/31/2008	25	9:43	27.79	485	7.25
	MW-6	3/31/2008	40	9:46	27.88	487	7.30

Appendix H
2008 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time	Temperature (°C)	Conductivity (µs/cm)	pH
Third Quarter 2008	MW-1	parameters not collected due to pump failure					
	MW-2	7/30/2008	33	15:08	28.87	478	7.34
	MW-2	7/30/2008	67	15:11	28.94	474	6.62
	MW-2	7/30/2008	100	15:14	28.86	470	6.72
	MW-3	7/29/2008	22	14:18	29.62	351	6.99
	MW-3	7/29/2008	33	14:20	29.96	355	6.89
	MW-3	7/29/2008	49	14:23	30.12	356	7.24
	MW-3	7/29/2008	65	14:26	30.50	359	7.29
	MW-4	7/29/2008	8	12:58	29.78	484	7.26
	MW-5	7/30/2008	19	12:08	28.89	431	6.67
	MW-5	7/30/2008	50	12:13	29.20	425	6.36
	MW-5	7/30/2008	81	12:18	29.22	422	6.76
	MW-5	7/30/2008	113	12:23	29.24	422	7.02
	MW-5	7/30/2008	144	12:28	29.32	421	7.15
	MW-5	7/30/2008	175	12:33	29.26	419	7.21
	MW-6	7/29/2008	13	10:26	28.71	448	7.19
	MW-6	7/29/2008	26	10:30	29.09	487	6.66
	MW-6	7/29/2008	33	10:32	29.20	487	6.73
	MW-6	7/29/2008	43	10:35	29.37	491	7.06
	MW-6	7/29/2008	53	10:38	29.45	493	7.13
	MW-7	8/1/2008	24	7:52	28.07	374	7.44
	MW-7	8/1/2008	57	7:56	28.21	372	6.64
	MW-7	8/1/2008	89	8:00	28.28	372	6.68
	MW-7	8/1/2008	122	8:04	28.33	370	6.92
	MW-7	8/1/2008	154	8:08	28.36	369	7.10
	MW-7	8/1/2008	186	8:12	28.42	371	7.21
	MW-7	8/1/2008	211	8:15	28.38	370	7.26
	MW-8	7/30/2008	10	8:44	29.21	260	8.05
	MW-8	7/30/2008	16	8:47	29.53	248	8.48
	MW-8	7/30/2008	22	8:50	30.59	246	8.88
	MW-8	7/30/2008	28	8:53	31.00	247	8.94
	MW-8	7/30/2008	34	8:56	31.26	248	9.00
	MW-8	7/30/2008	40	8:59	31.42	248	9.01
	MW-8	7/30/2008	46	9:02	31.51	249	8.99
	MW-9	8/1/2008	20	9:21	29.24	493	7.24
	MW-9	8/1/2008	52	9:26	29.58	491	7.14
	MW-9	8/1/2008	85	9:31	29.60	491	7.18
	MW-9	8/1/2008	117	9:36	29.53	490	7.18
	MW-9	8/1/2008	150	9:41	29.63	490	7.22

Appendix H
2008 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time	Temperature (°C)	Conductivity (µs/cm)	pH
Third Quarter 2008 (continued)	MW-9	8/1/2008	169	9:44	29.57	487	7.23
	MW-10	7/30/2008	13	9:54	29.11	411	7.11
	MW-10	7/30/2008	27	9:58	29.32	411	7.08
	MW-10	7/30/2008	40	10:02	29.58	415	7.13
	MW-10	7/30/2008	53	10:06	29.70	416	7.21
	MW-11	8/1/2008	25	10:57	28.82	659	7.21
	MW-11	8/1/2008	63	11:03	29.04	661	7.16
	MW-11	8/1/2008	100	11:09	29.01	663	7.14
	MW-11	8/1/2008	138	11:15	29.15	667	7.14
	MW-11	8/1/2008	175	11:21	29.15	667	7.14
	MW-11	8/1/2008	213	11:27	29.16	667	7.15
	MW-12	7/31/2008	60	12:51	29.41	525	7.33
	MW-12	7/31/2008	210	13:01	30.00	525	7.15
	MW-12	7/31/2008	360	13:11	30.46	504	7.21
	MW-12	7/31/2008	510	13:21	30.48	494	7.24
	MW-12	7/31/2008	840	13:43	30.64	497	7.23
	MW-12	7/31/2008	990	14:26	30.11	496	7.21
	MW-13	8/8/2008	54	16:19	30.21	715	6.14
	MW-13	8/8/2008	122	16:24	30.24	613	6.15
	MW-13	8/8/2008	204	16:30	30.24	620	6.43
	MW-13	8/8/2008	272	16:35	30.22	576	6.66
	MW-13	8/8/2008	408	16:45	30.25	581	6.93
	MW-13	8/8/2008	558	16:56	30.25	587	7.09
	MW-13	8/8/2008	762	17:11	30.63	580	7.18
	MW-15	8/8/2008	20	13:30	29.07	550	5.43
	MW-15	8/8/2008	54	13:35	29.26	547	5.43
	MW-15	8/8/2008	88	13:40	29.37	548	5.69
	MW-15	8/8/2008	150	13:49	29.38	551	6.07
	MW-15	8/8/2008	184	13:54	29.40	551	6.27
	MW-15	8/8/2008	224	14:00	29.35	551	6.49
	MW-15	8/8/2008	292	14:10	29.41	546	6.73
Fourth Quarter 2008	MW-1	10/17/2008	28	7:42	28.35	473	7.19
	MW-1	10/17/2008	57	7:46	28.56	471	7.21
	MW-1	10/17/2008	85	7:50	28.65	470	7.21
	MW-1	10/17/2008	114	7:54	28.74	470	7.18
	MW-1	10/17/2008	142	7:58	28.75	471	7.18
	MW-2	10/17/2008	30	9:07	28.26	463	7.23
	MW-2	10/17/2008	80	9:12	28.41	460	7.21

Appendix H
2008 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time	Temperature (°C)	Conductivity (µs/cm)	pH
Fourth Quarter 2008 (continued)	MW-2	10/17/2008	110	9:15	28.47	459	7.22
	MW-2	10/17/2008	130	9:17	28.51	458	7.23
	MW-2	10/17/2008	150	9:19	28.51	457	7.23
	MW-5	10/17/2008	25	11:15	29.01	426	7.17
	MW-5	10/17/2008	50	11:20	29.26	417	7.26
	MW-5	10/17/2008	80	11:26	29.37	415	7.28
	MW-5	10/17/2008	100	11:30	29.36	412	7.31
	MW-5	10/17/2008	125	11:35	29.34	407	7.33
	MW-5	10/17/2008	150	11:40	29.37	409	7.33
	MW-5	10/17/2008	175	11:45	29.28	406	7.33
	MW-6	10/16/2008	0	15:44	30.72	488	7.30
	MW-6	10/16/2008	19	15:48	27.63	460	7.05
	MW-6	10/16/2008	38	15:52	28.73	471	7.04
	MW-6	10/16/2008	56	15:56	28.63	470	7.09
	MW-13	10/17/2008	58	13:15	30.12	558	6.94
	MW-13	10/17/2008	174	13:25	30.27	559	7.09
	MW-13	10/17/2008	290	13:35	30.37	558	7.14
	MW-13	10/17/2008	406	13:45	29.90	550	7.12
	MW-13	10/17/2008	522	13:55	29.93	542	7.12
	MW-13	10/17/2008	638	14:05	29.94	535	7.14
	MW-13	10/17/2008	754	14:15	29.96	524	7.14
	MW-13	10/17/2008	870	14:25	29.94	523	7.16
	MW-14	10/16/2008	13	8:40	29.74	743	7.00
	MW-14	10/16/2008	47	8:51	28.89	739	7.25
	MW-14	10/16/2008	126	9:16	30.12	732	7.23
	MW-14	10/16/2008	161	9:27	30.74	738	7.14
	MW-14	10/16/2008	189	9:36	31.16	740	7.14
	MW-14	10/16/2008	224	9:47	31.59	745	7.08
	MW-14	10/16/2008	265	10:00	31.84	746	7.07
	MW-15	10/16/2008	19	14:00	29.40	523	7.10
	MW-15	10/16/2008	44	14:04	29.63	526	7.05
	MW-15	10/16/2008	69	14:08	29.81	523	7.06
	MW-15	10/16/2008	94	14:12	29.74	524	7.08
	MW-15	10/16/2008	119	14:16	29.94	524	7.07
	MW-15	10/16/2008	144	14:20	29.97	524	7.07
	MW-15	10/16/2008	6:00	14:22	29.94	524	7.09

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

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APPENDIX

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APPENDIX

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS - APRIL 2008

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the April 2008 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of six groundwater samples were collected and submitted to TestAmerica for the following parameters:

- metals by USEPA Methods 200.7 and 245.1;
- perchlorate by USEPA Method 314.0; and
- volatile organic compounds (VOCs) by USEPA Method 8260B and 524.2.

Additionally, four field quality assurance samples (i.e., field duplicate and trip blanks) were collected and analyzed as part of the sampling program. Table 1 lists the samples and associated analytical parameters.

1.1 Data Quality Assessment

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- sample receipt temperatures;
- holding times;
- method blanks;
- laboratory control samples (LCS);
- matrix spike/matrix spike duplicates (MS/MSD);
- field duplicates; and
- surrogates (for organic parameters).

1.2 Data Qualifiers

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J	The analyte was positively identified; however, the result should be considered an estimated value.
UJ	The reporting limit is considered an estimated value.
R	Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

1.3 Sample Preservation and Temperature Upon Laboratory Receipt

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory.

1.4 Holding Times

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

1.5 Blank Contamination

Method blanks and trip blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

1.6 LCS/LCS Duplicate Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).

- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits.

1.7 MS/MSD Recovery and RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits

1.8 Field Duplicates

One field duplicate was collected during this monitoring event and submitted for analysis. The RPD between the field duplicate and its associated samples were calculated and presented in Table 2. Field duplicates were evaluated by the following criteria:

- If an analyte is detected at a concentration greater than five times the method reporting limit, the RPD should be less than 25 percent.
- If an analyte is detected between the sample and field duplicate less than five times the method reporting limit, the difference between the sample and the field duplicate should not exceed the method reporting limit.

The field duplicate met acceptance criteria.

1.9 Surrogates

Surrogates for all organic parameters were recovered within acceptance limits.

2.0 Calibration

The second source calibration verification standard had a high recovery for bromoethane. Data qualification was not required since the associated samples were not detected for this analyte.

2.1 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS/LCSD attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table 3. All of the results were considered usable for the intended purposes and the project DQOs have been met.

PRIVATE WELLS MONITORING DATA VERIFICATION SUMMARY PRIVATE WELLS- APRIL 2008

1.0 INTRODUCTION

This summary presents data verification results for private residential wells adjacent to Universal Propulsion Company, Inc. (UPCO) during the April 2008 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 13 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 314.0

Table 4 lists the samples and associated analytical parameters.

1.1 Data Quality Assessment

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- sample receipt temperatures;
- holding times;
- method blanks;
- laboratory control samples (LCS); and
- matrix spike/matrix spike duplicates (MS/MSD);

1.2 Data Qualifiers

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

1.3 Sample Preservation and Temperature Upon Laboratory Receipt

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory except for the following:

- One sample collected on April 4, 2008, was received intact at 16° Celsius. Since the sample was received in the laboratory one hour following collection, this temperature outlier did not significantly impact sample results and data qualification was not required.

1.4 Holding Times

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

1.5 Blank Contamination

Method blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

1.6 LCS/LCS Duplicate Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits.

1.7 MS/MSD Recovery and RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits.

2.0 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table 5. All of the results were considered usable for the intended purposes and the project DQOs have been met.

MW Table 1
Sampling and Analysis Schedule
Groundwater Monitoring Data Verification

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-5	PRD0024-01	3/31/2008	N	Perchlorate
MW-1	PRD0024-02	3/31/2008	N	Perchlorate
MW-2	PRD0024-03	3/31/2008	N	Perchlorate
MW-6	PRD0024-04	3/31/2008	N	Perchlorate
FD033108	PRD0024-05	3/31/2008	FD of MW-2	Perchlorate
PW-1	PRD0208-01	4/2/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
POE	PRD0208-02	4/2/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
TB040208-A	PRD0208-03	4/2/2008	TB	VOCs
TB040208-B	PRD0208-04	4/2/2008	TB	1,4-Dioxane
TB040208-C	PRD0208-05	4/2/2008	TB	VOCs

Notes:

Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. In addition, calcium, magnesium, potassium, and sodium were analyed for PW-1 and POE

VOCs = volatile organic compounds. PW-1 and TB040208 were analyzed by USEPA Method 8260B; POE and TB040208-A were analyzed by USEPA Method 524.2.

N = normal field sample

FD = field duplicate

TB = trip blank

MW Table 2
Field Duplicate Summary
Groundwater Monitoring Data Verification

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-2/ FD033108	Perchlorate (ug/l)			
	Perchlorate	86	84	8.9

Notes:
RPD = Relative percent difference; [(difference)/(average)]*100
Field duplicate RPD acceptance limits is 25 percent for results greater than 5 times the reporting limit; for results less than 5 times the reporting limit, the difference between sample and field duplicate results should be less than the reporting limit

MW Table 3
Completeness Summary
Groundwater Monitoring Data Verification

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Perchlorate					
Perchlorate	6	6	100	6	100
VOCs (8260B)					
All analytes	1	1	100	1	100
VOCs (542.2)					
All analytes	2	2	100	2	100
Total Metals					
All analytes	2	2	100	2	100
1,4-Dioxane					
1,4-Dioxane	2	2	100	2	100

Notes:
Number of samples used in completeness calculations includes field samples , but not field duplicates or blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

PW Table 4
Sampling and Analysis Schedule
Private Wells Monitoring Data Verification

Sample ID	Lab ID	Collected	Sample Type	Parameters
18 E Yearling	PRD0159-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
16 E Yearling - N	PRD0122-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
16 E Yearling - O	PRD0124-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
106 W Yearling	PRD0126-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
122 W Yearling	PRD0127-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
218 E Yearling	PRD0128-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
424 E Yearling	PRD0129-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
616/604 E Yearling	PRD0131-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
412 E Yearling	PRD0132-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
520 E Yearling	PRD0148-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
25825 N 1st Place	PRD0134-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
25903 N 2nd Street	PRD0147-01	4/1/2008	N	Perchlorate by USEPA Method 314.0
820 W Yearling	PRD0358-01	4/4/2008	N	Perchlorate by USEPA Method 314.0

Notes:
N = normal field sample

Table 5
Completeness Summary
Private Wells Monitoring Data Verification

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate	13	13	100	13	100

Notes:
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS - JULY/AUGUST 2008

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the July/August 2008 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of sixteen groundwater samples were collected and submitted to TestAmerica for the following parameters:

- metals by USEPA Methods 200.7 and 245.1;
- perchlorate by USEPA Method 314.0; and
- volatile organic compounds (VOCs) by USEPA Method 8260B and 524.2.

Additionally, four field quality assurance samples (i.e., trip blanks) were collected and analyzed as part of the sampling program. Table 1 lists the samples and associated analytical parameters.

1.1 Data Quality Assessment

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- sample receipt temperatures;
- holding times;
- method blanks;
- laboratory control samples (LCS);
- matrix spike/matrix spike duplicates (MS/MSD); and,
- surrogates (for organic parameters).

Results that required qualification based on the data verification are summarized in Table 2.

1.2 Data Qualifiers

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

1.3 Sample Preservation and Temperature Upon Laboratory Receipt

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory except for the following:

- The samples collected on August 8, 2008, were received intact at 0.9° Celsius. This temperature outlier did not significantly impact sample results, so data qualification was not required.

1.4 Holding Times

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods. Sample MW-2 was reanalyzed outside the required holding time, but since the original analysis was reported no data qualification was required.

1.5 Blank Contamination

Method blanks and trip blanks were performed at the required frequencies. Target compounds were not detected in the blanks with the following exception:

- Acetone was detected at 12 ug/l in the trip blank collected August 1, 2008. Data qualification was not required because the associated samples were not detected for this analyte.

1.6 LCS/LCS Duplicate Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits except for the following:

- For the analytical batch P8H1428, the LCS and LCS duplicate recoveries exceeded the control limits for vinyl acetate. Data qualification was not required because the associated samples were not detected for this analyte.
- For the analytical batch P8H2727, the LCS and LCS duplicate recoveries exceeded the control limits for iodomethane. Data qualification was not required because the associated samples were not detected for this analyte.
- For the analytical batch P8H2823, the LCS and LCS duplicate recoveries exceeded the control limits for bromomethane and iodomethane. Data qualification was not required because the associated samples were not detected for these analytes.

1.7 MS/MSD Recovery and RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.

- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits except for the following:

- The MS/MSD recoveries associated with the analytical batch P8G3117 were outside of acceptance limits for vinyl acetate. Data qualification was not required because the MS/MSD recovery for this analyte was high and the associated samples were not detected for this analyte.
- The MS recovery associated with the analytical batch P8H1131 was outside of acceptance limits for 1,4-Dioxane. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).
- The MS/MSD recoveries associated with the analytical batch P8H2034 were below acceptance limits for Barium, Chromium, and Lead. Data qualification was not required because the spiked sample was not project-specific (i.e. batch QC).
- The MS/MSD recoveries associated with the analytical batch P8H2823 were above the acceptance limits for bromomethane and iodomethane. Data qualification was not required because the MS/MSD recoveries for these analytes were high and the associated samples were not detected for these analytes.

1.9 Surrogates

Surrogates for all organic parameters were recovered within acceptance limits with the following exceptions:

- The surrogate recovery for dibromofluoromethane in the analytical batch P8H1131 was high for sample MW-2. The associated result for 1,4-dioxane was qualified "J" to indicate a potential high bias.
- The surrogate recovery for toluene-d8 in the analytical batch P8H0646 was high for sample PW-1. The associated results were qualified "J" for detects and "UJ" for non-detects to indicate a potential low bias.

2.0 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, LCS/LCSD, and surrogates attained for the field samples was 86 percent (out of 432 results, 60 required data qualification). The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table 3. All of the results were considered usable for the intended purposes and the project DQOs have been met.

MW Table 1
Sampling and Analysis Schedule
Groundwater Monitoring Data Verification

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-6	PRG1750-01	7/30/2008	N	Perchlorate
MW-5	PRG1750-02	7/30/2008	N	Perchlorate
MW-4	PRG1750-03	7/30/2008	N	Perchlorate
MW-3	PRG1750-04	7/30/2008	N	Perchlorate
MW-2	PRG1750-05	7/30/2008	N	VOCs, 1,4-Dioxane, Perchlorate
TB073008	PRG1750-06	7/30/2008	TB	VOCs, 1,4-Dioxane
MW-8	PRG1823-01	7/31/2008	N	Perchlorate, Metals
MW-10	PRG1823-02	7/31/2008	N	Perchlorate
MW-12	PRG1823-03	7/31/2008	N	Perchlorate
MW-7	PRH0063-01	8/1/2008	N	Perchlorate
MW-9	PRH0063-02	8/1/2008	N	Perchlorate
MW-11	PRH0063-03	8/1/2008	N	Perchlorate
POE	PRH0063-04	8/1/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
PW-1	PRH0063-05	8/1/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
Trip Blank	PRH0063-07	8/1/2008	TB	VOCs
MW-13	PRH0600-01	8/8/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
MW-15	PRH0600-02	8/8/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
TB080808	PRH0600-03	8/8/2008	TB	1,4-Dioxane
MW-14	PRH1157-01	8/19/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
TB081908	PRH1157-02	8/19/2008	TB	VOCs

Notes:

Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. In addition, calcium, magnesium, potassium, and sodium were analyed for PW-1 and POE

VOCs = volatile organic compounds analyzed by USEPA Method 8260B; Sample POE was analyzed by USEPA Method 524.2.

N = normal field sample

TB = trip blank

MW Table 2
Qualified Results
Groundwater Monitoring Data Verification

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
MW-2	1,4-Dioxane	2.6	ug/l	J	Qualified due to high surrogate recovery
PW-1	1,1,1-Trichloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,1,2,2-Tetrachloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,1,2-Trichloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,1-Dichloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,1-Dichloroethene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,1-Dichloropropene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2,3-Trichlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2,3-Trichloropropane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2,4-Trichlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2,4-Trimethylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2-Dibromoethane (EDB)	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2-Dichlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2-Dichloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2-Dichloropropane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,3,5-Trimethylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,3-Dichlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,3-Dichloropropane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,4-Dichlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	2,2-Dichloropropane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	2-Butanone (MEK)	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	2-Chlorotoluene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	2-Hexanone	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	4-Chlorotoluene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	4-Methyl-2-pentanone (MIBK)	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Acetone	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Benzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Bromobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Bromochloromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Bromodichloromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Bromoform	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Bromomethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Carbon tetrachloride	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Chlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Chloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Chloroform	14	ug/l	J	Qualified due to low surrogate recovery
PW-1	Chloromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	cis-1,2-Dichloroethene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	cis-1,3-Dichloropropene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Dibromochloromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Dichlorodifluoromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Ethylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	m,p-Xylenes	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Methyl-tert-butyl Ether (MTBE)	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Methylene Chloride	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	n-Butylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	n-Propylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	o-Xylene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	p-Isopropyltoluene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	sec-Butylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Styrene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	tert-Butylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Tetrachloroethene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Toluene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	trans-1,2-Dichloroethene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	trans-1,3-Dichloropropene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Trichloroethene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Trichlorofluoromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Vinyl Acetate	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Vinyl chloride	ND	ug/l	UJ	Qualified due to low surrogate recovery

Notes:
ug/l = microgram per liter
J = Estimated result
UJ = Estimated detection limit

MW Table 3
Completeness Summary
Groundwater Monitoring Data Verification

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 314.0	16	16	100	16	100
Volatile Organic Compounds (8260)					
All analytes	5	4[a]	80	5	100
1,4-Dioxane	6	5[b]	83	6	100
Volatile Organic Compounds (524.2)					
All Analytes	1	1	100	1	1
Metals					
Arsenic	6	6	100	6	100
Barium	6	6	100	6	100
Cadmium	6	6	100	6	100
Calcium	2	2	100	2	100
Chromium	6	6	100	6	100
Lead	6	6	100	6	100
Magnesium	2	2	100	2	100
Mercury	6	6	100	6	100
Potassium	2	2	100	2	100
Selenium	6	6	100	6	100
Silver	6	6	100	6	100
Sodium	2	2	100	2	100

Notes:
Number of samples used in completeness calculations includes field samples, but not blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

a = Qualified due to low surrogate recovery
b = Qualified due to high surrogate recovery

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS- JANUARY 2008

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the January 2008 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of fourteen groundwater samples were collected and submitted to TestAmerica for the following parameters:

- metals by USEPA Methods 200.7, 200.8, and 245.1;
- perchlorate by USEPA Method 314.0; and
- volatile organic compounds (VOCs) by USEPA Method 8260B and 524.2.

Additionally, seven field quality assurance samples (i.e., field duplicate and trip blanks) were collected and analyzed as part of the sampling program. Table 1 lists the samples and associated analytical parameters.

1.1 Data Quality Assessment

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- sample receipt temperatures;
- holding times;
- method blanks;
- laboratory control samples (LCS);
- matrix spike/matrix spike duplicates (MS/MSD);
- field duplicates; and
- surrogates (for organic parameters).

Results that required qualification based on the data verification are summarized in Table 2.

1.2 Data Qualifiers

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J	The analyte was positively identified; however, the result should be considered an estimated value.
UJ	The reporting limit is considered an estimated value.
R	Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

1.3 Sample Preservation and Temperature Upon Laboratory Receipt

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory except for the following:

- The samples collected on January 15, 16, 17, and 18, 2008, were received intact at 1° Celsius. This temperature outlier did not significantly impact sample results, so data qualification was not required.

1.4 Holding Times

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods with the following exception:

- Sample MW-2 was analyzed for 1,4-Dioxane two days outside of the required holding time. The 1,4-Dioxane result was qualified "J" to indicate a potential low bias.

1.5 Blank Contamination

Method blanks and trip blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

1.6 LCS/LCS Duplicate Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits except for the following:

- For the analytical batch P8A2538, the LCS and LCS duplicate percent recoveries exceeded the control limits for chloroethane and vinyl acetate. Data qualification was not required because the associated samples were not detected for these analytes.
- For the analytical batch P8A2825, the LCS and LCS duplicate percent recoveries exceeded the control limits for vinyl acetate. Data qualification was not required because the associated samples were not detected for this analyte.
- For the analytical batch P8A3127, the LCS and LCS duplicate percent recoveries exceeded the control limits for dichlorofluoromethane and vinyl acetate. Data qualification was not required because the associated samples were not detected for these analytes.
- For the analytical batch P8B0119, the LCS and LCS duplicate percent recoveries exceeded the control limits for dichlorofluoromethane and vinyl acetate. Data qualification was not required because the associated samples were not detected for these analytes.
- For the analytical batch P8A3127, the RPD between the LCS and LCS duplicate recoveries exceeded the control limits for several analytes. Data qualification was not required because the LCS and LCS duplicate recoveries were within acceptance limits.

1.7 MS/MSD Recovery and RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits except for the following:

- The MS/MSD recoveries associated with the analytical batch P8A2538 were outside of acceptance limits for chloroethane, chloromethane, tetrachloroethene, and vinyl acetate. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).
- The MS/MSD recoveries associated with the analytical batch P8A2825 were outside of acceptance limits for chloroethane. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).
- The MS/MSD recoveries associated with the analytical batch P8A3127 were above acceptance limits for chloroethane, chloromethane, dichlorodifluoromethane, methylene chloride, vinyl acetate, and 1,1-Dichloroethane. Data qualification was not required because the associated samples were not detected for these analytes.
- For the analytical batch P8B0119, the RPD between MS and MSD percent recoveries exceeded the control limits for several analytes. Data qualification was not required because the MS and MSD recoveries were within acceptance limits. The MS/MSD recovery associated with this analytical batch was outside the acceptance limits for chloromethane. Data qualification was not required because the MS/MSD recovery for this analyte was high and the associated samples were not detected for this analyte.
- The MS/MSD recovery associated with the analytical batch 8A23061 was outside of acceptance limits for chromium. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).
- The MS/MSD recoveries associated with the analytical batch C8A2928 were outside of acceptance limits for tetrachloroethene, m&p-xylenes, and total

xylenes. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).

1.8 Field Duplicates

One field duplicate was collected during this monitoring event and submitted for analysis. The RPD between the field duplicate and its associated samples were calculated and presented in Table 3. Field duplicates were evaluated by the following criteria:

- If an analyte is detected at a concentration greater than five times the method reporting limit, the RPD should be less than 25 percent.
- If an analyte is detected between the sample and field duplicate less than five times the method reporting limit, the difference between the sample and the field duplicate should not exceed the method reporting limit.

All field duplicates met acceptance criteria.

1.9 Surrogates

Surrogates for all organic parameters were recovered within acceptance limits.

2.0 Calibration

The second source calibration verification standard associated with several VOC analytical batches had high recoveries for chloroethane and vinyl acetate. Data qualification was not required since the associated samples were not detected for these analytes.

2.1 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 100 percent (with the exception of 1,4-Dioxane with 93 percent). The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table 4. All of the results were considered usable for the intended purposes and the project DQOs have been met.

MW Table 1
Sampling and Analysis Schedule
Groundwater Monitoring Data Verification

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-12	PRA0956-01	1/15/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
MW-1	PRA0956-02	1/15/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
TB011508	PRA0956-03	1/15/2008	TB	VOCs, 1,4-Dioxane
MW-5	PRA1046-01	1/16/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
MW-11	PRA1046-02	1/16/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
TB011608	PRA1046-03	1/16/2008	TB	VOCs, 1,4-Dioxane
FD011608	PRA1046-04	1/16/2008	FD of MW-5	VOCs, 1,4-Dioxane, Perchlorate, Metals
MW-6	PRA1148-01	1/17/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
MW-7	PRA1148-02	1/17/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
TB011708	PRA1148-03	1/17/2008	TB	VOCs, 1,4-Dioxane
MW-4	PRA1219-01	1/19/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
MW-2	PRA1219-02	1/19/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
MW-10	PRA1222-01	1/18/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
PW-1	PRA1222-02	1/18/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
POE	PRA1222-03	1/18/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
TB011808-B	PRA1222-04	1/18/2008	TB	VOCs, 1,4-Dioxane
TB011808-C	PRA1222-05	1/18/2008	TB	VOCs
MW-9	PRA1222-06	1/18/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
MW-3	PRA1222-07	1/18/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals
TB011808-A	PRA1222-08	1/18/2008	TB	VOCs, 1,4-Dioxane
MW-8	PRA1222-09	1/18/2008	N	VOCs, 1,4-Dioxane, Perchlorate, Metals

Notes:

Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. In addition, calcium, magnesium, potassium, and sodium were analyed for PW-1 and POE

VOCs = volatile organic compounds analyzed by USEPA Method 8260B; POE and TB011808-C were analyzed by USEPA Method 524.2.

N = normal field sample

FD = field duplicate

TB = trip blank

MW Table 2
Qualified Results
Groundwater Monitoring Data Verification

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
MW-2	1,4-Dioxane	2.7	ug/L	J	Qualified due to holding time exceedance.

Notes:
ug/L - microgram per liter
J = Estimated result

MW Table 3
Field Duplicate Summary
Groundwater Monitoring Data Verification

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-5/ FD011608	Metals			
	Arsenic	<0.05	<0.05	NC
	Barium	0.051	0.048	6.1
	Cadmium	<0.005	<0.005	NC
	Chromium	0.022	0.021	4.7
	Lead	<0.05	<0.05	NC
	Mercury	<0.0002	<0.0002	NC
	Selenium	<0.05	<0.05	NC
	Silver	<0.005	<0.005	NC
	Inorganics			
	Perchlorate	25	23	8.3
	Volatile Organic Compounds			
	1,4-Dioxane	<1.0	<1.0	NC
	All Analytes	ND	ND	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]*100
ND = No analytes detected
NC = Not calculated
Field duplicate RPD acceptance limits is 25 percent for results greater than 5 times the reporting limit; for results less than 5 times the reporting limit, the difference between sample and field duplicate results should be less than the reporting limit

MW Table 4
Completeness Summary
Groundwater Monitoring Data Verification

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 314.0	15	15	100	15	100
Volatile Organic Compounds (8260)					
All Analytes	13	13	100	13	100
1,4-Dioxane	14	13[a]	93	14	100
Volatile Organic Compounds (524.2)					
All Analytes	1	1	100	1	1
Metals					
Arsenic	15	15	100	15	100
Barium	15	15	100	15	100
Cadmium	15	15	100	15	100
Calcium	2	2	100	2	100
Chromium	15	15	100	15	100
Lead	15	15	100	15	100
Magnesium	2	2	100	2	100
Mercury	15	15	100	15	100
Potassium	2	2	100	2	100
Selenium	15	15	100	15	100
Silver	15	15	100	15	100
Sodium	2	2	100	2	100

Notes:
Number of samples used in completeness calculations includes field samples and field duplicates, but not blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

a = Qualified due to holding time exceedance.

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS OCTOBER - 2008

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the October 2008 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 10 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- metals by USEPA Methods 200.7, and 245.1;
- perchlorate by USEPA Methods 314.0 and 332.0; and
- volatile organic compounds (VOCs) by USEPA Method 8260B and 524.2.

Additionally, four field quality assurance samples (i.e., field duplicates and trip blanks) were collected and analyzed as part of the sampling program. Table-1 lists the samples and associated analytical parameters.

1.1 Data Quality Assessment

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- sample receipt temperatures;
- holding times;
- method blanks;
- laboratory control samples (LCS);
- matrix spike/matrix spike duplicates (MS/MSD);
- field duplicates; and
- surrogates (for organic parameters).

Qualified results are summarized in Table-2.

1.2 Data Qualifiers

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J	The analyte was positively identified; however, the result should be considered an estimated value.
UJ	The reporting limit is considered an estimated value.
R	Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines.

1.3 Sample Preservation and Temperature Upon Laboratory Receipt

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory with the following exceptions. Samples received by the laboratory on October 17, 2008 had a temperature of 1° Celsius. This temperature outlier did not significantly impact sample results; therefore, data qualification was not required.

1.4 Holding Times

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

1.5 Blank Contamination

Method blanks and trip blanks were performed at the required frequencies. Target compounds were not detected in the blanks with the following exception:

- Acetone and carbon disulfide were detected above their respective reporting limits in the trip blank received by the laboratory on October 20, 2008 (Sample ID: TB102008). The analytes were not detected in the associated samples; therefore, data qualification was not required.

1.6 LCS/LCS Duplicate Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits.

1.7 MS/MSD Recovery and RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD duplicate were within acceptance limits except for the following:

- The MSD for analytical batch P8J2114 had low recovery for 1,4-dioxane (79 percent). Data qualification was not required because the MS and LCS were within acceptance limits.

- The MSD for analytical batch P8J2733 had low recovery for 20 analytes and toluene-d8 surrogate (73 percent). Qualified data is provided in Table-2.

- The MS/MSD for analytical batch P8J2134 had recoveries for calcium (114, 256, 339, and 11 percent), magnesium (-228, -92, 21, and -278 percent),

potassium (129 and 154 percent), and sodium (171, 171, and 217 percent) that were outside acceptance limits. Data qualification was not required because the sample results were greater than four times the spiked concentration.

1.8 Field Duplicates

Two field duplicates were collected during this monitoring event and submitted for analysis. The RPD between the field duplicates and their associated samples were calculated and presented in Table-3. Field duplicates were evaluated by the following criteria:

- If an analyte is detected at a concentration greater than five times the method reporting limit, the RPD should be less than 25 percent.
- If an analyte is detected between the sample and field duplicate less than five times the method reporting limit, the difference between the sample and the field duplicate should not exceed the method reporting limit.

All field duplicates met acceptance criteria.

1.9 Surrogates

Surrogates for all organic parameters were recovered within acceptance limits, with one exception. For sample PW-1, the surrogate recovery for toluene-d8 was below acceptance limits. The associated analytes were qualified UJ, and their reporting limits should be considered an estimated value.

2.0 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS/LCSD attained for the field samples was 72 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table-4. All of the results were considered usable for the intended purposes and the project DQOs have been met.

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY PRIVATE WELLS OCTOBER - 2008

1.0 INTRODUCTION

This summary presents data verification results for private residential wells adjacent to Universal Propulsion Company, Inc. (UPCO) during the October 2008 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 13 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- Perchlorate by USEPA Method 314.0; and
- perchlorate by USEPA Method 332.0

Table-5 lists the samples and associated analytical parameters.

1.1 Data Quality Assessment

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- sample receipt temperatures;
- holding times;
- method blanks;
- laboratory control samples (LCS); and
- matrix spike/matrix spike duplicates (MS/MSD).

Results did not require qualification based on the data verification.

1.2 Data Qualifiers

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

1.3 Sample Preservation and Temperature Upon Laboratory Receipt

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory.

1.4 Holding Times

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

1.5 Blank Contamination

Method blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

1.6 LCS/LCS Duplicate Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits.

1.7 MS/MSD Recovery and RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits

1.8 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table-6. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table 1
Sampling and Analysis Schedule
Groundwater Monitoring Report

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-15	PRJ1016-01	10/16/2008	N	Perchlorate
TB101708	PRJ1090-01	10/17/2008	TB	VOCs
MW-1	PRJ1090-02/03	10/17/2008	N	VOCs, Perchlorate
MW-2	PRJ1090-04	10/17/2008	N	Perchlorate
MW-14	PRJ1090-05	10/17/2008	N	Perchlorate
MW-5	PRJ1090-06	10/17/2008	N	Perchlorate
MW-13	PRJ1090-07	10/17/2008	N	Perchlorate
MW-6	PRJ1090-08	10/17/2008	N	Perchlorate
FD101708	PRJ1090-09	10/17/2008	FD of MW-13	Perchlorate
TB102008	PRJ1144-01	10/20/2008	TB	VOCs
FD102008	PRJ1144-02	10/20/2008	FD of PW-1	VOCs, Metals
PW-1	PRJ1144-03	10/20/2008	N	Perchlorate, VOCs, Metals
POE	PRJ1144-04	10/20/2008	N	Perchlorate, VOCs, Metals

Notes:

N = normal field sample

FD = field duplicate

TB = trip blank

Metals = arsenic, barium, cadmium, calcium, chromium, lead, magnesium, mercury, potassium, selenium, silver, sodium

VOCs = volatile organic compounds, including 1,4-dioxane, by EPA Method 8260B.

TB102008 was analyzed by EPA Method 8260B and EPA Method 524.2. POE was analyzed by EPA Method 524.2.

Perchlorate = EPA Method 314.0. MW-15, MW-14, MW-13, and FD101708 were also analyzed by EPA Method 332.0.

Table 2
Qualified Results
Groundwater Monitoring Report

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
PW-1	1,1,1-Trichloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,1,1,2-Tetrachloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,1,2,2-Tetrachloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,1,2-Trichloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,1-Dichloroethane	0.52	ug/l	J	Qualified due to low surrogate recovery
PW-1	1,1-Dichloroethene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,1-Dichloropropene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,2,3-Trichlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2,3-Trichloropropane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2,4-Trichlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2,4-Trimethylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,2-Dibromo-3-chloropropane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2-Dibromoethane (EDB)	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2-Dichlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2-Dichloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,2-Dichloropropane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,3,5-Trimethylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,3-Dichlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,3-Dichloropropane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	1,4-Dichlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	2,2-Dichloropropane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	2-Butanone (MEK)	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	2-Chlorotoluene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	2-Hexanone	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	4-Chlorotoluene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	4-Methyl-2-pentanone (MIBK)	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Acetone	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Benzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Bromobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Bromochloromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Bromodichloromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Bromoform	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Bromomethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Carbon disulfide	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Carbon tetrachloride	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Chlorobenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Chloroethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Chloroform	1.6	ug/l	J	Qualified due to low surrogate recovery and field duplicate RPD
PW-1	Chloromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	cis-1,2-Dichloroethene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	cis-1,3-Dichloropropene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Dibromochloromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery

Table 2
Qualified Results
Groundwater Monitoring Report

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
PW-1	Dibromomethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Dichlorodifluoromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Ethylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Hexachlorobutadiene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Iodomethane	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Isopropylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Methyl-tert-butyl Ether (MTBE)	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Methylene Chloride	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Naphthalene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	n-Butylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	n-Propylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	o-Xylene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	p-Isopropyltoluene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	sec-Butylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Styrene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	tert-Butylbenzene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Tetrachloroethene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Toluene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	trans-1,2-Dichloroethene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	trans-1,3-Dichloropropene	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Trichloroethene	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Trichlorofluoromethane	ND	ug/l	UJ	Qualified due to low surrogate recovery
PW-1	Vinyl Acetate	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Vinyl chloride	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Xylenes, Total	ND	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery

Notes:
ug/l = microgram per liter
J = Estimated result
UJ = Estimated detection limit

Table 3
Field Duplicate Summary
Groundwater Monitoring Report

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-13/ FD101708	**Inorganics (ug/l)**			
	Perchlorate by EPA 314.0	220	220	<1.0
	Perchlorate by EPA 332.0	210.0	210	<1.0
PW-1/ FD102008	**VOCs (ug/l)**			
	Chloroform	1.6	3.7	**79**
	1,1-Dichloroethane	0.52	0.54	3.8
	1,4-Dioxane	1.8	2.0	11
	All other analytes	ND	ND	NC
	Metals (mg/l)			
	Arsenic	<0.10	<0.10	NC
	Barium	<0.010	<0.010	NC
	Cadmium	<0.0010	<0.0010	NC
	Calcium	23	24	4.3
	Chromium	<0.010	<0.010	NC
	Lead	<0.015	<0.015	NC
	Magnesium	11	11	<1.0
	Mercury	<0.0002	<0.0002	NC
	Potassium	3.9	4.4	12
	Selenium	<0.10	<0.10	NC
	Silver	<0.010	<0.010	NC
	Sodium	58	61	5.0

Notes:
RPD = Relative percent difference; [(difference)/(average)]*100
ND = No analytes detected
NC = Not calculated
< = result was not detected above the reporting limit
Field duplicate RPD acceptance limits is 25 percent for results greater than 5 times the reporting limit; for results less than 5 times the reporting limit, the difference between sample and field duplicate results should be less than the reporting limit
Bolded results required data qualification.

Table 4
Completeness Summary
Groundwater Monitoring Report

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 314.0	9	9	100	9	100
Perchlorate 332.0	3	3	100	3	100
Volatile Organic Compounds (8260)					
1,1-Dichloroethene	2	1[a,b]	50	2	100
1,1-Dichloropropene	2	1[a,b]	50	2	100
1,2,4-Trimethylbenzene	2	1[a,b]	50	2	100
1,3,5-Trimethylbenzene	2	1[a,b]	50	2	100
Chloroform	2	1[a,c]	50	2	100
cis-1,2-Dichloropropene	2	1[a,b]	50	2	100
Ethylbenzene	2	1[a,b]	50	2	100
Iodomethane	2	1[a,b]	50	2	100
Isopropylbenzene	2	1[a,b]	50	2	100
Naphthalene	2	1[a,b]	50	2	100
n-Butylbenzene	2	1[a,b]	50	2	100
n-Propylbenzene	2	1[a,b]	50	2	100
p-Isopropyltoluene	2	1[a,b]	50	2	100
sec-Butylbenzene	2	1[a,b]	50	2	100
Styrene	2	1[a,b]	50	2	100
tert-Butylbenzene	2	1[a,b]	50	2	100
Toluene	2	1[a,b]	50	2	100
trans-1,3-Dichloropropene	2	1[a,b]	50	2	100
Vinyl Acetate	2	1[a,b]	50	2	100
Vinyl Chloride	2	1[a,b]	50	2	100
Xylenes, Total	2	1[a,b]	50	2	100
1,4-Dioxane	2	2	100	2	100
All other analytes	2	1[a]	50	2	100
Volatile Organic Compounds (524.2)					
All Analytes	1	1	100	1	1
Metals					
Arsenic	2	2	100	2	100
Barium	2	2	100	2	100
Cadmium	2	2	100	2	100
Calcium	2	2	100	2	100
Chromium	2	2	100	2	100
Lead	2	2	100	2	100
Magnesium	2	2	100	2	100
Mercury	2	2	100	2	100
Potassium	2	2	100	2	100
Selenium	2	2	100	2	100
Silver	2	2	100	2	100
Sodium	2	2	100	2	100

Notes:
Number of samples used in completeness calculations includes field samples, but not field duplicates or blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

a = Qualified due to low surrogate recovery.
b = Qualified due to low MS/MSD recovery
c = Qualified due to field duplicate RPD

Table 5
Sampling and Analysis Schedule
Groundwater Monitoring Report

Sample ID	Lab ID	Collected	Sample Type	Parameters
122 W Yearling	PRJ0724-01	10/13/2008	N	Perchlorate by EPA Method 314.0
122 W Yearling	PRJ0725-01	10/13/2008	N	Perchlorate by EPA Method 314.0
16 E Yearling	PRJ0913-01	10/15/2008	N	Perchlorate by EPA Method 314.0
106 W Yearling	PRJ0915-01	10/15/2008	N	Perchlorate by EPA Method 314.0
18 E Yearling	PRJ0916-01	10/15/2008	N	Perchlorate by EPA Method 314.0
8 W Yearling	PRJ0917-01	10/15/2008	N	Perchlorate by EPA Method 314.0
16 E Yearling	PRJ0918-01	10/15/2008	N	Perchlorate by EPA Method 332.0
25903 N 2 nd St	PRJ0919-01	10/15/2008	N	Perchlorate by EPA Method 314.0
106 W Yearling	PRJ0920-01	10/15/2008	N	Perchlorate by EPA Method 332.0
25825 N 1st Place	PRJ0921-01	10/15/2008	N	Perchlorate by EPA Method 314.0
218 S E Yearling	PRJ0922-01	10/15/2008	N	Perchlorate by EPA Method 314.0
8 W Yearling	PRJ0923-01	10/15/2008	N	Perchlorate by EPA Method 332.0
218 E Yearling	PRJ0924-01	10/15/2008	N	Perchlorate by EPA Method 314.0
424 E Yearling	PRJ0925-01	10/15/2008	N	Perchlorate by EPA Method 314.0
412 E Yearling	PRJ0926-01	10/15/2008	N	Perchlorate by EPA Method 314.0
604/616 E Yearling	PRJ0927-01	10/15/2008	N	Perchlorate by EPA Method 314.0
520 E Yearling	PRJ0928-01	10/15/2008	N	Perchlorate by EPA Method 314.0
18 E Yearling	PRJ0929-01	10/15/2008	N	Perchlorate by EPA Method 332.0
25903 N 2 nd St	PRJ0930-01	10/15/2008	N	Perchlorate by EPA Method 332.0
25825 N 1st Place	PRJ0931-01	10/15/2008	N	Perchlorate by EPA Method 332.0
218 S E Yearling	PRJ0933-01	10/15/2008	N	Perchlorate by EPA Method 332.0
218 E Yearling	PRJ0934-01	10/15/2008	N	Perchlorate by EPA Method 332.0
424 E Yearling	PRJ0936-01	10/15/2008	N	Perchlorate by EPA Method 332.0
412 E Yearling	PRJ0937-01	10/15/2008	N	Perchlorate by EPA Method 332.0

Table 6
Completeness Summary
Groundwater Monitoring Report

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 314.0	13	13	100	13	100
Perchlorate 332.0	13	13	100	13	100

Notes:
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY PRIVATE WELLS – APRIL 2008

1.0 INTRODUCTION

This summary presents data verification results for private residential wells adjacent to Universal Propulsion Company, Inc. (UPCO) during the April 2008 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 13 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 332.0

Table 1 lists the samples and associated analytical parameters.

1.1 Data Quality Assessment

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- sample receipt temperatures;
- holding times;
- method blanks;
- laboratory control samples (LCS); and
- matrix spike/matrix spike duplicates (MS/MSD).

Results did not require qualification based on the data verification.

1.2 Data Qualifiers

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

1.3 Sample Preservation and Temperature Upon Laboratory Receipt

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory except for the following:

- One sample collected on April 4, 2008, was received intact at 16° Celsius. Since the sample was received at the laboratory one hour following collection, this temperature outlier did not significantly impact sample results and data qualification was not required.

1.4 Holding Times

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

1.5 Blank Contamination

Method blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

1.6 LCS/LCS Duplicate Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits.

1.7 MS/MSD Recovery and RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits

1.8 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 100 percent. The technical completeness, which included all QC parameters,

attained for the field samples was 100 percent. The completeness results are provided in Table 2. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table 1
Sampling and Analysis Schedule
Groundwater Monitoring Data Verification

Sample ID	Lab ID	Collected	Sample Type	Parameters
18 E Yearling	PRD0175-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
16 E Yearling - N	PRD0164-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
16 E Yearling - O	PRD0165-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
106 W Yearling	PRD0167-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
122 W Yearling	PRD0171-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
218 E Yearling	PRD0174-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
424 E Yearling	PRD0176-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
616/604 E Yearling	PRD0179-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
412 E Yearling	PRD0166-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
520 E Yearling	PRD0173-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
25825 N 1st Place	PRD0168-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
25903 N 2nd Street	PRD0172-01	4/1/2008	N	Perchlorate by USEPA Method 332.0
820 W Yearling	PRD0395-01	4/4/2008	N	Perchlorate by USEPA Method 332.0

Notes:
N = normal field sample

Table 2
Completeness Summary
Groundwater Monitoring Data Verification

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 332.0	13	13	100	13	100

Notes:
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS - JULY/AUGUST 2008

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the July/August 2008 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of eleven groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 332.0

Table 1 lists the samples and associated analytical parameters.

1.1 Data Quality Assessment

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- sample receipt temperatures;
- holding times;
- method blanks;
- laboratory control samples (LCS);
- matrix spike/matrix spike duplicates (MS/MSD);
- field duplicates; and
- surrogates (for organic parameters).

Results did not require qualification based on the data verification.

1.2 Data Qualifiers

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

1.3 Sample Preservation and Temperature Upon Laboratory Receipt

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory except for the following:

- The samples collected on August 8, 2008, were received intact at 0.9° Celsius. This temperature outlier did not significantly impact sample results, so data qualification was not required.

1.4 Holding Times

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

1.5 Blank Contamination

Method blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

1.6 LCS/LCS Duplicate Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).

- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries for the LCS were within acceptance limits.

1.7 MS/MSD Recovery and RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits

1.8 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table 2. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table 1
Sampling and Analysis Schedule Groundwater Monitoring Data Verification

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-4	PRG1750-03	7/30/2008	N	Perchlorate by USEPA Method 332.0
MW-3	PRG1750-04	7/30/2008	N	Perchlorate by USEPA Method 332.0
MW-8	PRG1823-01	7/31/2008	N	Perchlorate by USEPA Method 332.0
MW-10	PRG1823-02	7/31/2008	N	Perchlorate by USEPA Method 332.0
MW-12	PRG1823-03	7/31/2008	N	Perchlorate by USEPA Method 332.0
MW-7	PRH0063-01	8/1/2008	N	Perchlorate by USEPA Method 332.0
MW-9	PRH0063-02	8/1/2008	N	Perchlorate by USEPA Method 332.0
MW-11	PRH0063-03	8/1/2008	N	Perchlorate by USEPA Method 332.0
MW-13	PRH0600-01	8/8/2008	N	Perchlorate by USEPA Method 332.1
MW-15	PRH0600-02	8/8/2008	N	Perchlorate by USEPA Method 332.2
MW-14	PRH1157-01	8/19/2008	N	Perchlorate by USEPA Method 332.3

Notes:
N = normal field sample

Table 2
Completeness Summary
Groundwater Monitoring Data Verification

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 332.0	11	11	100	11	100

Notes:
Number of samples used in completeness calculations includes field samples and field duplicates, but not blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

DATA VERIFICATION SUMMARY FOR SOIL-VAPOR MONITOR WELL SAMPLES

1.0 INTRODUCTION

This summary presents data verification results for the development of the soil-vapor monitoring well at the Universal Propulsion Company, Inc. (UPCO) during November 2008. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic Data Review (USEPA, 1999), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 4 samples were collected and submitted to TestAmerica for the following parameters:

- Volatile organic compounds by USEPA Method TO-15

Table 1 lists the samples and associated analytical parameters.

1.1 Data Quality Assessment

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- sample receipt temperatures;
- holding times;
- method blanks; and
- laboratory control samples (LCS).

Results did not require qualification based on the data verification.

1.2 Data Qualifiers

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

1.3 Sample Preservation and Temperature Upon Laboratory Receipt

Samples were received intact and at the correct temperature (ambient) at the project laboratory.

1.4 Holding Times

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

1.5 Blank Contamination

Method blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

1.6 LCS/LCS Duplicate Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits with the following exceptions:

- The LCS duplicate for analytical batch P8K1512 had high recovery for 1,2,4-trichlorobenzene and hexachlorobutadiene. Data qualification was not required because the associated samples were not detected for these analytes.
- The LCS and LCS duplicate for analytical batch P8K1921 had low recoveries for 1,2,4-trichlorobenzene and hexachlorobutadiene. Data qualification was not required because the associated samples were not analyzed for these parameters.

1.7 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, and LCS/LCSD attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table 2. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table 1
Sampling and Analysis Schedule
Groundwater Monitoring Report

Sample ID	Lab ID	Collected	Sample Type	Parameters
SVMW-1-30-40	PRK0738-01	11/13/2008	N	VOCs
SVMW-1-90-100	PRK0738-02	11/13/2008	N	VOCs
SVMW-1-140-150	PRK0738-03	11/13/2008	N	VOCs
SVMW-1-190-200	PRK0738-04	11/13/2008	N	VOCs

Table 2
Completeness Summary
Groundwater Monitoring Report

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds by EPA Method TO-15					
All analytes	4	4	100	4	100

Notes:
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS- JANUARY 2008

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the January 2008 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of eight groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 332.0

Table 1 lists the samples and associated analytical parameters.

1.1 Data Quality Assessment

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- sample receipt temperatures;
- holding times;
- method blanks;
- laboratory control samples (LCS);
- matrix spike/matrix spike duplicates (MS/MSD);
- field duplicates; and
- surrogates (for organic parameters).

Results did not require qualification based on the data verification.

1.2 Data Qualifiers

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

1.3 Sample Preservation and Temperature Upon Laboratory Receipt

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory except for the following:

- The samples collected on January 15, 16, 17, and 18, 2008, were received intact at 1° Celsius. This temperature outlier did not significantly impact sample results, so data qualification was not required.

1.4 Holding Times

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

1.5 Blank Contamination

Method blanks and trip blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

1.6 LCS/LCS Duplicate Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).

- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits.

1.7 MS/MSD Recovery and RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits

1.8 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table 2. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table 1
Sampling and Analysis Schedule
Groundwater Monitoring Data Verification

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-12	PRA0958-01	1/15/2008	N	Perchlorate by USEPA Method 332.0
MW-7	PRA1149-01	1/17/2008	N	Perchlorate by USEPA Method 332.0
MW-4	PRA1225-01	1/19/2008	N	Perchlorate by USEPA Method 332.0
MW-11	PRA1048-01	1/16/2008	N	Perchlorate by USEPA Method 332.0
MW-9	PRA1223-01	1/18/2008	N	Perchlorate by USEPA Method 332.0
MW-3	PRA1223-02	1/18/2008	N	Perchlorate by USEPA Method 332.0
MW-8	PRA1223-03	1/18/2008	N	Perchlorate by USEPA Method 332.0
MW-10	PRA1223-04	1/18/2008	N	Perchlorate by USEPA Method 332.0

Notes:
N = normal field sample

Table 2
Completeness Summary
Groundwater Monitoring Data Verification

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 332.0	8	8	100	8	100

Notes:
Number of samples used in completeness calculations includes field samples and field duplicates, but not blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

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APPENDIX

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APPENDIX

MALCOLM PIRNIE

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