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Revised Groundwater Pilot Test Report and Expanded Pilot Test Work Plan Quail Crossing Neighborhood Andover, Kansas

Prepared for:
NuStar Pipeline Operating Partnership L.P.

May 17, 2016
1641-10

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1.0 Introduction

This *Groundwater Pilot Test Report and Pilot Test Expansion Work Plan* (Report) was prepared on behalf of NuStar Pipeline Operating Partnership L.P. (NuStar) as part of a continuing response to the release of gasoline from a pipeline in the Quail Crossing Neighborhood (the Neighborhood) in Andover, Kansas in 2012. The area in the vicinity of the release (the Site) is shown on Figures 1 and 2. This Report was prepared in accordance with the Consent Agreement and Final Order (CAFO) dated May 10, 2013 and joint NuStar and Kansas Department of Health and Environment (KDHE) project discussions.

The purpose of the groundwater pilot test is to evaluate a groundwater remedial technology that may be appropriate for treating groundwater at the Site as part of NuStar's continuing response to the 2012 gasoline release. Activities presented in this Report were performed in general accordance with the *Revised Groundwater Pilot Test Work Plan* (Work Plan; Apex, 2015a); that Work Plan was approved by KDHE on January 26, 2015. The *Revised Interim Groundwater Pilot Test Report* (Interim Report; Apex, 2015b), which was approved by KDHE on October 30, 2015, presented work performed during the period March 2015 through June 2015, including: installation and development of three monitoring wells (MW-17 through MW-19) in March 2015; injection of an oxygen releasing compound (ORC) through nine temporary injection borings (IB-1 through IB-9) in March 2015; and collection and analysis of groundwater samples from monitoring wells in the vicinity of the release in March, April, and June 2015. The Interim Report concluded that insufficient time has elapsed for the ORC to significantly affect the biogeochemical system at monitoring points.

This Report documents groundwater pilot test activities performed from March 2015 through February 2016. The Report also evaluates the data collected to develop conclusions regarding the viability of ORC as a remedial technology at the Site. Work performed as part of the pilot test includes: injection of ORC Advanced® in March 2015; and collection and analysis of groundwater samples from monitoring wells in the vicinity of the release in March, April, June, August, November, and December 2015, and February 2016.

As detailed in this Report, pilot test data collected during the period March 2015 through February 2016 indicate that ORC Advanced® led to increased aerobic degradation of dissolved-phase petroleum conditions in the vicinity and hydraulically downgradient of the ORC injections. Measurable changes in groundwater quality were noted three to six months after ORC introduction and continued through February 2016. Accordingly, a proposal for an expansion of the pilot test is presented herein. The expanded pilot test includes an introduction of a more concentrated form of ORC Advanced®, installation of a larger number of ORC Advanced® injection borings to address residual dissolved-phase petroleum constituents in groundwater, and a longer pilot test time period. The purpose of the groundwater pilot test expansion is to further evaluate the effectiveness of ORC Advanced® as a groundwater remedial technology.

1.1 Report and Work Plan Organization

This Work Plan is organized as follows:

Background (Section 2): A summary of previous investigations and remedial measures implemented at the Site.

Site Description (Section 3): A description of the physical setting of the Site, local geology and hydrogeology, and a discussion of the nature and extent of gasoline in soil and groundwater.

Groundwater Pilot Test Implementation (Section 4): A summary of the groundwater pilot test implementation, including: well installation and ORC Advanced® introduction activities in March 2015; and groundwater sampling activities from March 2015 through February 2016.

Pilot Test Results (Section 5): A presentation and evaluation of soil and groundwater analytical results collected during the pilot test implementation from March 2015 through February 2016.

Proposed Pilot Test Expansion (Section 6): A description of a proposed pilot test expansion to be performed in 2016.

Reporting and Schedule (Section 7): A timeline for implementation of the pilot test expansion and associated reporting.

2.0 Background

The pipeline release was discovered in June 2012 after separate-phase hydrocarbons (SPH) were detected in the irrigation well at 2006 N Colt Court, Andover, Kansas. As shown on Figure 2, NuStar pipeline release location is approximately 80 feet north of the affected irrigation well. Upon notification of the discovery of SPH in the irrigation well, NuStar immediately mobilized to the Site and implemented several initial response and abatement activities, including repairs to the pipeline, deactivation of the irrigation well at 2006 N Colt Court, and removal of SPH from the irrigation well.

Following the initial response activities, NuStar: (1) performed a number of interim remedial measures (IRMs); (2) planned and implemented a Comprehensive Investigation (CI); (3) performed additional investigation to refine the understanding of petroleum constituents in vadose-zone soil; (4) designed and implemented a soil vapor extraction pilot test; (5) performed soil excavation to address residual petroleum constituents in soil; and (6) implemented an ongoing groundwater monitoring program. These activities are described in detail in reports previously prepared by Apex (2013; 2014a; 2014b; 2014c; 2014d; 2014e; 2015c; Apex, 2016a; and 2016b).

During the CI, 16 groundwater monitoring wells (MW-1 through MW-16) and four soil vapor extraction test wells (SVE-1 through SVE-4) were installed at the Site, at the locations shown on Figure 2. Since installation in summer 2013 through December 2014, the monitoring wells were gauged on a weekly basis

for the presence of SPH and to measure depth to water; in 2015, this activity was performed monthly. In March 2015, wells MW-17 through MW-19 were installed as part of the groundwater pilot test. Pilot Test borings and monitoring wells are shown on Figure 3. Groundwater samples have been collected quarterly from the 19 wells and 17 Neighborhood irrigation wells, and analyzed for dissolved-phase petroleum constituents. Based upon the data obtained during the CI, gasoline constituents remained in soil and groundwater in a limited area near the pipeline release location at concentrations that exceed KDHE drinking water screening criteria (Apex, 2014b).

Concurrent with the groundwater pilot test that is the subject of this Report, NuStar developed and implemented a soil excavation work plan to address the residual petroleum constituents in soil. In October 2015, approximately 1,050 cubic yards (yd^3) of soil were excavated from the ground surface to approximately 20.5 feet below ground surface (bgs); after completion of the excavation and prior to backfilling, approximately 1,400 pounds of ORC Advanced® were placed on the floor of the excavations to enhance aerobic degradation of residual petroleum constituents remaining in the subsurface. This work is detailed in the *Soil Excavation Results Report* (Apex, 2016a), which was approved by KDHE on March 14, 2016.

3.0 Site Description

The Site is located in the northern portion of the City of Andover, in Butler County, Kansas (Figure 1), approximately 1/3 mile southeast of the intersection of North 159th Street East and West 21st Street. Land use at and surrounding the Site is residential. A stormwater pond is located approximately 250 feet south of the pipeline. The stormwater pond has not been affected by the release.

Residents in the Neighborhood use municipal water for domestic purposes. In addition to the municipal water supply, some residents in the Neighborhood have irrigation water wells that are used for outdoor irrigation and landscape purposes. The irrigation wells range in total depth from approximately 80 to 116 feet bgs. In most irrigation wells, the screened interval extends from approximately 40 feet bgs to the total well depth; gravel filter packs typically extend from approximately 20 feet bgs to the total well depth. As part of NuStar's response, ten irrigation wells have been temporarily deactivated and the residences that used these wells were converted to the municipal water supply system for their irrigation supply; these converted wells/irrigation systems are shown on Figure 2 and 3.

3.1 Geology

The regional geology in Butler County consists of unconsolidated sediments, including Tertiary and Quaternary alluvium and Quaternary loess at the ground surface, overlying lower Permian limestone and shale of the Council Grove and Chase Groups (Aber, 1991). O'Connor et al. (1982) report that the uppermost bedrock unit at the Site is the Permian Wellington Formation, which reportedly consists of up to 100 feet of light gray and

green silty shale, with some thin limestone and gypsum beds. The Wellington Formation is underlain by the Nolans Limestone formation, which is approximately 20 to 30 feet thick, and consists of a light-buff limestone and dolomite in the upper part.

Geological conditions at the Site are generally consistent with regional conditions, based on information presented in irrigation well construction logs (surface to 116 feet bgs), monitoring well and soil boring logs (surface to 65 feet bgs), and observations during the October 2015 soil excavation (surface to 20.5 feet bgs). Yellowish-brown clay (loess) is generally encountered from the surface to depths of approximately 10 to 13 feet bgs. The clay is underlain by gray, yellow, and olive brown shale; interbedded clays; and limestone of the Wellington Formation. Thin layers of gypsum are occasionally encountered in the shale. In most borings, the uppermost shale is light brown to greenish-brown, dry, and hard, and is underlain by interbedded shale, clay, and limestone.

3.2 Hydrogeology

This section describes the regional and local hydrogeology.

3.2.1 Regional Hydrogeology

The Site and surrounding area are generally flat, although regional topography slopes gently to the east, toward the Whitewater River, which is approximately 4 miles east of the Site. O'Connor et al. (1982) report that the uppermost water-bearing unit at the Site is within the Wellington Formation. The productivity and quality of water from the Wellington Formation are limited. A regional groundwater elevation map prepared by O'Connor et al. (1982) indicates that groundwater in the Wellington formation exhibits an easterly gradient (0.005 foot per foot [ft/ft]) near the Site.

O'Connor et al. also report that the shale units in southwest Butler County are relatively impermeable or of very low permeability with respect to vertical groundwater flow below approximately 50 feet.

3.2.2 Site Hydrogeology

As shown on Figure 4 through 11, groundwater levels at the Site measured in 2015 and 2016 were between approximately 15 and 46 feet bgs (equivalent to 1,305 and 1,334 feet above mean sea level [MSL]). As shown on Figure 10, groundwater levels at the Site measured during the fourth quarter 2015 comprehensive groundwater monitoring event ranged were between approximately 16 and 36 feet bgs (equivalent to 1,315 and 1,333 feet above MSL); the elevation of the stormwater pond was 1344.75 feet MSL.

Groundwater elevations are typically highest near the stormwater pond and decrease with distance from the pond (Apex, 2016). The observed pattern is likely the result of localized groundwater recharge from the stormwater retention pond. The localized recharge results in radial flow of groundwater away from the

pond. However, with increasing distance from the pond, groundwater exhibits a more easterly flow component and flatter gradient, consistent with regional patterns (O'Connor et al., 1982).

3.3 Nature and Extent of Gasoline in Soil

A detailed description of the nature and extent of gasoline constituents in the vadose zone is provided in the *Soil Investigation Report and Proposed Soil Excavation Work Plan* (Apex, 2014e), which was approved by KDHE on August 8, 2014. The *Soil Excavation Results Report* (Apex, 2016a) detailed the October 2015 implementation of the soil excavation, and provided an updated post-excavation description of the nature and extent of gasoline in vadose zone soil.

Based upon previous investigations (Apex, 2014a; Apex, 2014c) and soil data collected during soil excavation activities in October 2015, the majority of the petroleum hydrocarbon mass observed in vadose zone soil at the pipeline release area was removed during the October 2015 soil excavation or the previous soil removal conducted in 2012. Remaining residual petroleum hydrocarbons are shown on Figure 12; these constituents do not present an ongoing source of degradation to groundwater for the following reasons:

- After completion of the excavation and prior to backfilling, approximately 1,400 pounds of ORC Advanced® were placed on the floor of the excavations to enhance aerobic degradation of residual petroleum constituents that remain in the subsurface.
- Groundwater was identified at a depth shallower than 20 feet and ORC Advanced® was placed in the base of the excavations to enhance degradation; therefore, much of the residual hydrocarbons will be in the zone of the fluctuating groundwater table and will be treated via the ORC Advanced®.
- The excavation was backfilled and covered by low permeability asphalt concrete which will minimize infiltration of surface water through the underlying vadose zone soils. Without surface water infiltration, there is no mechanism for the petroleum hydrocarbons in the vadose zone soil above the water table to leach and migrate to groundwater. Therefore, the limited soil that is above the fluctuating groundwater table and not exposed to the ORC Advanced® will also not be exposed to infiltrating surface water.

3.4 Nature and Extent of Gasoline Groundwater

The nature and extent of gasoline constituents in groundwater at the Site have been characterized based on samples collected from a network of 16 groundwater monitoring wells (MW-1 through MW-16); pilot test wells MW-17 through MW-19, SVE-2, and SVE-4; and 17 Neighborhood irrigation wells.

3.4.1 Separate-Phase Hydrocarbons

Groundwater data collected to date indicate that SPH on the water table are limited to the area in the vicinity of the irrigation well at 2006 N Colt Court. SPH have not been observed on the water in any other irrigation wells or monitoring wells at the Site, including several wells in the immediate vicinity of the release location (*i.e.* well MW-1, which is located approximately 50 feet from the pipeline release location; and wells MW-17 through MW-19, which are located within 60 feet of the release location).

3.4.2 Dissolved-Phase Hydrocarbons

Between 2012 and December 2015, the following constituents were detected in one or more groundwater samples at concentrations that exceed KDHE Tier 2 RBSVs: GRO; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; benzene; ethylbenzene; isopropylbenzene; naphthalene; and toluene.

During the most recent comprehensive monitoring event (December 2015), groundwater samples were collected from: monitoring wells MW-1 through MW-16; and pilot test wells MW-17 through MW-19, SVE-2 and SVE-4. Petroleum constituents were not detected or were detected at concentrations lower than KDHE Tier 2 RBSVs in 13 of 16 monitoring wells sampled (MW-2, MW-4 through MW-9, and MW-11 through MW-16). Pilot test wells MW-17 through MW-19 contained constituents at the lowest concentrations observed in 2015; well SVE-2 contained only one constituent (benzene) that exceeded the corresponding KDHE Tier 2 RBSV; and well SVE-4 contained GRO, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene exceeding the corresponding KDHE Tier 2 RBSVs. The highest concentrations were detected in monitoring well MW-1. The approximate extent of benzene above KDHE Tier 2 RBSVs from the December 2015 comprehensive groundwater monitoring event is shown on Figure 13.

4.0 Groundwater Pilot Test Implementation

The groundwater pilot test was performed in general accordance with the *Revised Groundwater Pilot Test Work Plan* (Apex, 2015a). The *Interim Groundwater Pilot Test Report* (Apex, 2015b) presented implementation of the Work Plan, including the drilling, injection of ORC Advanced®, and collection of soil and groundwater samples. The pilot test was performed in the vicinity of and hydraulically downgradient from the pipeline release location, as shown on Figure 3. The pilot test consisted of injection of ORC Advanced® in nine temporary borings (IB-1 through IB-9) and installation, development, and sampling of three wells (MW-17 through MW-19). Well and injection boring locations are shown on Figure 3.

4.1 ORC Advanced® Introduction

In March 2015, ORC Advanced® was injected at locations IB-1 through IB-9 using direct-injection techniques; these activities were presented in detail in the *Revised Interim Groundwater Pilot Test Report* (Apex, 2015b). Briefly, ORC Advanced® was mixed with water to form an injectable slurry which was then

pressure injected using an above-ground pump into the saturated zone, within 30 minutes after preparing the slurry. At each injection point, approximately 80 gallons of 20 percent ORC Advanced® slurry was injected from ten feet above to ten feet below the approximate groundwater surface elevation; this vertical profile was selected to accommodate seasonal groundwater fluctuations at the Site.

4.2 Groundwater Monitoring Program

In March, April, June, August, November, and December 2015, and February 2016, groundwater samples were collected from wells MW-1, MW-4, MW-5, and MW-17 through MW-19 using low-flow sampling techniques. Prior to sampling, each monitoring well was purged using a peristaltic pump while water quality parameters (pH, temperature, specific conductance, dissolved oxygen, and oxidation-reduction potential [ORP]) were recorded. The sampling in March 2015 was conducted prior to the ORC injections and is considered baseline data. These data were obtained to evaluate aquifer conditions prior to implementation of the pilot test and to provide a basis for subsequent evaluation of pilot test data.

Groundwater samples were submitted to an accredited analytical laboratory for the following analyses:

- GRO by Iowa Method OA-1;
- Volatile organic compounds (VOCs) by EPA Method 8260B;
- Methane by Method RSK-175;
- Potassium and iron by EPA Method SW6020;
- Nitrogen as nitrate, sulfate, and dissolved orthophosphate by EPA Method E300.0;
- Alkalinity by EPA Method 310.1;
- Carbon dioxide by Standard Method (SM) 9060A; and
- Ammonia by SM 4500.

The GRO and VOC analyses are intended to assess constituent concentrations in groundwater. The other analyses are indicator constituents used to evaluate for aerobic and anaerobic biodegradation of petroleum constituents.

5.0 Pilot Test Results

This section presents the analytical results for soil and groundwater samples collected during the Pilot Test implementation during the period March 2015 through February 2016. The effects of the March 2015 injection of ORC Advanced® are evident in decreased concentrations of dissolved-phase petroleum constituents in samples collected from wells in the pilot test area. Laboratory data are listed in Tables 1

through 5. Laboratory reports and a laboratory data quality assurance/quality control (QA/QC) review are included in Appendix B.

5.1 Groundwater Elevations

As shown in Table 1 and Figures 4 through 11, groundwater measurements indicate that the groundwater levels in the pilot test area (wells MW-1, MW-4, MW-5, and MW-17 through MW-19) ranged between approximately 19 and 34 feet bgs (equivalent to approximately 1,317 to 1,333 feet MSL from March 2015 through February 2016). In March 2015, groundwater elevations in wells MW-18 and MW-19 were significantly different compared to one another and nearby wells, which is likely because groundwater in the newly installed wells had not equilibrated. In subsequent groundwater monitoring events, groundwater elevations in wells MW-18 and MW-19 were similar to groundwater elevations in surrounding wells.

Water level measurements indicate that groundwater gradients at the Site are controlled by local and regional systems. Locally, leakage from the stormwater retention pond leads to groundwater recharge and elevated groundwater levels near the pond. As shown on Figures 4 through 11, this recharge effect results in radial outward flow of groundwater from the pond and relatively steep groundwater gradients near the retention pond. For example, during monitoring events from March 2015 through February 2016, groundwater near the northeast corner of the pond exhibited a steep northerly gradient of approximately 0.1 ft/ft (represented by wells MW-6 and MW-9). In contrast, during the same monitoring events, wells further from the pilot test area (north of West Mountain) exhibited a gradient in the range of 0.01 to 0.001 ft/ft.

5.2 Groundwater Analytical Data

Groundwater quality in the pilot test area was characterized using data collected from monitoring wells MW-1, MW-4, MW-5, and MW-17 through MW-19; groundwater samples were collected from these wells in March, April, June, August, November and December 2015, and February 2016. Table 5 lists groundwater quality parameters, Table 6 and Figure 14 present dissolved-phase petroleum analytical data. Laboratory analytical reports and the QA/QC review are included in Appendix B.

From March 2015 through February 2016, concentrations of dissolved-phase petroleum hydrocarbons decreased by approximately one order of magnitude in wells MW-4, MW-5, and MW-18, two orders of magnitude in well MW-19, and 50 percent in well MW-17. Where detected, the February 2016 samples collected from wells MW-5 and MW-4 contained gasoline constituents at concentrations less than KDHE Tier 2 RBSVs. The samples collected from well MW-19 in November 2015, December 2015, and February 2016 contained only one constituent (benzene) at or above the corresponding KDHE Tier 2 RBSV. Of note, concentrations did not decrease significantly during the first three months of the pilot test, as can be seen on Figure 14. The significant decreases were observed from July 2015 through February 2016 and demonstrate that there is lag time from introduction of the ORC to observable results.

Dissolved-phase petroleum constituent concentrations remain above KDHE Tier 2 RBSVs in monitoring wells MW-1 and MW-3; pilot test results suggest that those wells are outside the influence of the March 2015 ORC Advanced® injections. The approximate extent of benzene above KDHE Tier 2 RBSVs in groundwater is shown on Figure 13. As detailed in Section 6, additional ORC Advanced® injection are proposed to stimulate aerobic degradation of residual dissolved-phase constituents.

MNA Parameters. The MNA data, presented in Table 7 and on Figure 15, demonstrate that both aerobic and anaerobic microbial degradation of petroleum hydrocarbons are occurring in groundwater beneath the Site. Those processes were ongoing prior to the injection of ORC Advanced® outlined herein; however, the aerobic microbial degradation of petroleum hydrocarbons was enhanced as a result of the ORC Advanced® injections. The MNA data are interpreted below.

- Aerobic microbial degradation of petroleum hydrocarbons is a process during which available dissolved oxygen is consumed, resulting in negative ORP measurements. The source area wells (MW-1, and MW-17 through MW-19) show consistently low ORP measurements as compared to wells farther from the release location (MW-4 and MW-5), indicating that aerobic processes are occurring within the source area.
- Aerobic microbial degradation of petroleum hydrocarbons is a process during which carbon dioxide is produced. In general, the carbon dioxide concentrations in source area wells MW-1 and MW-17 are elevated compared to wells MW-4, MW-5, MW-19 and MW-20, which suggests higher rates of aerobic microbial activity in groundwater near wells MW-1 and MW-17.
- After the oxygen is depleted as a result of aerobic processes, subsequent microbial activity can occur under anaerobic conditions if anaerobic microbial populations are present. The anaerobic microbial degradation of petroleum hydrocarbons consumes sulfate and generates methane as a degradation byproduct. The sulfate and methane results from the pilot test support that anaerobic degradation also occurs at the Site.
    - Sulfate concentrations in source area wells (MW-1, and MW-17 through MW-19) are generally lower compared to wells farther from the release location (MW-4 and MW-5), indicating that anaerobic processes are occurring within the source area.
    - In general, the source area wells (MW-1, and MW-17 through MW-19) show higher methane concentrations compared to wells farther from the release location (MW-4 and MW-5), supporting that anaerobic processes are occurring within the source area.
- Indications of oxygen-rich environment (positive ORP values or lower methane concentrations) were not observed in wells near the ORC Advanced® injection locations. This indicates that ongoing aerobic processes occurring within the source area consumed the introduced oxygen; and that anaerobic processes are ongoing.

In summary, analytical data indicate that aerobic and anaerobic biodegradation of petroleum hydrocarbons is ongoing at the Site. Measurable changes in groundwater quality were noted three to six months after ORC introduction, and continued through February 2016. These data support that the ORC Advanced® injections allowed for rapidly increased aerobic degradation of petroleum constituents. However, as shown on Figure 13, the most recent comprehensive groundwater monitoring results from December 2015 indicate that residual dissolved-phase petroleum concentrations remain in the groundwater, primarily near wells MW-1, MW-17 and MW-3. In accordance with the work outlined herein, NuStar proposes expansion of the pilot test area to further assess the effectiveness ORC Advanced® introduction and overall groundwater quality.

6.0 Proposed Pilot Test Expansion

Groundwater results presented herein demonstrate that the injection and introduction of ORC Advanced® is an effective method of reducing the concentrations of dissolved-phase petroleum hydrocarbons in the subsurface. NuStar is proposing an expansion of the groundwater pilot test around wells MW-1 and MW-17, and extending to well MW-3 to assess the effectiveness of ORC in reducing residual hydrocarbon concentrations in those areas. Compared to the groundwater pilot test performed from March 2015 through February 2016, the expanded pilot test presented herein includes introduction of a more concentrated form of ORC and a larger number of ORC injection locations.

Based on Neighborhood feedback, NuStar understands that a minimum number of permanent monitoring and injection wells are desired. Accordingly, the benefits of utilizing temporary injection borings for ORC Advanced® outweigh the drawbacks; therefore, the expanded pilot test will rely on temporary injection borings for introduction of ORC Advanced® to the subsurface.

Sonic drilling methods were used during the previous pilot test performed in March 2015. Apex staff noted two key disadvantages to the sonic drilling methods and pressurized injection for this application: sonic drilling technology was slower compared to solid stem auger, which had been used on the site to advance borings in September 2013; and pressurized injection of ORC Advanced® required a thinner, less concentrated ORC slurry to allow flow into the surrounding formation. As such, solid stem drilling technology and non-pressurized introduction of ORC Advanced® are proposed for the expanded pilot test to allow introduction of ORC in a more concentrated form. The ORC Advanced® will be placed in a 15-foot interval, from ten feet below to five feet above the approximate groundwater elevation to accommodate seasonal groundwater fluctuations at the Site.

As noted in the *Soil Excavation Report* (Apex, 2015), approximately 1,400 pounds of ORC Advanced® were placed on the floor of the excavations. A layer of crushed rock was placed with the ORC Advanced® pellets to maintain placement of the pellets at the bottom of the excavation and in contact with the fluctuating groundwater table; and approximately 300 gallons of water were added to the ORC after placement. The

excavations were then backfilled with flowable controlled-density fill from the bottom of the excavation to approximately 6 feet bgs. NuStar evaluated the installation of injection wells and injection of ORC Advanced® slurry in those excavation areas. However, injection wells in those locations would likely be ineffective because dissolved-phase petroleum concentrations in that area are lower than other areas of the Site; the majority of source material in the soil was removed during the soil excavation and residual hydrocarbons in soil do not represent a significant ongoing source to groundwater; horizontal permeability in the crushed rock layer is likely limited by the introduction of flowable fill; and pressurized injection of ORC Advanced® requires a thinner, less concentrated ORC slurry to allow flow into the surrounding formation. Consequently, the construction of injection wells and subsequent injection of ORC slurry are not proposed in the soil excavation areas.

Details of the proposed expanded pilot test are presented below. A Quality Assurance Project Plan (QAPP), Health and Safety Plan (HASP), Sampling and Analysis Plan (SAP), and Analytical Laboratory Quality Assurance Manual were previously provided to KDHE and will be followed during the pilot test expansion.

6.1 Expanded Pilot Test Implementation

This section describes the expanded pilot test location; and the drilling, ORC Advanced® injection, and boring abandonment procedure.

6.1.1 Expanded Pilot Test Location and Purpose

The pilot test will consist of advancement of borings and introduction of ORC Advanced® in 38 temporary borings. The temporary injection borings will be advanced in the area generally shown on Figure 2, and depicted in detail on Figure 16. The temporary ORC Advanced® injection borings will be used to introduce ORC Advanced® into the saturated zone and introduce oxygen to the aquifer.

The pilot test locations were selected because: (1) the test area is representative of Site-wide geological conditions; (2) benzene in the test area is above the corresponding KDHE Tier 2 RBSV; (3) groundwater levels and gradient in the test area are relatively stable; (4) dissolved oxygen concentrations in the test area (e.g., wells MW-1, MW-3, and MW-17) are below the aerobic threshold; and (5) the pilot test injection borings and monitoring wells can be installed in the NuStar pipeline easement.

6.1.2 Drilling

The borings will be completed using 6-inch diameter solid stem auger drilling equipment. Solid stem drilling equipment is proposed because it has the capability to penetrate the dense soil and weathered bedrock at the Site in an efficient and cost-effective manner. The purpose of these borings is to introduce ORC Advanced® into the subsurface and site conditions are well documented; accordingly, soil logging will not be performed. The borings will be advanced to depths approximately 10 feet below first encountered

groundwater. Based on groundwater gauging in monitoring wells MW-1, MW-4, and MW-5; and groundwater observation during the soil excavation, the groundwater in the expanded pilot test area is anticipated to be encountered at depths ranging from approximately 20 to 30 feet bgs.

6.1.3 ORC Advanced Introduction

ORC Advanced® will be introduced in pelletized form. The pelletized form of ORC Advanced® is proposed herein because it is more concentrated, can be placed in the boreholes as backfill, and generates less dust compared to the powder form needed to create the slurry. ORC Advanced® pellets will be mixed with sand to prevent borehole caving, and backfilled into the open borehole from the surface.

For the typical injection point, the ORC Advanced® pellets and sand mixture will be introduced from ten feet below to five feet above the approximate groundwater elevation to accommodate seasonal groundwater fluctuations at the Site. The groundwater is anticipated to be encountered at depths ranging from approximately 20 to 30 feet bgs. Approximately 196 pounds of ORC Advanced® and 100 pounds of sand will be introduced per boring; the total mass of ORC Advanced® introduced will be 7,600 pounds. Once in the aquifer, ORC Advanced® is expected to last approximately nine months.

Once the ORC has been placed, the remaining borehole opening will be closed by a cement-bentonite grout to one foot bgs. The ground surface will be restored to original condition.

6.2 Monitoring Well Installations

Three monitoring wells will be installed at the locations shown on Figure 16 to monitor conditions upgradient of the test area and adjacent to the former release location. One monitoring well will be installed near the release location (approximately 10 feet to the southeast of the release location) to monitor groundwater quality in the immediate vicinity of the release; a second monitoring well will be installed in the October 2015 excavation area (25 to the north of the release location) to evaluate the effectiveness of the soil excavation and ORC amendment; and a third monitoring well will be installed at the midpoint between well MW-5 and MW-2 (approximately 100 feet to the southwest of the release location) to monitor groundwater conditions on the Site. This section describes the installation and development of the monitoring wells.

6.2.1 Drilling and Soil Logging

The well borings will be completed using solid stem auger drilling equipment. The borings will be advanced to depths approximately 10 feet below first encountered groundwater, which is anticipated to be encountered at approximately 20 to 30 feet bgs. An 18-inch split spoon sampler will be used to collect soil samples at 5-foot intervals collected for litholgic evaluation in general accordance with ASTM 2487/2488 and to confirm screen placement.

6.2.2 Monitoring Well Construction

Monitoring wells will be installed in accordance with KDHE SOP BER-06 (Installation of Monitoring Wells). In general, 2-inch-diameter Schedule 80 polyvinyl chloride (PVC) casing and screen will be installed in each boring. It is anticipated that the monitoring wells will include 15-foot screen intervals that intersect the water table; from ten feet below to five feet above the approximate groundwater elevation to accommodate seasonal groundwater fluctuations at the Site. Actual well construction details will be determined based on field observations. If field observations suggest that the bottom of the well screen should be placed at a depth shallower than the base of the boring, the excess boring interval will be backfilled with bentonite grout. Silica sand will be placed in the screen interval annular space and two feet above the screen. Bentonite grout will be placed in the annular space from the top of the sand pack to approximately 1 foot bgs. The wells will be completed at the ground surface in flush-mount traffic-rated monuments. A well completion record (WWC-5) will be completed for each well and submitted to KDHE.

6.2.3 Monitoring Well Development

The wells will be allowed to set for at least 24 hours prior to initiating well development. Wells will be developed by over-pumping and surging to remove excess turbidity and improve hydraulic communication with the adjacent water-bearing zone.

6.2.4 Monitoring Well Location Control

The horizontal locations of temporary borings and the wells will be surveyed by a Kansas-licensed land surveyor. The top-of-well casing and cap elevations for monitoring wells will also be measured to the nearest hundredth of a foot, relative to mean sea level.

6.2.5 Quality Assurance and Quality Control

Quality assurance / quality control (QA/QC) procedures that will be used throughout this project, including during drilling, and groundwater sampling will be implemented consistent with KDHE policy and the previously approved QAPP.

6.2.6 Investigation-Derived Waste

Investigation-derived waste (IDW) will consist of soil cuttings, excavated soil from well monument construction, decontamination water, purge water, and personal protection equipment (PPE). Soil and water IDW will be placed in drums or bins. Water IDW will be removed from container(s) via vacuum truck and disposed of appropriately. Soil containers will be properly labeled with the project name, general contents, and date. The soil will be profiled and transported to an appropriate facility for disposal upon approval. PPE will be disposed of as unregulated solid waste.

6.3 Groundwater Sampling and Analytical Program – Baseline Conditions

No sooner than 48 hours after development of the new monitoring wells (MW-20, MW-21, and MW-22), baseline groundwater samples will be collected from wells MW-1, MW-3, MW-4, MW-5, MW-17 through MW-21, and SVE-4. The baseline sampling program is intended to evaluate aquifer conditions prior to implementation of the expanded pilot test. Baseline data will provide a basis for subsequent evaluation of pilot test data. General water quality parameters (e.g., dissolved oxygen, ORP, temperature, conductivity, and pH) will be measured during groundwater sampling activities.

Groundwater samples will be submitted to an accredited analytical laboratory for the following analyses:

- Low-range hydrocarbons (LRH) by EPA Method 8015D;
- Mid-range hydrocarbons (MRH) by EPA Method 8015M;
- Low level VOCs by EPA Method 8260B;
- Methane by Method RSK-175;
- Potassium and iron by Method 6010B;
- Nitrogen as nitrate, sulfate, and dissolved orthophosphate by Method 9056A;
- Orthophosphate by EPA Method 4500P E-2011; and
- Ammonia by Method 350.1.

The LRH, MRH, and VOCs analyses are intended to evaluate constituent concentrations in groundwater prior to the implementation of the expanded pilot test. The LRH and MRH analyses are consistent with the recently adopted KDHE TPH Policy #BER-041 (KDHE, 2015); those analyses replace the previously used analytical method for gasoline-range organics (GRO), which was used for the groundwater pilot test during the period March 2015 through February 2016. The other analyses are intended to provide baseline data for subsequent evaluation of the effectiveness of ORC Advanced® for stimulating biodegradation.

6.3.1 Performance Monitoring

Starting three months after introduction of ORC Advanced® to the subsurface, groundwater quality will be monitored at monitoring wells MW-1, MW-3, MW-4, MW-5, MW-17 through MW-22, and SVE-4. Based upon the groundwater pilot test data collected during the period March 2015 through February 2016, we anticipate that measurable changes in groundwater quality will be noted three to six months after ORC introduction. Accordingly, monitoring will be performed on a quarterly schedule for approximately 15 months after ORC introduction; the duration and frequency of monitoring may be modified based on monitoring results. Performance monitoring will consist of the measurement of general water quality parameters (e.g., dissolved oxygen, ORP, temperature, conductivity, and pH) and collection and analysis of groundwater

samples for the analyses listed in Section 5.4. When possible, the performance monitoring program described above will be performed concurrently with the routine site-wide quarterly groundwater monitoring.

6.3.2 Data Analysis and Performance Evaluation

Groundwater chemical analytical data collected during the previous pilot test demonstrates that introduction of ORC Advanced® significantly stimulated microbial degradation of petroleum constituents in groundwater; the effects on dissolved-phase constituent concentrations and MNA parameters were particularly evident beginning three months after of ORC Advanced®. The expanded pilot test will be used to further evaluate the effectiveness of ORC Advanced® introduction using a high-concentrate pelletized form and a non-pressurized backfill methodology. In addition to addressing this question, data from the pilot test will be used to: assess the effects of oxygen introduction on microbial degradation processes; estimate the radius of influence of ORC Advanced® at the injection area; and optimize future applications of ORC Advanced®, if warranted. These conclusions will be used to determine if ORC Advanced® is effective and feasible for full-scale implementation, and if so, to expand the pilot test further or to optimize and design a full-scale system.

7.0 Reporting and Schedule

The expanded pilot test presented herein will be implemented within 60 days of KDHE approval; quarterly groundwater monitoring will be initiated after the ORC Advanced® introduction. An *Expanded Groundwater Pilot Test Implementation Report* will be submitted to KDHE approximately 60 days after conclusion of the pilot test and receipt of final analytical data. The final report will include a compilation and evaluation of analytical data, including levels of dissolved oxygen in groundwater, indications of microbial activity, and gasoline constituent concentration trends. These data will be used to draw conclusions about ORC Advanced® effectiveness and introduction methodology at the Site. If ORC Advanced® is determined to be effective and suitable for full-scale application, the report will include general design criteria for full-scale application. In the event that full-scale implementation is proposed, NuStar will coordinate with KDHE regarding implementation. If results of the pilot test are inconclusive, NuStar will coordinate with KDHE regarding alternative remediation approaches.

8.0 References

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Table 1
Groundwater Gauging Data
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Measurement Date	Casing Diameter (inches)	Top of Casing Elevation (feet)[1]	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Groundwater (feet bgs)	Depth to SPH (feet)	SPH Thickness (feet)	Groundwater Elevation (feet MSL)
MW-1	1/7/2015	4.0	1352.13	35.0	20-35	31.75	--	--	1320.38
	1/14/2015					31.44	--	--	1320.69
	1/20/2015					31.45	--	--	1320.68
	1/28/2015					31.42	--	--	1320.71
	2/4/2015					31.44	--	--	1320.69
	2/9/2015					31.62	--	--	1320.51
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/20/2015					31.38	--	--	1320.75
	3/25/2015					NM	--	--	NM
	4/20/2015					31.39	--	--	1320.74
	6/10/2015					31.23	--	--	1320.90
	6/15/2015					31.31	--	--	1320.82
	8/20/2015					31.35	--	--	1320.78
	11/3/2015					31.34	--	--	1320.79
	12/14/2015					31.21	--	--	1320.92
	2/16/2016					31.34	--	--	1320.79
MW-2	1/7/2015	2.0	1353.17	44.0	29-44	NM	--	--	NM
	1/14/2015					32.90	--	--	1320.27
	1/20/2015					32.93	--	--	1320.24
	1/28/2015					32.89	--	--	1320.28
	2/4/2015					32.92	--	--	1320.25
	2/9/2015					33.15	--	--	1320.02
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					32.87	--	--	1320.30
	3/25/2015					NM	--	--	NM
	4/20/2015					36.43	--	--	1316.74
	6/10/2015					NM	--	--	NM
	6/15/2015					34.83	--	--	1318.34
	8/20/2015					36.21	--	--	1316.96
	11/3/2015					36.31	--	--	1316.86
	12/14/2015					34.08	--	--	1319.09
	2/16/2016					32.69	--	--	1320.48

Please refer to notes at end of table.

Table 1
Groundwater Gauging Data
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Measurement Date	Casing Diameter (inches)	Top of Casing Elevation (feet)[1]	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Groundwater (feet bgs)	Depth to SPH (feet)	SPH Thickness (feet)	Groundwater Elevation (feet MSL)
MW-3	1/7/2015	2.0	1350.47	60.0	40-60	NM	--	--	NM
	1/14/2015					41.35	--	--	1309.12
	1/20/2015					41.36	--	--	1309.11
	1/28/2015					42.22	--	--	1308.25
	2/4/2015					41.12	--	--	1309.35
	2/9/2015					40.60	--	--	1309.87
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					41.02	--	--	1309.45
	3/25/2015					NM	--	--	NM
	4/20/2015					45.61	--	--	1304.86
	6/10/2015					NM	--	--	NM
	6/15/2015					38.21	--	--	1312.26
	8/20/2015					44.40	--	--	1306.07
	11/3/2015					43.35	--	--	1307.12
	12/14/2015					35.42	--	--	1315.05
	2/16/2016					23.13	--	--	1327.34
MW-4	1/7/2015	2.0	1350.73	41.0	26-41	NM	--	--	NM
	1/14/2015					31.52	--	--	1319.21
	1/20/2015					31.55	--	--	1319.18
	1/28/2015					31.66	--	--	1319.07
	2/4/2015					31.70	--	--	1319.03
	2/9/2015					31.75	--	--	1318.98
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					31.22	--	--	1319.51
	3/25/2015					NM	--	--	NM
	4/20/2015					34.10	--	--	1316.63
	6/10/2015					29.28	--	--	1321.45
	6/15/2015					29.02	--	--	1321.71
	8/20/2015					29.65	--	--	1321.08
	11/3/2015					30.40	--	--	1320.33
	12/14/2015					29.69	--	--	1321.04
	2/16/2016					30.16	--	--	1320.57

Please refer to notes at end of table.

Table 1
Groundwater Gauging Data
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Measurement Date	Casing Diameter (inches)	Top of Casing Elevation (feet)[1]	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Groundwater (feet bgs)	Depth to SPH (feet)	SPH Thickness (feet)	Groundwater Elevation (feet MSL)
MW-5	1/7/2015	2.0	1352.77	30.0	15-30	NM	--	--	NM
	1/14/2015					20.56	--	--	1332.21
	1/20/2015					20.55	--	--	1332.22
	1/28/2015					20.58	--	--	1332.19
	2/4/2015					20.69	--	--	1332.08
	2/9/2015					20.58	--	--	1332.19
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					20.80	--	--	1331.97
	3/25/2015					NM	--	--	NM
	4/20/2015					21.01	--	--	1331.76
	6/10/2015					19.44	--	--	1333.33
	6/15/2015					19.60	--	--	1333.17
	8/20/2015					19.97	--	--	1332.80
	11/3/2015					20.38	--	--	1332.39
	12/14/2015					19.82	--	--	1332.95
	2/16/2016					20.49	--	--	1332.28
MW-6	1/7/2015	2.0	1349.76	41.0	26-41	NM	--	--	NM
	1/14/2015					22.59	--	--	1327.17
	1/20/2015					22.45	--	--	1327.31
	1/28/2015					22.54	--	--	1327.22
	2/4/2015					22.59	--	--	1327.17
	2/9/2015					22.77	--	--	1326.99
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					22.62	--	--	1327.14
	3/25/2015					NM	--	--	NM
	4/20/2015					23.05	--	--	1326.71
	6/10/2015					NM	--	--	NM
	6/15/2015					20.45	--	--	1329.31
	8/20/2015					20.73	--	--	1329.03
	11/3/2015					21.84	--	--	1327.92
	12/14/2015					20.57	--	--	1329.19
	2/16/2016					21.49	--	--	1328.27

Please refer to notes at end of table.

Table 1
Groundwater Gauging Data
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Measurement Date	Casing Diameter (inches)	Top of Casing Elevation (feet)[1]	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Groundwater (feet bgs)	Depth to SPH (feet)	SPH Thickness (feet)	Groundwater Elevation (feet MSL)
MW-7	1/7/2015	2.0	1348.98	24.0	9-24	NM	--	--	NM
	1/14/2015					16.49	--	--	1332.49
	1/20/2015					16.55	--	--	1332.43
	1/28/2015					16.56	--	--	1332.42
	2/4/2015					16.56	--	--	1332.42
	2/9/2015					16.58	--	--	1332.40
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					16.63	--	--	1332.35
	3/25/2015					NM	--	--	NM
	4/20/2015					16.10	--	--	1332.88
	6/10/2015					NM	--	--	NM
	6/15/2015					14.91	--	--	1334.07
	8/20/2015					15.70	--	--	1333.28
	11/3/2015					16.08	--	--	1332.90
	12/14/2015					15.56	--	--	1333.42
	2/16/2016					16.51	--	--	1332.47
MW-8	1/7/2015	2.0	1353.38	30.0	15-30	NM	--	--	NM
	1/14/2015					21.64	--	--	1331.74
	1/20/2015					21.70	--	--	1331.68
	1/28/2015					21.72	--	--	1331.66
	2/4/2015					21.92	--	--	1331.46
	2/9/2015					21.88	--	--	1331.50
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					21.96	--	--	1331.42
	3/25/2015					NM	--	--	NM
	4/20/2015					22.25	--	--	1331.13
	6/10/2015					NM	--	--	NM
	6/15/2015					19.93	--	--	1333.45
	8/20/2015					20.64	--	--	1332.74
	11/3/2015					21.30	--	--	1332.08
	12/14/2015					20.41	--	--	1332.97
	2/16/2016					21.26	--	--	1332.12

Please refer to notes at end of table.

Table 1
Groundwater Gauging Data
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Measurement Date	Casing Diameter (inches)	Top of Casing Elevation (feet)[1]	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Groundwater (feet bgs)	Depth to SPH (feet)	SPH Thickness (feet)	Groundwater Elevation (feet MSL)
MW-9	1/7/2015	2.0	1349.48	34.0	19-34	NM	--	--	NM
	1/14/2015					NM	--	--	NM
	1/20/2015					NM	--	--	NM
	1/28/2015					31.81	--	--	1317.67
	2/4/2015					31.90	--	--	1317.58
	2/9/2015					31.78	--	--	1317.70
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					31.59	--	--	1317.89
	3/25/2015					NM	--	--	NM
	4/20/2015					33.25	--	--	1316.23
	6/10/2015					NM	--	--	NM
	6/15/2015					29.83	--	--	1319.65
	8/20/2015					28.41	--	--	1321.07
	11/3/2015					31.31	--	--	1318.17
	12/14/2015					29.22	--	--	1320.26
	2/16/2016					28.32	--	--	1321.16
MW-10	1/7/2015	2.0	1348.79	34.0	19-34	NM	--	--	NM
	1/14/2015					28.45	--	--	1320.34
	1/20/2015					28.42	--	--	1320.37
	1/28/2015					28.44	--	--	1320.35
	2/4/2015					28.49	--	--	1320.30
	2/9/2015					28.54	--	--	1320.25
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					28.42	--	--	1320.37
	3/25/2015					NM	--	--	NM
	4/20/2015					28.53	--	--	1320.26
	6/10/2015					NM	--	--	NM
	6/15/2015					28.30	--	--	1320.49
	8/20/2015					30.49	--	--	1318.30
	11/3/2015					28.39	--	--	1320.40
	12/14/2015					28.36	--	--	1320.43
	2/16/2016					26.97	--	--	1321.82

Please refer to notes at end of table.

Table 1
Groundwater Gauging Data
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Measurement Date	Casing Diameter (inches)	Top of Casing Elevation (feet)[1]	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Groundwater (feet bgs)	Depth to SPH (feet)	SPH Thickness (feet)	Groundwater Elevation (feet MSL)
MW-11	1/7/2015	2.0	1351.34	42.0	22-42	NM	--	--	NM
	1/14/2015					28.88	--	--	1322.46
	1/20/2015					28.88	--	--	1322.46
	1/28/2015					28.97	--	--	1322.37
	2/4/2015					28.94	--	--	1322.40
	2/9/2015					29.26	--	--	1322.08
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/19/2015					29.84	--	--	1321.50
	3/25/2015					NM	--	--	NM
	4/20/2015					30.39	--	--	1320.95
	6/10/2015					NM	--	--	NM
	6/15/2015					28.31	--	--	1323.03
	8/20/2015					28.73	--	--	1322.61
	11/3/2015					29.79	--	--	1321.55
	12/14/2015					28.64	--	--	1322.70
	2/16/2016					28.97	--	--	1322.37
MW-12	1/7/2015	2.0	1349.74	43.0	23-43	NM	--	--	NM
	1/14/2015					NM	--	--	NM
	1/20/2015					31.04	--	--	1318.70
	1/28/2015					31.05	--	--	1318.69
	2/4/2015					31.07	--	--	1318.67
	2/9/2015					31.06	--	--	1318.68
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					30.95	--	--	1318.79
	3/25/2015					NM	--	--	NM
	4/20/2015					31.09	--	--	1318.65
	6/10/2015					NM	--	--	'NM
	6/15/2015					30.86	--	--	1318.88
	8/20/2015					31.08	--	--	1318.66
	11/3/2015					31.10	--	--	1318.64
	12/14/2015					30.51	--	--	1319.23
	2/16/2016					27.92	--	--	1321.82

Please refer to notes at end of table.

Table 1
Groundwater Gauging Data
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Measurement Date	Casing Diameter (inches)	Top of Casing Elevation (feet)[1]	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Groundwater (feet bgs)	Depth to SPH (feet)	SPH Thickness (feet)	Groundwater Elevation (feet MSL)
MW-13	1/7/2015	2.0	1354.58	45.0	25-45	NM	--	--	NM
	1/14/2015					33.06	--	--	1321.52
	1/20/2015					32.93	--	--	1321.65
	1/28/2015					32.85	--	--	1321.73
	2/4/2015					33.07	--	--	1321.51
	2/9/2015					32.81	--	--	1321.77
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					33.16	--	--	1321.42
	3/25/2015					NM	--	--	NM
	4/20/2015					33.34	--	--	1321.24
	6/10/2015					NM	--	--	NM
	6/15/2015					31.94	--	--	1322.64
	8/20/2015					31.56	--	--	1323.02
	11/3/2015					32.00	--	--	1322.58
	12/14/2015					31.98	--	--	1322.60
	2/16/2016					31.49	--	--	1323.09
MW-14	1/7/2015	2.0	1354.99	45.0	25-45	NM	--	--	NM
	1/14/2015					33.51	--	--	1321.48
	1/20/2015					33.59	--	--	1321.40
	1/28/2015					33.65	--	--	1321.34
	2/4/2015					33.88	--	--	1321.11
	2/9/2015					34.00	--	--	1320.99
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					33.94	--	--	1321.05
	3/25/2015					NM	--	--	NM
	4/20/2015					34.93	--	--	1320.06
	6/10/2015					NM	--	--	NM
	6/15/2015					31.70	--	--	1323.29
	8/20/2015					31.55	--	--	1323.44
	11/3/2015					32.10	--	--	1322.89
	12/14/2015					31.74	--	--	1323.25
	2/16/2016					31.78	--	--	1323.21

Please refer to notes at end of table.

Table 1
Groundwater Gauging Data
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Measurement Date	Casing Diameter (inches)	Top of Casing Elevation (feet)[1]	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Groundwater (feet bgs)	Depth to SPH (feet)	SPH Thickness (feet)	Groundwater Elevation (feet MSL)
MW-15	1/7/2015	2.0	1351.79	45.0	25-45	NM	--	--	NM
	1/14/2015					NM	--	--	NM
	1/20/2015					34.93	--	--	1316.86
	1/28/2015					34.98	--	--	1316.81
	2/4/2015					35.12	--	--	1316.67
	2/9/2015					35.02	--	--	1316.77
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					35.04	--	--	1316.75
	3/25/2015					NM	--	--	NM
	4/20/2015					36.50	--	--	1315.29
	6/10/2015					NM	--	--	'NM
	6/15/2015					32.34	--	--	1319.45
	8/20/2015					33.48	--	--	1318.31
	11/3/2015					33.81	--	--	1317.98
	12/14/2015					31.47	--	--	1320.32
	2/16/2016					29.81	--	--	1321.98
MW-16	1/7/2015	2.0	1352.13	45.0	25-45	NM	--	--	NM
	1/14/2015					NM	--	--	NM
	1/20/2015					30.71	--	--	1321.42
	1/28/2015					20.13	--	--	1332.00
	2/4/2015					30.76	--	--	1321.37
	2/9/2015					31.09	--	--	1321.04
	2/18/2015					NM	--	--	NM
	2/25/2015					NM	--	--	NM
	3/4/2015					NM	--	--	NM
	3/11/2015					NM	--	--	NM
	3/18/2015					31.80	--	--	1320.33
	3/25/2015					NM	--	--	NM
	4/20/2015					33.03	--	--	1319.10
	6/10/2015					NM	--	--	NM
	6/15/2015					29.48	--	--	1322.65
	8/20/2015					28.65	--	--	1323.48
	11/3/2015					29.19	--	--	1322.94
	12/14/2015					27.88	--	--	1324.25
	2/16/2016					28.64	--	--	1323.49
MW-17	3/18/2015	2.0	1351.69	43	27-43	NM	--	--	NM
	4/20/2015					33.91	--	--	1317.78
	6/10/2015					31.15	--	--	1320.54
	6/15/2015					31.28	--	--	1320.41
	8/20/2015					31.19	--	--	1320.50
	11/3/2015					32.73	--	--	1318.96
	12/14/2015					32.00	--	--	1319.69
	2/16/2016					31.46	--	--	1320.23

Please refer to notes at end of table.

Table 1
Groundwater Gauging Data
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Measurement Date	Casing Diameter (inches)	Top of Casing Elevation (feet)[1]	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Groundwater (feet bgs)	Depth to SPH (feet)	SPH Thickness (feet)	Groundwater Elevation (feet MSL)
MW-18	3/18/2015	2.0	1351.11	43	27-43	27.93	--	--	1323.18
	4/20/2015					33.51	--	--	1317.60
	6/10/2015					30.50	--	--	1320.61
	6/15/2015					30.64	--	--	1320.47
	8/20/2015					30.81	--	--	1320.30
	11/3/2015					31.00	--	--	1320.11
	12/14/2015					30.96	--	--	1320.15
	2/16/2016					30.72	--	--	1320.39
MW-19	3/18/2015	2.0	1351.13	43	27-43	35.19	--	--	1315.94
	4/20/2015					33.70	--	--	1317.43
	6/10/2015					30.24	--	--	1320.89
	6/15/2015					30.60	--	--	1320.53
	8/20/2015					30.65	--	--	1320.48
	11/3/2015					31.08	--	--	1320.05
	12/14/2015					31.06	--	--	1320.07
	2/16/2016					30.69	--	--	1320.44
SVE-1	10/20/2015	2.0	1350.23	30	20-30	NM	--	--	NM
	11/24/2015					27.05	--	--	1323.18
	12/14/2015					26.11			1324.12
	2/16/2016					26.71			1323.52
SVE-2	10/20/2015	2.0	1350.21	30	15-30	NM	--	--	NM
	11/24/2015					28.17	--	--	1322.04
	12/14/2015					26.95	--	--	1323.26
	2/16/2016					27.97			1322.24
SVE-3	10/20/2015	2.0	1351.82	30	20-30	NM	--	--	NM
	11/24/2015					29.36	--	--	1322.46
	12/14/2015					29.25	--	--	1322.57
	2/16/2016					29.31			1322.51
SVE-4	10/20/2015	2.0	1350.31	30	20-30	NM	--	--	NM
	11/24/2015					28.55	--	--	1321.76
	12/14/2015					29.04	--	--	1321.27
	2/16/2016					29.01			1321.30

Please refer to notes at end of table.

Table 1
Groundwater Gauging Data
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Measurement Date	Casing Diameter (inches)	Top of Casing Elevation (feet)[1]	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Groundwater (feet bgs)	Depth to SPH (feet)	SPH Thickness (feet)	Groundwater Elevation (feet MSL)
Stormwater Pond (Pond Stage [feet MSL])	1/7/2015	NA	NA	NA	NA	NA	NA	NA	NM
	1/14/2015								NM
	1/20/2015								1344.00
	1/28/2015								1343.80
	2/4/2015								1344.15
	2/9/2015								1344.10
	2/18/2015								NM
	2/25/2015								NM
	3/4/2015								NM
	3/11/2015								NM
	3/18/2015								1343.60
	3/25/2015								NM
	4/20/2015								1344.75
	6/10/2015								1344.50
	6/15/2015								1344.75
	8/20/2015								NM
	11/3/2015								1344.50
	12/14/2015								1344.75
	2/16/2016								1344.50

Notes:

1. feet MSL = Feet above mean sea level (NAVD88).
2. -- = No SPH
3. NM = Not measured.
4. Pond elevation is measured directly from a staff gauge in the pond (in 0.25-foot increments). The top of the staff gauge is 1347.59 feet above mean sea level.
5. NA = Not applicable.

Table 2
Soil Analytical Data – March 2015
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Depth (feet bgs)	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5-Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	Toluene	Total Xylenes
			Concentrations in mg/kg (ppm)																
IB-1	16.5	3/14/2015	<0.05	0.0053	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.010
	24.0	3/14/2015	5.4	0.16	<0.005	0.056	0.056	0.11	0.077	0.059	0.013	--	0.034	0.037	0.013	0.036	--	0.18	0.21
IB-4	6.0	3/18/2015	<0.05	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.010
	19.5	3/18/2015	100	5.7	<0.05	1.4	<0.1	0.065	1.0	0.83	0.16	--	0.80	0.56	0.38	0.87	--	0.59	3.3
	31.0	3/18/2015	1600	30	<0.5	17	<0.99	4.0	11	21	2.3	--	10	4.7	4.1	11	--	40	81
	39.0	3/18/2015	0.29	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.010
IB-7	19.0	3/18/2015	<0.05	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.010
	24.0	3/18/2015	590	8.6	<0.05	3.1	0.33	1.2	5.6	5.7	0.35	--	0.96	1.1	0.42	1.5	--	11	21
	39.0	3/18/2015	<0.05	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.010
MW-17	19.0	3/12/2015	<0.05	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.01
	22.0	3/12/2015	30	2.1	<0.05	0.75	<0.1	0.16	0.51	1.3	0.11	--	0.26	0.23	0.13	0.38	--	0.48	5.2
	37.0	3/12/2015	<0.05	0.0065	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.01
MW-19	28.0	3/11/2015	<0.05	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.010
	32.0	3/11/2015	3.4	0.02	<0.005	0.16	0.021	0.17	0.076	0.081	0.025	--	0.052	0.073	0.053	0.089	--	0.17	0.48
	45.0	3/11/2015	<0.05	<0.005	<0.005	<0.005	<0.01	0.081	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.01
KDHE Tier 2 Screening Value (soil to groundwater pathway)			79.3	1.07	0.060	5.51	24.15	0.168	--	65.6	65.14	--	--	0.349	10.2	110	--	51.2	809

Notes:

1. GRO = Gasoline-range organics quantified by IOWA OA-1.
2. Volatile organic compounds by U.S. Environmental Protection Agency (EPA) Method 8260B.
3. mg/kg (ppm) = Milligrams per kilogram (parts per million).
4. **Bold** indicates detected concentration above the KDHE screening value.
5. < = Not detected above the method reporting limit (MRL).
6. KDHE Tier 2 Screening Values from the *Risk-Based Standards for Kansas, 5th Edition* , October 2010.

Table 3
Soil Analytical Data – October 2015
Andover Colt Court Release Site
Andover, Kansas

Sample Location	Sample Depth (feet bgs)	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5-Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	Toluene	Total Xylenes
			Concentrations in mg/kg (ppm)														
SW-E	16.0	10/7/2015	<0.049	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01
SW-N	16.5	10/7/2015	<0.048	<0.0048	<0.0048	<0.0048	<0.0095	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0095
SW-NE	18.0	10/7/2015	0.35	0.025	<0.0044	0.011	<0.0089	0.022	0.011	<0.0044	0.0064	0.014	0.0067	0.012	0.010	<0.0044	<0.0089
SW-NW	15.0	10/7/2015	2.2	0.090	<0.005	0.26	<0.010	<0.005	0.0080	0.17	0.024	0.012	0.18	0.074	0.12	0.069	0.18
SW-S	15.0	10/7/2015	<0.050	<0.005	<0.005	<0.005	<0.0099	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0099
FLOOR-NE	19.5	10/7/2015	0.066	<0.005	<0.0050	<0.005	<0.010	0.015	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.010	<0.010
FLOOR-NW	19.0	10/7/2015	0.13	0.028	<0.0048	0.0085	<0.0096	0.027	<0.0048	0.0056	0.0052	<0.0048	0.012	0.0060	<0.0048	<0.0048	0.027
SW-SE	10.0	10/8/2015	<0.050	<0.005	<0.005	<0.005	<0.0099	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0099
SW-SE	15.0	10/8/2015	<0.048	<0.0048	<0.0048	<0.0048	<0.0095	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0095
SW-SE	17.5	10/8/2015	37	19	<0.046	1.2	<0.093	<0.046	<0.046	0.13	0.091	<0.046	1.5	0.64	0.44	<0.046	0.76
SW-SNE	15.0	10/8/2015	0.055	0.030	<0.005	0.0077	<0.0099	<0.005	<0.005	0.0073	<0.005	<0.005	0.019	0.0058	<0.005	0.011	0.033
SW-SNM	17.0	10/8/2015	45	12	<0.05	3.9	<0.099	<0.05	<0.05	1.1	0.29	<0.05	2.9	1.7	1.8	0.074	5.6
SW-SNW	17.0	10/8/2015	40	2.1	<0.05	0.56	<0.10	<0.05	<0.05	0.061	0.064	<0.05	0.96	0.39	0.22	<0.05	0.45
SW-SS	13.0	10/8/2015	<0.05	<0.005	<0.005	<0.005	<0.0099	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0099
SW-SS	16.5	10/8/2015	16	1.3	<0.05	0.42	<0.10	<0.050	0.16	0.36	0.080	0.19	0.36	0.25	0.26	0.22	1.2
SW-SSE	17.0	10/8/2015	26	10	<0.048	1.3	<0.097	0.069	0.46	1.3	0.18	0.61	0.35	0.65	0.84	0.53	2.5
SW-SW	17.0	10/8/2015	0.45	<0.0048	<0.0048	<0.0048	0.016	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0097
FLOOR-SE	19.0	10/8/2015	250	6.4	<0.045	2.7	<0.090	0.23	0.61	6.1	0.43	0.64	1.5	0.93	1.3	7.8	24
FLOOR-SW	20.5	10/8/2015	1300	54	<0.050	22	<0.10	0.29	3.2	28	1.8	2.7	9.9	5.9	11	35	130
KDHE Tier 2 Screening Value (soil to groundwater pathway)			50.0	1.07	0.060	5.51	24.15	0.168	--	65.6	65.14	--	0.349	50.9	110	51.2	809

Notes:

1. GRO = Gasoline-range organics quantified by IOWA OA-1.
2. Volatile organic compounds by U.S. Environmental Protection Agency (EPA) Method 8260B.
3. mg/kg (ppm) = Milligrams per kilogram (parts per million).
4. **Bold** indicates detected concentration above the KDHE screening value.
5. < = Not detected above the method reporting limit (MRL).
6. -- = A KDHE Tier 2 Risk Based Screening Value has not been established.
7. KDHE Soil to Groundwater Screening Values for: (1) VOCs from the *Risk-Based Tier 2 Standards for Kansas, 5th Edition* , October 2010; (2) GRO from BER Policy BER-041, September 1, 2015.
8. bgs = below ground surface

Table 4
Soil Analytical Data, KDHE Samples – October 2015
Andover Colt Court Release Site
Andover, Kansas

Sample Location	Sample Depth (feet bgs)	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5-Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	Toluene	Total Xylenes
			Concentrations in mg/kg (ppm)														
S-1	19.5	10/7/2015	<0.130	0.0798	--	0.0241	<0.033	0.0138	--	0.0133	<0.0065	--	0.0355	<0.0065	<0.0132	0.0435	0.108
S-9	15.0	10/8/2015	<0.130	<0.040	--	<0.040	<0.8	1.08	--	0.170	<0.040	--	<0.040	<0.040	<0.040	<0.040	<0.118
S-8	17.5	10/8/2015	31	12.8	--	4.1	<3.0	2.58	--	6.33	0.560	--	1.9	1.0	2.64	8.49	21.6
S-11	17.0	10/8/2015	350	8.68	--	2.8	<4.0	5.2	--	5.68	0.480	--	0.940	0.890	2.0	10.7	9.3
S-3	20.5	10/8/2015	3800	309	--	97.9	<80.0	12.0	--	199	15.0	--	50.0	17.0	64.6	334.0	798.0
KDHE Tier 2 Screening Value (soil to groundwater pathway)			50.0	1.07	0.060	5.51	24.15	0.168	--	65.6	65.14	--	0.349	50.9	110	51.2	809

Notes:

1. GRO = Gasoline-range organics quantified by EPA Method 8015D.
2. Volatile organic compounds by U.S. Environmental Protection Agency (EPA) Method 5035/8260B.
3. mg/kg (ppm) = Milligrams per kilogram (parts per million).
4. **Bold** indicates detected concentration above the KDHE screening value.
5. < = Not detected above the method reporting limit (MRL).
6. -- = A KDHE Tier 2 Risk Based Screening Value has not been established.
7. KDHE Soil to Groundwater Screening Values for: (1) VOCs from the Risk-Based Tier 2 Standards for Kansas, 5th Edition, October 2010; (2) GRO from BER Policy BER-041, September 1, 2015.
8. bgs = below ground surface

Table 5
Groundwater Quality Parameters
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH	ORP
MW-1	1/30/2014	15.79	0.00	1,060	7.25	-52
	4/9/2014	19.22	5.52	979	6.98	-130
	7/23/2014	19.98	5.35	1,251	7.49	-110
	10/29/2014	15.81	3.21	1,369	6.97	-60
	2/12/2015	11.33	1.43	1,250	6.77	-57
	3/20/2015	16.71	1.16	1,388	6.75	-46
	4/20/2015	16.67	1.16	1,203	6.67	-46
	6/16/2015	16.50	0.95	1,311	7.01	-52
	8/20/2015	17.22	0.88	1,348	6.98	-77
	9/15/2015	17.67	4.39	1,365	6.94	-51
	11/5/2015	16.78	0.44	1,385	6.90	-111
	12/16/2015	13.26	0.19	1,453	6.90	-154
	2/17/2016	15.95	0.27	1,686	6.87	-93
MW-2	1/30/2014	15.50	0.00	843	6.22	99
	4/8/2014	15.29	4.05	752	6.77	7
	7/22/2014	21.74	4.79	852	4.79	55
	10/30/2014	19.07	4.87	813	7.21	130
	2/10/2015	14.90	3.16	816	5.77	129
	6/16/2015	18.89	2.75	805	7.28	40
	9/16/2015	18.92	2.66	715	6.87	129
	12/15/2015	16.45	2.96	797	7.20	73
MW-3	1/30/2014	11.91	0.00	853	4.05	18
	4/8/2014	17.25	8.41	740	6.96	-11
	7/24/2014	25.79	2.89	971	7.18	-95
	10/30/2014	18.47	0.96	901	7.07	-236
	2/10/2015	16.27	0.93	940	6.68	-85
	6/17/2015	18.87	0.46	947	7.04	-83
	9/15/2015	19.61	0.89	852	6.82	-110
	12/15/2015	15.44	0.20	925	6.98	-119
MW-4	1/30/2014	14.01	2.78	1,130	5.46	158
	4/9/2014	14.99	2.54	968	6.95	132
	7/24/2014	20.53	0.57	1,135	7.24	-9
	10/30/2014	16.98	0.54	1,083	7.03	-146
	2/10/2015	16.62	1.07	1,044	6.54	-48
	3/20/2015	15.77	0.86	1,050	6.52	-30
	4/20/2015	17.43	0.86	719	7.02	-30
	6/16/2015	19.74	3.82	1,101	7.24	26
	8/20/2015	19.86	3.95	1,136	6.98	43
	9/16/2015	20.16	7.34	1,044	7.28	74
	11/5/2015	19.21	4.79	1,131	7.20	54
	12/15/2015	16.75	4.60	1,011	7.14	76
	2/17/2016	17.11	4.06	1,151	7.09	2

Please refer to notes at end of table.

Table 5
Groundwater Quality Parameters
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH	ORP
MW-5	1/30/2014	15.57	0.00	1,300	6.96	57
	4/8/2014	15.99	1.09	1,190	6.92	189
	7/23/2014	20.70	2.28	1,458	7.17	64
	10/29/2014	19.39	0.49	1,453	6.98	127
	2/10/2015	15.98	1.38	1,444	6.47	93
	3/20/2015	16.44	1.07	1,451	6.73	35
	4/20/2015	16.80	1.10	1,360	6.80	20
	6/16/2015	17.90	1.49	1,429	6.96	149
	8/20/2015	18.95	1.51	1,464	7.23	0
	9/16/2015	19.17	1.63	1,310	6.94	107
	11/5/2015	18.70	2.25	1,374	7.23	67
	12/15/2015	15.34	1.88	1,420	7.00	107
	2/17/2016	16.72	0.71	1,382	7.09	36
MW- 6	1/30/2014	15.54	0.63	986	7.11	146
	4/9/2014	16.58	9.16	797	7.00	201
	7/24/2014	19.56	5.64	1,303	7.27	17
	10/29/2014	18.08	4.29	1,137	7.09	160
	2/11/2015	13.07	4.06	893	6.91	100
	6/17/2015	17.60	3.88	1,280	7.15	15
	9/15/2015	18.01	1.29	431	7.13	-34
	10/22/2015	16.60	5.71	1,171	7.22	333
	12/16/2015	14.00	1.71	336	7.26	148
MW-7	1/30/2014	16.13	0.00	667	7.21	-37
	4/9/2014	15.78	9.43	566	7.08	23
	7/24/2014	18.24	0.66	740	7.38	-11
	10/29/2014	17.47	0.22	754	7.25	-33
	2/11/2015	15.25	0.80	662	6.93	18
	6/17/2015	17.16	0.60	868	7.27	-31
	9/15/2015	18.00	0.37	671	7.12	-32
	10/22/2015	16.99	0.42	769	7.32	-12
	12/16/2015	15.47	7.16	865	0.70	-163
MW-8	1/30/2014	16.94	1.56	1,120	7.00	109
	4/8/2014	16.42	9.18	976	6.80	170
	7/22/2014	19.71	4.88	1,156	7.27	70
	10/29/2014	20.01	3.92	1,051	7.19	138
	2/10/2015	16.90	2.66	1,178	6.44	100
	6/17/2015	1926.00	3.16	1,209	7.18	110
	9/16/2015	19.29	3.47	1,033	6.97	131
	12/15/2015	16.59	3.12	1,138	7.13	91

Please refer to notes at end of table.

Table 5
Groundwater Quality Parameters
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH	ORP
MW-9	1/30/2014	12.13	0.00	760	4.50	8
	4/8/2014	16.65	4.05	725	7.07	192
	7/24/2014	23.24	3.59	1,080	7.11	48
	10/30/2014	16.72	5.61	977	7.08	98
	2/11/2015	15.06	3.13	884	7.05	91
	6/16/2015	19.40	0.67	1,247	7.16	61
	9/15/2015	20.43	0.98	990	6.83	43
	10/22/2015	17.86	1.40	1,043	7.11	136
	12/15/2015	16.73	4.35	1,259	7.17	54
MW-10	1/30/2014	14.31	0.00	1,340	4.90	-44
	4/8/2014	17.01	0.18	982	6.79	-105
	8/1/2014	21.23	9.61	1,236	7.59	77
	10/29/2014	19.71	1.80	1,302	6.90	88
	2/11/2015	13.84	1.67	984	6.88	99
	6/16/2015	19.13	0.55	1,439	7.28	47
	9/15/2015	21.36	1.48	1,348	6.84	56
	10/22/2015	17.55	0.51	1,262	7.01	154
	12/15/2015	16.80	0.67	1,431	6.81	75
MW-11	1/30/2014	16.22	6.91	1,320	6.54	185
	4/8/2014	16.61	6.09	1,140	7.05	199
	7/23/2014	20.17	2.45	1,438	7.24	100
	10/30/2014	18.55	4.02	1,404	7.11	91
	2/10/2015	16.66	4.01	1,314	6.61	72
	6/17/2015	18.94	1.78	1,463	7.12	120
	9/16/2015	20.67	3.16	1,339	6.92	93
	12/15/2015	16.71	2.20	1,452	6.95	81
MW-12	1/30/2014	14.13	0.00	927	5.44	66
	4/9/2014	19.96	8.58	774	7.01	30
	7/22/2014	24.34	0.85	1,067	7.11	-5
	10/29/2014	18.73	0.63	967	7.13	-67
	2/12/2015	15.09	1.11	906	6.78	45
	6/16/2015	20.24	2.43	1,014	7.15	50
	9/15/2015	20.60	5.65	946	6.90	92
	10/22/2015	17.63	4.28	953	7.26	362
	12/16/2015	16.34	0.70	979	7.07	133
MW-13	1/30/2014	15.00	6.53	774	7.04	158
	4/8/2014	15.35	7.03	674	6.93	109
	7/22/2014	23.53	8.10	790	7.31	76
	10/29/2014	19.97	6.70	767	7.19	135
	2/10/2015	15.74	4.85	759	6.25	110
	6/17/2015	1895.00	5.22	673	7.27	102
	9/16/2015	18.88	6.52	659	7.20	86
	12/15/2015	15.57	6.26	487	7.59	79

Please refer to notes at end of table.

Table 5
Groundwater Quality Parameters
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH	ORP
MW-14	1/30/2014	15.31	3.53	724	7.00	183
	4/9/2014	18.75	5.62	608	7.06	181
	7/22/2014	22.63	4.81	683	7.32	66
	10/29/2014	17.09	5.49	703	7.29	101
	2/12/2015	14.50	4.17	687	6.73	94
	6/17/2015	18.90	3.42	698	7.20	97
	9/16/2015	20.70	3.89	587	7.14	82
	12/15/2015	15.63	3.42	649	7.19	85
MW-15	1/30/2014	12.24	0.00	732	5.65	218
	4/8/2014	15.84	9.96	653	6.93	180
	7/23/2014	18.11	4.78	734	7.31	92
	10/29/2014	20.21	4.49	728	7.16	147
	2/10/2015	16.94	3.79	732	6.56	75
	6/17/2015	18.85	3.58	744	7.08	113
	9/16/2015	19.45	7.93	652	7.40	61
	10/22/2015	17.66	6.26	710	7.49	332
	12/15/2016	15.84	4.04	624	7.19	81
MW-16	1/30/2014	12.34	2.39	929	5.79	191
	4/8/2014	15.65	8.32	713	6.91	181
	7/23/2014	21.58	4.60	981	7.28	87
	10/29/2014	20.13	4.36	972	7.09	156
	2/10/2015	16.70	3.25	924	6.73	97
	6/17/2015	20.30	3.66	889	7.16	120
	9/16/2015	18.79	5.00	771	7.11	83
	12/15/2015	15.94	4.42	642	7.34	77
MW-17	3/20/2015	18.15	0.61	1057	6.81	42
	4/20/2015	16.87	0.83	1,012	6.70	-46
	6/16/2015	17.43	0.92	1,047	7.00	-10
	8/20/2015	17.79	0.67	1,067	7.18	-98
	9/15/2015	17.65	0.38	1,121	6.93	-198
	11/5/2015	17.40	0.58	1,011	7.12	-129
	12/15/2015	14.55	0.42	922	6.96	-113
	2/17/2016	16.43	0.35	970	6.99	-105
MW-18	3/20/2015	17.43	0.68	990	6.89	-13
	4/20/2015	17.38	0.79	880	6.17	62
	6/16/2015	18.90	0.93	899	7.12	-18
	8/20/2015	19.36	0.97	924	6.59	-57
	9/15/2015	20.55	6.54	912	7.46	-80
	11/5/2015	18.92	1.01	898	7.24	-100
	12/15/2015	17.06	0.98	879	7.04	8
	2/17/2016	16.17	5.10	907	7.02	-70

Please refer to notes at end of table.

Table 5
Groundwater Quality Parameters
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH	ORP
MW-19	3/20/2015	17.83	1.57	905	7.09	50
	4/20/2015	17.11	1.36	841	6.62	-61
	6/16/2015	18.83	0.49	827	7.25	-82
	8/20/2015	18.76	0.70	813	8.50	-53
	9/15/2015	24.37	3.70	859	7.30	-53
	11/5/2015	18.50	1.97	822	7.33	-11
	12/15/2015	17.15	2.05	810	7.14	28
	2/17/2016	16.35	1.33	836	7.22	11

Notes:

1. °C = Degrees Celsius.
2. mg/L = Milligrams per liter.
3. ORP = Oxidation-reduction potential.
4. Specific Conductivity was documented as mS/cm (millisiemens per centimeter) on the field sampling sheets. The value is reported in this table as millisiemens/centimeter (mS/cm).

Table 6
Groundwater Analytical Results – Dissolved-Phase Petroleum Constituents
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5- Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	Toluene	Total Xylenes
		Concentrations in mg/L (ppm)																
KDHE Tier 2 Values		0.5	0.00844	0.005	0.044	4.92	0.005	7.02	0.7	0.45	--	--	0.00111	0.169	0.66	--	1	10
MW-1	8/9/2013	120	0.86	<0.05	0.22	<0.1	9.1	0.37	1.9	<0.05	6.3	0.1	0.23	<0.05	0.068	2.8	26	9.1
	10/24/2013	39	0.69	<0.010	0.19	0.050	7.8	0.26	2.0	0.031	4.9	0.043	0.14	0.011	0.084	2.2	18	7.1
	1/30/2014	44	1.0	<0.025	0.30	<0.05	3.1	0.45	1.4	0.045	3.5	0.076	0.29	0.030	0.14	1.6	9.3	5.2
	4/9/2014	20	0.49	<0.010	0.18	<0.020	1.1	<0.01	0.2	0.011	--	0.023	0.069	0.018	0.016	--	3.1	2.5
	7/23/2014	49	0.39	<0.001	0.11	0.023	3.1	0.059	0.61	0.011	2.2	<0.010	0.044	<0.010	0.019	1.2	6.4	3.4
	10/29/2014	45	0.47	<0.010	0.19	<0.020	5.0	0.051	0.50	<0.010	3.4	0.015	0.043	<0.010	<0.010	2.2	12	5.5
	2/12/2015	5.8	<0.010	<0.010	<0.010	<0.020	0.26	<0.010	0.077	<0.010	0.64	0.016	0.022	<0.010	<0.010	0.36	0.99	0.99
	3/20/2015	2.5	0.11	0.0014	0.044	<0.0020	0.052	0.035	0.045	0.0029	0.16	0.01	0.014	0.008	0.0075	0.11	0.11	0.27
	4/20/2015	7.0	0.074	<0.001	0.093	<0.0020	0.077	0.072	0.11	0.15	0.39	0.023	0.027	0.019	0.025	0.21	0.25	0.60
	6/16/2015	140	0.32	<0.010	0.30	<0.020	5.2	0.12	0.47	0.011	5.3	<0.010	0.11	<0.010	0.012	2.8	11	8.1
	8/20/2015	110	0.33	<0.010	0.33	<0.020	2.9	0.19	0.77	0.013	6.4	0.032	0.093	0.018	0.029	3.2	8.0	9.6
	9/15/2015	67	0.61	<0.001	0.26	0.032	1.3	0.14	0.42	0.0095	--	0.019	0.065	0.017	0.020	--	2.4	4.4
	11/5/2015	7.9	0.11	<0.010	0.14	<0.020	0.37	<0.010	0.12	<0.010	0.60	0.014	0.026	<0.010	0.020	0.37	0.49	0.97
DUP	11/5/2015	8.2	0.085	<0.001	0.10	<0.002	0.37	0.067	0.10	0.0055	0.61	0.017	0.021	<0.001	0.015	0.37	0.49	0.98
	12/16/2015	38.3 J	0.51	<0.01	0.16	<0.10	5.7	0.113	1.26	0.0219	--	0.0138	0.0944	<0.01	0.046	--	7.81	4.91
KDHE Split	12/16/2015	21.2 J	0.73	<0.025	0.22	<0.25	5.6	0.18	1.4	0.025	--	0.016 J	0.11 J	0.015 J	0.066	--	8.2	5.5
	2/17/2016	18.4	0.656	<0.0100	0.23	<0.100	1.4	0.0679	0.4	0.0103	--	<0.01	0.107	<0.0100	0.026	--	1.03	4.61
MW-2	8/8/2013	2.3	<0.005	<0.005	<0.005	0.13	0.12	0.099	<0.005	<0.005	0.017	0.02	<0.005	<0.005	<0.005	<0.005	0.027	0.021
DUP	8/8/2013	2.2	<0.005	<0.005	<0.005	0.13	0.15	0.11	<0.005	<0.005	0.021	0.021	<0.005	<0.005	<0.005	<0.005	0.031	0.026
	10/23/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	1/29/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	4/8/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/22/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/30/2014	0.11	0.0085	<0.001	0.0030	<0.002	0.0034	0.0038	0.018	<0.001	0.010	0.0013	0.0024	<0.001	0.0014	0.0097	0.0095	0.020
	2/10/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
DUP	2/10/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	6/16/2015	0.089	<0.001	<0.001	<0.001	<0.002	0.0013	<0.001	<0.001	<0.001	0.0052	<0.001	<0.001	<0.001	<0.001	0.0026	0.0089	0.0078
	9/16/2015	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003

Please refer to notes at end of table.

Table 6
Groundwater Analytical Results – Dissolved-Phase Petroleum Constituents
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5- Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	Toluene	Total Xylenes
		Concentrations in mg/L (ppm)																
KDHE Tier 2 Values		0.5	0.00844	0.005	0.044	4.92	0.005	7.02	0.7	0.45	--	--	0.00111	0.169	0.66	--	1	10
MW-3	8/9/2013	6	0.054	<0.005	0.010	0.016	1.2	0.070	0.12	<0.005	0.086	0.014	0.011	<0.005	0.0074	0.12	0.4	0.21
	10/24/2013	1.7	0.075	<0.001	0.012	0.0057	1.1	0.082	0.12	0.0061	0.065	0.011	0.017	0.010	0.010	0.011	0.051	0.077
DUP	10/24/2013	2.0	0.073	<0.001	0.012	0.0059	1.1	0.077	0.11	0.0058	0.063	0.011	0.018	0.001	0.010	0.011	0.051	0.075
	1/28/2014	2.8	0.038	<0.001	<0.001	0.0069	0.76	0.072	0.07	0.0062	0.0098	0.0061	0.0081	<0.001	0.0079	<0.001	0.0081	0.011
	4/8/2014	3.0	0.048	<0.005	0.010	<0.01	0.64	<0.005	0.058	0.0061	--	0.0075	0.014	<0.005	0.011	--	0.1	0.053
	7/24/2014	9.8	0.16	<0.010	0.037	<0.020	1.8	0.081	0.51	<0.010	0.32	<0.010	0.028	<0.010	0.023	0.51	1.6	0.83
	10/30/2014	6.1	0.12	<0.010	0.025	<0.020	1.1	0.085	0.36	<0.010	0.17	0.019	0.029	<0.010	0.018	0.18	0.15	0.35
	2/10/2015	7.9	0.19	<0.010	0.047	<0.020	1.4	0.15	0.52	0.014	0.41	0.034	0.054	<0.010	0.032	0.32	0.93	0.73
	6/17/2015	21	0.46	<0.005	0.11	<0.01	1.6	0.016	0.95	0.030	0.92	0.029	0.10	0.031	0.078	0.57	1.5	1.5
	9/15/2015	11	0.28	<0.005	0.054	<0.01	1.2	0.19	0.65	0.023	--	0.020	0.039	<0.005	0.057	--	0.045	0.27
DUP	9/15/2015	11	0.089	<0.005	0.079	<0.01	0.98	0.23	0.77	0.032	--	0.031	0.086	0.012	0.070	--	0.048	0.37
	12/16/2015	4.75 J	0.241	<0.005	0.0317	<0.05	0.85	0.151	0.643	0.026	--	0.0215	0.054	<0.005	0.061	--	<0.025	<0.015
KDHE Split	12/16/2015	6.9 J	0.30	<0.025	0.039	<0.25	0.95	0.24	0.68	0.026	--	0.026	0.060 J	0.0057 J	0.067	--	0.049	<0.075
MW-4	8/8/2013	0.48	0.0013	<0.001	0.0013	<0.002	0.035	0.012	0.0075	0.0013	0.027	0.0027	0.0027	<0.001	0.0022	0.011	0.056	0.038
	10/23/2013	1.0	0.0096	<0.001	0.016	0.0046	0.083	0.050	0.017	<0.0010	0.0071	0.0085	0.0036	<0.001	0.0013	0.034	0.034	0.041
	1/28/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	4/8/2014	2.5	0.054	<0.001	0.027	0.0043	0.23	0.070	0.15	0.0039	--	0.0071	0.016	0.0022	0.0084	--	0.2	0.14
	7/24/2014	0.75	0.047	<0.001	0.017	<0.002	0.11	0.022	0.049	0.0029	0.043	0.0027	0.0092	<0.001	0.0070	0.028	0.015	0.070
DUP	7/24/2014	0.79	0.054	<0.001	0.019	<0.002	0.11	0.025	0.057	0.0033	0.050	0.0031	0.0098	0.0017	0.0080	0.032	0.017	0.083
	10/30/2014	4.8	0.20	<0.001	0.089	<0.002	0.49	0.097	0.40	0.014	0.20	0.017	0.062	0.0078	0.039	0.24	0.33	0.44
	2/10/2015	1.6	0.12	<0.001	0.058	<0.002	0.17	0.052	0.12	0.0042	0.022	0.0092	0.019	0.0058	0.0077	0.081	0.042	0.10
	3/20/2015	4.6	0.19	<0.001	0.088	<0.002	0.26	0.094	0.20	0.012	0.099	0.014	0.044	0.0095	0.0220	0.13	0.18	0.23
	4/20/2015	0.083	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	0.0013	<0.001	0.0032	<0.001	0.0017	<0.001	<0.001	0.0015	0.0018	0.0047
	6/16/2015	0.14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	0.0013	<0.001	0.0046	<0.001	<0.001	<0.001	<0.001	0.003	0.0059	0.0077
	8/20/2015	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	9/16/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	11/5/2015	0.057	<0.001	<0.001	<0.001	<0.002	0.0023	<0.001	0.0023	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
	2/17/2016	<0.100	0.00179	<0.001	<0.001	<0.01	0.00177	<0.001	0.00199	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	0.0105

Please refer to notes at end of table.

Table 6
Groundwater Analytical Results – Dissolved-Phase Petroleum Constituents
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5- Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	Toluene	Total Xylenes
		Concentrations in mg/L (ppm)																
KDHE Tier 2 Values		0.5	0.00844	0.005	0.044	4.92	0.005	7.02	0.7	0.45	--	--	0.00111	0.169	0.66	--	1	10
MW-5	8/8/2013	0.94	0.015	<0.001	0.15	<0.002	0.038	0.24	0.002	0.0018	0.11	0.0046	0.0084	<0.001	0.0023	0.0068	0.05	0.17
	10/24/2013	2.1	0.098	<0.001	0.028	<0.002	0.081	0.039	0.063	0.0051	0.20	0.0075	0.023	0.0026	0.011	0.12	0.10	0.32
	1/30/2014	0.61	0.038	0.0012	0.011	<0.002	0.05	0.018	0.034	0.0022	0.041	0.0017	0.0086	<0.001	0.0046	0.033	0.009	0.075
	4/8/2014	0.35 J	0.0051 J	<0.001	0.0013 J	0.0021 J	0.025 J	<0.001	0.0018 J	0.0021 J	--	0.0015 J	0.0085 J	<0.001	<0.001	--	0.0024 J	0.041 J
DUP	4/8/2014	0.52 J	0.012 J	<0.001	0.0035 J	0.0033 J	0.037 J	<0.001	0.0058 J	0.003 J	--	0.0019 J	0.013 J	0.0010	0.0014 J	--	0.0061 J	0.06 J
	7/23/2014	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	0.0014	<0.001	<0.001	<0.001	<0.001	<0.003
DUP	7/23/2014	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	0.0013	<0.001	<0.001	<0.001	<0.001	<0.003
	10/29/2014	<0.050	<0.001	<0.001	<0.001	<0.002	0.0018	<0.001	<0.001	<0.001	0.0048	<0.001	<0.001	<0.001	<0.001	0.0027	0.010	0.0075
	2/10/2015	0.27	0.0092	<0.001	0.0024	<0.002	0.040	0.016	0.0071	0.0020	0.0068	0.0030	0.0069	0.0016	0.0021	0.011	0.0092	0.018
	3/20/2015	0.2	<0.001	<0.001	<0.001	<0.002	0.023	<0.001	0.0015	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0010	<0.003
	4/20/2015	1.5	0.0015	<0.001	0.0062	<0.002	0.057	0.052	0.039	0.0052	0.024	0.0042	0.022	0.0019	0.0096	0.0072	0.012	0.031
	6/16/2015	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	8/20/2015	0.24	0.0013	<0.001	0.0012	<0.002	0.0045	<0.001	0.0053	<0.001	0.017	<0.001	<0.001	<0.001	<0.001	0.0088	0.0230	0.026
	9/16/2015	<0.050	<0.001	<0.001	<0.001	<0.002	0.0024	<0.001	<0.001	<0.001	--	<0.001	0.0021	<0.001	<0.001	--	<0.001	<0.003
	11/5/2015	0.092	<0.001	<0.001	0.0013	<0.002	0.0130	<0.001	0.0028	<0.001	0.0021	<0.001	0.0025	<0.001	<0.001	0.0013	0.0013	0.0034
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
	2/17/2016	<0.100	<0.001	<0.001	<0.001	<0.01	0.00131	<0.001	0.0011	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	0.00615
MW-6	8/9/2013	<0.05	<0.001	<0.001	<0.001	0.0029	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0026	<0.001	<0.001	<0.001	<0.001	<0.003
	10/24/2013	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
DUP	10/24/2013	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	1/30/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	4/8/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/24/2014	<0.05	<0.001	<0.001	<0.001	<0.002	0.0031	<0.001	0.0032	<0.001	0.0027	<0.001	<0.001	<0.001	<0.001	0.0031	0.0083	0.0059
	10/29/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	0.0028	<0.001	<0.001	<0.001	<0.001	0.0014	0.0052	0.0042
	2/11/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
DUP	2/11/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	6/17/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	9/15/2015	0.24	0.0017	<0.001	<0.001	<0.002	0.0022	<0.001	0.0022	<0.001	--	<0.001	0.0020	<0.001	<0.001	--	0.0076	0.010
	10/22/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/16/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003

Please refer to notes at end of table.

Table 6
Groundwater Analytical Results – Dissolved-Phase Petroleum Constituents
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5- Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	Toluene	Total Xylenes
		Concentrations in mg/L (ppm)																
KDHE Tier 2 Values		0.5	0.00844	0.005	0.044	4.92	0.005	7.02	0.7	0.45	--	--	0.00111	0.169	0.66	--	1	10
MW-7	8/9/2013	<0.05	<0.001	<0.001	<0.001	<0.002	0.0012	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0014	<0.003
	10/24/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	1/30/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	4/8/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/24/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0016	<0.003
	10/29/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0024	<0.003
	2/11/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	6/17/2015	0.089	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	9/15/2015	0.11	0.0027	<0.001	<0.001	<0.002	0.0029	<0.001	0.0031	<0.001	--	<0.001	0.0024	<0.001	<0.001	--	0.0088	0.014
	10/22/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/16/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
MW-8	8/8/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/24/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	1/30/2014	0.16	0.0026	<0.001	0.001	<0.002	0.0030	<0.001	0.0049	<0.001	0.013	<0.001	0.0041	<0.001	<0.001	0.0056	0.02	0.018
DUP	1/30/2014	0.15	0.0031	<0.001	0.001	<0.002	0.0038	<0.001	0.0056	0.0011	0.014	<0.001	0.0040	<0.001	<0.001	0.0064	0.025	0.021
	4/8/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/22/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/29/2014	<0.05	<0.001	<0.001	<0.001	<0.002	0.0014	<0.001	<0.001	<0.001	0.0041	<0.001	<0.001	<0.001	<0.001	0.0024	0.0082	0.0065
DUP	10/29/2014	<0.05	<0.001	<0.001	<0.001	<0.002	0.0013	<0.001	<0.001	<0.001	0.0041	<0.001	<0.001	<0.001	<0.001	0.0021	0.0081	0.0063
	2/10/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	6/17/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0017	<0.003
	9/16/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003

Please refer to notes at end of table.

Table 6
Groundwater Analytical Results – Dissolved-Phase Petroleum Constituents
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5- Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	Toluene	Total Xylenes
		Concentrations in mg/L (ppm)																
KDHE Tier 2 Values		0.5	0.00844	0.005	0.044	4.92	0.005	7.02	0.7	0.45	--	--	0.00111	0.169	0.66	--	1	10
MW-9	8/9/2013	36	0.82	<0.001	0.23	0.23	0.99	0.21	0.65	0.025	2.8	0.048	0.17	0.014	0.068	1.3	4.4	4.1
	10/23/2013	0.054	<0.001	<0.001	<0.001	<0.002	0.0026	0.0011	<0.001	<0.001	<0.002	0.0025	0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	11/25/2013	0.57	0.022	<0.010	0.013	0.004	0.058	0.017	0.0019	<0.001	0.019	0.0028	0.0084	<0.001	<0.001	0.018	0.005	0.037
	1/28/2014	0.058	<0.001	<0.001	<0.001	<0.002	0.0046	0.0015	<0.001	<0.001	<0.002	<0.001	0.0033	<0.001	<0.001	<0.001	<0.001	<0.003
	4/8/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
DUP	4/8/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/24/2014	<0.05	<0.001	<0.001	<0.001	<0.002	0.0017	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0034	<0.003
	10/30/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0026	<0.003
DUP	10/30/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0023	<0.003
	2/11/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	6/16/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0053	<0.003
	9/15/2015	<0.05	0.0016	<0.001	<0.001	<0.002	0.0019	<0.001	0.0031	<0.001	--	<0.001	0.0021	<0.001	<0.001	--	0.0022	0.0043
	10/22/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
MW-10	8/9/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/23/2013	2.6	0.033	<0.001	0.029	0.014	0.051	0.069	0.0034	<0.001	0.27	0.021	0.0013	0.0014	<0.001	0.15	0.14	0.42
	11/25/2013	3.7	0.22	<0.001	0.072	0.019	0.016	0.081	0.027	0.0065	0.26	0.016	0.023	<0.001	0.025	0.12	0.048	0.38
	1/28/2014	1.1	0.12	<0.001	0.039	0.0023	0.026	0.0081	0.036	0.0049	0.073	0.0036	0.014	0.0064	0.015	0.05	0.048	0.12
	4/8/2014	8.8	0.56	<0.005	0.23	<0.01	0.12	<0.005	0.11	0.011	--	0.026	0.035	<0.005	<0.005	--	0.3	1.1
	8/1/2014	0.091	<0.001	<0.001	<0.001	0.0066	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/29/2014	0.066	<0.001	<0.001	<0.001	<0.002	0.0021	<0.001	<0.001	<0.001	0.0058	<0.001	<0.001	<0.001	<0.001	0.0034	0.013	0.0092
	2/11/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	6/16/2015	0.35	<0.001	<0.001	<0.001	0.0029	0.0024	0.0032	<0.001	<0.001	0.0040	0.0045	<0.001	<0.001	<0.001	0.0021	0.0068	0.0062
	9/15/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	0.0014	<0.001	--	<0.001	0.0019	<0.001	<0.001	--	0.0016	<0.003
	10/22/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/15/2015	0.212	<0.001	<0.001	<0.001	<0.01	0.00819	0.0336	<0.001	<0.001	--	0.00514	<0.005	<0.001	<0.001	--	<0.005	0.00577
	1/13/2016	0.836	<0.005	<0.005	<0.005	<0.05	<0.005	0.0505	<0.005	<0.005	--	0.00987	<0.025	<0.005	<0.005	--	<0.0250	<0.015

Please refer to notes at end of table.

Table 6
Groundwater Analytical Results – Dissolved-Phase Petroleum Constituents
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5- Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	Toluene	Total Xylenes
		Concentrations in mg/L (ppm)																
KDHE Tier 2 Values		0.5	0.00844	0.005	0.044	4.92	0.005	7.02	0.7	0.45	--	--	0.00111	0.169	0.66	--	1	10
MW-11	10/23/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	0.0024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	1/29/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	0.0024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	4/8/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/23/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/30/2014	0.25	0.016	<0.001	0.0058	<0.02	0.012	0.0078	0.038	0.0011	0.021	0.0014	0.0059	<0.001	0.0024	0.023	0.023	0.044
	2/10/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	0.0010	<0.001	<0.002	<0.001	0.0034	<0.001	<0.001	<0.001	<0.001	<0.003
	6/17/2015	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0032	<0.003
DUP	6/17/2015	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0035	<0.003
	9/16/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
MW-12	10/23/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	0.0026	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	1/28/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	4/9/2014	0.081	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/22/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/29/2014	0.12	0.0011	<0.001	<0.001	<0.002	0.0050	<0.001	0.0017	<0.001	0.010	<0.001	<0.001	<0.001	<0.001	0.0063	0.027	0.016
	2/12/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	0.0054	<0.001	<0.001	<0.001	<0.001	0.0029	0.0064	0.0083
	6/16/2015	0.061	<0.001	<0.001	<0.001	<0.002	0.0014	<0.001	0.0013	<0.001	0.0058	<0.001	<0.001	<0.001	<0.001	0.0028	0.011	0.0086
	9/15/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	0.0018	<0.001	<0.001	--	0.0013	<0.003
	10/22/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/16/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
KDHE Split	12/16/2015	<0.50	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.01	<0.001	<0.001	--	<0.001	<0.003
MW-13	10/23/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	0.0032	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	1/30/2014	0.072	0.0014	<0.001	<0.001	<0.002	0.0011	<0.001	0.0024	<0.001	0.0063	<0.001	0.0038	<0.001	<0.001	0.0026	0.0083	0.0089
	4/8/2014	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/22/2014	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/29/2014	0.056	<0.001	<0.001	<0.001	<0.002	0.0028	<0.001	0.0011	<0.001	0.0065	<0.001	<0.001	<0.001	<0.001	0.0040	0.015	0.011
	2/10/2015	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	6/17/2015	<0.050	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0019	<0.003
	9/16/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
DUP	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003

Please refer to notes at end of table.

Table 6
Groundwater Analytical Results – Dissolved-Phase Petroleum Constituents
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5- Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	Toluene	Total Xylenes
		Concentrations in mg/L (ppm)																
KDHE Tier 2 Values		0.5	0.00844	0.005	0.044	4.92	0.005	7.02	0.7	0.45	--	--	0.00111	0.169	0.66	--	1	10
MW-14	10/23/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	1/30/2014	<0.05	0.0011	<0.001	<0.001	<0.002	<0.001	<0.001	0.0016	<0.001	0.0043	<0.001	<0.001	<0.001	<0.001	0.0017	0.0059	0.0061
	4/9/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/22/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/29/2014	0.54	0.0029	<0.001	0.0013	<0.002	0.021	<0.001	0.0049	<0.001	0.036	<0.001	<0.001	<0.001	<0.001	0.022	0.10	0.058
	2/12/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	6/17/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0016	<0.003
	9/16/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
MW-15	10/24/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	0.0026	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	1/28/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	0.0026	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	4/8/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/23/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/29/2014	<0.05	<0.001	<0.001	<0.001	<0.002	0.0012	<0.001	<0.001	<0.001	0.0030	<0.001	<0.001	<0.001	<0.001	0.0018	0.0072	0.0048
	2/10/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	6/17/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0043	<0.003
	9/16/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	0.0018	<0.001	<0.001	--	0.0018	<0.003
	10/22/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
MW-16	10/23/2013	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	0.0027	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	1/28/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
DUP	1/28/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	4/8/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	7/23/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	10/29/2014	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	0.0026	<0.001	<0.001	<0.001	<0.001	0.0014	0.0050	0.0040
	2/10/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	6/17/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0029	<0.003
	9/16/2015	<0.05	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.003
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003

Please refer to notes at end of table.

Table 6
Groundwater Analytical Results – Dissolved-Phase Petroleum Constituents
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5- Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	Toluene	Total Xylenes
		Concentrations in mg/L (ppm)																
KDHE Tier 2 Values		0.5	0.00844	0.005	0.044	4.92	0.005	7.02	0.7	0.45	--	--	0.00111	0.169	0.66	--	1	10
MW-17	3/20/2015	8.9	0.14	<0.001	0.043	<0.002	0.80	0.11	0.14	0.006	0.5	0.0099	0.020	0.0022	0.007	0.30	0.79	0.80
	4/20/2015	5.1	0.020	<0.001	0.022	<0.002	0.36	0.075	0.084	0.098	0.23	0.0087	0.0072	<0.001	0.0052	0.13	0.29	0.36
	6/16/2015	95	0.19	<0.001	0.31	0.044	2.0	0.37	1.5	0.044	3.4	0.038	0.14	0.015	0.10	1.8	6.8	5.2
	8/20/2015	54	0.21	<0.010	0.22	<0.02	1.2	0.31	1.2	0.043	2.8	0.049	0.16	<0.010	0.10	1.4	2.6	4.2
	9/15/2015	13	0.45	<0.001	0.11	0.00610	0.71	0.23	0.59	0.026	--	0.031	0.068	<0.001	0.06	--	0.46	1
	11/5/2015	2.9	<0.010	<0.010	<0.010	<0.020	0.30	0.14	0.18	0.014	0.021	0.013	0.024	<0.010	0.024	<0.010	0.017	<0.030
	12/16/2015	2.24	0.05	<0.001	0.00125	<0.01	0.27	0.08	0.153	0.00807	--	0.0142	0.0125	<0.001	0.01	--	0.0619	0.0788
	2/17/2016	3.09	0.081	<0.001	0.00545	<0.01	0.45	<0.02	0.222	0.0102	--	0.0044	0.0134	<0.001	0.02	--	0.131	0.155
MW-18	3/20/2015	40	0.45	<0.001	0.13	<0.002	2.0	0.23	0.56	0.02	2.3	0.031	0.097	0.0077	0.027	1.2	6.2	3.4
	4/20/2015	4.4	0.016	<0.001	0.016	<0.002	0.20	0.032	0.091	0.094	0.24	0.0039	0.0087	<0.001	0.0061	0.13	0.52	0.37
	6/16/2015	6.3	0.021	<0.001	0.021	<0.002	0.26	0.036	0.12	0.0041	0.24	0.0035	0.015	0.0016	0.0089	0.17	0.59	0.41
	8/20/2015	5.6	0.032	<0.001	0.030	<0.002	0.46	0.088	0.30	0.0084	0.24	0.011	0.027	<0.001	0.017	0.17	0.16	0.41
DUP	8/20/2015	5.0	0.031	<0.001	0.029	<0.002	0.40	0.086	0.22	0.0086	0.23	0.011	0.028	<0.001	0.017	0.17	0.15	0.40
	9/15/2015	3.0	0.069	<0.001	0.019	<0.002	0.26	0.036	0.12	0.004	--	0.0036	0.019	<0.001	0.0089	--	0.09	0.29
DUP	9/15/2015	3.2	0.023	<0.001	0.017	<0.002	0.25	0.037	0.11	0.0043	--	0.0041	0.022	0.0018	0.009	--	0.097	0.28
	11/5/2015	1.4	0.0095	<0.001	0.0067	<0.002	0.14	0.043	0.048	0.0031	0.032	0.0054	0.0073	<0.001	0.0051	0.040	0.012	0.073
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	0.01	0.00178	0.00446	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
DUP	12/15/2015	<0.10	0.00154	<0.001	<0.001	<0.01	0.02	0.00382	0.00771	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
	2/17/2016	0.85	0.0121	<0.001	0.00163	<0.01	0.19	0.0183	0.0591	0.00335	--	0.00166	0.00785	<0.001	0.00608	--	0.00528	0.01
MW-19	3/20/2015	2.2	0.039	<0.001	0.011	0.0098	0.14	0.033	0.0057	<0.001	0.17	0.0021	0.0037	<0.001	<0.001	0.098	0.16	0.27
	4/20/2015	1.5	0.0054	<0.001	0.0053	<0.002	0.096	0.018	0.027	0.027	0.060	0.0020	0.0038	<0.001	0.0022	0.037	0.088	0.098
	6/16/2015	0.99	0.024	<0.001	0.0074	<0.002	0.11	0.013	0.045	0.0015	0.160	<0.0010	0.0029	<0.001	0.0031	0.068	0.30	0.23
DUP	6/16/2015	2.5	0.0071	<0.001	0.0062	<0.002	0.11	0.012	0.046	0.0016	0.130	<0.0010	0.0051	<0.001	0.0027	0.067	0.30	0.19
	8/20/2015	0.064	<0.001	<0.001	<0.001	<0.002	0.0060	<0.001	0.0027	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003
	9/15/2015	1.4	0.02	<0.001	0.0051	0.0044	0.1100	0.016	0.037	0.0015	--	0.0016	0.0034	<0.001	0.003	--	0.15	0.16
	11/5/2015	0.089	<0.001	<0.001	<0.001	<0.002	0.010	<0.001	0.0057	<0.001	0.0043	<0.001	<0.001	<0.001	<0.001	0.0023	0.0027	0.0066
	12/15/2015	<0.10	<0.001	<0.001	<0.001	<0.01	0.0055	0.00105	0.00169	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
	2/17/2016	<0.10	<0.001	<0.001	<0.001	<0.01	0.0071	0.00176	0.00452	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003
DUP	2/17/2016	<0.10	<0.001	<0.001	<0.001	<0.01	0.0067	0.00148	0.00371	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	<0.005	<0.003

Please refer to notes at end of table.

Table 6
Groundwater Analytical Results – Dissolved-Phase Petroleum Constituents
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Sample Location	Sample Date	GRO	1,2,4 Trimethylbenzene	1,2 Dichloroethane	1,3,5- Trimethylbenzene	2-Butanone	Benzene	Cyclohexane	Ethylbenzene	Isopropylbenzene	m,p-Xylene	Methylcyclohexane	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	Toluene	Total Xylenes
		Concentrations in mg/L (ppm)																
KDHE Tier 2 Values		0.5	0.00844	0.005	0.044	4.92	0.005	7.02	0.7	0.45	--	--	0.00111	0.169	0.66	--	1	10
SVE-2	12/16/2015	<0.10	0.00651	<0.001	0.00176	<0.01	**0.00637**	0.00132	0.00812	<0.001	--	<0.001	<0.005	<0.001	<0.001	--	0.0192	0.252
SVE-4	12/16/2015	**15.5**	**1.01**	<0.005	**0.951**	<0.05	<0.005	0.0596	0.343	<0.005	--	0.0753	**0.198**	0.144	0.470	--	<0.025	0.466

Notes:

1. GRO = Gasoline-range organics quantified by IOWA OA-1.
2. Volatile organic compounds by U.S. Environmental Protection Agency (EPA) Method 8260B.
3. mg/L (ppm) = Milligrams per liter (parts per million).
4. **Bold** indicates detected concentration above the KDHE screening value.
5. < = Not detected above the method reporting limit (MRL).
6. -- = Not analyzed or not established.
7. KDHE Tier 2 Screening Values from the *Risk-Based Standards for Kansas, 5th Edition* , October 2010.
8. J = Estimated concentration. See Appendix C for more information.

Table 7
Groundwater Analytical Results – Monitored Natural Attenuation Parameters
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Sample Date	Results (mg/L)										
		Total Alkalinity (As CaCO3)	Dissolved Iron	Methane	Potassium	Nitrogen as Nitrate	Sulfate	Orthophosphate	Nitrogen/ Ammonia	Carbon Dioxide	Dissolved Oxygen	ORP (mV)
MW-1	3/20/2015	537.00	<0.20	0.097	1.57	0.161	8.08	0.16	<0.20	86	1.16	-46
	4/20/2015	465.00	<0.20	0.132	5.87	0.288	6.17	0.48	<0.20	81	0.75	-78
	6/16/2015	503.00	<0.20	0.008	0.935	0.257	36	<0.10	<0.20	81	0.95	-52
	8/20/2015	538.00	<0.20	0.051	2.65	0.144	3.42	<0.10	<0.20	85	0.88	-77
	11/5/2015	553.00	<0.20	0.408	2.21	<0.100	2.36	<0.10	0.27	NM	0.44	-111
DUP MW-1	11/5/2015	559.00	<0.20	0.441	2.21	<0.100	2.66	<0.10	0.26	NM	NM	NM
	12/16/2015	366.00	0.854	0.510	4.98	<0.100	89.6	0.475	0.973	<100	0.19	-154
	2/17/2016	483.00	<0.10	1.010	1.32	<0.100	66.9	0.033	0.496	<100	0.27	-93
MW-4	3/20/2015	467.00	<0.20	0.039	1.30	0.468	41.4	<0.10	<0.20	62	0.86	-30
	4/20/2015	319.00	<0.20	0.042	2.44	1.12	45.1	<0.10	<0.20	20	2.71	-25
	6/16/2015	419.00	<0.20	<0.0005	1.72	1.96	117	<0.10	<0.20	30	3.82	26
	8/20/2015	430.00	<0.20	<0.0005	2.76	1.94	125	<0.10	<0.20	39	3.95	43
	11/5/2015	438.00	<0.20	0.0011	1.62	1.17	111	<0.10	<0.20	NM	4.79	54
	12/15/2015	387.00	<0.10	<0.01	1.70	0.89	108	0.045	<0.25	24.5	4.60	76
	2/17/2016	447.00	<0.10	<0.01	1.06	1.52	122	<0.025	<0.25	<100	4.06	2
MW-5	3/20/2015	446.00	<0.20	0.002	0.67	5.78	167	<0.10	<0.20	48	1.07	35
	4/20/2015	434.00	<0.20	0.003	0.66	3.55	176	<0.10	<0.20	23	1.10	20
	6/16/2015	491.00	<0.20	0.002	0.68	5.18	162	<0.10	<0.20	60	1.49	149
	8/20/2015	499.00	<0.20	0.001	1.01	6.09	170	<0.10	<0.20	54	1.51	0
	11/5/2015	446.00	<0.20	<0.0005	0.76	6.18	157	<0.10	<0.20	NM	2.25	67
	12/15/2015	492.00	<0.10	<0.01	<1.0	6.49	168	<0.025	<0.25	<100	1.88	107
	2/17/2016	484.00	<0.10	<0.01	<1.0	6.16	153	<0.025	<0.25	<100	0.71	36
MW-17	3/20/2015	430.00	<0.20	0.005	18.40	0.175	39.5	<0.10	<0.20	63	0.61	42
	4/20/2015	455.00	<0.20	0.003	15.70	0.280	36.0	<0.10	<0.20	40	0.83	-46
	6/16/2015	471.00	<0.20	0.011	2.21	0.258	32.8	<0.10	<0.20	72	0.92	-10
	8/20/2015	490.00	<0.20	0.003	1.12	0.153	56.3	<0.10	<0.20	66	0.67	-98
	11/5/2015	482.00	<0.20	0.017	3.47	<0.100	17.6	<0.10	<0.20	NM	0.58	-129
	12/16/2015	470.00	<0.10	0.034	2.06	<0.100	9.5	<0.025	<0.25	<100	0.42	-113
	2/17/2016	475.00	<0.10	0.022	1.97	<0.10	<5.0	<0.025	<0.25	<100	0.35	-105

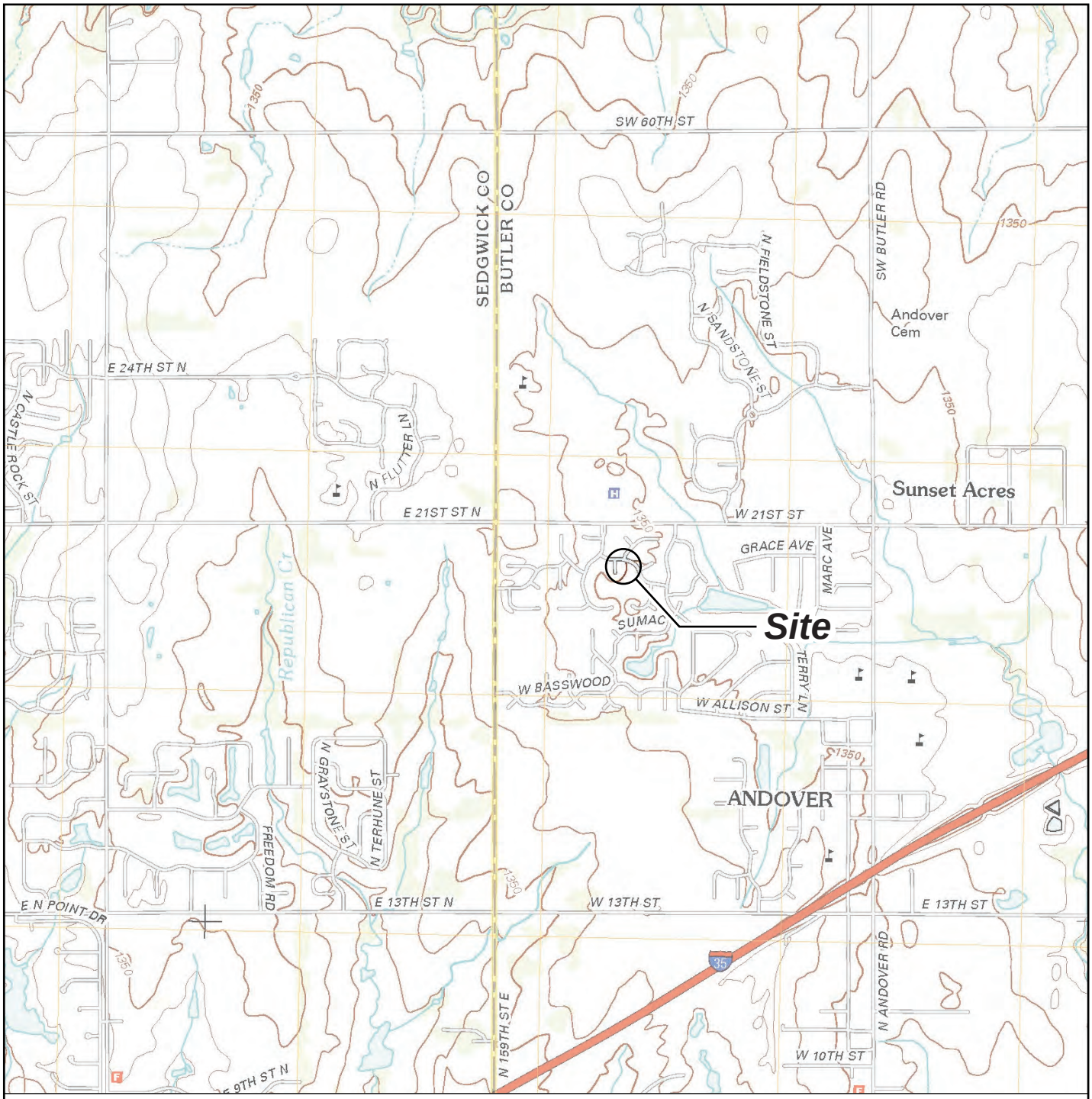
Please refer to notes at end of table.

Table 7
Groundwater Analytical Results – Monitored Natural Attenuation Parameters
Groundwater Pilot Test
Andover Quail Crossing Release Site
Andover, Kansas

Well ID	Sample Date	Results (mg/L)										
		Total Alkalinity (As CaCO3)	Dissolved Iron	Methane	Potassium	Nitrogen as Nitrate	Sulfate	Orthophosphate	Nitrogen/ Ammonia	Carbon Dioxide	Dissolved Oxygen	ORP (mV)
MW-18	3/20/2015	394.00	<0.20	0.006	7.63	0.175	27.8	<0.10	<0.20	44	0.68	-13
	4/20/2015	343.00	<0.20	0.008	21.60	0.415	38.0	<0.10	<0.20	35	0.79	62
	6/16/2015	406.00	<0.20	0.004	9.15	0.387	27.0	<0.10	<0.20	42	0.93	-18
	8/20/2015	419.00	<0.20	0.001	3.68	0.168	13.1	<0.10	<0.20	41	0.97	-57
DUP	8/20/2015	430.00	<0.20	0.002	4.02	0.181	14.0	<0.10	<0.20	37	NM	NM
MW-18	11/5/2015	420.00	<0.20	0.002	1.69	<0.100	18.7	<0.10	NM	NM	1.01	-100
	12/15/2015	418.00	<0.10	<0.01	1.55	<0.100	18.1	0.229	<0.25	<100	0.98	8
DUP	12/15/2015	397.00	<0.10	<0.01	1.48	<0.100	17.1	0.054	<0.25	25.1	NM	NM
	2/17/2016	434.00	<0.10	<0.01	1.80	<0.100	13.6	<0.025	<0.25	<100	5.1	-70
MW-19	3/20/2015	361.00	<0.20	0.002	8.95	0.466	60.7	<0.10	<0.20	23	1.57	50
	4/20/2015	332.00	<0.20	0.003	10.70	0.258	53.5	<0.10	<0.20	18	1.36	-61
	6/16/2015	349.00	<0.20	0.005	7.75	0.222	40.6	<0.10	<0.20	22	0.49	-82
DUP	6/16/2015	351.00	<0.20	0.007	8.17	0.216	40.0	<0.10	<0.20	21	NM	NM
	8/20/2015	356.00	<0.20	<0.0005	3.99	0.146	31.1	<0.10	<0.20	28	0.70	-53
MW-19	11/5/2015	393.00	<0.20	0.001	4.59	0.323	28.0	<0.10	<0.20	NM	1.97	-11
	12/15/2015	378.00	<0.10	0.0108	2.18	0.602	26.8	0.084	<0.25	<20	2.05	28
	2/17/2016	368.00	<0.10	<0.01	2.12	0.196	25.5	<0.025	<0.25	<20	1.33	11
DUP	2/17/2016	376.00	<0.10	<0.01	1.91	0.275	24.7	<0.025	<0.25	23.3	1.33	11

Notes:

1. mg/L = Milligrams per liter.
2. mV = Millivolts.
3. < = Analyte not detected at the reporting limit shown.
4. NM = Not measured.



Note: Base map prepared from USGS 7.5-minute quadrangles of Andover, KS, dated 2012 as provided by USGS.gov.

0 2,000 4,000

Approximate Scale in Feet

KANSAS

N

Site Location Map

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1641-08	Figure
	April 2106		1

N

Legend:

- **MW-1** Monitoring Well Location
- Irrigation Well
- **VP-1** Soil Vapor Monitoring Point
- **B-1** Boring Location
- **SVE-1** Soil Vapor Extraction Pilot Test Well
- Property Line
- Pipeline
- Pipeline Easement Boundary
- HOA — Lot Owned by Quail Crossing Homeowner's Association
- Deactivated Irrigation Well
- Excavation Area

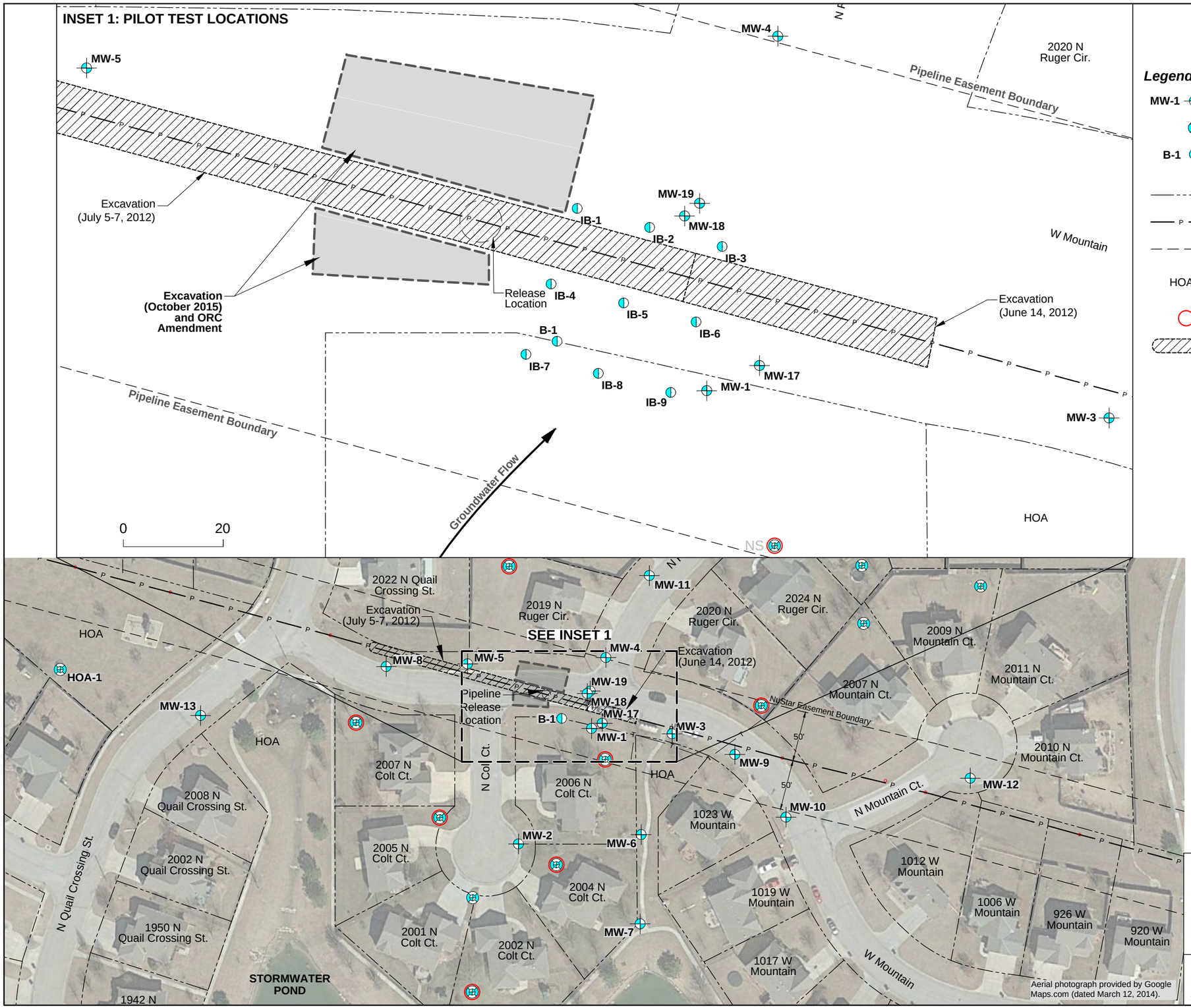
0 100 200

Scale in Feet

Site Plan and Sampling Location Map

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

APEX	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number 1641-08 April 2016	Figure 2



Legend:

- **MW-1** Monitoring Well Location
- Irrigation Well
- **B-1** Soil Boring Location (July 2013) (IB = Injection Boring Location)
- Property Line
- Pipeline
- Pipeline Easement Boundary
- HOA Lot Owned by Quail Crossing Homeowner's Association
- Deactivated Irrigation Well
- Excavation Area

N

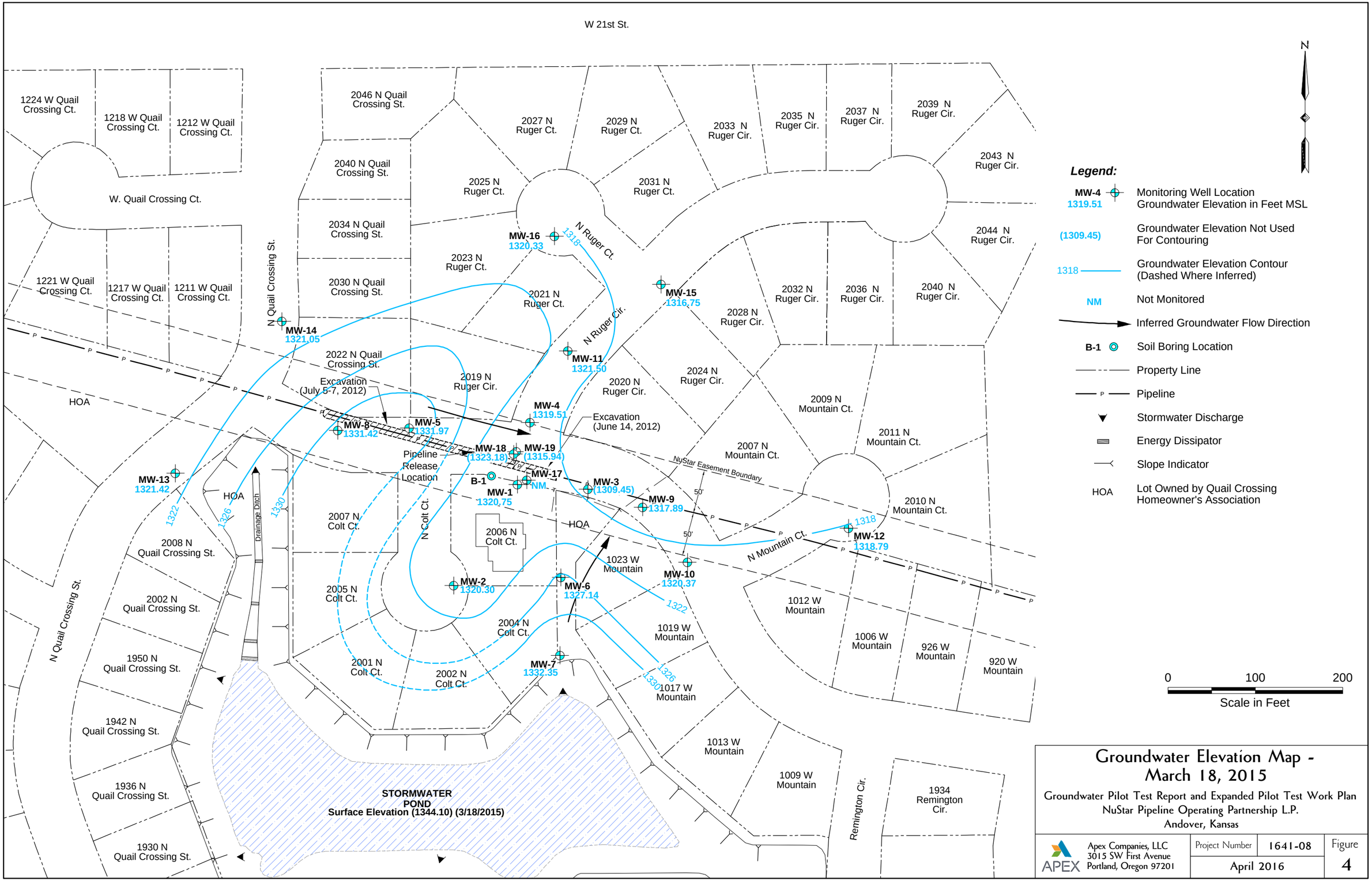
0 100 200

Scale in Feet

Pilot Test Injection Boring and Monitoring Well Locations

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

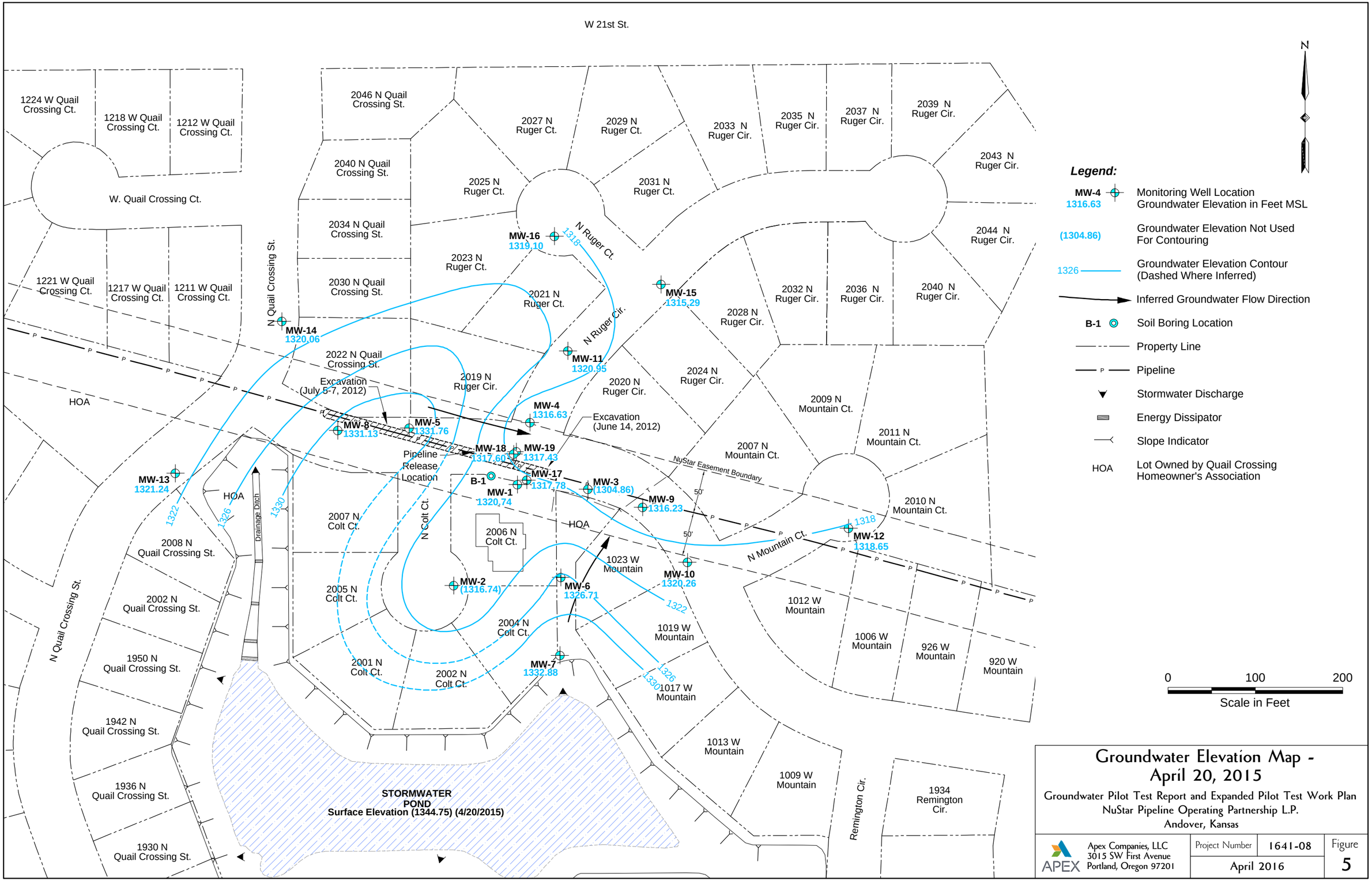
APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1641-08	Figure
	April 2016		3



Groundwater Elevation Map - March 18, 2015

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

APEX	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number 1641-08 April 2016	Figure 4

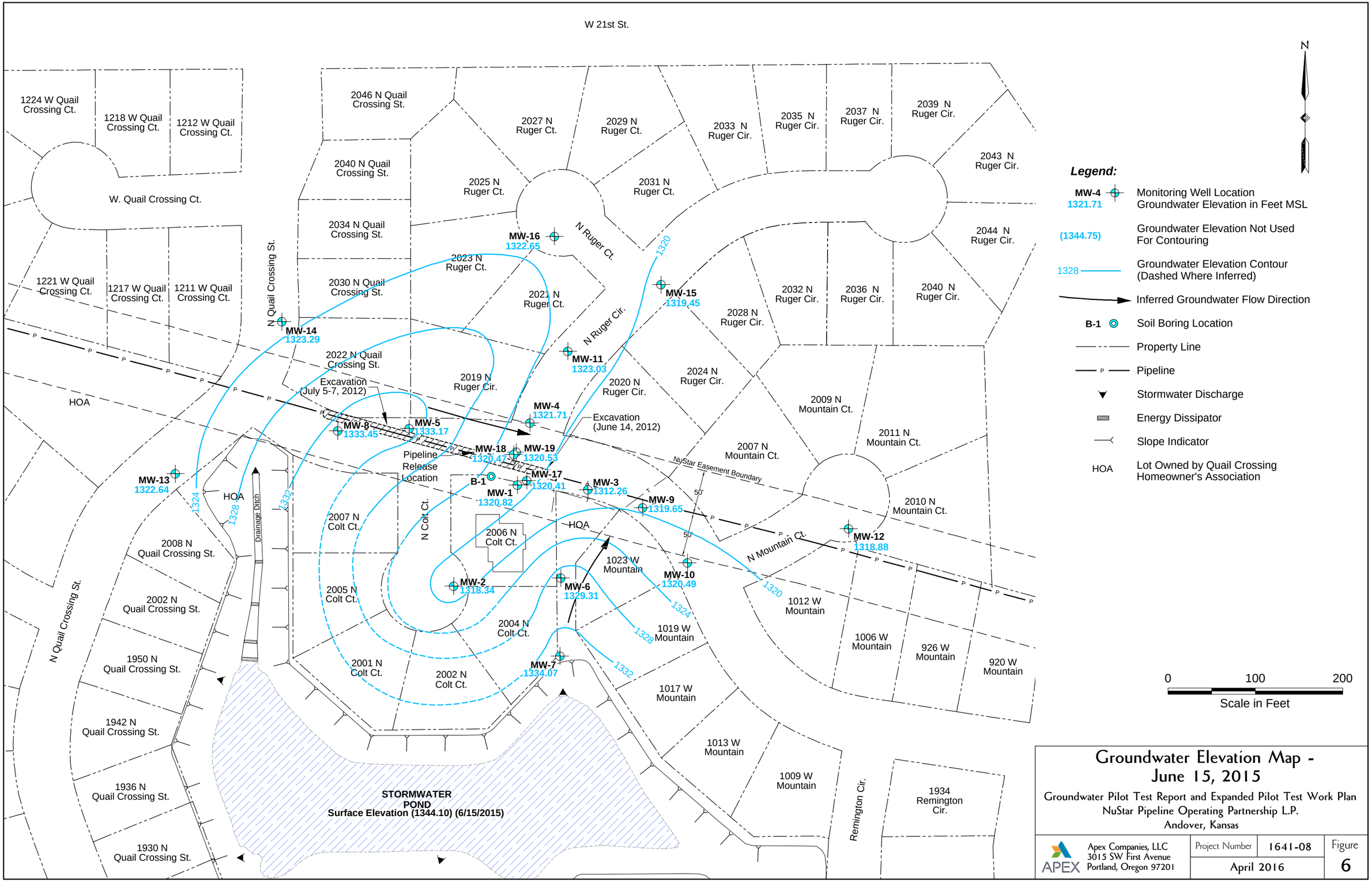


Groundwater Elevation Map - April 20, 2015

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

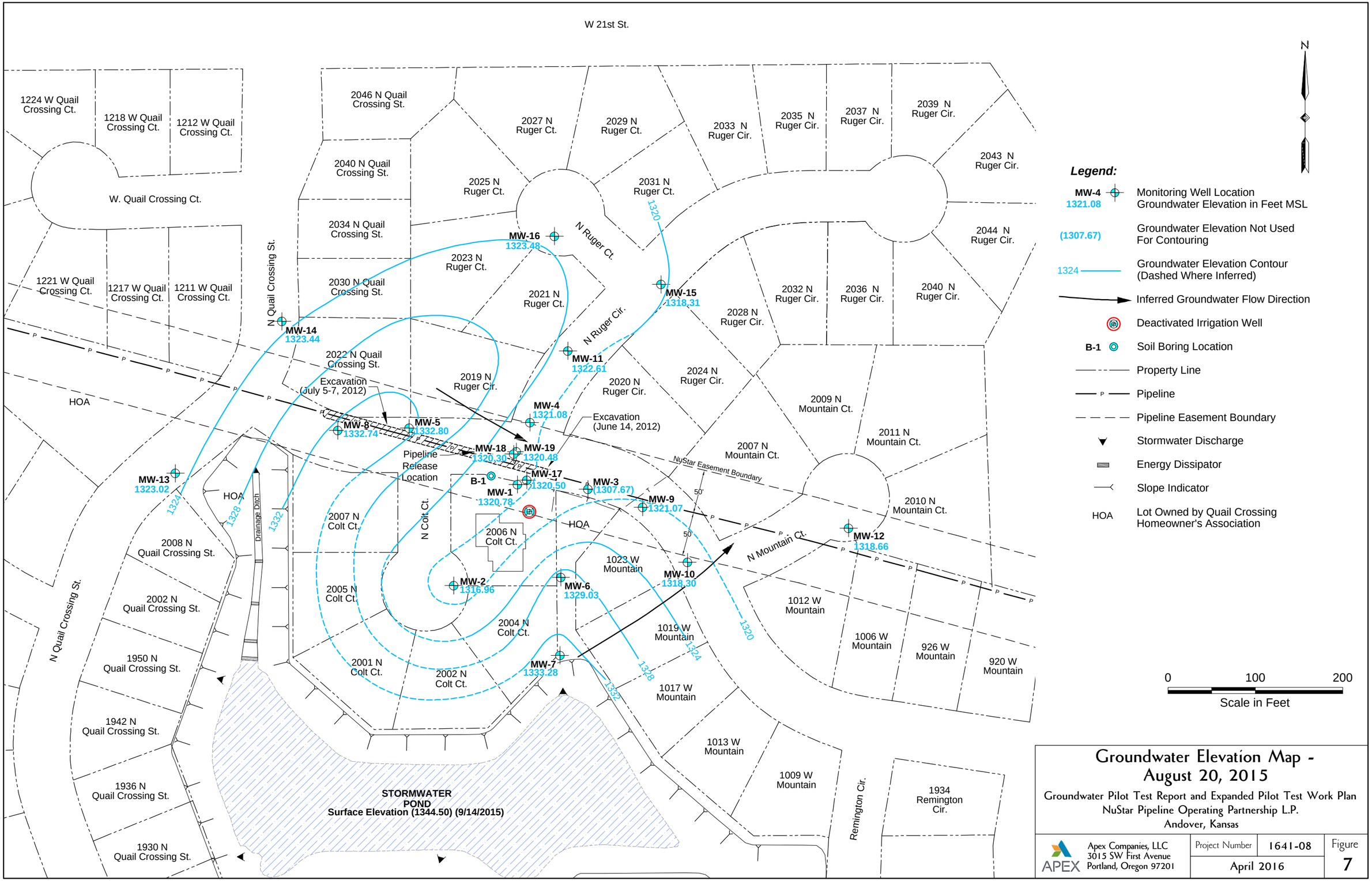
Project Number	1641-08	Figure
April 2016		5



Groundwater Elevation Map - June 15, 2015

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

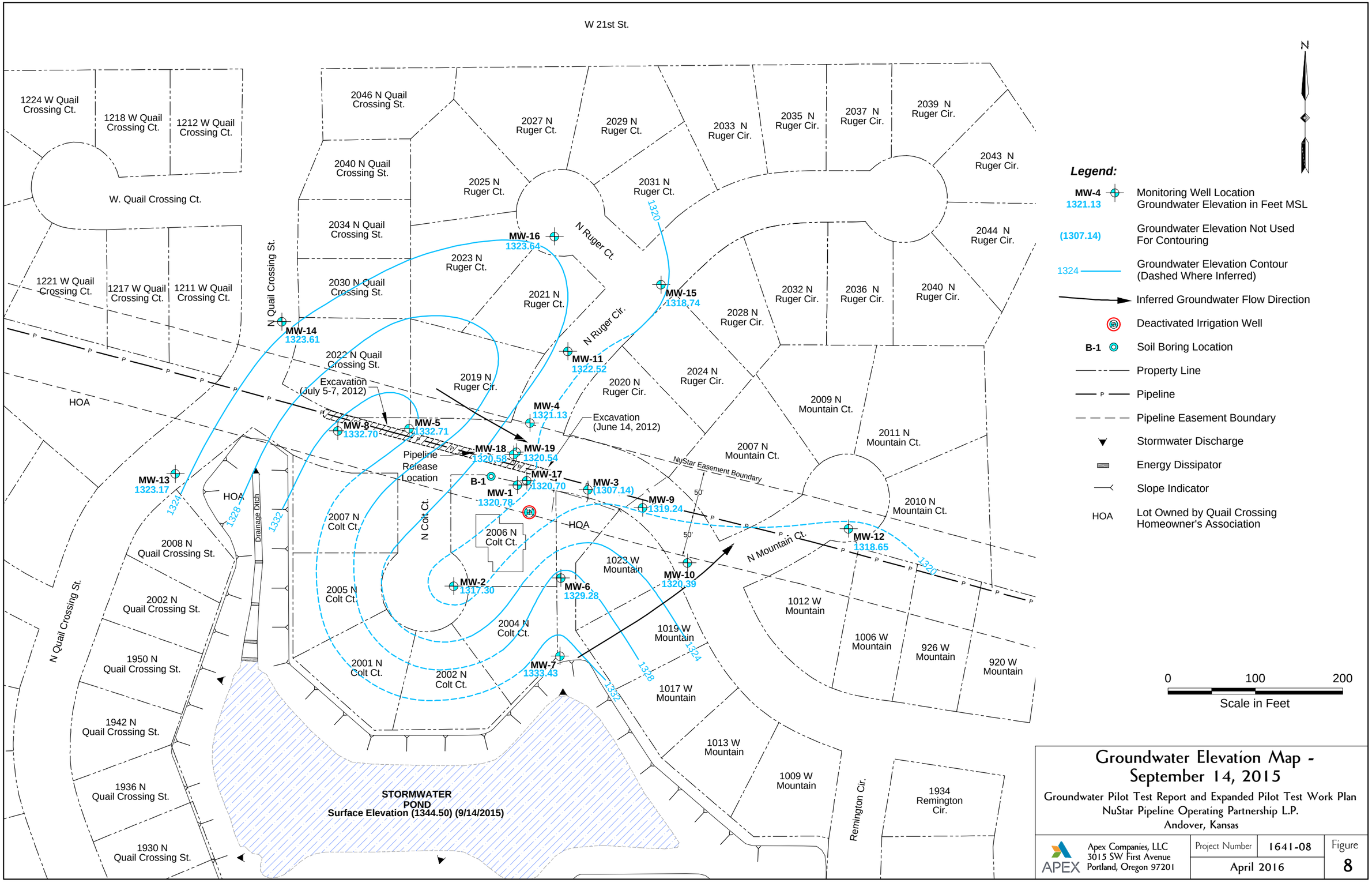
APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1641-08	Figure
	April 2016		6



Groundwater Elevation Map - August 20, 2015

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

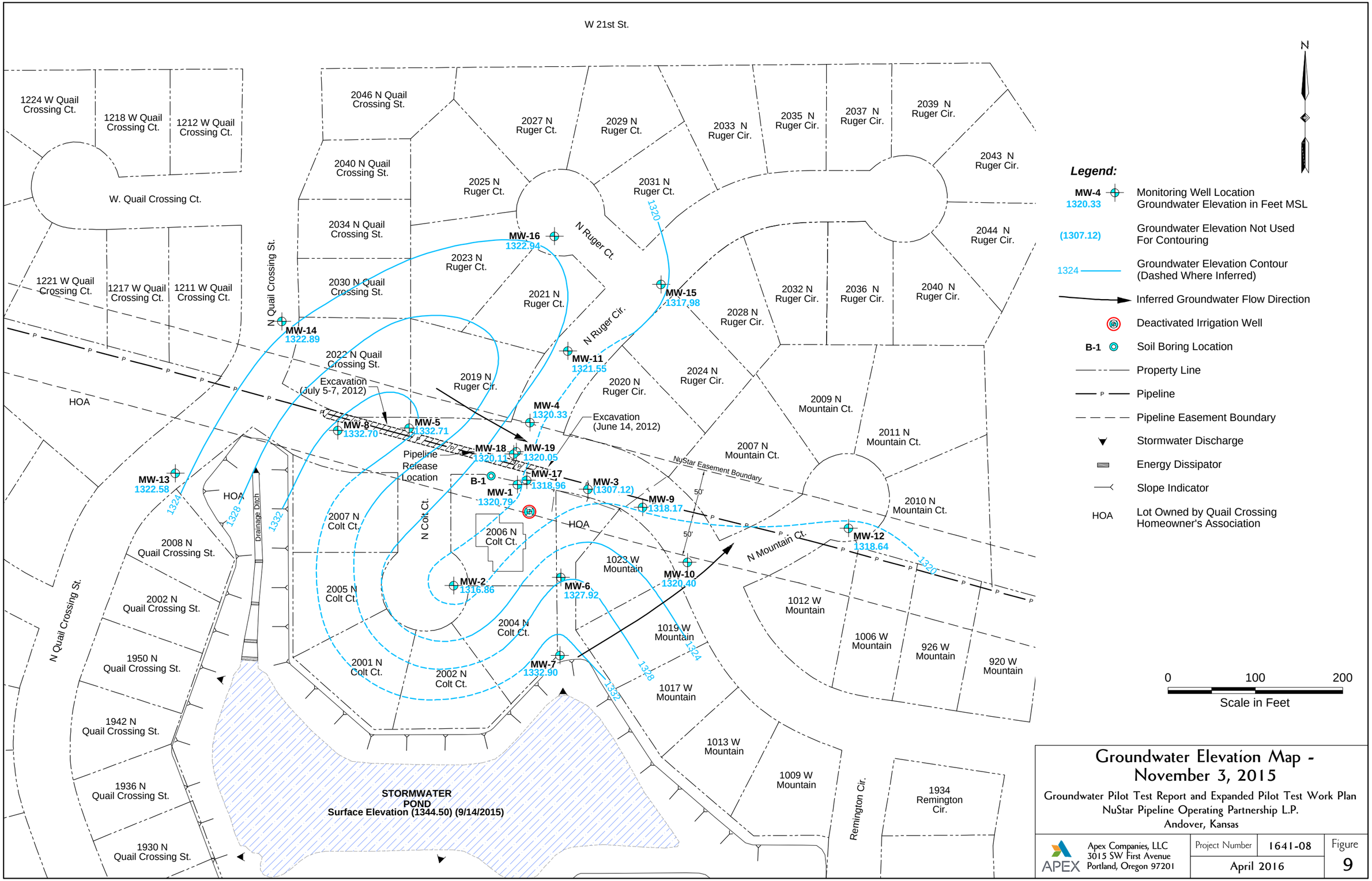
APEX	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number 1641-08 April 2016	Figure 7



Groundwater Elevation Map - September 14, 2015

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

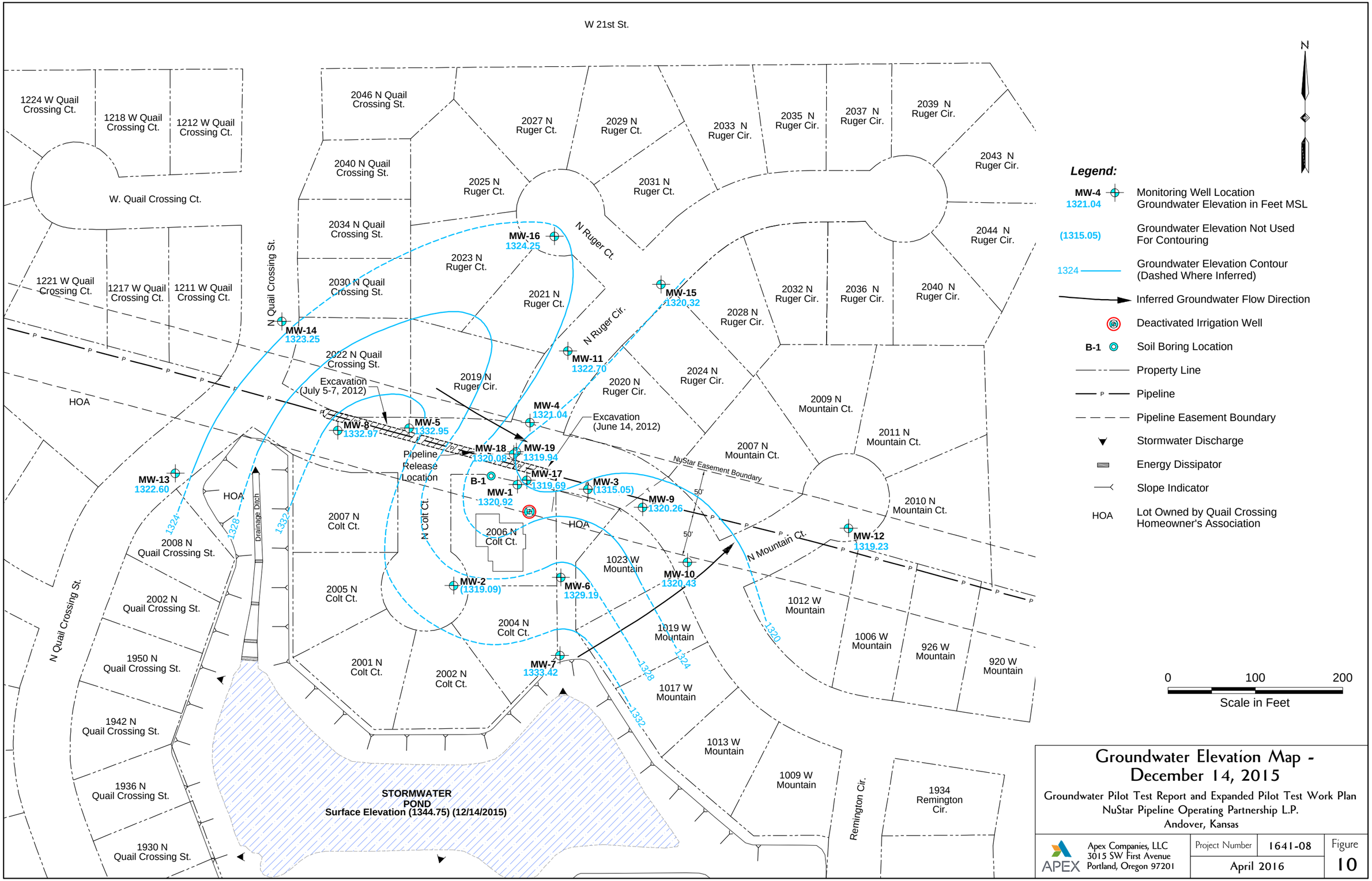
APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1641-08	Figure
	April 2016		8



Groundwater Elevation Map - November 3, 2015

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

APEX	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number 1641-08 April 2016	Figure 9

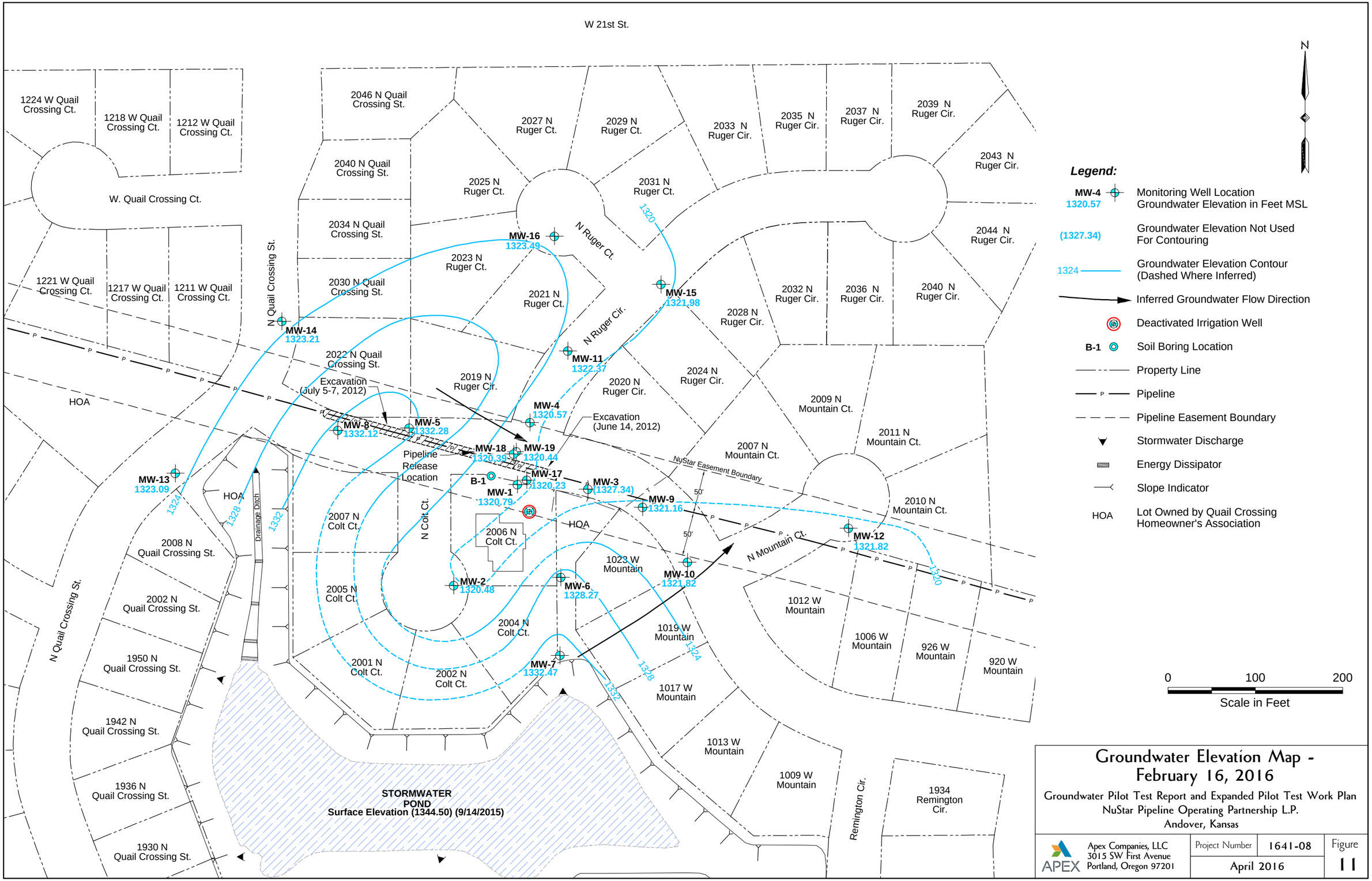


Groundwater Elevation Map - December 14, 2015

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

APEX
Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

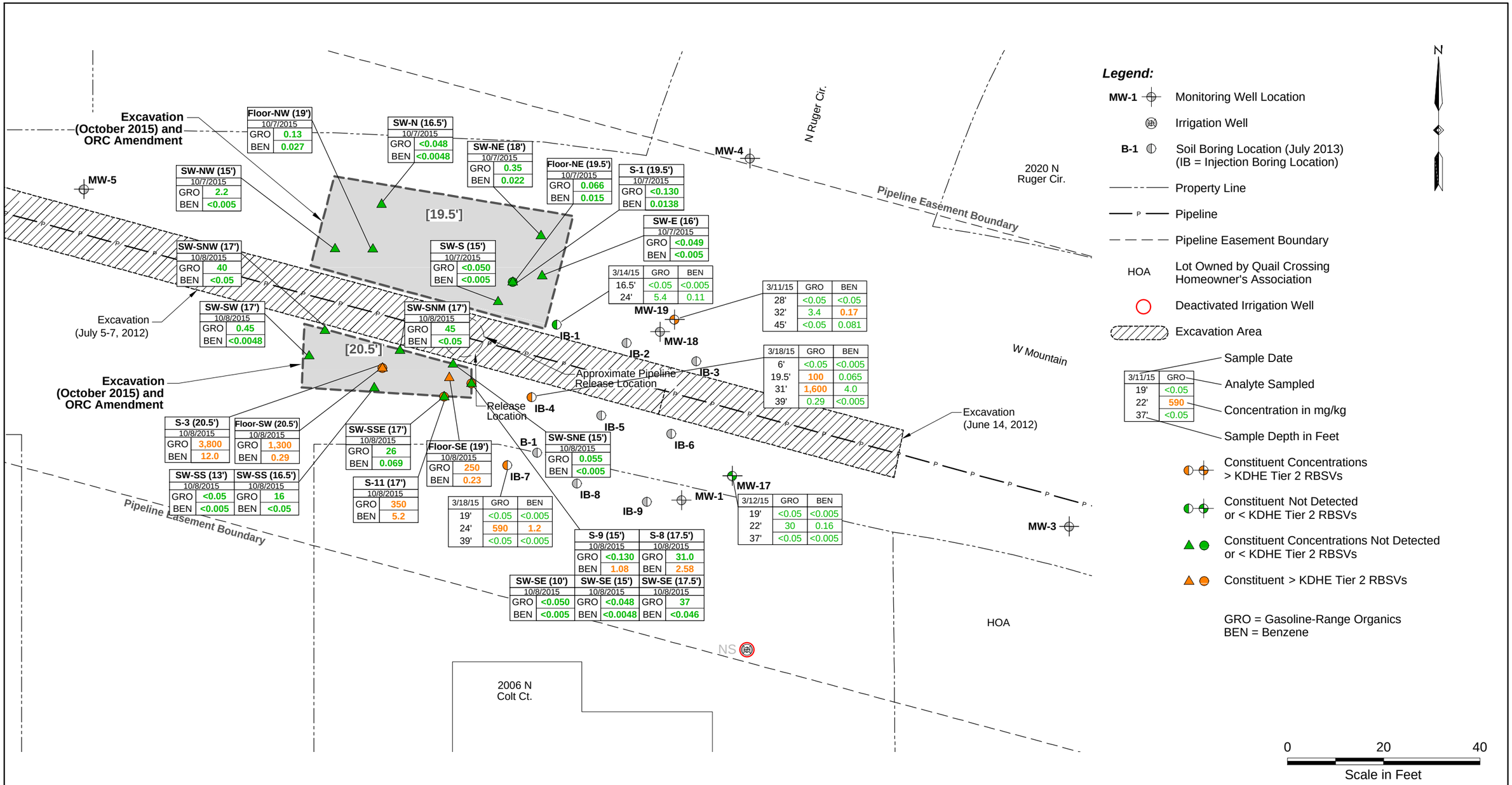
Project Number	1641-08	Figure
April 2016		10



Groundwater Elevation Map - February 16, 2016

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

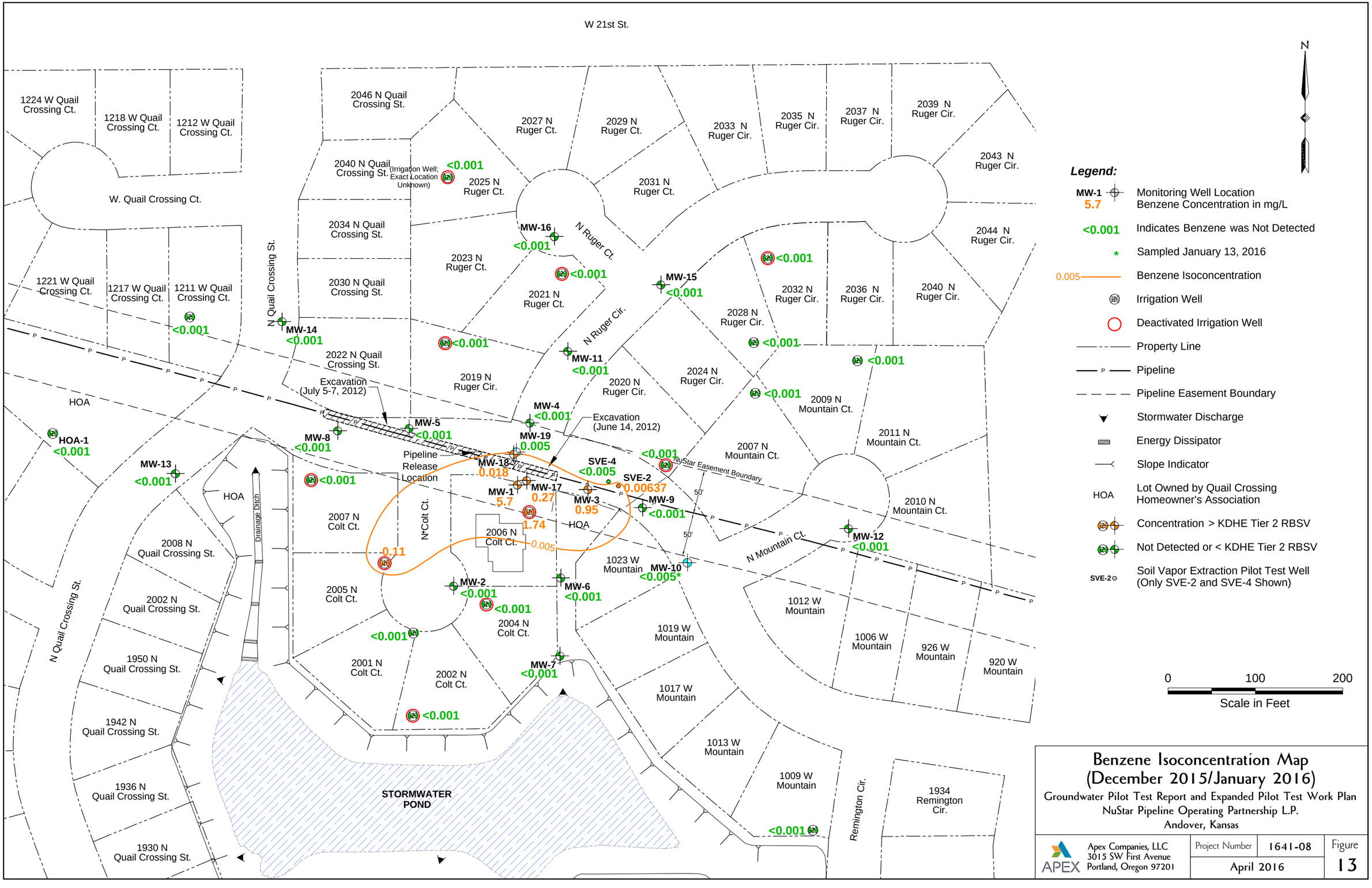
APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1641-08	Figure
	April 2016		11



Petroleum Constituents in Soil - March and October 2015

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1641-08	Figure
	April 2016		12

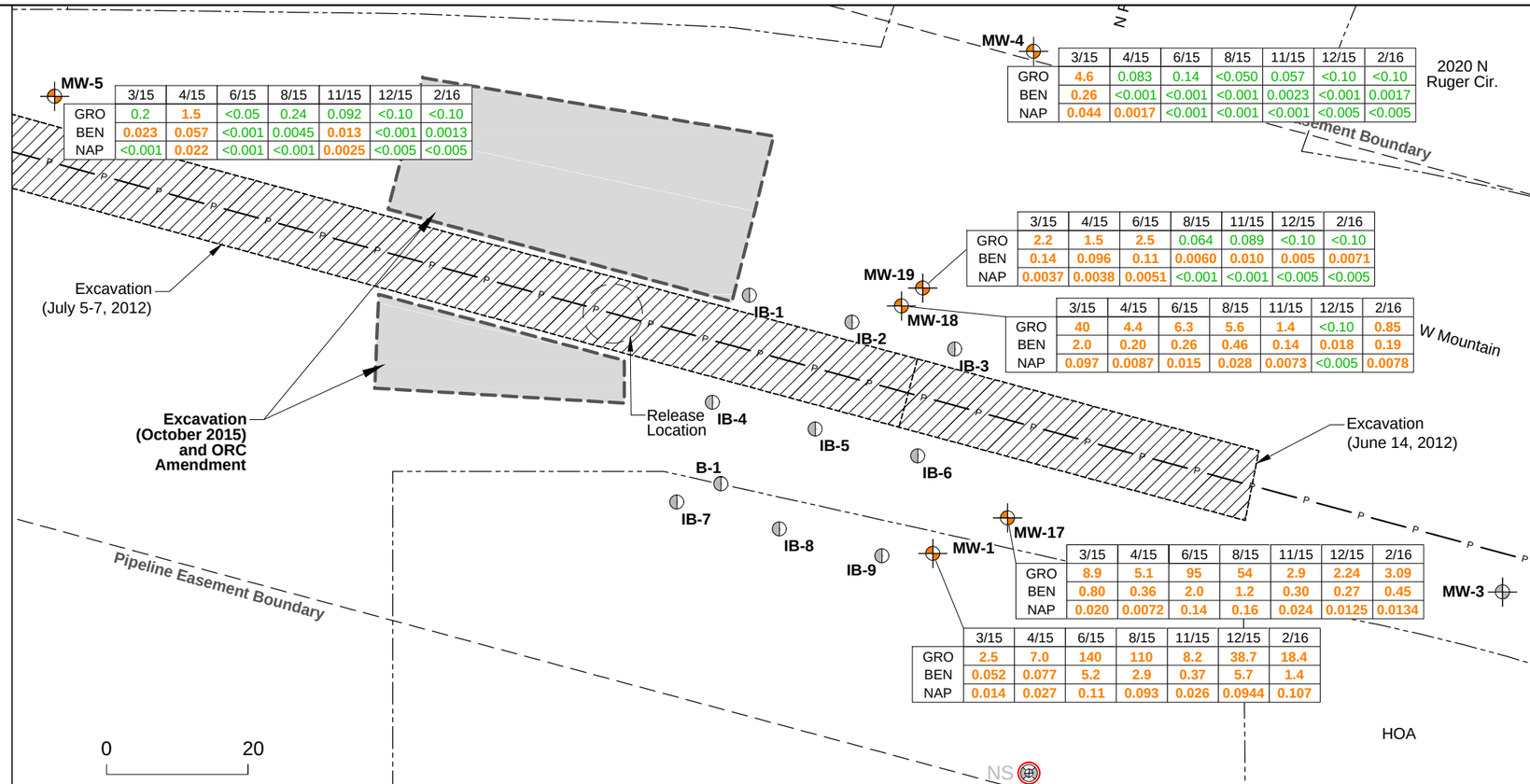


Benzene Isoconcentration Map (December 2015/January 2016)

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

APEX
Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number	1641-08	Figure
April 2016		13



	3/15	4/15	6/15	8/15	11/15	12/15	2/16
GRO	0.2	1.5	<0.05	0.24	0.092	<0.10	<0.10
BEN	0.023	0.057	<0.001	0.0045	0.013	<0.001	0.0013
NAP	<0.001	0.022	<0.001	<0.001	0.0025	<0.005	<0.005

	3/15	4/15	6/15	8/15	11/15	12/15	2/16
GRO	4.6	0.083	0.14	<0.050	0.057	<0.10	<0.10
BEN	0.26	<0.001	<0.001	<0.001	0.0023	<0.001	0.0017
NAP	0.044	0.0017	<0.001	<0.001	<0.001	<0.005	<0.005

	3/15	4/15	6/15	8/15	11/15	12/15	2/16
GRO	2.2	1.5	2.5	0.064	0.089	<0.10	<0.10
BEN	0.14	0.096	0.11	0.0060	0.010	0.005	0.0071
NAP	0.0037	0.0038	0.0051	<0.001	<0.001	<0.005	<0.005

	3/15	4/15	6/15	8/15	11/15	12/15	2/16
GRO	40	4.4	6.3	5.6	1.4	<0.10	0.85
BEN	2.0	0.20	0.26	0.46	0.14	0.018	0.19
NAP	0.097	0.0087	0.015	0.028	0.0073	<0.005	0.0078

	3/15	4/15	6/15	8/15	11/15	12/15	2/16
GRO	8.9	5.1	95	54	2.9	2.24	3.09
BEN	0.80	0.36	2.0	1.2	0.30	0.27	0.45
NAP	0.020	0.0072	0.14	0.16	0.024	0.0125	0.0134

	3/15	4/15	6/15	8/15	11/15	12/15	2/16
GRO	2.5	7.0	140	110	8.2	38.7	18.4
BEN	0.052	0.077	5.2	2.9	0.37	5.7	1.4
NAP	0.014	0.027	0.11	0.093	0.026	0.0944	0.107

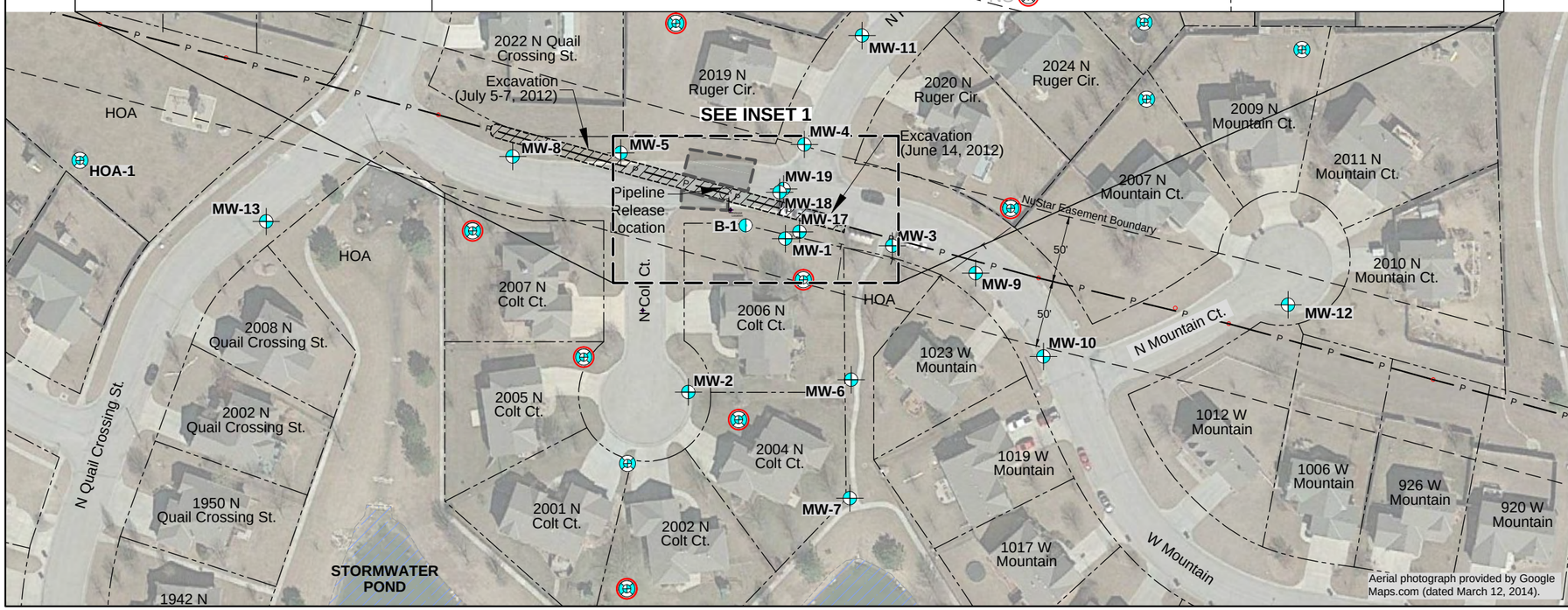
Legend:

- **MW-1** Monitoring Well Location
- Irrigation Well
- **B-1** Soil Boring Location (July 2013) (IB = Injection Boring Location)
- Property Line
- Pipeline
- Pipeline Easement Boundary
- HOA — Lot Owned by Quail Crossing Homeowner's Association
- Deactivated Irrigation Well
- Excavation Area
- 2/16 — Date Sampled (MM/YY)
- GRO <0.10 — Concentration in mg/L
- BEN 0.0071 — Analyte Sampled
- NAP <0.005
- Concentration > KDHE Tier 2 RBSV
- Not Detected or < KDHE Tier 2 RBSV

GRO = Gasoline-Range Organics
BEN = Benzene
NAP = Naphthalene

N

0 100 200
Scale in Feet



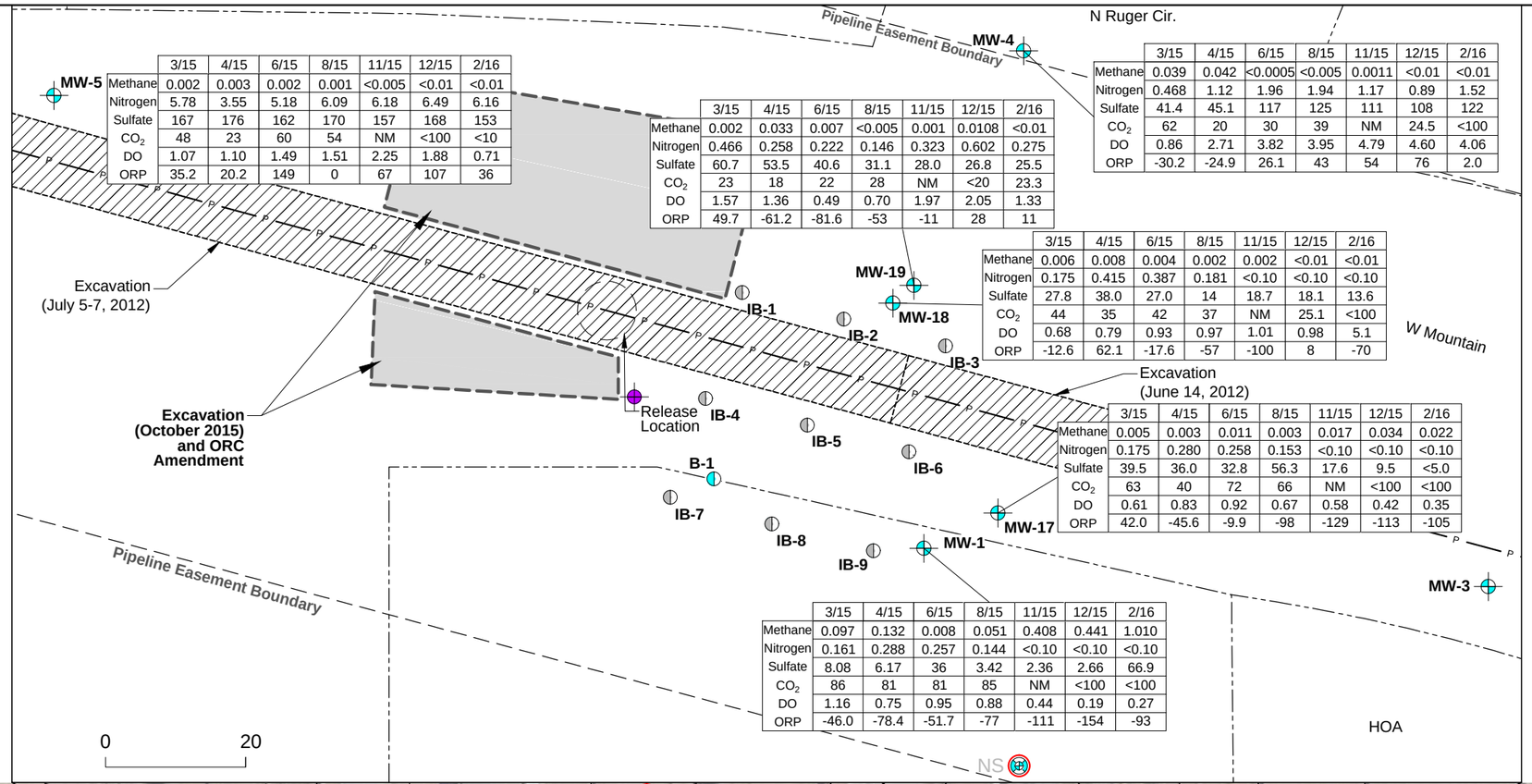
Aerial photograph provided by Google Maps.com (dated March 12, 2014).

Dissolved-Phase Constituents in Groundwater - March 2015 to February 2016

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

APEX
Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number	1641-08	Figure
April 2016		14



	3/15	4/15	6/15	8/15	11/15	12/15	2/16
Methane	0.002	0.003	0.002	0.001	<0.005	<0.01	<0.01
Nitrogen	5.78	3.55	5.18	6.09	6.18	6.49	6.16
Sulfate	167	176	162	170	157	168	153
CO_2	48	23	60	54	NM	<100	<10
DO	1.07	1.10	1.49	1.51	2.25	1.88	0.71
ORP	35.2	20.2	149	0	67	107	36

	3/15	4/15	6/15	8/15	11/15	12/15	2/16
Methane	0.002	0.033	0.007	<0.005	0.001	0.0108	<0.01
Nitrogen	0.466	0.258	0.222	0.146	0.323	0.602	0.275
Sulfate	60.7	53.5	40.6	31.1	28.0	26.8	25.5
CO_2	23	18	22	28	NM	<20	23.3
DO	1.57	1.36	0.49	0.70	1.97	2.05	1.33
ORP	49.7	-61.2	-81.6	-53	-11	28	11

	3/15	4/15	6/15	8/15	11/15	12/15	2/16
Methane	0.039	0.042	<0.0005	<0.005	0.0011	<0.01	<0.01
Nitrogen	0.468	1.12	1.96	1.94	1.17	0.89	1.52
Sulfate	41.4	45.1	117	125	111	108	122
CO_2	62	20	30	39	NM	24.5	<100
DO	0.86	2.71	3.82	3.95	4.79	4.60	4.06
ORP	-30.2	-24.9	26.1	43	54	76	2.0

	3/15	4/15	6/15	8/15	11/15	12/15	2/16
Methane	0.006	0.008	0.004	0.002	0.002	<0.01	<0.01
Nitrogen	0.175	0.415	0.387	0.181	<0.10	<0.10	<0.10
Sulfate	27.8	38.0	27.0	14	18.7	18.1	13.6
CO_2	44	35	42	37	NM	25.1	<100
DO	0.68	0.79	0.93	0.97	1.01	0.98	5.1
ORP	-12.6	62.1	-17.6	-57	-100	8	-70

	3/15	4/15	6/15	8/15	11/15	12/15	2/16
Methane	0.005	0.003	0.011	0.003	0.017	0.034	0.022
Nitrogen	0.175	0.280	0.258	0.153	<0.10	<0.10	<0.10
Sulfate	39.5	36.0	32.8	56.3	17.6	9.5	<5.0
CO_2	63	40	72	66	NM	<100	<100
DO	0.61	0.83	0.92	0.67	0.58	0.42	0.35
ORP	42.0	-45.6	-9.9	-98	-129	-113	-105

	3/15	4/15	6/15	8/15	11/15	12/15	2/16
Methane	0.097	0.132	0.008	0.051	0.408	0.441	1.010
Nitrogen	0.161	0.288	0.257	0.144	<0.10	<0.10	<0.10
Sulfate	8.08	6.17	36	3.42	2.36	2.66	66.9
CO_2	86	81	81	85	NM	<100	<100
DO	1.16	0.75	0.95	0.88	0.44	0.19	0.27
ORP	-46.0	-78.4	-51.7	-77	-111	-154	-93

Legend:

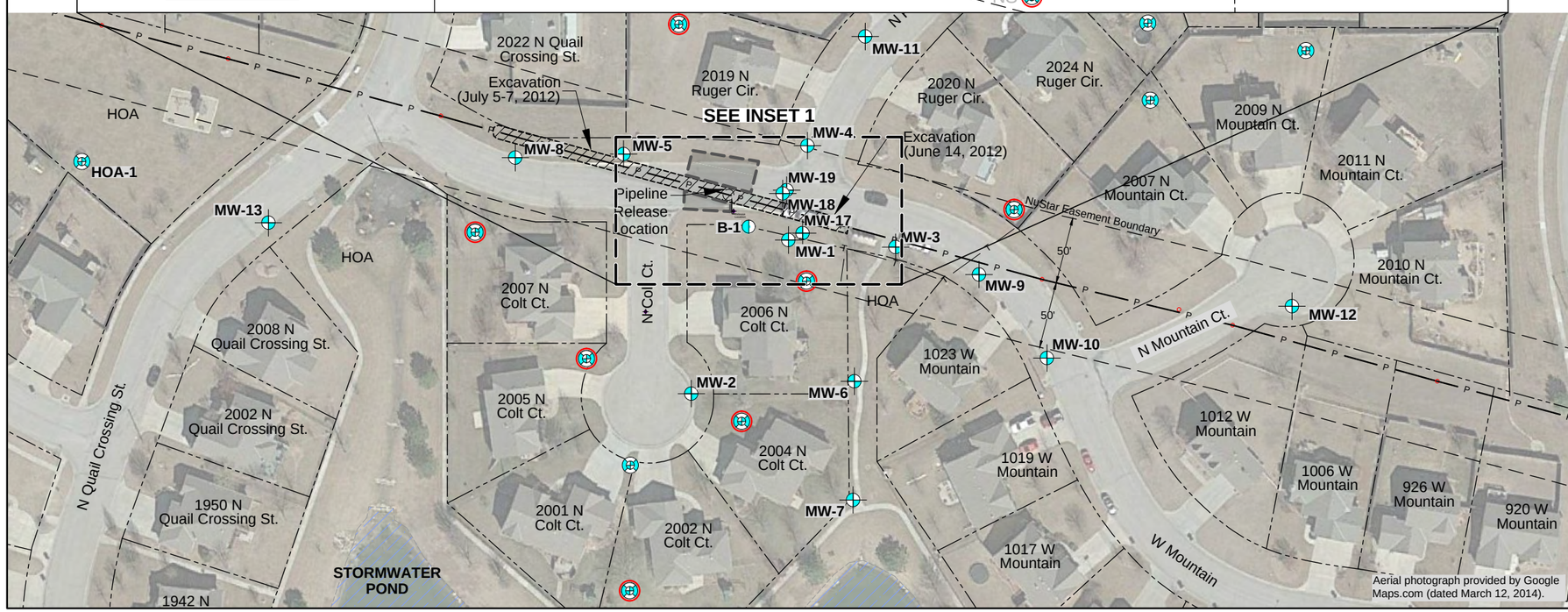
- **MW-1** — Monitoring Well Location
- Irrigation Well
- **B-1** — Soil Boring Location (July 2013) (IB = Injection Boring Location)
- Property Line
- Pipeline
- Pipeline Easement Boundary
- HOA — Lot Owned by Quail Crossing Homeowner's Association
- Deactivated Irrigation Well
- Excavation Area

	3/15
Methane	0.097
Nitrogen	0.161
Sulfate	8.08
CO_2	86
DO	1.16
ORP	-46.0

Date Sampled (MM/YY)
Concentration in mg/L
Analyte Sampled

N

0 100 200
Scale in Feet

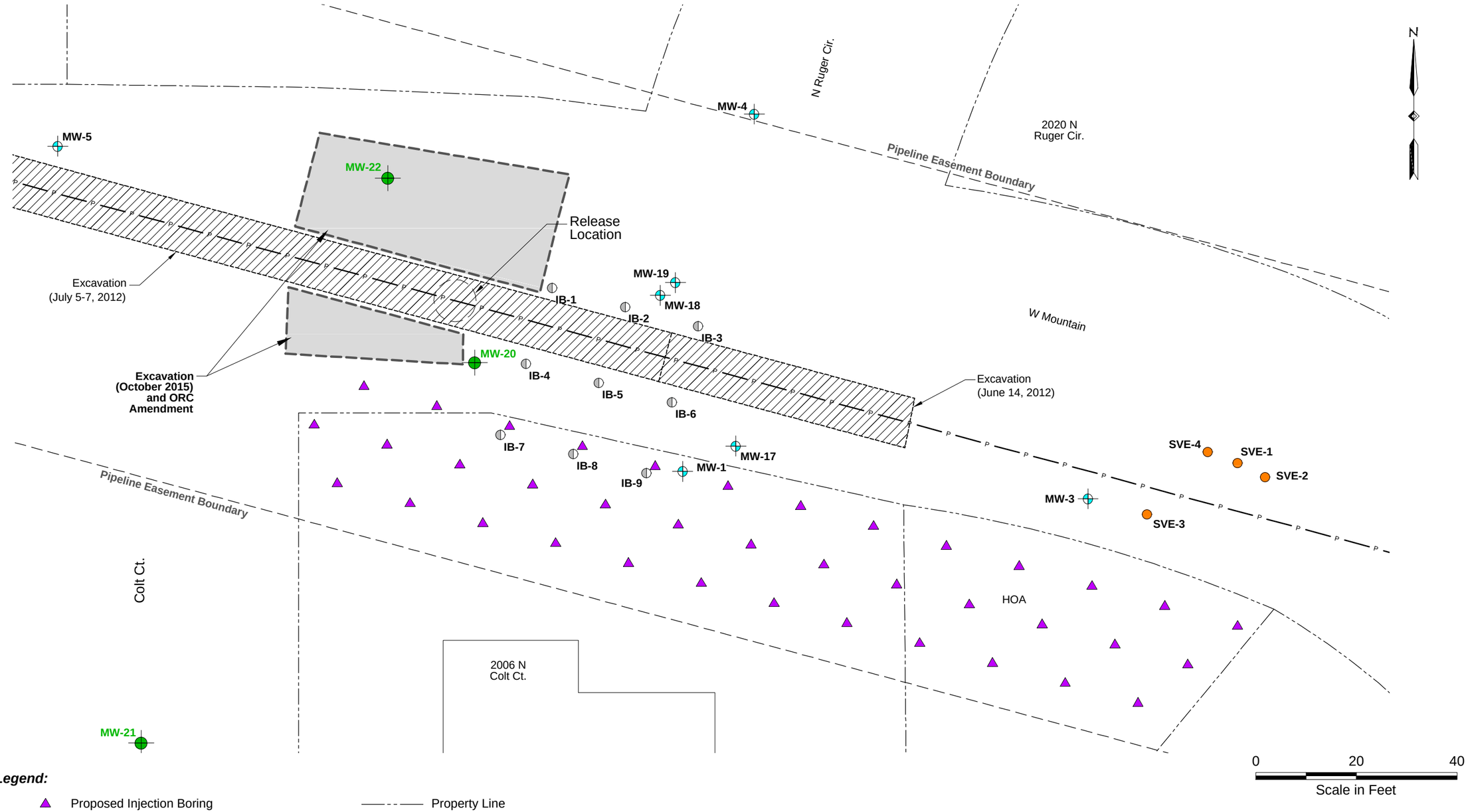


Aerial photograph provided by Google Maps.com (dated March 12, 2014).

Monitored Natural Attenuation Parameters - March 2015 to February 2016

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

APEX	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number 1641-08 April 2016	Figure 15



Legend:

- Proposed Injection Boring
- MW-20 Proposed Monitoring Well
- MW-1 Monitoring Well Location
- IB-1 Injection Boring (March 2015)
- SVE-1 Soil Vapor Extraction Pilot Test Well
- Property Line
- Pipeline
- HOA Lot Owned by Quail Crossing Homeowner's Association

Expanded Pilot Test - Proposed Injection Boring Locations

Groundwater Pilot Test Report and Expanded Pilot Test Work Plan
NuStar Pipeline Operating Partnership L.P.
Andover, Kansas

APEX
Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number	1641-08	Figure
April 2016		16

Appendix A

Field Notes

WELL GAGING DATA SHEET

APEX

		Job Number:	32000441-08.003
Client:	NSTM	Date:	20150218
Project:	Antioch / colfCart	Sampler:	
Weather:	Cloudy	Time In/Out:	

WATER LEVEL DATA

	Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
	2006	15:49	—	45.55	—	—	—	
	MW-18	16:05	—	27.93	41.09	—	—	16:09 Began Development
	MW-18	16:20	—	—	—	—	—	16:20 Dry
	MW-19	16:30	—	35.14	42.85	—	—	16:32 Began Development
	MW-19	16:33	water	clear	16:34 back to	cloudy		dry at 16:35
03-19	MW-11	13:56	—	29.84	—	—	—	
	MW-14	14:07	—	33.94	—	—	—	
	MW-13	14:14	—	33.16	—	—	—	
	MW-8	14:17	—	21.96	—	—	—	
	MW-5	14:19	—	20.80	—	—	—	
	MW-2	14:22	—	32.87	—	—	—	
	MW3	14:25	—	41.02	—	—	—	
	MW-6	14:28	—	22.62	—	—	—	
	MW-7	14:31	—	16.63	—	—	—	
	Pond	14:33	—	—	—	—	—	1343.6
	MW9	14:36	—	31.59	—	—	—	
	MW-10	14:39	—	28.42	—	—	—	
	MW12	14:42	—	30.95	—	—	—	
	MW-4	14:45	—	31.22	—	—	—	
16	MW-16	14:48	—	31.80	—	—	—	
	MW-15	1454	—	35.04	—	—	—	
3-20	MW-1	1055	—	31.38	—	—	—	

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-4	Job Number:	32000164108-003
Client:	NUSTAR	Date:	3-20-2015
Project:	Ardmore / Colt Creek	Sampler:	PN
Weather:	cool, sunny	Time In/Out:	0930 / 1015

WELL DATA

Well Depth:	—	Well Diameter:	2	Water Height	—
Depth to Water:	31.22	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	35
Sampling Method:	PN	Tubing Type:	poly

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0945	0.3	0.3	31.28	0.3	6.45	14.83	1.047	11.48	5.2	—	CL
0948	0.9	1.2	31.58	0.3	6.49	15.46	1.051	1.69	-16.7	—	CL
0951	0.9	2.1	31.85	0.3	6.50	15.51	1.050	1.24	-24.3	—	SC
0954	0.9	3.0	32.07	0.3	6.51	15.49	1.050	0.99	-28.3	—	AC
0957	0.9	3.9	32.33	0.3	6.52	15.77	1.050	0.86	-30.2	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-4	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	0959	Final Depth to Water:	33.46	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-5	Job Number:	32001641 08-004
Client:	NUSTAR	Date:	3-20-2015
Project:	Arrowe Colt Court	Sampler:	PN
Weather:	cool, sunny	Time In/Out:	1020/1050

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	20.80	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	23
Sampling Method:	PN	Tubing Type:	poly

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1026	0.3	0.3	21.06	0.3	6.85	16.37	1.449	2.42	28.9	—	C
1029	0.9	1.2	21.29	0.3	6.78	16.45	1.451	1.07	[illegible]	—	C
1032	0.9	2.1	21.43	0.3	6.75	16.45	1.452	1.13	31.3	—	C
1035	0.9	3.0	21.53	0.3	6.73	16.44	1.451	1.07	35.2	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	1037	Final Depth to Water:	21.54	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-1	Job Number:	30020164[illegible]-09.003
Client:	NV STAT	Date:	3-20-2015
Project:	Andrews Lott Court	Sampler:	PW
Weather:	NICE, sunny	Time In/Out:	11:10

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	31.38	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	34
Sampling Method:	PN	Tubing Type:	Poly

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1116	0.3	0.3	31.52	0.3	7.00	16.87	1.391	6.07	-71.9	—	CL
1119	0.9	1.2	31.64	0.3	6.84	16.80	1.391	2.08	-67.9	—	CL
1122	0.9	2.1	31.77	0.3	6.78	16.87	1.389	1.41	-63.7	—	CL
1125	0.9	3.0	31.81	0.3	6.76	16.70	1.388	1.21	-54.0	—	CL
1128	0.9	3.9	32.02	0.3	6.75	16.77	1.388	1.16	-46.0	—	CL

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	1130	Final Depth to Water:	32.55	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-17	Job Number:	32010/641-08004
Client:	NG STAT	Date:	3-20-2015
Project:	Andover Volt Court	Sampler:	PW
Weather:	Nice/sunny	Time In/Out:	11:50

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	31.45	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	42
Sampling Method:	PN	Tubing Type:	Poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1155	0.3	0.3	35.95	0.3	6.95	18.01	1,051	3.03	30.1		VC
1158	0.9	1.2	36.35	0.3	6.88	16.28	1056	1.28	38.8		VC
1201	0.9	2.1	36.81	0.3	6.84	18.18	1,053	0.87	43.3		VC
1204	0.9	3.0	37.30	0.3	6.82	18.07	1,055	0.70	43.2		VC
1207	0.9	3.9	37.85	0.3	6.81	18.15	1,057	0.61	42.0		VC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-17	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	1209	Final Depth to Water:	40.32	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-18	Job Number:	32000641-08.005
Client:	NUSTAR	Date:	3-20-2015
Project:	Anderson Point Court	Sampler:	PW
Weather:	nice, sunny	Time In/Out:	12:45

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	~~21.46~~ 27.93	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	36	Comments	
Sampling Method:	PN	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1248	0.3	0.3	31.00	0.3	7.05	17.89	0.993	2.03	3.5	/	VC
1251	0.9	1.2	31.52	0.3	6.97	17.78	1.009	1.03	-18.8	/	VC
1254	0.9	2.1	31.92	0.3	6.90	17.52	0.999	0.78	-9.2	/	VC
1257	0.9	3.0	32.19	0.3	6.89	17.43	0.990	0.68	-12.6	/	VC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-18	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	1259	Final Depth to Water:	33.17	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-19	Job Number:	32020/1411-08.023
Client:	NVSTAT	Date:	3-20-2015
Project:	Anderson/Cott Court	Sampler:	PN
Weather:	nice, sunny	Time In/Out:	13:14

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	35.19	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	39
Sampling Method:	PN	Tubing Type:	poly

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1318	0.3	6.3	34.26	0.3	7.24	18.18	0.909	6.54	53.9	/	CL
1321	0.9	1.2	34.55	0.3	7.13	17.99	0.906	1.90	43.8	/	CL
1324	0.9	2.1	34.89	0.3	7.09	17.91	0.906	1.55	43.7	/	CL
1327	0.9	3.0	35.22	0.3	7.09	17.83	0.905	1.57	49.7	/	CL

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-19	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	1329	Final Depth to Water:	~~36.3~~ 35.36	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

ALS Environmental

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Chain of Custody Form

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COC ID: 118685

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ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	E3CE-0065 Andover Release Site	A	300_W (Sulfate, nitrate, O-Phos)
Work Order		Project Number		B	8260_LL_W (Colt Court GW List)
Company Name	Apex Companies	Bill To Company	Apex Companies	C	ALK_W 2320B
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	ICP_DISS (Dissolved Iron)
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	ICP_TW (Potassium only)
				F	NIT_AMM_W_ISE
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	RSK175 (Methane)
Phone	(503) 924-4704	Phone	(503) 924-4704	H	VPH OA-1_W (HYD-5)
Fax		Fax		I	XXX SUB (SUB CO2 (Simi Valley))
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-4	3-20-2015	0959	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
2	MW-5		1037	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
3	MW-1		1130	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
4	MW-17		1209	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
5	MW-18	1259	~~1329~~	GW	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
6	MW-19		1329	GW													
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Paul Ward

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) TAT 7 days Other

Results Due Date:

Relinquished by:	Date: 3-20-15	Time: 14:30	Received by:
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: (E3CE-0065 Andover Release Site)

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

QC Level STD

Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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FIELD OBSERVATION FORM

SITE: Andover Quail Crossing	DATE: 4/20/15
WEATHER: wind 55°F	ESTIMATED DURATION OF EVENT: 1 day
EVENT TYPE: Gauge + Sample 6 wells	PTW #:
FIELD STAFF / COMPANY NAME: Jace Harris Ted Alfred	

OBJECTIVE OF FIELD WORK: Gauge all wells + Sample 6 new wells for MNA parameters

LIST APPLICABLE SOPs: Gauge wells + Sample

WERE SOPs FOLLOWED?	YES	NO	N/A
ARE THE WELLS IN GOOD CONDITION?	YES	NO	N/A
WERE WATER LEVELS CONSISTENT WITH PREVIOUS EVENTS?	YES	NO	N/A
WERE NAPL LEVELS CONSISTENT WITH PREVIOUS EVENTS (if applicable)?	YES	NO	N/A
ARE OFF-SITE ACTIVITIES/RECEPTORS NEAR SITE THE SAME AS DURING PREVIOUS EVENTS?	YES	NO	N/A
NUMBER OF DRUMS ONSITE UPON ARRIVAL: ___ ARE DRUMS LABELED:	YES	NO	N/A

(PROVIDE EXPLANATION BELOW FOR ALL "NO" ANSWERS. ATTACH ADDITIONAL DOCUMENTATION TO FORM IF NECESSARY)

NOTES/COMMENTS:

WELL GAGING DATA SHEET

APEX

		Job Number:	N/A
Client:	NuStar	Date:	4/20/15
Project:	Andover Quarl Xing	Sampler:	JH + TA
Weather:	wind 55°F	Time In/Out:	

WATER LEVEL DATA

Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
MW-1	10:41	—	31.39				
MW-2	10:44	—	36.43				
MW-3	10:29	—	45.61				
MW-4	11:13	—	34.10				
MW-5	10:51	—	21.01				
MW-6	10:34	—	23.05				
MW-7	10:32	—	16.10				
MW-8	10:~~9~~50	—	22.25				
MW-9	10:27	—	33.25				
MW-10	10:24	—	28.53				
MW-11	11:11	—	30.39				
MW-12	10:20	—	31.09				
MW-13	10:48	—	33.34				
MW-14	10:46	—	34.93				
MW-15	11:06	—	36.50				
MW-16	11:02	—	33.03				
MW-17	10:39	—	~~34.91~~ 33.91				
MW-18	11:18	—	33.51				
MW-19	11:19	—	33.70				
Pond	10:31	—	1344.75'				

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-1	Job Number:	
Client:	Nu Star	Date:	4/20/15
Project:	Andrews Quail Crossing	Sampler:	TA, JH
Weather:	Sunny / cloudy	Time In/Out:	1455 / 1535

WELL DATA

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	31.39	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	0.5' from bottom	Comments	
Sampling Method:	bladder	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
15:06			31.45	.2	6.81	16.72	1.186	1.03	-72.2		SC
15:09			31.49	.2	6.73	17.42	1.208	0.59	-75.6		SC
15:12			31.53	.2	6.71	16.94	1.214	0.89	-77.7		SC
15:15			31.60	.2	6.67	16.67	1.203	0.75	-78.4		SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate	.2	Analytical Laboratory:	ALS
Sample Time:	1522	Final Depth to Water:	31.82	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 VOAs	9 HCl / 3 Neat	See	yes (no)			
1 250 Plastic	H_2SO_4	COC	yes no			
1 250 Plastic	HNO_3		yes no			
3 250 Plastic	Neat		yes no			
			yes no			
			yes no			

COMMENTS

Variations in cloud cover causing large swings in temp readings due to sun exposure (YSI vessel + tubing)

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-4	Job Number:	
Client:	Nu Star	Date:	4/20/15
Project:	Andover Quail Crossing	Sampler:	TA, JH
Weather:	Sunny / cloudy	Time In/Out:	1540 / 1615

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	34.10	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	4' from bottom	Comments	
Sampling Method:	bladder	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (mS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
15:45			34.19	.15	7.09	18.01	0.722	3.10	-25.3		SC
15:48			34.34	.15	7.04	17.41	0.724	2.83	-29.0		SC
15:51			34.57	.15	6.99	17.07	0.722	2.69	-27.9		SC
15:53			34.64	.125	7.00	17.31	0.719	2.54	-25.3		SC
15:56			34.69	.125	7.02	17.43	0.719	2.71	-24.9		SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-4	Sampling Flow Rate	.125	Analytical Laboratory:	ALS
Sample Time:	16:04	Final Depth to Water:	34.80	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 VOAs	9 HCl / 3 Neat	See	yes (no)			
1 250 PL	H_2SO_4	C.O.C.	yes no			
1 250 PL	HNO_3		yes no			
3 250 PL	Neat		yes no			
			yes no			
			yes no			

COMMENTS

Fluctuations in cloud cover causing temperature variances due to sun exposure to vessel / tubing

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-5	Job Number:	
Client:	NuStar	Date:	4/20/15
Project:	Andover Rail (coating	Sampler:	TA, JH
Weather:	Sunny / Cloudy	Time In/Out:	16 /

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	21.01	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:			Comments
Sampling Method:	bladder	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1624			21.12	.2	6.99	17.63	1.337	1.71	1.6		AC
1627			21.25	.2	6.85	17.12	1.358	1.27	10.5		AC
1630			21.34	.2	6.84	17.04	1.356	1.27	14.2		C
1633			21.56	.2	6.82	17.01	1.357	1.30	20.1		C
1636			21.71	.2	6.80	16.80	1.360	1.10	20.2		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate	.2	Analytical Laboratory:	ALS
Sample Time:	1647	Final Depth to Water:	27.87	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 Vocs	9 HCl / 3 Neat		yes (no)			
1 250 Pl	H_2SO_4	See	yes no			
1 250 Pl	HNO_3	C.O.C	yes no			
3 250 Pl	Neat		yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-17	Job Number:	
Client:	NuStar	Date:	4/20/15
Project:	Andover Quail Crossing	Sampler:	TA, JH
Weather:	Sunny / cloudy	Time In/Out:	1416

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	~~34.91~~ 33.91	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	2.5' from bottom
Sampling Method:	bladder	Tubing Type:	poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (mS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1421			34.10	.2	7.08	17.40	1.020	2.60	-44.8		SC
1424			34.31	.2	6.81	17.16	1.014	1.04	-42.9		SC
1427			34.47	.15	6.74	16.89	1.014	1.15	-44.3		SC
1430			34.69	.15	6.68	16.63	1.004	0.87	-44.1		SC
1433			34.83	.15	6.70	16.87	1.012	0.83	-45.6		SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-17	Sampling Flow Rate	.15	Analytical Laboratory:	ALS
Sample Time:	14:40	Final Depth to Water:	35.31	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 VOAs	9 HCl / 3 neat	See CoC	yes (no)			
1 250mL Plastic	H_2SO_4		yes no			
1 250mL Plastic	HNO_3		yes no			
3 250mL Plastic	Neat		yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-18	Job Number:	
Client:	NuStar	Date:	4/20/15
Project:	Andover Release	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1205/1235

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	33.51	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	5' from bottom	Comments	
Sampling Method:	Bladder	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (mS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
12:13			33.71	.15	5.93	17.07	.951	1.03	62.4	—	Cl
12:16			34.07	.15	6.03	17.18	.885	0.89	64.0	—	Cl
12:19			34.36	.15	6.10	17.17	.880	0.84	62.4	—	Cl
12:22			34.45	.10	6.17	17.38	.880	0.79	62.1	—	Cl

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-18	Sampling Flow Rate	.100	Analytical Laboratory:	ALS
Sample Time:	12:27	Final Depth to Water:	34.97	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 vocs	HCl	See CoC.	yes (no)			
25ml 1 pl, H_2SO_4			yes no			
" 1 pl, HNO_3			yes no			
" 3 Neat			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-19	Job Number:	
Client:	NuStar	Date:	4/20/15
Project:	Andrews Quail Xing	Sampler:	TA/JH
Weather:	Sunny	Time In/Out:	12:40/1325

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	33.70	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	Comments
Sampling Method:	Bladder	Tubing Type:	Poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
12:53			33.90	.15	6.91	17.74	.896	7.44	-14.3		SC
12:56			33.99	.15	6.74	17.34	.863	3.01	-45.9		SC
12:59			34.04	.15	6.63	17.16	.851	1.61	-59.5		SC
13:02			34.17	.15	6.62	17.10	.845	1.40	-61.6		SC
13:05			34.28	.15	6.62	17.11	.841	1.36	-61.2		SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-19	Sampling Flow Rate	.15	Analytical Laboratory:	ALS
Sample Time:	13:15	Final Depth to Water:	35.03	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 VOA's	9 HCl / 3 Neat	See COC	yes (no)			
250 mL Plastic	H_2SO_4		yes no			
250 mL Plastic	HNO_3		yes no			
250 mL Plastic	Neat		yes no			
			yes no			
			yes no			

COMMENTS

ALS Environmental

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Chain of Custody Form

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ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	E3CE-0065 Andover Release Site	A	300_W (Sulfate, nitrate, O-Phos)
Work Order		Project Number		B	8260_LL_W (Colt Court GW List)
Company Name	Apex Companies	Bill To Company	Apex Companies	C	ALK_W 2320B
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	ICP_DISS (Dissolved Iron)
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	ICP_TW (Potassium only)
				F	NIT_AMM_W_ISE
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	RSK175 (Methane)
Phone	(503) 924-4704	Phone	(503) 924-4704	H	VPH OA-1_W (HYD-5)
Fax		Fax		I	XXX SUB (SUB CO2 (Simi Valley))
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-18	4/20/15	1227	W	HCl, NaOH, H_2SO_4, HNO_3	17	X	X	X	X	X	X	X	X	X		
2	MW-19	↓	1315	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
3	MW-17	↓	1440	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
4	MW-1	↓	1522	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
5	MW-4	↓	1604	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
6	MW-5	↓	1647	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
7					1,2,3 7-HCl+												
8																	
9																	
10																	

Sampler(s) Please Print & Sign	Shipment Method	Required Turnaround Time: (Check Box)	Results Due Date:
Ted Alfred		TAT 7 days Other:	

Relinquished by:	Date:	Time:	Received by:	Notes: (E3CE-0065 Andover Release Site)
	4/20/15	1830		
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)
		QC Level STD
		Other:

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-5	Job Number:	1641-08.002
Client:	NuStar	Date:	6/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Rainy	Time In/Out:	0815

WELL DATA

Well Depth:	30.00	Well Diameter:	2"	Water Height	
Depth to Water:	19.60	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	25'	Comments	
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
8:41	.400	.400	19.65	.200	6.96	18.16	1412	2.10	158.5	—	AC
8:44	.600	1.000	19.68	.200	6.96	18.00	1420	1.86	157.1	—	C
8:47	.600	1.600	19.72	.200	6.95	17.88	1418	1.44	155.2	—	C
8:50	.600	2.200	19.76	.200	6.95	17.88	1426	1.48	152.6	—	C
8:53	.600	2.800	19.80	.200	6.96	17.90	1429	1.49	148.7	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	08:59	Final Depth to Water:	19.87	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
39 VOA's	HCl	C.O.C.	yes no			
3 VOA's	Neat		yes no			
(3) 250 mL pl	Neat		yes no			
1 H_2SO_4 pl-250mL	H_2SO_4		yes no			
1 HNO_3 pl-250mL	HNO_3		yes no			
			yes no			

COMMENTS

Full MNA parameters ran

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-17	Job Number:	1641-08.002
Client:	NuStar	Date:	6/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Rainy	Time In/Out:	0915

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	31.28	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	36'		Comments
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color .Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0920	.500	.500	31.42	.250	7.14	18.16	1035	1.40	-17.1	-	AC
923	.750	1.250	31.48	.250	7.06	18.27	1033	1.11	-13.8	-	AC
926	.750	2.000	31.48	.250	7.03	17.70	1035	1.06	-11.5	-	C
929	.750	2.750	31.49	.250	7.01	17.51	1036	0.96	-10.6	-	C
0932	.750	3.500	31.49	.250	7.00	17.43	1047	0.92	-9.9	-	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-17	Sampling Flow Rate	.250	Analytical Laboratory:	ALS
Sample Time:	0940	Final Depth to Water:	31.52	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOA's	HCl	C.O	yes no			
3 VOA's	Neat		yes no			
3 250mL Pl	Neat	C.	yes no			
1 250mL Pl	H_2SO_4		yes no			
1 250mL Pl	HNO_3		yes no			
			yes no			

COMMENTS

Full MNA Pan

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-1	Job Number:	1641-08.004
Client:	Nustar	Date:	6/16/15
Project:	Andover Q.L.	Sampler:	TA, JH
Weather:	Rainy/misty	Time In/Out:	0945

WELL DATA

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	31.31	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	4' from bottom
Sampling Method:	same	Tubing Type:	poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity .(NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0951	.600	.600	31.31	.300	7.08	16.86	1318	1.50	-50.6	–	AC
0954	.900	1.500	31.39	.300	7.05	16.65	1315	1.18	-51.0	–	AC
0957	.900	2.400	31.46	.300	7.02	16.59	1312	1.01	-51.6	–	C
1000	.900	3.300	31.55	.300	7.01	16.50	1311	0.95	-51.7	–	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate	.300	Analytical Laboratory:	ALS
Sample Time:	1010	Final Depth to Water:	31.58	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOA's	HCl	C.O.C	yes no			
3 VOA's	Neat		yes no			
3 250-pl	Neat		yes no			
1 250-pl	H_2SO_4		yes no			
1 250-pl	HNO_3		yes no			
			yes no			

COMMENTS

Full MNA ran

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-18	Job Number:	1641-08.002
Client:	NuStar	Date:	6/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Rainy / Misty	Time In/Out:	1015

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.64	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	35'	Comments	
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1022	.500	.500	30.79	.250	7.24	19.17	902	1.90	-34.5	–	CI
1025	.750	1.250	30.89	.250	7.19	20.00	894	1.31	-30.0	–	CI
1028	.750	2.000	31.05	.250	7.17	19.21	897	1.24	-26.8	–	CI
1031	.750	2.750	31.21	.250	7.15	18.99	895	0.95	-22.7	–	SC
1034	.750	3.500	31.33	.250	7.13	18.99	895	0.89	-19.8	–	SC
1037	.750	4.250	31.41	.250	7.12	18.90	899	0.93	-17.6	–	SC

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-18	Sampling Flow Rate	.250	Analytical Laboratory:	AKS
Sample Time:	10:45	Final Depth to Water:	31.51	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOAs	HCl	C.	yes no			
3 VOAs	Neat	O.	yes no			
3 250-PI	Neat	C.	yes no			
1 250-PI	H_2SO_4		yes no			
1 250-PI	HNO_3		yes no			
			yes no			

COMMENTS

Full MNA

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-19	Job Number:	1641-08.002
Client:	NuStar	Date:	6/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Rainy/Misty	Time In/Out:	1055

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.60	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	34'		Comments
Sampling Method:	Same	Tubing Type:	Poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
10:59	.500	.500	30.59	.250	7.45	20.13	820	1.94	-21.8	–	Cl
11:02	.750	1.250	30.70	.250	7.38	19.66	825	1.28	-39.8	–	Cl
1105	.750	2.000	30.40	.250	7.32	18.77	825	0.66	-62.6	–	SC
1108	.750	2.750	31.15	.250	7.27	18.65	825	0.57	-72.9	–	SC
1111	.450	3.200	31.40	.150	7.25	18.83	827	0.49	-81.6	–	SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-19	Sampling Flow Rate	.200	Analytical Laboratory:		ALS	
Sample Time:	11:18	Final Depth to Water:	31.86	Did Well Dewater?		No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	MS/MSD	Duplicate ID
9 VOAs	HCl	C.	yes	no			DUP-1
3 VOAs	Neat	O.	yes	no			
3 250-Pl	Neat	C.	yes	no			
1 250-Pl	H_2SO_4		yes	no			
1 250-Pl	HNO_3		yes	no			
			yes	no			

COMMENTS

Full MNA

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-4	Job Number:	1641-08.002
Client:	NuStar	Date:	6/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Cloudy	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	29.02	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	33'		Comments
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1156	.500	.500	29.21	.250	7.50	19.46	1084	5.04	15.2	-	AC
1159	.600	1.100	29.34	.200	7.33	19.48	1090	3.88	22.8	—	AC
1202	.450	1.550	29.49	.150	7.27	19.52	1097	3.88	25.7	-	AC
1205	.450	~~1.101~~ 2.000	29.53	.150	7.24	19.74	1101	3.82	26.1	-	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-4	Sampling Flow Rate	.150	Analytical Laboratory:	ALS
Sample Time:	1210	Final Depth to Water:	29.76	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOAs	HCl	C.	yes no			
3 VOAs	Neat	O.	yes no			
3 250-PI	Neat	C.	yes no			
1 250-PI	H_2SO_4		yes no			
1 250-PI	HNO_3		yes no			
			yes no			

COMMENTS

Full MNA

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-2	Job Number:	1641-08.002
Client:	NuStar	Date:	8-18-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1340

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	34.83	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	38'		Comments
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
13:45	.400	.400	34.94	.200	7.70	21.76	820	4.21	29.7	—	AC
13:48	.600	1.000	34.88	.200	7.42	20.17	816	3.25	36.7	—	C
1351	.600	1.600	34.96	.200	7.36	19.20	799	2.77	47.1	—	C
1354	.600	2.200	35.15	.200	7.30	19.22	803	2.69	42.8	—	C
1357	.600	2.800	35.23	.200	7.29	19.01	806	2.73	40.4	—	C
1400	.600	3.400	35.28	.200	7.28	18.89	805	2.75	40.1	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-2	Sampling Flow Rate	.200	Analytical Laboratory:	ACS
Sample Time:	14:02	Final Depth to Water:	35.34	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	GRO/VOCs	yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-12	Job Number:	
Client:	NuStar	Date:	6-16-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1455

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.86	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	35'		Comments
Sampling Method:	same	Tubing Type:	poly		

	Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
						+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
Sunny	1503	.600	.600	30.87	.300	7.26	21.89	1028	3.61	48.5	—	SC
	1506	.750	1.350	30.90	.250	7.06	21.28	1019	2.49	54.3	—	SC
	1509	.750	2.100	30.91	.250	7.15	20.46	1018	2.47	51.1	—	SC
Cloud	1512	.750	2.850	30.91	.250	7.15	19.91	1017	2.45	50.6	—	SC
	1515	.750	3.600	30.91	.250	7.16	19.69	1014	2.42	50.5	—	SC
Sunny	1518	.750	4.350	30.91	.250	7.15	20.24	1014	2.43	49.8	—	SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-12	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	15:22	Final Depth to Water:	30.91	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAS	HCl	C.O.C.	yes no			
		VOCs/GRO	yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Cloud cover affecting YSI chamber + tubing – intermittent + causing temp fluctuations.

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-10	Job Number:	1641-08.002
Client:	NuStar	Date:	6-16-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1555

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	28.30	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	1.5' from bottom	Comments	
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
16:02	.600	.600	28.35	.300	7.36	21.30	1466	5.21	47.4	–	AC
16:05	.900	1.500	28.39	.300	7.24	19.73	1452	1.08	54.5	–	AC
16:08	.900	2.400	28.42	.300	7.17	19.02	1447	0.74	52.2	–	AC
16:11	.900	3.300	28.45	.300	7.29	19.30	1447	0.64	49.5	–	AC
16:14	.900	4.200	28.46	.300	7.28	19.13	1439	0.55	47.1	–	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-10	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	16:17	Final Depth to Water:	28.47	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-9	Job Number:	1641-08.002
Client:	NuStar	Date:	8/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	16:32

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	29.83	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	32'	Comments
Sampling Method:	same	Tubing Type:	poly	

	Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
						+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
	16:33	.500	.500	29.84	.250	7.23	20.70	1263	2.61	60.8	—	SC
	16:36	.750	1.250	30.01	.750	7.07	19.15	1249	1.06	66.8	—	SC
1639	~~16:39~~	.750	2.000	30.12	.750	7.04	19.03	1247	0.92	65.9	—	SC
1642	~~16:42~~	.600	2.600	30.19	.200	7.10	19.35	1247	0.79	62.5	—	AC
1645	"	.600	3.200	30.28	.200	7.16	19.40	1247	0.67	60.5	-	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-9	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	16:49	Final Depth to Water:	30.33	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-15	Job Number:	1641-08.002
Client:	NuStar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Cloudy	Time In/Out:	0845

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	32.34	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	35.5'	Comments
Sampling Method:	Same	Tubing Type:	poly	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<– Stabilization Criteria
0850	.400	.400	32.50	.200	7.12	19.76	748	4.58	116.9	—	AC
0853	.450	.850	32.55	.150	7.08	19.28	744	3.72	113.6	—	AC
0856	.450	1.300	32.62	.150	7.08	19.16	745	3.63	113.2	—	AC
859	.450	1.750	32.66	.150	7.08	18.82	744	3.60	113.1	—	C
0902	.450	1.200	32.70	.150	7.08	18.87	744	3.58	113.0	—	C
0905	.450	1.650	32.73	.150	7.08	18.85	744	3.58	112.8	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-15	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	0910	Final Depth to Water:	32.75	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes ~~no~~			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-16	Job Number:	1641-08.002
Client:	Nustar	Date:	6/17/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Cloudy	Time In/Out:	0927

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	29.48	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	33'	Comments	
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0930	.500	.500	28.52	.250	7.41	20.20	886	5.04	119.3	—	~~A~~SC
933	.750	1.250	28.48	.250	7.24	19.42	882	4.05	124.4	—	SC
936	.450	1.700	29.21	.150	7.16	20.16	884	3.71	123.9	—	AC
939	.300	2.000	29.30	.100	7.14	20.22	888	3.70	123.2	—	AC
0942	.300	2.300	29.35	.100	7.16	20.30	889	3.66	120.2	—	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-16	Sampling Flow Rate	.150	Analytical Laboratory:	ALS
Sample Time:	9:45	Final Depth to Water:	29.40	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-11	Job Number:	1641-08.002
Client:	NuStar	Date:	6/17/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Cloudy	Time In/Out:	10:01

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.86 6/16	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	34'		Comments
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
10:06	.600	.600	28.45	.300	7.29	19.51	1466	2.01	121.8	–	AC
10:09	.750	1.300	28.87	.250	7.14	18.81	1467	1.75	125.9	–	AC
10:12	.450	1.750	28.97	.150	7.12	18.98	1465	1.73	124.1	–	AC
10:15	.450	1.200	29.08	.150	7.12	18.94	1463	1.78	120.3	–	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-11	Sampling Flow Rate	.200	Analytical Laboratory:	ALS	
Sample Time:	10:19	Final Depth to Water:	29.20	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.o.c.	yes (no)			Dup 2
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-8	Job Number:	1641-08.002
Client:	NiStar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Cloudy	Time In/Out:	1038

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	19.93	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	23'		Comments
Sampling Method:	same	Tubing Type:	poly		

	Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
						+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
Sunny	1041	.400	.400	20.08	.200	7.49	20.46	1217	7.85	110.8	—	AC
cloudy	1044	.600	1.000	20.30	.200	7.32	18.82	1202	3.71	115.7	—	AC
Cloudy	1047	.450	1.450	20.26	.150	7.22	18.91	1202	3.38	118.3	—	AC
cloudy	1050	.600	2.050	20.30	.200	7.20	19.10	1201	3.24	115.6	—	C
sunny	1053	.600	2.650	20.30	.200	7.19	19.42	1207	3.19	112.4	—	C
	1056	.600	3.250	20.31	.200	7.18	19.26	1209	3.16	109.8	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-8	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	11:00	Final Depth to Water:	20.31	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	V.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-13	Job Number:	1641-08.002
Client:	NuStar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, SH
Weather:	Sunny	Time In/Out:	1104

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	31.94	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	35'	Comments	
Sampling Method:	Same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
11:13	.500	.500	31.96	.250	7.53	21.08	685	6.55	99.5	—	SC
11:16	.750	1.250	32.34	.250	7.36	18.54	672	5.47	109.1	—	SC
11:19	.450	1.700	32.46	.150	7.31	18.71	672	5.31	106.9	—	SC
11:22	.450	2.150	32.55	.150	7.30	18.89	673	5.26	105.4	—	SC
11:25	.450	2.600	32.64	.150	7.28	18.91	673	5.19	103.6	—	SC
11:27	.300	2.900	32.73	.150	7.27	18.95	673	5.22	101.9	—	SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-13	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	11:30	Final Depth to Water:	32.79	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-14	Job Number:	1641-08.002
Client:	NuStar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny/Cloudy	Time In/Out:	~~1130~~ 1138

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	31.70	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	34'	Comments	
Sampling Method:	bladder	Tubing Type:	poly		

	Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
						+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
	11:41	.500	.500	31.80	.250	7.48	20.11	700	4.37	95.1	–	AC
cloudy	11:44	.750	1.250	32.30	.250	7.24	18.37	693	3.72	102.0	–	AC
cloudy	11:47	.300	1.550	32.50	.100	7.20	18.56	697	3.59	101.0	–	AC
cloudy	11:50	.300	1.850	32.63	.100	7.20	18.63	696	3.49	99.8	–	AC
partly sunny	11:53	.300	2.150	32.71	.100	7.20	18.90	698	3.42	97.3	–	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-14	Sampling Flow Rate	.200	Analytical Laboratory:	ALS	
Sample Time:	11:57	Final Depth to Water:	32.83	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-3	Job Number:	1641-08.002
Client:	Nustar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1320

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	38.21	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	42'
Sampling Method:	same	Tubing Type:	poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1327	.500	.500	38.10	.250	7.30	22.77	920	1.91	-56.1	—	C
1330	.750	1.250	38.12	.250	7.20	20.60	939	0.85	-61.7	—	C
1333	.750	2.000	38.14	.250	7.12	19.97	934	0.68	-68.2	—	C
1336	.750	2.750	38.15	.250	7.08	19.33	944	0.62	-74.2	—	C
1339	.750	3.500	38.15	.250	7.05	18.97	946	0.50	-80.1	—	C
1342	.750	4.250	38.16	.250	7.04	18.87	947	0.46	-83.3	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-3	Sampling Flow Rate	.200	Analytical Laboratory:	ACS
Sample Time:	13:45	Final Depth to Water:	38.16	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	G.O.C	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

tubing + YSI cylinder exposed to intermittent sunshine - temp variances experienced, as well as higher than avg. temps.

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-7	Job Number:	1641-08.002
Client:	NuStar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1350

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	14.91	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	~~bailer~~ peri	Pump Intake Depth:	19'	Comments
Sampling Method:	same - peri	Tubing Type:	poly	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1357	.600	.600	15.01	.200	7.41	17.75	866	2.26	-43.2	—	C
1400	.600	1.200	15.15	.200	7.32	17.30	897	1.13	-37.2	—	C
1403	.600	1.800	15.18	.200	7.27	17.20	879	0.90	-34.1	—	C
1406	.600	2.400	15.21	.200	7.26	17.32	881	0.78	-32.4	—	C
1409	.600	3.000	15.22	.200	7.26	17.28	876	0.64	-31.9	—	C
1411	.600	3.600	15.23	.200	7.27	17.16	868	0.60	-31.2	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-7	Sampling Flow Rate	.200	Analytical Laboratory:	ACS
Sample Time:	1414	Final Depth to Water:	15.23	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-6	Job Number:	164f-08.002
Client:	Nustar	Date:	6-17-15
Project:	Andarc Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1416

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	20.45	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	peristaltic	Pump Intake Depth:	24'
Sampling Method:	same	Tubing Type:	poly

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
14:20	.400	.400	20.71	.200	7.38	17.51	1294	4.56	-1.7	—	C
1423	.600	1.000	20.93	.200	7.25	17.49	1297	3.95	4.9	—	C
1426	.600	1.600	21.11	.200	7.19	17.45	1292	3.96	10.3	—	C
1429	.600	2.200	21.25	.200	7.17	17.62	1288	3.94	13.0	—	C
1432	.600	2.800	21.37	.200	7.15	17.60	1280	3.88	14.9	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-6	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	1434	Final Depth to Water:	21.43	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	G.O.C.	yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Tubing bringing up small, intermittent bubbles - possibly affecting YSI cylinder DO reading

APEX
3015 SW First Avenue
Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-07/08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-10-2015

PROJECT	QUAIL CROSSING PILOT TEST	ARRIVAL TIME	0845
LOCATION	ANDOVER, KANSAS	DEPARTURE TIME	1630
CLIENT	NUSTAR	WEATHER	FOG (40'S) AM/CLEAR (70'S) PM
PURPOSE OF OBSERVATIONS	WELL INSTALLATION/PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	CHAD AND MARK	H&S REVIEW	✓

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0845 APEX (M. WHITSON) ARRIVES ON SITE, DRILLERS (CHAD AND MARK; LAYNE) HAVE STAGED EQUIPMENT AND LEFT TO OBTAIN WATER USE PERMIT AND TOTALIZER FROM CITY.
WELL LOCATIONS HAVE BEEN CLEARED, UTILITY LOCATES APPEAR TO HAVE BEEN COMPLETED.
PID AND INTERFACE PROBE SHIPMENT WAS DELAYED, WILL ARRIVE AT FEDEX FACILITY BY NOON TODAY.
0945 LAYNE ON SITE, MOVE PORTA POTTY INSIDE OF DELINEATION ZONE
WALK SITE WITH LAYNE, GO OVER SCOPE OF WORK
1015 START MOVING EQUIPMENT, JACE AND JASON (APEX) ARRIVE ON SITE.
APEX FINISHES CLEARING MW-17 LOC.
LAYNE SETUP ON MW-18 LOC.
H+S REVIEW
1100 JACE AND JASON HEAD TO EASTER ADDITION TO CLEAR LOCATIONS
LAYNE EXPERIENCING RIG DIFFICULTIES/TROUBLESHOOT
APEX MOBS TO FEDEX TO PICKUP PID/INTERFACE PROBE AND SAMPLE JARS/COOLERS
RETURN TO SITE, FEDEX WILL DELIVER TOMORROW MORNING
MOB TO EASTER ADDITION
1515 START ABANDONING WELLS AT EASTER ADDITION, AS-1-AS-3, MC-1-MC-3, MW-1, MW-F.
1600 SURFACE MONUMENTS REMOVED, PROTECT HOLES
CLEAN UP
1630 DEPART SITE

BY
APEX REPRESENTATIVE

REVIEWED BY
APEX PROJECT MANAGER

APEX

3015 SW First Avenue
Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-11-2015

PROJECT	QUAIL CROSSING PILOT TEST	ARRIVAL TIME	1010
LOCATION	ANDOVER, KS	DEPARTURE TIME	1830
CLIENT	NUSTAR	WEATHER	CLEAR (50'S-70'S) CALM
PURPOSE OF OBSERVATIONS	WELL INSTALLATION / PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	CHAD AND MARK	H&S REVIEW	✓

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1010 APEX ARRIVES ON SITE AFTER PICKING UP EQUIP/BOTTLES AT FEDEX, LAYNE ON SITE
1015 H+S PLAN REVIEW WITH CHAD AND MARK, LAYNE DOES NOT HAVE FR, OKAY (PM)
1030 START CORING MW-18 LOCATION (SEE LOG), PAMELA (KDHE) ON SITE
1130 KDHE DEPARTS, PHOTOGRAPH MW-6 AND MW-7 MON.'S FOR FIX
1345 FINISH WITH MW-18 (CASED TO 19' BGS)
MOVE TO MW-19 LOCATION AND SET UP
1500 START CORING MW-19 (SEE LOG), DRILLERS ASK ABOUT LANDFARM
1800 DOWN TO 45' BGS IN MW-19 (CASED TO 19' BGS)
CLEAN UP, TALK TO DRILLERS ABOUT LANDFARM HOURS (8-5 PM)
1830 DEPART SITE

BY

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REVIEWED BY

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PROJECT NUMBER 320001641-08/07
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-12-2015

PROJECT	QUAIL CROSSING PILOT TEST	ARRIVAL TIME	0800
LOCATION	ANDOVER, KS	DEPARTURE TIME	1815
CLIENT	NUSTAR	WEATHER	CLEAR (40'S-70'S) CALM
PURPOSE OF OBSERVATIONS	WELL INSTALLATION/PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	CHAD AND MARK	H&S REVIEW	✓

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0800 APEX ARRIVES ON SITE, LAYNE ON SITE, H+S REVIEW
LAYNE SETS UP ON MW-17 LOCATION USING MUD MATS FOR TRACK RIG
0830 GAUGE WATER IN MW-18 AND MW-19
0830 START CORING MW-17 LOCATION (SEE LOG)
1115 FINISH CORING MW-17 (CASED TO 19' BGS)
1200 GAUGE OPEN BOREHOLE
LAYNE CLEANS UP AND MOBS TO EASTER ADDITION
SETUP ON MW-1R LOCATION
1430 START CORING MW-1R (SEE LOG)
1640 FINISH CORING MW-1R LOCATION
INSTALL MW-1R WELL FROM 25-40' (SCREENED) (SEE INSTALLATION LOG)
MOVE RIG OFF MW-1R
CLEAN UP
1815 DEPART SITE

BY
APEX REPRESENTATIVE

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PROJECT NUMBER 320001641-07
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-13-2015

PROJECT	EASTER ADDITION	ARRIVAL TIME	0845
LOCATION	ANDOVER, KS	DEPARTURE TIME	1915
CLIENT	NUSTAR	WEATHER	CLEAR (40'S-70'S) CALM
PURPOSE OF OBSERVATIONS	WELL INSTALLATION / PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	MARK AND CHAD	H&S REVIEW	✓

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0845 APEX ARRIVES ON SITE, H+S REVIEW
0915 LAYNE SAYS RIG IS NOT STARTING UP, THEY ARE TROUBLESHOOTING AND MAKING PHONE CALLS TO FIX IT. CALL S. JACKSON
LAYNE CALLS JOHN DEERE MECHANIC
1015 GAUGE WELLS AT QUAIL CROSSING
LAYNE TROUBLESHOOTING RIG
CLEAN UP SITE, LOAD UP SOIL
1120 LAYNE TAKES LOAD TO EL DORADO
1300 LAYNE RETURNS FROM EL DORADO
MECHANIC ON SITE
WORK ON RIG
1445 RIG UP AND RUNNING MECHANIC DEPARTS
SENSOR, FUEL FILTER, COMBINATION OF OTHER ISSUES
WITH RIG IN VICINITY OF WELLS TO BE ABANDONED, SET UP TREMIE AND INJECT GROUT IN WELLS TO ABANDON, MOVE RIG TO F-1R LOC.
1550 SETUP ON F-1R LOC.
1615 START CORING F-1R LOCATION (SEE LOG)
1900 FINISH CORING F-1R
1915 CLEAN UP, DEPART SITE

BY

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PROJECT NUMBER 320001641-07/08
FIELD REPORT NUMBER
PAGE 1 OF
DATE 03-14-15

PROJECT	EASTER ADDITION / QUAIL CROSSING	ARRIVAL TIME	0800
LOCATION	ANDOVER, KS	DEPARTURE TIME	1730
CLIENT	NUSTAR	WEATHER	CLEAR (70'S) CALM
PURPOSE OF OBSERVATIONS	WELL REPLACEMENT / INSTALLATION / PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	MARK AND CHAD	H&S REVIEW	✓

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0800 APEX ARRIVES ON SITE, H+S REVIEW
RUN CASING IN F-1R LOCATION, START INSTALLING WELL (25-40')
0915 WELL INSTALLED, START CLEANUP DEMOB OFF WELL LOCATION
SETUP OVER F-1 TO ABANDON, MOVE EQUIPMENT
0930 START ABANDONMENT OF F-1
CHIP MONUMENT
0945 PLUG WELL WITH GROUT THROUGH TREMIE
CUT CASING 3' BGS, TALK WITH OWNER ABOUT RUTS IN DRIVEWAY, THEY SUGGEST GRAVEL FILL
1020 LAYNE TO MENARDS FOR TOP SOIL
PLACE TOP SOIL, COMPLETE SURFACE ON F-1R AND MW-1R
1300 ALL ABANDONMENTS COMPLETE
CLEAN UP AND MOVE TO QUAIL CROSSING
1330 GAUGE WELLS AT QUAIL CROSSING
MOVE EQUIPMENT
1430 START SETTING UP ON INJECTION LOCATION IB-1
1515 START CORING IB-1 LOC. (SEE LOG)
1700 GET TO 29' BGS, STOP FOR DAY
CLEAN UP
1730 DEPART SITE

BY
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PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-15-2015

PROJECT	QUAIL CROSSING	ARRIVAL TIME	0930
LOCATION	ANDOVER, KS	DEPARTURE TIME	1800
CLIENT	NUSTAR	WEATHER	CLEAR (40'S/60'S) CALM
PURPOSE OF OBSERVATIONS	WELL INSTALL/PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE	PERMIT NO.	–
CONTRACTOR REP.	MARK/CHAD	H&S REVIEW	✓

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0930 APEX ARRIVES ON SITE, LAYNE ON SITE, H+S REVIEW
SETUP ON IB-1 LOCATION
1015 RESUME CORING IB-1 (SEE LOG)
1115 COMPLETE IB-1 (CASED TO 20' BGS)
MOVE TO IB-2 AND SETUP
1115 CORE IB-2 (SEE LOG)
1330 IB-2 COMPLETE (CASED TO 20' BGS)
MOVE TO IB-3 AND SETUP
1330 CORE IB-3 (SEE LOG)
1600 COMPLETE IB-3 (CASED TO 20' BGS
1600 GAUGE WELLS ON SITE (SEE GAUGING SHEET)
CLEAN UP
SETUP ON IB WELLS FOR INJECTION, DISCUSS WITH S. JACKSON
WILL START WITH WELL INSTALLATIONS TOMORROW
CLEAN UP
1800 DEPART SITE

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PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-16-15

PROJECT	NUSTAR QUAIL CROSSING	ARRIVAL TIME	0830
LOCATION	ANDOVER, KS	DEPARTURE TIME	~~1630~~ MW 03-16-15 1700
CLIENT	NUSTAR	WEATHER	CLEAR
PURPOSE OF OBSERVATIONS	WELL INSTALLATION / PILOT STUDY / TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	MARK AND CHAD	H&S REVIEW	✓

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0830 APEX ARRIVES ON SITE, LAYNE ON SITE, H+S REVIEW
MOVE RIG TO SETUP ON MW-17 FOR INSTALLATION
RIG SETUP OVER MW-17
RUN CASING DOWN TO 42'
CASING DOWN TO DEPTH
START INSTALLING WELL MW-17 FROM 27-42' (SCREENED)
1310 WELL INSTALLED (MW-17)
MOVE RIG, SETUP ON MW-19 TO CONSTRUCT WELL
RIG SETUP, POSITION CASING
1340 START SENDING CASING DOWN TO 42'
CASING DOWN TO DEPTH
1510 INSTALL WELL COMPONENTS ON MW-19 FROM 27-42' (SCREENED)
1550 FINISH INSTALL ON MW-19
PULL CASING
PULL RIG OFF OF MW-19 LOCATION
(620)245-7847 - JAY HAWK LANDSCAPING
SETUP ON MW-18 LOCATION
CLEAN UP
1700 DEPART SITE

BY

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PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-17-2015

PROJECT	QUAIL CROSSING	ARRIVAL TIME	0815
LOCATION	ANDOVER, KS	DEPARTURE TIME	1745
CLIENT	NUSTAR	WEATHER	M. CLEAR (40'S) WINDY
PURPOSE OF OBSERVATIONS	WELL INSTALLATION / PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE	PERMIT NO.	–
CONTRACTOR REP.	MARK AND CHAD	H&S REVIEW	✓

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0815 APEX ARRIVES ON SITE, LAYNE ON SITE, RIG IS DOWN
HYDRAULIC CYLINDER/ACTUATOR ON DRILL HEAD BROKE THIS MORNING
CALL S. JACKSON, LAYNE HAS SOMEONE FROM TEXAS DRIVING UP REPLACEMENT
COMPLETE SURFACE OF MW-17 MONITORING WELL
EXTEND PAD ON MW-7 LOC. (PER S. JACKSON)
PART COMES IN FOR DRILL RIG, INSTALL ON DRILL HEAD
1515 SAMPLES SHIPPED TO LABORATORY
WORK ON DRILL RIG
RIG BACK UP AND RUNNING, START PUSHING CASING TO 42' BGS
CASING DOWN TO DEPTH
1625 START INSTALLING MONITORING WELL MW-18
WELL MW-18 INSTALL, SCREEN FROM 27-42' BGS
1645 APEX (PAUL AND RYAN) DEPART SITE
1700 WELL INSTALLED, PULL RIG OFF HOLE.
BENTONITE IN SURFACE
MOVE EQUIPMENT AROUND
CLEAN UP SITE
1745 DEPART

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PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 2
DATE 03-18-2015

PROJECT	QUAIL CROSSING	ARRIVAL TIME	0800
LOCATION	ANDOVER, KS	DEPARTURE TIME	1700
CLIENT	NUSTAR	WEATHER	OVERCAST, LIGHT RAIN (40's)
PURPOSE OF OBSERVATIONS	WELL INSTALL/PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE	PERMIT NO.	—
CONTRACTOR REP.	MARK/CHAD	H&S REVIEW	✓

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0800 APEX ARRIVES ON SITE, LAYNE ON SITE, H+S REVIEW
SETUP ON IB-7 LOCATION WITH MUD MATS FOR TRACKS
0815 CORE IB-7 LOCATION (SEE LOG)
0940 COMPLETE IB-7 LOCATION
SETUP EQUIPMENT FOR INJECTION
0950 MIX FIRST 40-GALLON BATCH OF ORC ADVANCED, 2 x 40 LB BAGS ORC, 36 GALLONS OF WATER, 40-GALLON SLURRY, PLAN TO INJECT THROUGH 4-4.5" CASING (CORE BARREL) (4-INCH OD CORE BARREL AND 3.5" OD TOOLING/RODS)
(SEE INJECTION LOG
MIX SECOND BATCH OF ORC, INJECT
1030 INJECTION IB-7 COMPLETE 80-GALLONS OF SLURRY INJECTED
PULL RIG OFF IB-7 LOCATION, CALL S. JACKSON, ASK DRILLER TO REDUCE INJECTION PRESSURE TO 50 PSI, PER INJECTION PERMIT (VIC PERMIT DOES NOT ALLOW GREATER THAN 50 PSI FOR INJECTIONS)
SETUP ON IB-8 LOCATION
1045 CORE IB-8
1155 IB-8 COMPLETED TO 40' BGS
1200 INJECT AT IB-8 LOCATION (SEE INJECTION LOG)
SETUP ON IB-4 LOCATION
1300 CORE IB-4
1415 IB-4 COMPLETED TO 40' BGS
1418 INJECT AT IB-4 LOCATION (SEE INJECTION LOG)
SETUP ON IB-5 LOCATION
1435 CORE IB-5

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PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 2 OF 2
DATE 03-18-2015

1545 IB-5 CORED TO 40' BGS
1555 INJECT AT IB-5 LOC. (SEE INJECTION LOG)
1610 COMPLETE INJECTION
CLEAN UP
1700 DEPART SITE

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PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-19-2015

PROJECT	QUAIL CROSSING	ARRIVAL TIME	0815
LOCATION	ANDOVER, KS	DEPARTURE TIME	1215
CLIENT	NUSTAR	WEATHER	LT RAIN (40's-50's)
PURPOSE OF OBSERVATIONS	WELL INSTALLATION / PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE	PERMIT NO.	–
CONTRACTOR REP.	(MARK AND CHAD)	H&S REVIEW	✓

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0815 APEX ON SITE, LAYNE ON SITE, H+S REVIEW
CORE IB-9 LOCATION TO 40' BGS
0910 INJECT AT IB-9 LOCATION (SEE INJECTION LOG)
MOVE TO IB-6
CORE IB-6 LOCATION TO 40' BGS
1120 INJECT AT IB-6 LOCATION (SEE INJECTION LOG)
CLEAN UP
LEAVE APEX TULSA WITH INJECTION LOG AND INSTRUCTIONS
1215 DEPART SITE FOR FEDEX AND KANSAS CITY AIRPORT

BY

APEX REPRESENTATIVE

REVIEWED BY

APEX PROJECT MANAGER

WELL GAGING DATA SHEET

APEX

		Job Number:	1641
Client:	NUSTAR	Date:	03-12-2015
Project:	QUAIL CROSSING	Sampler:	M. WHITSON
Weather:	CLEAR (70'S) CALM	Time In/Out:	

WATER LEVEL DATA

Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
MW-19	0835	–	45.0	45.7'	–	0.7'	
MW-18	0845	–	43.2'	44'	–	0.8'	
MW-17	1200	–	–	45.0'	–	–	
	03-13						
MW-19	1030	–	42.6'	44.8'	–	2.2'	
MW-18	1035	–	40.0'	43.3'	–	3.3'	
MW-17	1040	–	42.8	44.0'	–	1.2'	
	03-14						
MW-19	1335	–	40.1'	44.6	–	4.5'	
MW-18	1340	–	36.3'	41.5	–	5.2'	
MW-17	1345	–	38.7'	41.3	–	2.6'	
	03-15						
MW-17	1600	–	35.4	39.4	–	4.0'	
MW-19	1605	–	38.5	41.1	–	2.6'	
MW-18	1610	–	33.5	39.8	–	6.3'	

WELL GAGING DATA SHEET

APEX

		Job Number:	
Client:	NUSTAR	Date:	03-18-15
Project:	QUAIL CROSSING	Sampler:	M. WHITSON
Weather:	CLOUDY (40'S)	Time In/Out:	

WATER LEVEL DATA

Well I.D.	Time	~~Depth to Free Product (feet)~~	~~Depth to Water (feet)~~	~~Depth to Well Bottom (feet)~~	~~Product Thickness (feet)~~	~~Water Column Height (feet)~~	Notes/Other Remarks		
WELL ID	TIME START	SLURRY GALLONS	BOTTOM DEPTH	TOP DEPTH	TIME FINISH	PRESSURE	SLURRY MIX TIME	ORC LBS	WATER GALLONS
IB-7	~~09~~ 1000	~~40~~ 80	40	30	1015	100	0950	80	36
	1015	~~40~~ 80	30	20	1030	100	1015	80	36
IB-8	1200	~40	40	30	1207	40	1155	~75	36
	1209	~40	30	20	1215	40	1208	~75	36
IB-4	1418	~40	40	30	1421	35	1415	~75	36
	1424	~40	30	20	1430	35	1422	~75	36
IB-5	1555	~40	40	30	1600	40	1550	~75	36
	1605	~40	30	20	1610	40	1601	~75	36

WELL GAGING DATA SHEET

APEX

		Job Number	
Client:		Date:	08-19-15
Project:		Sampler:	M. WHITSON-J
Weather:		Time In/Out:	

WATER LEVEL DATA

Well ID	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column (feet)	Notes/Other Remarks		
WELL ID	TIME	SURFACE DATA	BOTTOM DEPTH	TOP DEPTH	TIME SAMPLED	MESS	SAMPLE PRE TIME	ORG	WATER
18-9	0910	40	40	30	0915	36	0907	75	36
	0918	40	30	20	0925	35	0916	75	36
18-6	1120	40	40	30	1125	40	1116	75	36
	1130	40	20	20	1135	40	1128	75	36

ALS Environmental

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Chain of Custody Form

Page 1 of 2

COC ID: 118554

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	H = HOLD FOR INSTRUCTIONS FROM PM
				F	(NOT ALL SAMPLES WILL BE RUN FOR ANALYSIS)
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	
Phone	(503) 924-4704	Phone	(503) 924-4704	H	
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-19 (28)	03-11	1710	S	–	2	H	H									
2	MW-19 (32)	03-11	1720	S	–	2	H	H									
3	MW-19 (45)	03-11	1800	S	–	2	H	H									
4	MW-18 (26.5)	03-11	1315	S	–	2	H	H									
5	MW-18 (31.5)	03-11	1325	S	–	2	H	H									
6	MW-17 (19)	03-12	1005	S	–	2	H	H									
7	MW-17 (22)	03-12	1015	S	–	2	H	H									
8	MW-17 (37)	03-12	1100	S	–	2	H	H									
9	IB-1 (18.0)	03-14	1650	S	–	2	H	H									
10	IB-1 (24.0)	03-14	1700	S	–	2	H	H									

Sampler(s) Please Print & Sign: MICHAEL WHITSON

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) [X] Std 10 Wk days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	03-17	1530	
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[X] Level 2 Std QC
[ ] Level 3 Std QC/Row da
[ ] Level 4 SW846/CLP
[ ] Other/EDD
[ ] TRRP ChkList
[ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Chain of Custody Form

Page 2 of 2

COC ID: 118555

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	H = HOLD FOR INSTRUCTIONS FROM PM
				F	(NOT ALL SAMPLES RUN FOR ANALYSIS)
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	
Phone	(503) 924-4704	Phone	(503) 924-4704	H	
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	IB-2 (32)	03-15	1320	S	–	2	H	H									
2	IB-2 (38)	03-15	1330	S	–	2	H	H									
3	IB-3 (24)	03-15	1530	S	–	2	H	H									
4	IB-3 (30)	03-15	1540	S	–	2	H	H									
5	IB-3 (36)	03-15	1600	S	–	2	H	H									
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: MICHAEL WHITSON

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☒ Std 10 Wk days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date: 03-17	Time: 1530	Received by:
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
☒ Level 2 Std QC
☐ Level 3 Std QC/Row da
☐ Level 4 SW846/CLP
☐ Other/EDD
☐ TRRP ChkList
☐ TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Apex Companies, LLC- Portland, OR

3015 SW First Avenue
Portland, OR 97201-4707

Billing Information:
Accounts Payable- Rachelle Vanderzanden
3015 SW First Avenue
Portland, OR 97201-4707

Report to: ~~Ian Maguire~~ / Sam Jackson

Email To: ~~IMaguire@apexcos.com~~; SJackson@apexcos.com

Project Description: **Andover Release Site**

City/State Collected: ANDOVER, KS

Phone: **503-924-4704**
Fax: **503-943-6357**

Client Project #: **E3CE-0065**

Lab Project #: **ASHCREPOR-NUSTAR**

Collected by (print): MICHAEL WHITSON

Site/Facility ID #: EASTER ADDITION

P.O. #:

Collected by (signature): [signature]

Immediately Packed on Ice N ____ Y ✓

Rush? (Lab MUST Be Notified)
____ Same Day 200%
____ Next Day 100%
____ Two Day 50%
____ Three Day 25%

Date Results Needed

Email? ___No X__Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABS SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L #

Table #

Acctnum: **ASHCREPOR**
Template: **T100693**
Prelogin: **P500936**
TSR: **358 - Jarred Willis**
PB: 3/17/15 NW
Shipped Via: **FedEX Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	OA1(GRO) / V8260 2ozClr-NoPres	OA2 4ozClr-NoPres	V8260- Trip Blank 40mlAmb-HCl-Blk								Rem./Contaminant	Sample # (lab only)
MW-1R (19.5)	G	SS	19.5	03-12	1550	2	X	X										
MW-1R (22)	G	SS	22	03-12	1600	2	X	X										
MW-1R (33)	G	SS	33	03-12	1630	2	X	X										
F1R (26)	G	SS	26	03-13	1750	2	X	X										
F-1R (30)	G	SS	30	03-13	1830	2	X	X										
F-1R (36)	G	SS	36	03-13	1845	2	X	X										
TRIP BLANK	-	~~SS~~	—	—	—	~~2~~	~~X~~	~~X~~	X MW	03-17-15								
		SS				~~2~~	~~X~~	~~X~~	MW	03-17-15								
		SS				~~2~~	~~X~~	~~X~~	MW	03-17-15								
		SS				~~2~~	~~X~~	~~X~~	MW	03-17-15								

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: H = HOLD FOR INSTRUCTIONS FROM PM
(NOT ALL SAMPLES WILL BE RUN FOR ANALYSIS)

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____
[signature]				
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:

Condition: (lab use only)

COC Seal Intact: ____Y ____N ____NA

pH Checked: NCF:

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Chain of Custody Form

Page 1 of 2

COC ID: 118557

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	
				F	H = HOLD FOR INSTRUCTIONS FROM PM
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	(NOT ALL SAMPLES WILL BE RUN FOR
Phone	(503) 924-4704	Phone	(503) 924-4704	H	ANALYSIS)
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	IB-7 (19)	03-18-15	0900	S	–	2	H	H									
2	IB-7 (24)	03-18-15	0915	S	–	2	H	H									
3	IB-7 (39)	03-18-15	0930	S	–	2	H	H									
4	IB-8 (18)	03-18-15	1130	S	–	2	H	H									
5	IB-8 (32.5)	03-18-15	1200	S	–	2	H	H									
6	IB-8 (39)	03-18-15	1205	S	–	2	H	H									
7	IB-4 (6)	03-18-15	1330	S	–	2	H	H									
8	IB-4 (19.5)	03-18-15	1345	S	–	2	H	H									
9	IB-4 (31)	03-18-15	1400	S	–	2	H	H									
10	IB-4 (39)	03-18-15	1415	S	–	2	H	H									

Sampler(s) Please Print & Sign: MIKE WHITSON

Shipment Method: FEDEX OVERNIGHT

Required Turnaround Time: (Check Box) ☒ Std 10 Wk. days ☐ 5 Wk. Days ☐ 2 Wk. Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by: | Date: 03-19 | Time: 1700 | Received by:

Relinquished by: | Date: | Time: | Received by (Laboratory):

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
- ☒ Level 2 Std QC
- ☐ Level 3 Std QC/Row da
- ☐ Level 4 SW846/CLP
- ☐ Other/EDD
- ☐ TRRP ChkList
- ☐ TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

Page 2 of 2

COC ID: 118556

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	
				F	
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	
Phone	(503) 924-4704	Phone	(503) 924-4704	H	
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	TRIP BLANK	—	—	W	1	2	X										
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: MIKE MATTSON

Shipment Method: FEDEX OVERNIGHT

Required Turnaround Time: (Check Box): [X] Std 10 Wk days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: | Date: | Time: 1700 | Received by:

Relinquished by: | Date: | Time: | Received by (Laboratory):

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
- [X] Level 2 Std QC
- [ ] Level 3 Std QC/Row da
- [ ] Level 4 SW846/CLP
- [ ] Other/EDD
- [ ] TRRP ChkList
- [ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-07/08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-10-2015

PROJECT	QUAIL CROSSING PILOT TEST	ARRIVAL TIME	0845
LOCATION	ANDOVER, KANSAS	DEPARTURE TIME	1630
CLIENT	NUSTAR	WEATHER	FOG (40'S) AM/CLEAR (70'S) PM
PURPOSE OF OBSERVATIONS	WELL INSTALLATION/PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	CHAD AND MARK	H&S REVIEW	✓

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, send sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

0845 APEX (M. WHITSON) ARRIVES ON SITE, DRILLERS (CHAD AND MARK; LAYNE) HAVE STAGED EQUIPMENT AND LEFT TO OBTAIN WATER USE PERMIT AND TOTALIZER FROM CITY.
WELL LOCATIONS HAVE BEEN CLEARED, UTILITY LOCATES APPEAR TO HAVE BEEN COMPLETED.
PID AND INTERFACE PROBE SHIPMENT WAS DELAYED, WILL ARRIVE AT FEDEX FACILITY BY NOON TODAY.
0945 LAYNE ON SITE, MOVE PORTA POTTY INSIDE OF DELINEATION ZONE
WALK SITE WITH LAYNE, GO OVER SCOPE OF WORK
1015 START MOVING EQUIPMENT, JACE AND JASON (APEX) ARRIVE ON SITE.
APEX FINISHES CLEARING MW-17 LOC.
LAYNE SETUP ON MW-18 LOC.
H+S REVIEW
1100 JACE AND JASON HEAD TO EASTER ADDITION TO CLEAR LOCATIONS
LAYNE EXPERIENCING RIG DIFFICULTIES/TROUBLESHOOT
APEX MOBS TO FEDEX TO PICKUP PID/INTERFACE PROBE AND SAMPLE JARS/COOLERS
RETURN TO SITE, FEDEX WILL DELIVER TOMORROW MORNING
MOB TO EASTER ADDITION
1515 START ABANDONING WELLS AT EASTER ADDITION, AS-1-AS-3, MC-1-MC-3, MW-1, MW-F.
1600 SURFACE MONUMENTS REMOVED, PROTECT HOLES
CLEAN UP
1630 DEPART SITE

BY
APEX REPRESENTATIVE

REVIEWED BY
APEX PROJECT MANAGER

APEX

3015 SW First Avenue
Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-11-2015

PROJECT	QUAIL CROSSING PILOT TEST	ARRIVAL TIME	1010
LOCATION	ANDOVER, KS	DEPARTURE TIME	1830
CLIENT	NUSTAR	WEATHER	CLEAR (50'S-70'S) CALM
PURPOSE OF OBSERVATIONS	WELL INSTALLATION / PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	CHAD AND MARK	H&S REVIEW	✓

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1010 APEX ARRIVES ON SITE AFTER PICKING UP EQUIP/BOTTLES AT FEDEX, LAYNE ON SITE
1015 H+S PLAN REVIEW WITH CHAD AND MARK, LAYNE DOES NOT HAVE FR, OKAY (PM)
1030 START CORING MW-18 LOCATION (SEE LOG), PAMELA (KDHE) ON SITE
1130 KDHE DEPARTS, PHOTOGRAPH MW-6 AND MW-7 MON.'S FOR FIX
1345 FINISH WITH MW-18 (CASED TO 19' BGS)
MOVE TO MW-19 LOCATION AND SET UP
1500 START CORING MW-19 (SEE LOG), DRILLERS ASK ABOUT LANDFARM
1800 DOWN TO 45' BGS IN MW-19 (CASED TO 19' BGS)
CLEAN UP, TALK TO DRILLERS ABOUT LANDFARM HOURS (8-5 PM)
1830 DEPART SITE

BY

APEX REPRESENTATIVE

REVIEWED BY

APEX PROJECT MANAGER

APEX
3015 SW First Avenue
Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-08/07
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-12-2015

PROJECT	QUAIL CROSSING PILOT TEST	ARRIVAL TIME	0800
LOCATION	ANDOVER, KS	DEPARTURE TIME	1815
CLIENT	NUSTAR	WEATHER	CLEAR (40'S-70'S) CALM
PURPOSE OF OBSERVATIONS	WELL INSTALLATION/PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	CHAD AND MARK	H&S REVIEW	✓

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0800 APEX ARRIVES ON SITE, LAYNE ON SITE, H+S REVIEW
LAYNE SETS UP ON MW-17 LOCATION USING MUD MATS FOR TRACK RIG
0830 GAUGE WATER IN MW-18 AND MW-19
0830 START CORING MW-17 LOCATION (SEE LOG)
1115 FINISH CORING MW-17 (CASED TO 19' BGS)
1200 GAUGE OPEN BOREHOLE
LAYNE CLEANS UP AND MOBS TO EASTER ADDITION
SETUP ON MW-1R LOCATION
1430 START CORING MW-1R (SEE LOG)
1640 FINISH CORING MW-1R LOCATION
INSTALL MW-1R WELL FROM 25-40' (SCREENED) (SEE INSTALLATION LOG)
MOVE RIG OFF MW-1R
CLEAN UP
1815 DEPART SITE

BY
APEX REPRESENTATIVE

REVIEWED BY
APEX PROJECT MANAGER

APEX

3015 SW First Avenue
Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-07
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-13-2015

PROJECT	EASTER ADDITION	ARRIVAL TIME	0845
LOCATION	ANDOVER, KS	DEPARTURE TIME	1915
CLIENT	NUSTAR	WEATHER	CLEAR (40'S-70'S) CALM
PURPOSE OF OBSERVATIONS	WELL INSTALLATION / PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	MARK AND CHAD	H&S REVIEW	✓

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0845 APEX ARRIVES ON SITE, H+S REVIEW
0915 LAYNE SAYS RIG IS NOT STARTING UP, THEY ARE TROUBLESHOOTING AND MAKING PHONE CALLS TO FIX IT. CALL S. JACKSON
LAYNE CALLS JOHN DEERE MECHANIC
1015 GAUGE WELLS AT QUAIL CROSSING
LAYNE TROUBLESHOOTING RIG
CLEAN UP SITE, LOAD UP SOIL
1120 LAYNE TAKES LOAD TO EL DORADO
1300 LAYNE RETURNS FROM EL DORADO
MECHANIC ON SITE
WORK ON RIG
1445 RIG UP AND RUNNING MECHANIC DEPARTS
SENSOR, FUEL FILTER, COMBINATION OF OTHER ISSUES
WITH RIG IN VICINITY OF WELLS TO BE ABANDONED, SET UP TREMIE AND INJECT GROUT IN WELLS TO ABANDON, MOVE RIG TO F-1R LOC.
1550 SETUP ON F-1R LOC.
1615 START CORING F-1R LOCATION (SEE LOG)
1900 FINISH CORING F-1R
1915 CLEAN UP, DEPART SITE

BY

APEX REPRESENTATIVE

REVIEWED BY

APEX PROJECT MANAGER

APEX
3015 SW First Avenue
Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-07/08
FIELD REPORT NUMBER
PAGE 1 OF
DATE 03-14-15

PROJECT	EASTER ADDITION / QUAIL CROSSING	ARRIVAL TIME	0800
LOCATION	ANDOVER, KS	DEPARTURE TIME	1730
CLIENT	NUSTAR	WEATHER	CLEAR (70'S) CALM
PURPOSE OF OBSERVATIONS	WELL REPLACEMENT / INSTALLATION / PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	MARK AND CHAD	H&S REVIEW	✓

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0800 APEX ARRIVES ON SITE, H+S REVIEW
RUN CASING IN F-1R LOCATION, START INSTALLING WELL (25-40')
0915 WELL INSTALLED, START CLEANUP DEMOB OFF WELL LOCATION
SETUP OVER F-1 TO ABANDON, MOVE EQUIPMENT
0930 START ABANDONMENT OF F-1
CHIP MONUMENT
0945 PLUG WELL WITH GROUT THROUGH TREMIE
CUT CASING 3' BGS, TALK WITH OWNER ABOUT RUTS IN DRIVEWAY, THEY SUGGEST GRAVEL FILL
1020 LAYNE TO MENARDS FOR TOP SOIL
PLACE TOP SOIL, COMPLETE SURFACE ON F-1R AND MW-1R
1300 ALL ABANDONMENTS COMPLETE
CLEAN UP AND MOVE TO QUAIL CROSSING
1330 GAUGE WELLS AT QUAIL CROSSING
MOVE EQUIPMENT
1430 START SETTING UP ON INJECTION LOCATION IB-1
1515 START CORING IB-1 LOC. (SEE LOG)
1700 GET TO 29' BGS, STOP FOR DAY
CLEAN UP
1730 DEPART SITE

BY
APEX REPRESENTATIVE

REVIEWED BY
APEX PROJECT MANAGER

APEX
3015 SW First Avenue
Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-15-2015

PROJECT	QUAIL CROSSING	ARRIVAL TIME	0930
LOCATION	ANDOVER, KS	DEPARTURE TIME	1800
CLIENT	NUSTAR	WEATHER	CLEAR (40'S/60'S) CALM
PURPOSE OF OBSERVATIONS	WELL INSTALL/PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE	PERMIT NO.	–
CONTRACTOR REP.	MARK/CHAD	H&S REVIEW	✓

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0930 APEX ARRIVES ON SITE, LAYNE ON SITE, H+S REVIEW
SETUP ON IB-1 LOCATION
1015 RESUME CORING IB-1 (SEE LOG)
1115 COMPLETE IB-1 (CASED TO 20' BGS)
MOVE TO IB-2 AND SETUP
1115 CORE IB-2 (SEE LOG)
1330 IB-2 COMPLETE (CASED TO 20' BGS)
MOVE TO IB-3 AND SETUP
1330 CORE IB-3 (SEE LOG)
1600 COMPLETE IB-3 (CASED TO 20' BGS
1600 GAUGE WELLS ON SITE (SEE GAUGING SHEET)
CLEAN UP
SETUP ON IB WELLS FOR INJECTION, DISCUSS WITH S. JACKSON
WILL START WITH WELL INSTALLATIONS TOMORROW
CLEAN UP
1800 DEPART SITE

BY
APEX REPRESENTATIVE

REVIEWED BY
APEX PROJECT MANAGER

APEX

3015 SW First Avenue
Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-16-15

PROJECT	NUSTAR QUAIL CROSSING	ARRIVAL TIME	0830
LOCATION	ANDOVER, KS	DEPARTURE TIME	~~1630~~ MW 03-16-15 1700
CLIENT	NUSTAR	WEATHER	CLEAR
PURPOSE OF OBSERVATIONS	WELL INSTALLATION / PILOT STUDY / TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE DRILLING	PERMIT NO.	–
CONTRACTOR REP.	MARK AND CHAD	H&S REVIEW	✓

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0830 APEX ARRIVES ON SITE, LAYNE ON SITE, H+S REVIEW
MOVE RIG TO SETUP ON MW-17 FOR INSTALLATION
RIG SETUP OVER MW-17
RUN CASING DOWN TO 42'
CASING DOWN TO DEPTH
START INSTALLING WELL MW-17 FROM 27-42' (SCREENED)
1310 WELL INSTALLED (MW-17)
MOVE RIG, SETUP ON MW-19 TO CONSTRUCT WELL
RIG SETUP, POSITION CASING
1340 START SENDING CASING DOWN TO 42'
CASING DOWN TO DEPTH
1510 INSTALL WELL COMPONENTS ON MW-19 FROM 27-42' (SCREENED)
1550 FINISH INSTALL ON MW-19
PULL CASING
PULL RIG OFF OF MW-19 LOCATION
(620)245-7847 - JAY HAWK LANDSCAPING
SETUP ON MW-18 LOCATION
CLEAN UP
1700 DEPART SITE

BY

APEX REPRESENTATIVE

REVIEWED BY

APEX PROJECT MANAGER

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Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-17-2015

PROJECT	QUAIL CROSSING	ARRIVAL TIME	0815
LOCATION	ANDOVER, KS	DEPARTURE TIME	1745
CLIENT	NUSTAR	WEATHER	M. CLEAR (40'S) WINDY
PURPOSE OF OBSERVATIONS	WELL INSTALLATION / PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE	PERMIT NO.	–
CONTRACTOR REP.	MARK AND CHAD	H&S REVIEW	✓

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0815 APEX ARRIVES ON SITE, LAYNE ON SITE, RIG IS DOWN
HYDRAULIC CYLINDER/ACTUATOR ON DRILL HEAD BROKE THIS MORNING
CALL S. JACKSON, LAYNE HAS SOMEONE FROM TEXAS DRIVING UP REPLACEMENT
COMPLETE SURFACE OF MW-17 MONITORING WELL
EXTEND PAD ON MW-7 LOC. (PER S. JACKSON)
PART COMES IN FOR DRILL RIG, INSTALL ON DRILL HEAD
1515 SAMPLES SHIPPED TO LABORATORY
WORK ON DRILL RIG
RIG BACK UP AND RUNNING, START PUSHING CASING TO 42' BGS
CASING DOWN TO DEPTH
1625 START INSTALLING MONITORING WELL MW-18
WELL MW-18 INSTALL, SCREEN FROM 27-42' BGS
1645 APEX (PAUL AND RYAN) DEPART SITE
1700 WELL INSTALLED, PULL RIG OFF HOLE.
BENTONITE IN SURFACE
MOVE EQUIPMENT AROUND
CLEAN UP SITE
1745 DEPART

BY

APEX REPRESENTATIVE

REVIEWED BY

APEX PROJECT MANAGER

APEX

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Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 2
DATE 03-18-2015

PROJECT	QUAIL CROSSING	ARRIVAL TIME	0800
LOCATION	ANDOVER, KS	DEPARTURE TIME	1700
CLIENT	NUSTAR	WEATHER	OVERCAST, LIGHT RAIN (40's)
PURPOSE OF OBSERVATIONS	WELL INSTALL/PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE	PERMIT NO.	—
CONTRACTOR REP.	MARK/CHAD	H&S REVIEW	✓

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0800 APEX ARRIVES ON SITE, LAYNE ON SITE, H+S REVIEW
SETUP ON IB-7 LOCATION WITH MUD MATS FOR TRACKS
0815 CORE IB-7 LOCATION (SEE LOG)
0940 COMPLETE IB-7 LOCATION
SETUP EQUIPMENT FOR INJECTION
0950 MIX FIRST 40-GALLON BATCH OF ORC ADVANCED, 2 x 40 LB BAGS ORC, 36 GALLONS OF WATER, 40-GALLON SLURRY, PLAN TO INJECT THROUGH 4-4.5" CASING (CORE BARREL) (4-INCH OD CORE BARREL AND 3.5" OD TOOLING/RODS)
(SEE INJECTION LOG
MIX SECOND BATCH OF ORC, INJECT
1030 INJECTION IB-7 COMPLETE 80-GALLONS OF SLURRY INJECTED
PULL RIG OFF IB-7 LOCATION, CALL S. JACKSON, ASK DRILLER TO REDUCE INJECTION PRESSURE TO 50 PSI, PER INJECTION PERMIT (VIC PERMIT DOES NOT ALLOW GREATER THAN 50 PSI FOR INJECTIONS)
SETUP ON IB-8 LOCATION
1045 CORE IB-8
1155 IB-8 COMPLETED TO 40' BGS
1200 INJECT AT IB-8 LOCATION (SEE INJECTION LOG)
SETUP ON IB-4 LOCATION
1300 CORE IB-4
1415 IB-4 COMPLETED TO 40' BGS
1418 INJECT AT IB-4 LOCATION (SEE INJECTION LOG)
SETUP ON IB-5 LOCATION
1435 CORE IB-5

BY

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(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 2 OF 2
DATE 03-18-2015

1545 IB-5 CORED TO 40' BGS
1555 INJECT AT IB-5 LOC. (SEE INJECTION LOG)
1610 COMPLETE INJECTION
CLEAN UP
1700 DEPART SITE

BY

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APEX PROJECT MANAGER

APEX
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Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 320001641-08
FIELD REPORT NUMBER
PAGE 1 OF 1
DATE 03-19-2015

PROJECT	QUAIL CROSSING	ARRIVAL TIME	0815
LOCATION	ANDOVER, KS	DEPARTURE TIME	1215
CLIENT	NUSTAR	WEATHER	LT RAIN (40's-50's)
PURPOSE OF OBSERVATIONS	WELL INSTALLATION / PILOT TEST		
APEX REPRESENTATIVE	M. WHITSON	APEX PROJECT MANAGER	S. JACKSON
CONTRACTOR	LAYNE	PERMIT NO.	–
CONTRACTOR REP.	(MARK AND CHAD)	H&S REVIEW	✓

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0815 APEX ON SITE, LAYNE ON SITE, H+S REVIEW
CORE IB-9 LOCATION TO 40' BGS
0910 INJECT AT IB-9 LOCATION (SEE INJECTION LOG)
MOVE TO IB-6
CORE IB-6 LOCATION TO 40' BGS
1120 INJECT AT IB-6 LOCATION (SEE INJECTION LOG)
CLEAN UP
LEAVE APEX TULSA WITH INJECTION LOG AND INSTRUCTIONS
1215 DEPART SITE FOR FEDEX AND KANSAS CITY AIRPORT

BY

APEX REPRESENTATIVE

REVIEWED BY

APEX PROJECT MANAGER

WELL GAGING DATA SHEET

APEX

		Job Number:	1641
Client:	NUSTAR	Date:	03-12-2015
Project:	QUAIL CROSSING	Sampler:	M. WHITSON
Weather:	CLEAR (70'S) CALM	Time In/Out:	

WATER LEVEL DATA

Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
MW-19	0835	–	45.0	45.7'	–	0.7'	
MW-18	0845	–	43.2'	44'	–	0.8'	
MW-17	1200	–	–	45.0'	–	–	
	03-13						
MW-19	1030	–	42.6'	44.8'	–	2.2'	
MW-18	1035	–	40.0'	43.3'	–	3.3'	
MW-17	1040	–	42.8	44.0'	–	1.2'	
	03-14						
MW-19	1335	–	40.1'	44.6	–	4.5'	
MW-18	1340	–	36.3'	41.5	–	5.2'	
MW-17	1345	–	38.7'	41.3	–	2.6'	
	03-15						
MW-17	1600	–	35.4	39.4	–	4.0'	
MW-19	1605	–	38.5	41.1	–	2.6'	
MW-18	1610	–	33.5	39.8	–	6.3'	

WELL GAGING DATA SHEET

APEX

		Job Number:	
Client:	NUSTAR	Date:	03-18-15
Project:	QUAIL CROSSING	Sampler:	M. WHITSON
Weather:	CLOUDY (40'S)	Time In/Out:	

WATER LEVEL DATA

Well I.D.	Time	~~Depth to Free Product (feet)~~	~~Depth to Water (feet)~~	~~Depth to Well Bottom (feet)~~	~~Product Thickness (feet)~~	~~Water Column Height (feet)~~	Notes/Other Remarks		
WELL ID	TIME START	SLURRY GALLONS	BOTTOM DEPTH	TOP DEPTH	TIME FINISH	PRESSURE	SLURRY MIX TIME	ORC LBS	WATER GALLONS
IB-7	~~09~~ 1000	~~40~~ 80	40	30	1015	100	0950	80	36
	1015	~~40~~ 80	30	20	1030	100	1015	80	36
IB-8	1200	~40	40	30	1207	40	1155	~75	36
	1209	~40	30	20	1215	40	1208	~75	36
IB-4	1418	~40	40	30	1421	35	1415	~75	36
	1424	~40	30	20	1430	35	1422	~75	36
IB-5	1555	~40	40	30	1600	40	1550	~75	36
	1605	~40	30	20	1610	40	1601	~75	36

WELL GAGING DATA SHEET

APEX

		Job Number	
Client:		Date:	08-19-15
Project:		Sampler:	M. WHITSON-J
Weather:		Time In/Out:	

WATER LEVEL DATA

Well ID	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column (feet)	Notes/Other Remarks		
WELL ID	TIME	SURFACE DATA	BOTTOM DEPTH	TOP DEPTH	TIME SAMPLED	MESS	SAMPLE PRE TIME	ORG	WATER
18-9	0910	40	40	30	0915	36	0907	75	36
	0918	40	30	20	0925	35	0916	75	36
18-6	1120	40	40	30	1125	40	1116	75	36
	1130	40	20	20	1135	40	1128	75	36

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Chain of Custody Form

Page 1 of 2

COC ID: 118554

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	H = HOLD FOR INSTRUCTIONS FROM PM
				F	(NOT ALL SAMPLES WILL BE RUN FOR ANALYSIS)
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	
Phone	(503) 924-4704	Phone	(503) 924-4704	H	
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-19 (28)	03-11	1710	S	–	2	H	H									
2	MW-19 (32)	03-11	1720	S	–	2	H	H									
3	MW-19 (45)	03-11	1800	S	–	2	H	H									
4	MW-18 (26.5)	03-11	1315	S	–	2	H	H									
5	MW-18 (31.5)	03-11	1325	S	–	2	H	H									
6	MW-17 (19)	03-12	1005	S	–	2	H	H									
7	MW-17 (22)	03-12	1015	S	–	2	H	H									
8	MW-17 (37)	03-12	1100	S	–	2	H	H									
9	IB-1 (18.0)	03-14	1650	S	–	2	H	H									
10	IB-1 (24.0)	03-14	1700	S	–	2	H	H									

Sampler(s) Please Print & Sign: MICHAEL WHITSON

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) [X] Std 10 Wk days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	03-17	1530	
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[X] Level 2 Std QC
[ ] Level 3 Std QC/Row da
[ ] Level 4 SW846/CLP
[ ] Other/EDD
[ ] TRRP ChkList
[ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page 2 of 2

COC ID: 118555

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	H = HOLD FOR INSTRUCTIONS FROM PM
				F	(NOT ALL SAMPLES RUN FOR ANALYSIS)
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	
Phone	(503) 924-4704	Phone	(503) 924-4704	H	
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	IB-2 (32)	03-15	1320	S	–	2	H	H									
2	IB-2 (38)	03-15	1330	S	–	2	H	H									
3	IB-3 (24)	03-15	1530	S	–	2	H	H									
4	IB-3 (30)	03-15	1540	S	–	2	H	H									
5	IB-3 (36)	03-15	1600	S	–	2	H	H									
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: MICHAEL WHITSON

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☒ Std 10 Wk days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date: 03-17	Time: 1530	Received by:
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
☒ Level 2 Std QC
☐ Level 3 Std QC/Row da
☐ Level 4 SW846/CLP
☐ Other/EDD
☐ TRRP ChkList
☐ TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Apex Companies, LLC- Portland, OR

3015 SW First Avenue
Portland, OR 97201-4707

Billing Information:
Accounts Payable- Rachelle Vanderzanden
3015 SW First Avenue
Portland, OR 97201-4707

Report to: ~~Ian Maguire~~ / Sam Jackson

Email To: ~~IMaguire@apexcos.com~~; SJackson@apexcos.com

Project Description: **Andover Release Site**

City/State Collected: ANDOVER, KS

Phone: **503-924-4704**
Fax: **503-943-6357**

Client Project #: **E3CE-0065**

Lab Project #: **ASHCREPOR-NUSTAR**

Collected by (print): MICHAEL WHITSON

Site/Facility ID #: EASTER ADDITION

P.O. #:

Collected by (signature): [signature]

Immediately Packed on Ice N ____ Y ✓

Rush? (Lab MUST Be Notified)
____ Same Day 200%
____ Next Day 100%
____ Two Day 50%
____ Three Day 25%

Date Results Needed

Email? ___No X__Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

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YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L #

Table #

Acctnum: **ASHCREPOR**
Template: **T100693**
Prelogin: **P500936**
TSR: **358 - Jarred Willis**
PB: 3/17/15 NW
Shipped Via: **FedEX Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	OA1(GRO) / V8260 2ozClr-NoPres	OA2 4ozClr-NoPres	V8260- Trip Blank 40mlAmb-HCl-Blk								Rem./Contaminant	Sample # (lab only)
MW-1R (19.5)	G	SS	19.5	03-12	1550	2	X	X										
MW-1R (22)	G	SS	22	03-12	1600	2	X	X										
MW-1R (33)	G	SS	33	03-12	1630	2	X	X										
F1R (26)	G	SS	26	03-13	1750	2	X	X										
F-1R (30)	G	SS	30	03-13	1830	2	X	X										
F-1R (36)	G	SS	36	03-13	1845	2	X	X										
TRIP BLANK	-	~~SS~~	—	—	—	~~2~~	~~X~~	~~X~~	X MW	03-17-15								
		SS				~~2~~	~~X~~	~~X~~	MW	03-17-15								
		SS				~~2~~	~~X~~	~~X~~	MW	03-17-15								
		SS				~~2~~	~~X~~	~~X~~	MW	03-17-15								

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: H = HOLD FOR INSTRUCTIONS FROM PM
(NOT ALL SAMPLES WILL BE RUN FOR ANALYSIS)

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____
[signature]				
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:

Condition: (lab use only)

COC Seal Intact: ____Y ____N ____NA

pH Checked: NCF:

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Chain of Custody Form

Page 1 of 2

COC ID: 118557

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	
				F	H = HOLD FOR INSTRUCTIONS FROM PM
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	(NOT ALL SAMPLES WILL BE RUN FOR
Phone	(503) 924-4704	Phone	(503) 924-4704	H	ANALYSIS)
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	IB-7 (19)	03-18-15	0900	S	–	2	H	H									
2	IB-7 (24)	03-18-15	0915	S	–	2	H	H									
3	IB-7 (39)	03-18-15	0930	S	–	2	H	H									
4	IB-8 (18)	03-18-15	1130	S	–	2	H	H									
5	IB-8 (32.5)	03-18-15	1200	S	–	2	H	H									
6	IB-8 (39)	03-18-15	1205	S	–	2	H	H									
7	IB-4 (6)	03-18-15	1330	S	–	2	H	H									
8	IB-4 (19.5)	03-18-15	1345	S	–	2	H	H									
9	IB-4 (31)	03-18-15	1400	S	–	2	H	H									
10	IB-4 (39)	03-18-15	1415	S	–	2	H	H									

Sampler(s) Please Print & Sign: MIKE WHITSON

Shipment Method: FEDEX OVERNIGHT

Required Turnaround Time: (Check Box) ☒ Std 10 Wk. days ☐ 5 Wk. Days ☐ 2 Wk. Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by: | Date: 03-19 | Time: 1700 | Received by:

Relinquished by: | Date: | Time: | Received by (Laboratory):

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
- ☒ Level 2 Std QC
- ☐ Level 3 Std QC/Row da
- ☐ Level 4 SW846/CLP
- ☐ Other/EDD
- ☐ TRRP ChkList
- ☐ TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page 2 of 2

COC ID: 118556

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	
				F	
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	
Phone	(503) 924-4704	Phone	(503) 924-4704	H	
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	TRIP BLANK	—	—	W	1	2	X										
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: MIKE MATTSON

Shipment Method: FEDEX OVERNIGHT

Required Turnaround Time: (Check Box): [X] Std 10 Wk days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: | Date: | Time: 1700 | Received by:

Relinquished by: | Date: | Time: | Received by (Laboratory):

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
- [X] Level 2 Std QC
- [ ] Level 3 Std QC/Row da
- [ ] Level 4 SW846/CLP
- [ ] Other/EDD
- [ ] TRRP ChkList
- [ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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WELL GAGING DATA SHEET

APEX

		Job Number:	32000441-08.003
Client:	NSTM	Date:	20150218
Project:	Antioch / colfCart	Sampler:	
Weather:	Cloudy	Time In/Out:	

WATER LEVEL DATA

	Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
	2006	15:49	—	45.55	—	—	—	
	MW-18	16:05	—	27.93	41.09	—	—	16:09 Began Development
	MW-18	16:20	—	—	—	—	—	16:20 Dry
	MW-19	16:30	—	35.14	42.85	—	—	16:32 Began Development
	MW-19	16:33	water	clear	16:34 back to	cloudy		dry at 16:35
03-19	MW-11	13:56	—	29.84	—	—	—	
	MW-14	14:07	—	33.94	—	—	—	
	MW-13	14:14	—	33.16	—	—	—	
	MW-8	14:17	—	21.96	—	—	—	
	MW-5	14:19	—	20.80	—	—	—	
	MW-2	14:22	—	32.87	—	—	—	
	MW3	14:25	—	41.02	—	—	—	
	MW-6	14:28	—	22.62	—	—	—	
	MW-7	14:31	—	16.63	—	—	—	
	Pond	14:33	—	—	—	—	—	1343.6
	MW9	14:36	—	31.59	—	—	—	
	MW-10	14:39	—	28.42	—	—	—	
	MW12	14:42	—	30.95	—	—	—	
	MW-4	14:45	—	31.22	—	—	—	
16	MW-16	14:48	—	31.80	—	—	—	
	MW-15	1454	—	35.04	—	—	—	
3-20	MW-1	1055	—	31.38	—	—	—	

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-4	Job Number:	32000164108-003
Client:	NUSTAR	Date:	3-20-2015
Project:	Ardmore / Colt Creek	Sampler:	PN
Weather:	cool, sunny	Time In/Out:	0930 / 1015

WELL DATA

Well Depth:	—	Well Diameter:	2	Water Height	—
Depth to Water:	31.22	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	35
Sampling Method:	PN	Tubing Type:	poly

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0945	0.3	0.3	31.28	0.3	6.45	14.83	1.047	11.48	5.2	—	CL
0948	0.9	1.2	31.58	0.3	6.49	15.46	1.051	1.69	-16.7	—	CL
0951	0.9	2.1	31.85	0.3	6.50	15.51	1.050	1.24	-24.3	—	SC
0954	0.9	3.0	32.07	0.3	6.51	15.49	1.050	0.99	-28.3	—	AC
0957	0.9	3.9	32.33	0.3	6.52	15.77	1.050	0.86	-30.2	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-4	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	0959	Final Depth to Water:	33.46	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-5	Job Number:	32001641 08-004
Client:	NUSTAR	Date:	3-20-2015
Project:	Arrowe Colt Court	Sampler:	PN
Weather:	cool, sunny	Time In/Out:	1020/1050

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	20.80	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	23
Sampling Method:	PN	Tubing Type:	poly

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1026	0.3	0.3	21.06	0.3	6.85	16.37	1.449	2.42	28.9	—	C
1029	0.9	1.2	21.29	0.3	6.78	16.45	1.451	1.07	[illegible]	—	C
1032	0.9	2.1	21.43	0.3	6.75	16.45	1.452	1.13	31.3	—	C
1035	0.9	3.0	21.53	0.3	6.73	16.44	1.451	1.07	35.2	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	1037	Final Depth to Water:	21.54	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-1	Job Number:	30020164[illegible]-09.003
Client:	NV STAT	Date:	3-20-2015
Project:	Andrews Lott Court	Sampler:	PW
Weather:	NICE, sunny	Time In/Out:	11:10

WELL DATA

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	31.38	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	34
Sampling Method:	PN	Tubing Type:	Poly

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1116	0.3	0.3	31.52	0.3	7.00	16.87	1.391	6.07	-71.9	—	CL
1119	0.9	1.2	31.64	0.3	6.84	16.80	1.391	2.08	-67.9	—	CL
1122	0.9	2.1	31.77	0.3	6.78	16.87	1.389	1.41	-63.7	—	CL
1125	0.9	3.0	31.81	0.3	6.76	16.70	1.388	1.21	-54.0	—	CL
1128	0.9	3.9	32.02	0.3	6.75	16.77	1.388	1.16	-46.0	—	CL

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	1130	Final Depth to Water:	32.55	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-17	Job Number:	32010/641-08004
Client:	NG STAT	Date:	3-20-2015
Project:	Andover Volt Court	Sampler:	PW
Weather:	Nice/sunny	Time In/Out:	11:50

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	31.45	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	42
Sampling Method:	PN	Tubing Type:	Poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1155	0.3	0.3	35.95	0.3	6.95	18.01	1,051	3.03	30.1		VC
1158	0.9	1.2	36.35	0.3	6.88	16.28	1056	1.28	38.8		VC
1201	0.9	2.1	36.81	0.3	6.84	18.18	1,053	0.87	43.3		VC
1204	0.9	3.0	37.30	0.3	6.82	18.07	1,055	0.70	43.2		VC
1207	0.9	3.9	37.85	0.3	6.81	18.15	1,057	0.61	42.0		VC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-17	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	1209	Final Depth to Water:	40.32	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-18	Job Number:	32000641-08.005
Client:	NUSTAR	Date:	3-20-2015
Project:	Anderson Point Court	Sampler:	PW
Weather:	nice, sunny	Time In/Out:	12:45

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	~~21.46~~ 27.93	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	36	Comments	
Sampling Method:	PN	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1248	0.3	0.3	31.00	0.3	7.05	17.89	0.993	2.03	3.5	/	VC
1251	0.9	1.2	31.52	0.3	6.97	17.78	1.009	1.03	-18.8	/	VC
1254	0.9	2.1	31.92	0.3	6.90	17.52	0.999	0.78	-9.2	/	VC
1257	0.9	3.0	32.19	0.3	6.89	17.43	0.990	0.68	-12.6	/	VC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-18	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	1259	Final Depth to Water:	33.17	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-19	Job Number:	32020/1411-08.023
Client:	NVSTAT	Date:	3-20-2015
Project:	Anderson/Cott Court	Sampler:	PN
Weather:	nice, sunny	Time In/Out:	13:14

WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	35.19	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

PURGING DATA

Purge Method:	PN	Pump Intake Depth:	39
Sampling Method:	PN	Tubing Type:	poly

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1318	0.3	6.3	34.26	0.3	7.24	18.18	0.909	6.54	53.9	/	CL
1321	0.9	1.2	34.55	0.3	7.13	17.99	0.906	1.90	43.8	/	CL
1324	0.9	2.1	34.89	0.3	7.09	17.91	0.906	1.55	43.7	/	CL
1327	0.9	3.0	35.22	0.3	7.09	17.83	0.905	1.57	49.7	/	CL

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-19	Sampling Flow Rate	0.3	Analytical Laboratory:	ALS
Sample Time:	1329	Final Depth to Water:	~~36.3~~ 35.36	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

ALS Environmental

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Chain of Custody Form

Page 1 of 1

COC ID: 118685

Houston, TX +1 281 530 5656 | Spring City, PA +1 610 948 4903 | South Charleston, WV +1 304 356 3168 | Middletown, PA +1 717 944 5541 | Salt Lake City, UT +1 801 266 7700 | York, PA +1 717 505 5280

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	E3CE-0065 Andover Release Site	A	300_W (Sulfate, nitrate, O-Phos)
Work Order		Project Number		B	8260_LL_W (Colt Court GW List)
Company Name	Apex Companies	Bill To Company	Apex Companies	C	ALK_W 2320B
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	ICP_DISS (Dissolved Iron)
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	ICP_TW (Potassium only)
				F	NIT_AMM_W_ISE
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	RSK175 (Methane)
Phone	(503) 924-4704	Phone	(503) 924-4704	H	VPH OA-1_W (HYD-5)
Fax		Fax		I	XXX SUB (SUB CO2 (Simi Valley))
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-4	3-20-2015	0959	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
2	MW-5		1037	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
3	MW-1		1130	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
4	MW-17		1209	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
5	MW-18	1259	~~1329~~	GW	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
6	MW-19		1329	GW													
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Paul Ward

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) TAT 7 days Other

Results Due Date:

Relinquished by:	Date: 3-20-15	Time: 14:30	Received by:
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: (E3CE-0065 Andover Release Site)

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

QC Level STD

Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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FIELD OBSERVATION FORM

SITE: Andover Quail Crossing	DATE: 4/20/15
WEATHER: wind 55°F	ESTIMATED DURATION OF EVENT: 1 day
EVENT TYPE: Gauge + Sample 6 wells	PTW #:
FIELD STAFF / COMPANY NAME: Jace Harris Ted Alfred	

OBJECTIVE OF FIELD WORK: Gauge all wells + Sample 6 new wells for MNA parameters

LIST APPLICABLE SOPs: Gauge wells + Sample

WERE SOPs FOLLOWED?	YES	NO	N/A
ARE THE WELLS IN GOOD CONDITION?	YES	NO	N/A
WERE WATER LEVELS CONSISTENT WITH PREVIOUS EVENTS?	YES	NO	N/A
WERE NAPL LEVELS CONSISTENT WITH PREVIOUS EVENTS (if applicable)?	YES	NO	N/A
ARE OFF-SITE ACTIVITIES/RECEPTORS NEAR SITE THE SAME AS DURING PREVIOUS EVENTS?	YES	NO	N/A
NUMBER OF DRUMS ONSITE UPON ARRIVAL: ___ ARE DRUMS LABELED:	YES	NO	N/A

(PROVIDE EXPLANATION BELOW FOR ALL "NO" ANSWERS. ATTACH ADDITIONAL DOCUMENTATION TO FORM IF NECESSARY)

NOTES/COMMENTS:

WELL GAGING DATA SHEET

APEX

		Job Number:	N/A
Client:	NuStar	Date:	4/20/15
Project:	Andover Quarl Xing	Sampler:	JH + TA
Weather:	wind 55°F	Time In/Out:	

WATER LEVEL DATA

Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
MW-1	10:41	—	31.39				
MW-2	10:44	—	36.43				
MW-3	10:29	—	45.61				
MW-4	11:13	—	34.10				
MW-5	10:51	—	21.01				
MW-6	10:34	—	23.05				
MW-7	10:32	—	16.10				
MW-8	10:~~9~~50	—	22.25				
MW-9	10:27	—	33.25				
MW-10	10:24	—	28.53				
MW-11	11:11	—	30.39				
MW-12	10:20	—	31.09				
MW-13	10:48	—	33.34				
MW-14	10:46	—	34.93				
MW-15	11:06	—	36.50				
MW-16	11:02	—	33.03				
MW-17	10:39	—	~~34.91~~ 33.91				
MW-18	11:18	—	33.51				
MW-19	11:19	—	33.70				
Pond	10:31	—	1344.75'				

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-1	Job Number:	
Client:	Nu Star	Date:	4/20/15
Project:	Andrews Quail Crossing	Sampler:	TA, JH
Weather:	Sunny / cloudy	Time In/Out:	1455 / 1535

WELL DATA

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	31.39	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	0.5' from bottom	Comments	
Sampling Method:	bladder	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
15:06			31.45	.2	6.81	16.72	1.186	1.03	-72.2		SC
15:09			31.49	.2	6.73	17.42	1.208	0.59	-75.6		SC
15:12			31.53	.2	6.71	16.94	1.214	0.89	-77.7		SC
15:15			31.60	.2	6.67	16.67	1.203	0.75	-78.4		SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate	.2	Analytical Laboratory:	ALS
Sample Time:	1522	Final Depth to Water:	31.82	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 VOAs	9 HCl / 3 Neat	See	yes (no)			
1 250 Plastic	H_2SO_4	COC	yes no			
1 250 Plastic	HNO_3		yes no			
3 250 Plastic	Neat		yes no			
			yes no			
			yes no			

COMMENTS

Variations in cloud cover causing large swings in temp readings due to sun exposure (YSI vessel + tubing)

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-4	Job Number:	
Client:	Nu Star	Date:	4/20/15
Project:	Andover Quail Crossing	Sampler:	TA, JH
Weather:	Sunny / cloudy	Time In/Out:	1540 / 1615

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	34.10	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	4' from bottom	Comments	
Sampling Method:	bladder	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (mS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
15:45			34.19	.15	7.09	18.01	0.722	3.10	-25.3		SC
15:48			34.34	.15	7.04	17.41	0.724	2.83	-29.0		SC
15:51			34.57	.15	6.99	17.07	0.722	2.69	-27.9		SC
15:53			34.64	.125	7.00	17.31	0.719	2.54	-25.3		SC
15:56			34.69	.125	7.02	17.43	0.719	2.71	-24.9		SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-4	Sampling Flow Rate	.125	Analytical Laboratory:	ALS
Sample Time:	16:04	Final Depth to Water:	34.80	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 VOAs	9 HCl / 3 Neat	See	yes (no)			
1 250 PL	H_2SO_4	C.O.C.	yes no			
1 250 PL	HNO_3		yes no			
3 250 PL	Neat		yes no			
			yes no			
			yes no			

COMMENTS

Fluctuations in cloud cover causing temperature variances due to sun exposure to vessel / tubing

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-5	Job Number:	
Client:	NuStar	Date:	4/20/15
Project:	Andover Rail (coating	Sampler:	TA, JH
Weather:	Sunny / Cloudy	Time In/Out:	16 /

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	21.01	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:			Comments
Sampling Method:	bladder	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1624			21.12	.2	6.99	17.63	1.337	1.71	1.6		AC
1627			21.25	.2	6.85	17.12	1.358	1.27	10.5		AC
1630			21.34	.2	6.84	17.04	1.356	1.27	14.2		C
1633			21.56	.2	6.82	17.01	1.357	1.30	20.1		C
1636			21.71	.2	6.80	16.80	1.360	1.10	20.2		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate	.2	Analytical Laboratory:	ALS
Sample Time:	1647	Final Depth to Water:	27.87	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 Vocs	9 HCl / 3 Neat		yes (no)			
1 250 Pl	H_2SO_4	See	yes no			
1 250 Pl	HNO_3	C.O.C	yes no			
3 250 Pl	Neat		yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-17	Job Number:	
Client:	NuStar	Date:	4/20/15
Project:	Andover Quail Crossing	Sampler:	TA, JH
Weather:	Sunny / cloudy	Time In/Out:	1416

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	~~34.91~~ 33.91	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	2.5' from bottom
Sampling Method:	bladder	Tubing Type:	poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (mS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1421			34.10	.2	7.08	17.40	1.020	2.60	-44.8		SC
1424			34.31	.2	6.81	17.16	1.014	1.04	-42.9		SC
1427			34.47	.15	6.74	16.89	1.014	1.15	-44.3		SC
1430			34.69	.15	6.68	16.63	1.004	0.87	-44.1		SC
1433			34.83	.15	6.70	16.87	1.012	0.83	-45.6		SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-17	Sampling Flow Rate	.15	Analytical Laboratory:	ALS
Sample Time:	14:40	Final Depth to Water:	35.31	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 VOAs	9 HCl / 3 neat	See CoC	yes (no)			
1 250mL Plastic	H_2SO_4		yes no			
1 250mL Plastic	HNO_3		yes no			
3 250mL Plastic	Neat		yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-18	Job Number:	
Client:	NuStar	Date:	4/20/15
Project:	Andover Release	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1205/1235

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	33.51	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	5' from bottom	Comments	
Sampling Method:	Bladder	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (mS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
12:13			33.71	.15	5.93	17.07	.951	1.03	62.4	—	Cl
12:16			34.07	.15	6.03	17.18	.885	0.89	64.0	—	Cl
12:19			34.36	.15	6.10	17.17	.880	0.84	62.4	—	Cl
12:22			34.45	.10	6.17	17.38	.880	0.79	62.1	—	Cl

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-18	Sampling Flow Rate	.100	Analytical Laboratory:	ALS
Sample Time:	12:27	Final Depth to Water:	34.97	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 vocs	HCl	See CoC.	yes (no)			
25ml 1 pl, H_2SO_4			yes no			
" 1 pl, HNO_3			yes no			
" 3 Neat			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-19	Job Number:	
Client:	NuStar	Date:	4/20/15
Project:	Andrews Quail Xing	Sampler:	TA/JH
Weather:	Sunny	Time In/Out:	12:40/1325

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	33.70	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	Comments
Sampling Method:	Bladder	Tubing Type:	Poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
12:53			33.90	.15	6.91	17.74	.896	7.44	-14.3		SC
12:56			33.99	.15	6.74	17.34	.863	3.01	-45.9		SC
12:59			34.04	.15	6.63	17.16	.851	1.61	-59.5		SC
13:02			34.17	.15	6.62	17.10	.845	1.40	-61.6		SC
13:05			34.28	.15	6.62	17.11	.841	1.36	-61.2		SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-19	Sampling Flow Rate	.15	Analytical Laboratory:	ALS
Sample Time:	13:15	Final Depth to Water:	35.03	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
12 VOA's	9 HCl / 3 Neat	See COC	yes (no)			
250 mL Plastic	H_2SO_4		yes no			
250 mL Plastic	HNO_3		yes no			
250 mL Plastic	Neat		yes no			
			yes no			
			yes no			

COMMENTS

ALS Environmental

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Chain of Custody Form

Page 1 of 1

COC ID: 124872

Houston, TX +1 281 530 5656 | Spring City, PA +1 610 948 4903 | South Charleston, WV +1 304 356 3168 | Middletown, PA +1 717 944 5541 | Salt Lake City, UT +1 801 266 7700 | York, PA +1 717 505 5280

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	E3CE-0065 Andover Release Site	A	300_W (Sulfate, nitrate, O-Phos)
Work Order		Project Number		B	8260_LL_W (Colt Court GW List)
Company Name	Apex Companies	Bill To Company	Apex Companies	C	ALK_W 2320B
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	ICP_DISS (Dissolved Iron)
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	ICP_TW (Potassium only)
				F	NIT_AMM_W_ISE
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	RSK175 (Methane)
Phone	(503) 924-4704	Phone	(503) 924-4704	H	VPH OA-1_W (HYD-5)
Fax		Fax		I	XXX SUB (SUB CO2 (Simi Valley))
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-18	4/20/15	1227	W	HCl, NaOH, H_2SO_4, HNO_3	17	X	X	X	X	X	X	X	X	X		
2	MW-19	↓	1315	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
3	MW-17	↓	1440	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
4	MW-1	↓	1522	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
5	MW-4	↓	1604	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
6	MW-5	↓	1647	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
7					1,2,3 7-HCl+												
8																	
9																	
10																	

Sampler(s) Please Print & Sign	Shipment Method	Required Turnaround Time: (Check Box)	Results Due Date:
Ted Alfred		TAT 7 days Other:	

Relinquished by:	Date:	Time:	Received by:	Notes: (E3CE-0065 Andover Release Site)
	4/20/15	1830		
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)
		QC Level STD
		Other:

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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3. The Chain of Custody is a legal document. All information must be completed accurately.

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WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-5	Job Number:	1641-08.002
Client:	NuStar	Date:	6/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Rainy	Time In/Out:	0815

WELL DATA

Well Depth:	30.00	Well Diameter:	2"	Water Height	
Depth to Water:	19.60	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	25'	Comments	
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
8:41	.400	.400	19.65	.200	6.96	18.16	1412	2.10	158.5	—	AC
8:44	.600	1.000	19.68	.200	6.96	18.00	1420	1.86	157.1	—	C
8:47	.600	1.600	19.72	.200	6.95	17.88	1418	1.44	155.2	—	C
8:50	.600	2.200	19.76	.200	6.95	17.88	1426	1.48	152.6	—	C
8:53	.600	2.800	19.80	.200	6.96	17.90	1429	1.49	148.7	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	08:59	Final Depth to Water:	19.87	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
39 VOA's	HCl	C.O.C.	yes no			
3 VOA's	Neat		yes no			
(3) 250 mL pl	Neat		yes no			
1 H_2SO_4 pl-250mL	H_2SO_4		yes no			
1 HNO_3 pl-250mL	HNO_3		yes no			
			yes no			

COMMENTS

Full MNA parameters ran

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-17	Job Number:	1641-08.002
Client:	NuStar	Date:	6/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Rainy	Time In/Out:	0915

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	31.28	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	36'		Comments
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color .Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0920	.500	.500	31.42	.250	7.14	18.16	1035	1.40	-17.1	-	AC
923	.750	1.250	31.48	.250	7.06	18.27	1033	1.11	-13.8	-	AC
926	.750	2.000	31.48	.250	7.03	17.70	1035	1.06	-11.5	-	C
929	.750	2.750	31.49	.250	7.01	17.51	1036	0.96	-10.6	-	C
0932	.750	3.500	31.49	.250	7.00	17.43	1047	0.92	-9.9	-	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-17	Sampling Flow Rate	.250	Analytical Laboratory:	ALS
Sample Time:	0940	Final Depth to Water:	31.52	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOA's	HCl	C.O	yes no			
3 VOA's	Neat		yes no			
3 250mL Pl	Neat	C.	yes no			
1 250mL Pl	H_2SO_4		yes no			
1 250mL Pl	HNO_3		yes no			
			yes no			

COMMENTS

Full MNA Pan

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-1	Job Number:	1641-08.004
Client:	Nustar	Date:	6/16/15
Project:	Andover Q.L.	Sampler:	TA, JH
Weather:	Rainy/misty	Time In/Out:	0945

WELL DATA

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	31.31	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	4' from bottom
Sampling Method:	same	Tubing Type:	poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity .(NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0951	.600	.600	31.31	.300	7.08	16.86	1318	1.50	-50.6	–	AC
0954	.900	1.500	31.39	.300	7.05	16.65	1315	1.18	-51.0	–	AC
0957	.900	2.400	31.46	.300	7.02	16.59	1312	1.01	-51.6	–	C
1000	.900	3.300	31.55	.300	7.01	16.50	1311	0.95	-51.7	–	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate	.300	Analytical Laboratory:	ALS
Sample Time:	1010	Final Depth to Water:	31.58	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOA's	HCl	C.O.C	yes no			
3 VOA's	Neat		yes no			
3 250-pl	Neat		yes no			
1 250-pl	H_2SO_4		yes no			
1 250-pl	HNO_3		yes no			
			yes no			

COMMENTS

Full MNA ran

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-18	Job Number:	1641-08.002
Client:	NuStar	Date:	6/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Rainy / Misty	Time In/Out:	1015

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.64	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	35'	Comments	
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1022	.500	.500	30.79	.250	7.24	19.17	902	1.90	-34.5	–	CI
1025	.750	1.250	30.89	.250	7.19	20.00	894	1.31	-30.0	–	CI
1028	.750	2.000	31.05	.250	7.17	19.21	897	1.24	-26.8	–	CI
1031	.750	2.750	31.21	.250	7.15	18.99	895	0.95	-22.7	–	SC
1034	.750	3.500	31.33	.250	7.13	18.99	895	0.89	-19.8	–	SC
1037	.750	4.250	31.41	.250	7.12	18.90	899	0.93	-17.6	–	SC

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-18	Sampling Flow Rate	.250	Analytical Laboratory:	AKS
Sample Time:	10:45	Final Depth to Water:	31.51	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOAs	HCl	C.	yes no			
3 VOAs	Neat	O.	yes no			
3 250-PI	Neat	C.	yes no			
1 250-PI	H_2SO_4		yes no			
1 250-PI	HNO_3		yes no			
			yes no			

COMMENTS

Full MNA

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-19	Job Number:	1641-08.002
Client:	NuStar	Date:	6/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Rainy/Misty	Time In/Out:	1055

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.60	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	34'		Comments
Sampling Method:	Same	Tubing Type:	Poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
10:59	.500	.500	30.59	.250	7.45	20.13	820	1.94	-21.8	–	Cl
11:02	.750	1.250	30.70	.250	7.38	19.66	825	1.28	-39.8	–	Cl
1105	.750	2.000	30.40	.250	7.32	18.77	825	0.66	-62.6	–	SC
1108	.750	2.750	31.15	.250	7.27	18.65	825	0.57	-72.9	–	SC
1111	.450	3.200	31.40	.150	7.25	18.83	827	0.49	-81.6	–	SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-19	Sampling Flow Rate	.200	Analytical Laboratory:		ALS	
Sample Time:	11:18	Final Depth to Water:	31.86	Did Well Dewater?		No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	MS/MSD	Duplicate ID
9 VOAs	HCl	C.	yes	no			DUP-1
3 VOAs	Neat	O.	yes	no			
3 250-Pl	Neat	C.	yes	no			
1 250-Pl	H_2SO_4		yes	no			
1 250-Pl	HNO_3		yes	no			
			yes	no			

COMMENTS

Full MNA

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-4	Job Number:	1641-08.002
Client:	NuStar	Date:	6/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Cloudy	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	29.02	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	33'		Comments
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1156	.500	.500	29.21	.250	7.50	19.46	1084	5.04	15.2	-	AC
1159	.600	1.100	29.34	.200	7.33	19.48	1090	3.88	22.8	—	AC
1202	.450	1.550	29.49	.150	7.27	19.52	1097	3.88	25.7	-	AC
1205	.450	~~1.101~~ 2.000	29.53	.150	7.24	19.74	1101	3.82	26.1	-	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-4	Sampling Flow Rate	.150	Analytical Laboratory:	ALS
Sample Time:	1210	Final Depth to Water:	29.76	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOAs	HCl	C.	yes no			
3 VOAs	Neat	O.	yes no			
3 250-PI	Neat	C.	yes no			
1 250-PI	H_2SO_4		yes no			
1 250-PI	HNO_3		yes no			
			yes no			

COMMENTS

Full MNA

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-2	Job Number:	1641-08.002
Client:	NuStar	Date:	8-18-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1340

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	34.83	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	38'		Comments
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
13:45	.400	.400	34.94	.200	7.70	21.76	820	4.21	29.7	—	AC
13:48	.600	1.000	34.88	.200	7.42	20.17	816	3.25	36.7	—	C
1351	.600	1.600	34.96	.200	7.36	19.20	799	2.77	47.1	—	C
1354	.600	2.200	35.15	.200	7.30	19.22	803	2.69	42.8	—	C
1357	.600	2.800	35.23	.200	7.29	19.01	806	2.73	40.4	—	C
1400	.600	3.400	35.28	.200	7.28	18.89	805	2.75	40.1	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-2	Sampling Flow Rate	.200	Analytical Laboratory:	ACS
Sample Time:	14:02	Final Depth to Water:	35.34	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	GRO/VOCs	yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-12	Job Number:	
Client:	NuStar	Date:	6-16-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1455

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.86	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	35'		Comments
Sampling Method:	same	Tubing Type:	poly		

	Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
						+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
Sunny	1503	.600	.600	30.87	.300	7.26	21.89	1028	3.61	48.5	—	SC
	1506	.750	1.350	30.90	.250	7.06	21.28	1019	2.49	54.3	—	SC
	1509	.750	2.100	30.91	.250	7.15	20.46	1018	2.47	51.1	—	SC
Cloud	1512	.750	2.850	30.91	.250	7.15	19.91	1017	2.45	50.6	—	SC
	1515	.750	3.600	30.91	.250	7.16	19.69	1014	2.42	50.5	—	SC
Sunny	1518	.750	4.350	30.91	.250	7.15	20.24	1014	2.43	49.8	—	SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-12	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	15:22	Final Depth to Water:	30.91	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAS	HCl	C.O.C.	yes no			
		VOCs/GRO	yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Cloud cover affecting YSI chamber + tubing – intermittent + causing temp fluctuations.

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-10	Job Number:	1641-08.002
Client:	NuStar	Date:	6-16-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1555

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	28.30	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	1.5' from bottom	Comments	
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
16:02	.600	.600	28.35	.300	7.36	21.30	1466	5.21	47.4	–	AC
16:05	.900	1.500	28.39	.300	7.24	19.73	1452	1.08	54.5	–	AC
16:08	.900	2.400	28.42	.300	7.17	19.02	1447	0.74	52.2	–	AC
16:11	.900	3.300	28.45	.300	7.29	19.30	1447	0.64	49.5	–	AC
16:14	.900	4.200	28.46	.300	7.28	19.13	1439	0.55	47.1	–	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-10	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	16:17	Final Depth to Water:	28.47	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-9	Job Number:	1641-08.002
Client:	NuStar	Date:	8/16/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	16:32

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	29.83	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	32'	Comments
Sampling Method:	same	Tubing Type:	poly	

	Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
						+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
	16:33	.500	.500	29.84	.250	7.23	20.70	1263	2.61	60.8	—	SC
	16:36	.750	1.250	30.01	.750	7.07	19.15	1249	1.06	66.8	—	SC
1639	~~16:39~~	.750	2.000	30.12	.750	7.04	19.03	1247	0.92	65.9	—	SC
1642	~~16:42~~	.600	2.600	30.19	.200	7.10	19.35	1247	0.79	62.5	—	AC
1645	"	.600	3.200	30.28	.200	7.16	19.40	1247	0.67	60.5	-	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-9	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	16:49	Final Depth to Water:	30.33	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-15	Job Number:	1641-08.002
Client:	NuStar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Cloudy	Time In/Out:	0845

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	32.34	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	35.5'	Comments
Sampling Method:	Same	Tubing Type:	poly	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<– Stabilization Criteria
0850	.400	.400	32.50	.200	7.12	19.76	748	4.58	116.9	—	AC
0853	.450	.850	32.55	.150	7.08	19.28	744	3.72	113.6	—	AC
0856	.450	1.300	32.62	.150	7.08	19.16	745	3.63	113.2	—	AC
859	.450	1.750	32.66	.150	7.08	18.82	744	3.60	113.1	—	C
0902	.450	1.200	32.70	.150	7.08	18.87	744	3.58	113.0	—	C
0905	.450	1.650	32.73	.150	7.08	18.85	744	3.58	112.8	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-15	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	0910	Final Depth to Water:	32.75	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes ~~no~~			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-16	Job Number:	1641-08.002
Client:	Nustar	Date:	6/17/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Cloudy	Time In/Out:	0927

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	29.48	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	33'	Comments	
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0930	.500	.500	28.52	.250	7.41	20.20	886	5.04	119.3	—	~~A~~SC
933	.750	1.250	28.48	.250	7.24	19.42	882	4.05	124.4	—	SC
936	.450	1.700	29.21	.150	7.16	20.16	884	3.71	123.9	—	AC
939	.300	2.000	29.30	.100	7.14	20.22	888	3.70	123.2	—	AC
0942	.300	2.300	29.35	.100	7.16	20.30	889	3.66	120.2	—	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-16	Sampling Flow Rate	.150	Analytical Laboratory:	ALS
Sample Time:	9:45	Final Depth to Water:	29.40	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-11	Job Number:	1641-08.002
Client:	NuStar	Date:	6/17/15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Cloudy	Time In/Out:	10:01

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.86 6/16	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	34'		Comments
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
10:06	.600	.600	28.45	.300	7.29	19.51	1466	2.01	121.8	–	AC
10:09	.750	1.300	28.87	.250	7.14	18.81	1467	1.75	125.9	–	AC
10:12	.450	1.750	28.97	.150	7.12	18.98	1465	1.73	124.1	–	AC
10:15	.450	1.200	29.08	.150	7.12	18.94	1463	1.78	120.3	–	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-11	Sampling Flow Rate	.200	Analytical Laboratory:	ALS	
Sample Time:	10:19	Final Depth to Water:	29.20	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.o.c.	yes (no)			Dup 2
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-8	Job Number:	1641-08.002
Client:	NiStar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Cloudy	Time In/Out:	1038

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	19.93	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	23'		Comments
Sampling Method:	same	Tubing Type:	poly		

	Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
						+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
Sunny	1041	.400	.400	20.08	.200	7.49	20.46	1217	7.85	110.8	—	AC
cloudy	1044	.600	1.000	20.30	.200	7.32	18.82	1202	3.71	115.7	—	AC
Cloudy	1047	.450	1.450	20.26	.150	7.22	18.91	1202	3.38	118.3	—	AC
cloudy	1050	.600	2.050	20.30	.200	7.20	19.10	1201	3.24	115.6	—	C
sunny	1053	.600	2.650	20.30	.200	7.19	19.42	1207	3.19	112.4	—	C
	1056	.600	3.250	20.31	.200	7.18	19.26	1209	3.16	109.8	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-8	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	11:00	Final Depth to Water:	20.31	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	V.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-13	Job Number:	1641-08.002
Client:	NuStar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, SH
Weather:	Sunny	Time In/Out:	1104

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	31.94	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	35'	Comments	
Sampling Method:	Same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
11:13	.500	.500	31.96	.250	7.53	21.08	685	6.55	99.5	—	SC
11:16	.750	1.250	32.34	.250	7.36	18.54	672	5.47	109.1	—	SC
11:19	.450	1.700	32.46	.150	7.31	18.71	672	5.31	106.9	—	SC
11:22	.450	2.150	32.55	.150	7.30	18.89	673	5.26	105.4	—	SC
11:25	.450	2.600	32.64	.150	7.28	18.91	673	5.19	103.6	—	SC
11:27	.300	2.900	32.73	.150	7.27	18.95	673	5.22	101.9	—	SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-13	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	11:30	Final Depth to Water:	32.79	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-14	Job Number:	1641-08.002
Client:	NuStar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny/Cloudy	Time In/Out:	~~1130~~ 1138

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	31.70	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	34'	Comments	
Sampling Method:	bladder	Tubing Type:	poly		

	Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
						+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
	11:41	.500	.500	31.80	.250	7.48	20.11	700	4.37	95.1	–	AC
cloudy	11:44	.750	1.250	32.30	.250	7.24	18.37	693	3.72	102.0	–	AC
cloudy	11:47	.300	1.550	32.50	.100	7.20	18.56	697	3.59	101.0	–	AC
cloudy	11:50	.300	1.850	32.63	.100	7.20	18.63	696	3.49	99.8	–	AC
partly sunny	11:53	.300	2.150	32.71	.100	7.20	18.90	698	3.42	97.3	–	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-14	Sampling Flow Rate	.200	Analytical Laboratory:	ALS	
Sample Time:	11:57	Final Depth to Water:	32.83	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-3	Job Number:	1641-08.002
Client:	Nustar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1320

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	38.21	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	bladder	Pump Intake Depth:	42'
Sampling Method:	same	Tubing Type:	poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1327	.500	.500	38.10	.250	7.30	22.77	920	1.91	-56.1	—	C
1330	.750	1.250	38.12	.250	7.20	20.60	939	0.85	-61.7	—	C
1333	.750	2.000	38.14	.250	7.12	19.97	934	0.68	-68.2	—	C
1336	.750	2.750	38.15	.250	7.08	19.33	944	0.62	-74.2	—	C
1339	.750	3.500	38.15	.250	7.05	18.97	946	0.50	-80.1	—	C
1342	.750	4.250	38.16	.250	7.04	18.87	947	0.46	-83.3	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-3	Sampling Flow Rate	.200	Analytical Laboratory:	ACS
Sample Time:	13:45	Final Depth to Water:	38.16	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	G.O.C	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

tubing + YSI cylinder exposed to intermittent sunshine - temp variances experienced, as well as higher than avg. temps.

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-7	Job Number:	1641-08.002
Client:	NuStar	Date:	6-17-15
Project:	Andover Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1350

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	14.91	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	~~bailer~~ peri	Pump Intake Depth:	19'	Comments
Sampling Method:	same - peri	Tubing Type:	poly	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1357	.600	.600	15.01	.200	7.41	17.75	866	2.26	-43.2	—	C
1400	.600	1.200	15.15	.200	7.32	17.30	897	1.13	-37.2	—	C
1403	.600	1.800	15.18	.200	7.27	17.20	879	0.90	-34.1	—	C
1406	.600	2.400	15.21	.200	7.26	17.32	881	0.78	-32.4	—	C
1409	.600	3.000	15.22	.200	7.26	17.28	876	0.64	-31.9	—	C
1411	.600	3.600	15.23	.200	7.27	17.16	868	0.60	-31.2	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-7	Sampling Flow Rate	.200	Analytical Laboratory:	ACS
Sample Time:	1414	Final Depth to Water:	15.23	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	C.O.C.	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-6	Job Number:	164f-08.002
Client:	Nustar	Date:	6-17-15
Project:	Andarc Q.C.	Sampler:	TA, JH
Weather:	Sunny	Time In/Out:	1416

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	20.45	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	peristaltic	Pump Intake Depth:	24'
Sampling Method:	same	Tubing Type:	poly

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
14:20	.400	.400	20.71	.200	7.38	17.51	1294	4.56	-1.7	—	C
1423	.600	1.000	20.93	.200	7.25	17.49	1297	3.95	4.9	—	C
1426	.600	1.600	21.11	.200	7.19	17.45	1292	3.96	10.3	—	C
1429	.600	2.200	21.25	.200	7.17	17.62	1288	3.94	13.0	—	C
1432	.600	2.800	21.37	.200	7.15	17.60	1280	3.88	14.9	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-6	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	1434	Final Depth to Water:	21.43	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 VOAs	HCl	G.O.C.	yes no			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Tubing bringing up small, intermittent bubbles - possibly affecting YSI cylinder DO reading

WELL GAGING DATA SHEET

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

		Job Number:	32000164 1-08
Client:	NuStar	Date:	8/20/15
Project:	Andover Q.C.	Sampler:	TA, LB
Weather:	Sunny	Time In/Out:	1100

WATER LEVEL DATA

	Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
NE	MW-19	1133	—	30.65	—	—	—	
SW	MW-18	1135	—	30.81	—	—	—	
	MW-1	1137	—	31.35	—	—	—	
	MW-17	1138	—	31.19	—	—	—	
	MW-7	1140	—	15.70	—	—	—	
	MW-6	1142	—	20.73	—	—	—	
	MW-3	1144	—	44.40	—	—	—	
	MW-4	1146	—	29.65	—	—	—	
	MW-9	1150	—	28.41	33.94	—	—	
	MW-10	1153	—	30.49	—	—	—	
	MW-12	1155	—	31.08	—	—	—	
	MW-15	1200	—	33.48	—			
	MW-16	1204	—	28.65	—			
	MW-11	1208	—	28.73	—			
	MW-14	1212	—	31.55	—			
	MW-13	1214	—	31.56	—			
	MW-2	1217	—	36.21	—			
	MW-8	1222	—	20.64	—			
	MW-5	1224	—	19.97	—			

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-18	Job Number:	32000/641-08
Client:	Nuskal	Date:	8/20/15
Project:	Andover QC	Sampler:	TA/[illegible]
Weather:	Sunny	Time In/Out:	[illegible]

WELL DATA

Well Depth:		Well Diameter:	2 in	Water Height	
Depth to Water:	30.81	Screened Interval:		x Multiplier	
Water Column Length:	—	Depth to Free Product:	NP	x Casing Volumes	
Purge Volume:		Free Product Thickness:	—	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder Pump	Pump Intake Depth:	1.5' from top
Sampling Method:	Gra Bladder	Tubing Type:	Poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1302	0.3	0.3	30.81	0.15	6.55	25.83	0.930	2.14	-15.9		CL
1305	0.45 ~~0.75~~	0.75 ~~0.60~~	30.95	0.15	6.54	20.53	0.919	1.43 ~~[illegible]~~	-37.7		CL
1308	0.45 ~~0.60~~	1.20	31.24	0.15	6.55	19.33	0.926	1.15	-45.9		CL
1311	0.45	1.65	31.50	0.15	6.59	19.36	0.924	0.97	-57.1		CL
~~1314~~	~~0.45~~	~~2.10~~		~~0.15~~							
~~1317~~	~~0.45~~	~~2.55~~		~~0.15~~							

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-18	Sampling Flow Rate	.150	Analytical Laboratory:	ALS
Sample Time:	1315	Final Depth to Water:	32.40	Did Well Dewater?	No

	# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4VOAs	~~8 1 VOAs~~	HCl	COC	yes no			DUP-1
	3 VOAs	Neat	COC	yes no			
	3 250P	Neat	COC	yes no			
	1 ~~[illegible]~~ 250P	H_2SO_4	COC	yes no			
	1 250P	HNO_3	COC	yes no			
	~~1 2~~			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-19	Job Number:	3200001641-08
Client:	NuStar	Date:	8/20/15
Project:	Andover QC	Sampler:	TA/LB
Weather:	Sunny	Time In/Out:	

WELL DATA

Well Depth:	~~MW-19~~	Well Diameter:	2in	Water Height	
Depth to Water:	30.05	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:	NP	x Casing Volumes	
Purge Volume:		Free Product Thickness:	—	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	1.5' from top	Comments	
Sampling Method:	Bladder	Tubing Type:	Poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1355	0.60 ~~0.80~~	0.60 ~~0.80~~	*	0.20	7.07	20.47	0.828	2.90	-1.6		CL
1358	0.60 ~~0.80~~	1.20 ~~0.40~~	*	0.20	7.30	19.31	0.826	1.43	-24.5		CL
1401	0.60 ~~0.80~~	1.80 ~~0.60~~	*	0.20	8.08	18.94	0.830	1.33	-33.7		CL
1404	0.60 ~~0.80~~	2.10 ~~0.80~~	31.53	0.20	8.37	19.07	0.832	1.13	-39.7		CL
1407	0.60 ~~0.80~~	2.70 ~~1.00~~	31.67	0.20	8.45	18.86	0.825	0.81	-49.0		CL
1410	0.60 ~~0.80~~	~~1.20~~	31.80	0.20	8.50	18.76	0.813	0.70	-53.1		CL

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-19	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	1412	Final Depth to Water:	32.35	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9x Voa	HCL	COC	yes (no)			
3x Voa	Neat		yes (no)			
3x 250P	Neat		yes (no)			
1x 250P	H_2SO_4		yes (no)			
1x 250P	HNO_3		yes (no)			
			yes no			

COMMENTS

* interphase probe not functioning, field repair

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-4	Job Number:	320001641-08
Client:	Nustar	Date:	8/20
Project:	Andover QC	Sampler:	TA/LB
Weather:	Sunny	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2in	Water Height	
Depth to Water:	29.65	Screened Interval:		x Multiplier	
Water Column Length:	~~29.65~~	Depth to Free Product:	NP	x Casing Volumes	
Purge Volume:		Free Product Thickness:	—	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	1.5' from top
Sampling Method:	Bladder	Tubing Type:	Poly

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1436	0.525	0.525	*	0.175	7.30	20.23	1.135	4.37	22.4		CL
1439	0.525	1.05	*	0.175	7.22	20.51	1.134	4.05	32.4		CL
1441	0.525	1.575	*	0.175	7.03	20.27	1.135	3.94	36.6		CL
1444	0.525	2.100	*	0.175	7.00	20.47	1.137	3.88	40.1		SL/CL
1447	0.375 ~~0.250~~	2.475 ~~2.625~~	*	0.125	6.98	19.86	1.136	3.95	43.0		SL CL

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-4	Sampling Flow Rate	.125	Analytical Laboratory:	ALS
Sample Time:	1448	Final Depth to Water:	*	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
~~8x 9 Voa~~ 9x Voa	HCL	COC	yes (no)			
3x Voa	Neat		yes (no)			
3x250 P	Neat		yes (no)			
1x250 P	H_2SO_4		yes (no)			
1x250 P	HNO_3		yes (no)			
			yes no			

COMMENTS

* IP not functioning

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-1	Job Number:	320001641-08
Client:	Nustar	Date:	8/20/15
Project:	Andover. QC	Sampler:	JA/LB
Weather:	Sunny	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	~~2in~~ 4in	Water Height	
Depth to Water:	31.35	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:	NP	x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	1.5' from top	Comments	
Sampling Method:	Bladder	Tubing Type:	Poly		

Time	Volume Purged (~~liters~~) mL	Cumulative Volume Purged (~~liters~~) mL	DTW (btc)	Purge Rate (~~L~~ mL/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1522	375	375	*	125	7.30	17.96	1.355	1.20	-72.9		CL
1525	375	750	*	125	7.10	17.51	1.350	1.17	-77.1		CL
1528	375	1125	*	125	7.01	17.31	1.348	1.16	-77.1		slightly CL
1531	375	1500	*	125	6.98	17.22	1.348	0.88	-77.3		slightly CL

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate	.125	Analytical Laboratory:	ALS
Sample Time:	1534	Final Depth to Water:	*	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 x VOA	HCl	COC	yes (no)			
3 x VOA	Neat		yes (no)			
3 x 250P	Neat		yes (no)			
1 x 250P	H_2SO_4		yes (no)			
1 x 250P	HNO_3		yes (no)			
			yes no			

COMMENTS

* IP not functioning

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-17	Job Number:	32000/641-08
Client:	NuStar	Date:	08/20/15
Project:	Andover QC	Sampler:	JA / LB
Weather:	Sunny	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2 in	Water Height	
Depth to Water:	31.19	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	1.5' from top	Comments	
Sampling Method:	Bladder	Tubing Type:	Poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1558	.200	.200	*	.125	7.38	19.60	1066	1.76	-68.9	—	Cl
1601	.375	.575	*	.125	7.20	18.03	1056	1.23	-88.6	—	SC
1604	.375	.950	*	.125	7.20	17.96	1055	0.97	-91.6	—	SC
1607	.375	1.325	*	.125	7.18	17.91	1056	0.77	-95.8	—	SC
1610	.375	1.700	*	.125	7.18	17.79	1067	0.67	-98.0	—	SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-17	Sampling Flow Rate	.125	Analytical Laboratory:	ALS
Sample Time:	16:14	Final Depth to Water:	*	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9x Voa	HCL	COC	yes (no)			
3x Voa	Neat	↓	yes (no)			
3x 250p	Neat	↓	yes (no)			
1x 250p	H_2SO_4	↓	yes (no)			
1x 250p	HNO_3	↓	yes (no)			
			yes no			

COMMENTS

* ID not functioning

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.

Well I.D.	MW-5	Job Number:	32000164I-09
Client:	Nustar	Date:	8/20/15
Project:	Andover QC	Sampler:	TA, dP
Weather:	Sunny	Time In/Out:	

WELL DATA

Well Depth:	~~19.97~~	Well Diameter:	2"	Water Height	
Depth to Water:	19.97	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	1.5' from Top	Comments	
Sampling Method:	same	Tubing Type:	poly		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.2	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1638	.300	.300	*	.125	7.19	18.65	1449	1.47	-8.2	—	SC
1641	.375	.675	*	.125	7.14	18.93	1453	1.50	-2.7	—	SC
1644	.375	1.050	*	.125	7.21	19.05	1460	1.54	-1.1	—	SC
1647	.375	1.425	*	.125	7.23	18.95	1464	1.51	-0.1	—	SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate	.125	Analytical Laboratory:	ALS
Sample Time:	1650	Final Depth to Water:	*	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOAs	HCl		yes no			
3 VOAs	Neat		yes no			
1 250 P	Neat		yes no			
1 250 P	HNO_3		yes no			
1 250 P	H_2SO_4		yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-1	Job Number:	1641-03
Client:	NuStar	Date:	11-5-15
Project:	Andover Q.C.	Sampler:	TA
Weather:	Cloudy	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	31.34	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	1' from bottom		Comments
Sampling Method:	Same	Tubing Type:	LDPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0828	.600	.600	31.55	.200	6.88	16.84	1386	2.08	-115.2	-	Cl
0831	.600	1.200	31.69	.200	6.89	16.67	1386	0.88	-123.7	-	Cl
0834	.450	1.650	31.78	.150	6.89	16.69	1385	0.70	-119.6	-	Cl
0837	.450	2.100	31.88	.150	6.90	16.81	1385	0.50	-110.1	-	Cl
0840	.450	2.550	31.95	.150	6.90	16.78	1385	0.44	-110.6	-	Cl

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	0846	Final Depth to Water:	32.05	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 250 P	Neat	COC	yes ~~no~~			DUP-1
1 250 P	HNO3		yes ~~no~~			
1 250 P	H2SO4		yes ~~no~~			
1 250 P	Neat		yes ~~no~~			
9 VOA	HCl		yes ~~no~~			
3 VOA	Neat		yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-17	Job Number:	1641-09
Client:	Nustar	Date:	11-5/5
Project:	Andover QC	Sampler:	TA
Weather:	partly cloudy	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	32.73	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	35'
Sampling Method:	Same	Tubing Type:	LDPE

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
934	.300	.300	32.72	.150	7.15	17.97	1021	2.87	-109.8	–	AC
937	.450	.750	33.16	.150	7.12	17.51	1018	1.10	-118.2	–	AC
940	.300	1.050	33.30	.100	7.12	17.56	1018	0.95	-122.9	–	C
943	.300	1.350	33.46	.100	7.12	17.46	1014	0.71	-127.0	–	C
946	.300	1.650	33.59	.100	7.12	17.4	1011	0.58	-128.5	–	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-17	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	950	Final Depth to Water:	33.70	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 250 P	Neat	LOC	yes no			
1 250 P	HNO3	↓	yes no			
1 250 P	H2SO4	↓	yes no			
3 VOA	Neat	↓	yes no			
9 VOA	HCl	↓	yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-19	Job Number:	1641-03
Client:	NuStar	Date:	11-5-15
Project:	Andover QC	Sampler:	TA
Weather:	Sunny	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	31.08	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	34'	Comments
Sampling Method:	Same	Tubing Type:	LDPE	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1030	.300	.300	31.10	.150	7.45	18.72	824	5.43	5.1	—	SC
1033	.450	.750	31.32	.150	7.31	18.24	819	2.10	6.6	—	SC
1036	.300	1.050	31.49	.100	7.33	18.30	818	2.05	3.4	—	SC
1039	.300	1.350	31.55	.100	7.33	18.50	822	1.97	-10.5	—	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-19	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	1045	Final Depth to Water:	31.82	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 250 P	Neat	COC	yes no			
1 250 P	H_2SO_4		yes no			
1 250 P	HNO_3		yes no			
9 VOA	HCl		yes no			
3 VOA	Neat		yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-18	Job Number:	1641-08
Client:	Nustar	Date:	11-5-15
Project:	Andover Q.C.	Sampler:	TA
Weather:	Partly Cloudy	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	31.00	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	33'
Sampling Method:	Same	Tubing Type:	LDPE

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1109	.300	.300	31.02	.150	7.32	19.41	0.897	2.73	-95.4	—	SC
1112	.450	.750	31.36	.150	7.23	18.70	894	1.05	-102.7	—	SC
1115	.300	1.050	31.50	.100	7.23	18.87	894	1.03	-100.0	—	AC
1118	.300	1.350	31.60	.100	7.24	18.92	898	1.01	-100.0	—	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-18	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	1122	Final Depth to Water:	31.67	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOA	HCl	COC	yes ~~no~~			
3 VOA	Neat	↓	yes ~~no~~			
3 250 P	Neat		yes ~~no~~			
~~1 250 P~~	~~H_2SO_4~~		~~yes~~ ~~no~~			
1 250 P	~~Neat~~ HNO_3	↓	yes ~~no~~			
			yes no			

COMMENTS

Dropped H_2SO_4 250mL Plastic in purge bucket... excluded from ~~analyses~~ analysis

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-4	Job Number:	1641-08
Client:	NuStar	Date:	11-5-15
Project:	Andover Q.C.	Sampler:	TA
Weather:	Sunny	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.40	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	~~Peri~~ Bladder	Pump Intake Depth:	33.51
Sampling Method:	Same	Tubing Type:	LDPE

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1301	.300	.300	30.60	.150	7.22	19.36	1141	9.36	44.6	—	SC
1304	.450	.750	30.79	.150	7.20	19.05	1137	4.61	47.3	—	SC
1307	.375	1.125	30.90	.125	7.20	19.15	1133	4.73	50.5	—	~~AC~~ SC
1310	.375	1.500	31.05	.125	7.20	19.21	1131	4.79	54.2	—	~~AC~~ SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-4	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	1316	Final Depth to Water:	31.15	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOAs	HCl	COC	yes no			
3 VOAs	Neat		yes no			
3 250 P	Neat		yes no			
1 250 P	HNO_3		yes no			
1 250P	H_2SO_4		yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-5	Job Number:	1641-08
Client:	Nustar	Date:	11-5-15
Project:	Andover Q.C.	Sampler:	TA
Weather:	Sunny	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	20.38	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	23'
Sampling Method:	Same	Tubing Type:	LDPE

Comments

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1350	.300	.300	20.40	.150	7.36	20.12	1385	9.88	72.5	—	AC
1353	.450	.750	21.49	.150	7.20	19.48	1377	1.80	66.3	—	AC
1356	.600	1.350	21.59	.200	7.22	19.01	1373	2.13	64.4	—	AC
1359	.600	1.950	21.67	.200	7.23	18.62	1373	2.20	66.7	—	C
1402	.600	1.550	21.75	.200	7.23	18.70	1374	2.25	67.1	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate	.200	Analytical Laboratory:	ALS
Sample Time:	1407	Final Depth to Water:	21.80	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
9 VOAs	HCl		yes ~~no~~			
3 VOAs	Neat		yes ~~no~~			
3 250 P	Neat		yes ~~no~~			
1 250 P	HNO3		yes ~~no~~			
1 250 P	H_2SO_4		yes ~~no~~			
			yes no			

COMMENTS

WELL GAGING DATA SHEET

APEX

		Job Number:	32001641-08
Client:	Mustar	Date:	11-3-15
Project:	Andover QC.	Sampler:	TA
Weather:	Sunny	Time In/Out:	

WATER LEVEL DATA

	Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
	MW-12	1657	—	31.10				
E	MW-10	1659	—	28.39				
W	MW-9	1701	—	31.31				
grass	SVE-3	1702	—	29.33				
E	SVE-2	1703	—	27.22				
C	SVE-1	1706	—	27.21				
W	SVE-4	1709	—	28.59				
	MW-7	1716	—	16.09				
	MW-6	1718	—	21.84				
	MW-3	1720	—	43.35				
	MW-1	1722	—	31.34				
	MW-17	1723	—	32.73				
W	MW-18	1725	—	31.00				
E	MW-19	1726	—	31.08				
	MW-16	1729	—	29.19				
	MW-15	1731	—	33.91				
	MW-11	1733	—	29.79				
	MW-4	1735	—	30.40				
	MW-2	1739	—	36.31				
	MW-5	1741		20.38				
	MW-8	1743	—	21.30				
	MW-14	1746	—	32.10				
	MW-13	1749	—	32.00				
	Pond							1344.5

WELL GAGING DATA SHEET

APEX

		Job Number:	32000641-083
Client:	NuStar	Date:	2/16/16
Project:	Andover Q.C.	Sampler:	TA
Weather:	Sunny, 40's	Time In/Out:	

WATER LEVEL DATA

	Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
	MW-1	1358	—	31.34				
	MW-2	1355	—	32.69				
	MW-3	1408	—	23.13				
	MW-4	1412	—	30.16				
	MW-5	1247	—	20.49				
	MW-6	1351	—	21.49				
	MW-7	1348	—	16.51				
	MW-8	1245	—	21.26				
	MW-9	1347	—	28.32				
	MW-10	1345	—	26.97				
	MW-11	1300	—	28.97				
	MW-12	1340	—	27.92				
	MW-13	1242	—	31.49				
	MW-14	1238	—	31.78				
	MW-15	1255	—	29.81				
	MW-16	1251	—	28.64				
	MW-17	1404	—	31.46				
	MW-18	1426	—	30.72				
	MW-19	1427	—	30.69				
E	SVE-4	1417	—	29.01	29.66			
C	SVE-1	1419	—	26.71				
W	SVE-2	1423	—	27.97				
grass	SVE-3	1415	—	29.31	29.75			
	pond	1352	—	—	—	—	—	1344.50' ASL
	2006 Lotlit irrigation well	1438	—	36.89				~5mL F.P. in skimmer, no H_2O Skimmer coated with black residue (VOC odor)

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-1	Job Number:	32000164I-08
Client:	NuStar	Date:	2/17/16
Project:	Andover Q.C.	Sampler:	TA
Weather:	Sunny, 40's	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	4"	Water Height	
Depth to Water:	31.34	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:	—	x Casing Volumes	
Purge Volume:		Free Product Thickness:	—	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	34'	Comments	
Sampling Method:	Same	Tubing Type:	LDPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
13:22	.450	.450	31.45	.150	7.44	16.19	1.709	1.59	-58.6	—	CL
13:25	.450	.900	31.55	.150	6.90	16.01	1.705	0.50	-70.9	—	CL
13:28	.450	1.350	31.66	.150	6.87	15.97	1.703	0.36	-81.7	—	CL
13:31	.450	1.800	31.78	.150	6.87	15.96	1.697	0.29	-89.8	—	CL
13:34	.450	2.250	31.96	.150	6.87	15.95	1.686	0.27	-93.4	—	CL

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-1	Sampling Flow Rate	.200	Analytical Laboratory:	ESC
Sample Time:	1337	Final Depth to Water:	31.96	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(2) VOAs	HCl	COC	yes no			
(2) 500mL P	Neat / HNO3	↓	yes no			
(2) 250mL P	Neat	↓	yes no			
125mL P	H_2SO_4	↓	yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-4	Job Number:	32000164l-08
Client:	Nustar	Date:	2/17/16
Project:	Andover Q.C.	Sampler:	TA
Weather:	Sunny, 40's	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.16	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:	—	x Casing Volumes	
Purge Volume:		Free Product Thickness:	—	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	33'	Comments	
Sampling Method:	Same	Tubing Type:	LDPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm) mS	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1503	.300	.300	30.39	.100	7.46	17.71	1.147	4.90	-8.1	—	SC
1506	.300	.600	30.51	.100	7.21	17.27	1.150	4.14	-1.6	—	SC
1509	.300	.900	30.59	.100	7.12	17.27	1.150	4.05	0.1	—	SC
1512	.300	1.200	30.64	.100	7.09	17.15	1.151	4.09	0.8	—	AC
1515	.300	1.500	30.69	.100	7.09	17.11	1.151	4.06	1.7	—	AC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-4	Sampling Flow Rate	.200	Analytical Laboratory:	ESL
Sample Time:	1520	Final Depth to Water:	30.65	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(2) VOAs	HCl	C.O.C.	yes no			
(2) 250mL P	Neat	↓	yes no			
(2) 500mL P	Neat/HNO_3		yes no			
125mL P	H_2SO_4	✓	yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-5	Job Number:	32000641-08
Client:	Nustar	Date:	2/17/16
Project:	Andover Q-L	Sampler:	TA
Weather:	Sunny, 40's	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	20.49	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:	—	x Casing Volumes	
Purge Volume:		Free Product Thickness:	—	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	23'	Comments	
Sampling Method:	Same	Tubing Type:	LDPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm) mS	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1712	.400	.400	20.68	.200	7.92	17.00	1.373	3.12	31.7	—	C
1715	.600	1.000	20.69	.200	7.30	16.83	1.384	0.75	45.2	—	C
1718	.450	1.450	20.73	.150	7.17	16.54	1.384	0.74	41.3	—	C
1721	.450	1.900	20.74	.150	7.13	16.60	1.383	0.72	38.5	—	C
1724	.450	2.350	20.73	.150	7.09	16.72	1.382	0.71	36.4	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-5	Sampling Flow Rate	.200	Analytical Laboratory:	ESC
Sample Time:	1728	Final Depth to Water:	20.75	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(2) VOAs	HCl	C.O.C	yes no			
(2) 500mL P	Neat / HNO_3	↓	yes no			
(2) 250mL P	Neat		yes no			
125mL P	H_2SO_4		yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-17	Job Number:	32000164-08
Client:	NuStar	Date:	2/17/16
Project:	Andover Q.C.	Sampler:	TA
Weather:	Sunny, 40's	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	31.46	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:	—	x Casing Volumes	
Purge Volume:		Free Product Thickness:	—	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	34'	Comments
Sampling Method:	Same	Tubing Type:	LDPE	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1415	.300	.300	31.69	.100	7.26	16.87	0.991	2.13	-81.4	-	CL
1418	.300	.900	31.79	.100	7.03	16.48	0.971	0.51	-92.6	-	CL
1421	.300	1.200	32.13	.100	6.99	16.47	0.969	0.41	-100.3	-	CL
1424	.300	1.500	32.35	.100	6.99	16.43	0.970	0.35	-105.2	-	CL

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-17	Sampling Flow Rate	.200	Analytical Laboratory:	ESC
Sample Time:	14.22	Final Depth to Water:	32.46	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(2) 500mL P	Neat/HNO3	T.M.C.	yes no			
(2) 250 mL P	Neat	↓	yes no			
125 mL P	H2SO4	↓	yes no			
(2) VOAs	HCl	↓	yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-18	Job Number:	32000164I-08
Client:	NuStar	Date:	2/17/16
Project:	Andrews QC	Sampler:	TA
Weather:	Sunny, 40's	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.72	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:	—	x Casing Volumes	
Purge Volume:		Free Product Thickness:	—	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	33.5'	Comments	
Sampling Method:	Same	Tubing Type:	LDPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
11:08	.600	.600	30.89	.200	6.20	16.08	.898	1.11	92.8	—	CL
11:11	.450	1.050	31.01	.150	6.55	15.99	.904	6.0	36.1	—	CL
11:14	.450	1.500	31.19	.150	6.73	16.00	.905	5.5	-1.8	—	CL
11:17	.300	1.800	31.31	.100	6.86	15.99	.906	5.3	-26.2	—	CL
11:20	.300	2.100	31.44	.100	6.92	16.01	.907	5.2	-42.3	—	CL
11:23	.300	2.400	31.50	.100	6.97	16.07	.907	5.1	-55.8	—	CL
11:26	.300	2.700	31.56	.100	7.00	16.10	.907	5.0	-62.9	—	CL
11:29	.300	3.100	31.75	.100	7.02	16.17	.907	5.1	-69.6	—	CL

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-18	Sampling Flow Rate	.200	Analytical Laboratory:	ESC
Sample Time:	11:33	Final Depth to Water:	32.76	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
500mL Pl	Neat	C.O.C.	yes (no)			
125mL Pl	H_2SO_4	C.O.C.	yes (no)			
(2) 250mL Pl	Neat	C.O.C.	yes (no)			
500mL Pl	HNO_3	C.O.C.	yes (no)			
(2) VOAs	HCl	C.O.C.	yes (no)			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

APEX

Well I.D.	MW-19	Job Number:	32000164I-08
Client:	Nustar	Date:	2/17/16
Project:	Andover Q.C.	Sampler:	TA
Weather:	Sunny, 40's	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	30.69	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:	—	x Casing Volumes	
Purge Volume:		Free Product Thickness:	—	= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bladder	Pump Intake Depth:	34'	Comments	
Sampling Method:	Same	Tubing Type:	LDPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond ~~(µS/cm)~~ mS/cm	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
12:04	.300	.300	30.76	.150	7.54	16.50	0.384	2.51	18.04	—	CL
12:07	.450	.750	31.03	.150	7.30	16.50	0.836	1.37	22.07	—	CL
12:10	.300	1.050	31.23	.100	7.24	16.36	0.836	1.30	15.06	—	CL
12:13	.300	1.350	31.37	.100	7.22	16.35	0.836	1.35	11.07	—	CL
12:16											

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-19	Sampling Flow Rate	.200	Analytical Laboratory:	ESL
Sample Time:	12:17	Final Depth to Water:	33.76	Did Well Dewater?	NO

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(2) VOAs	HCl	COC	yes no			DUP
(2) 500mL P	Neat / HNO_3	↓	yes no			
(2) 250mL P	Neat		yes no			
125mL P	H_2SO_4		yes no			
			yes no			
			yes no			

COMMENTS

Appendix B

Laboratory Reports and QA/QC Review (on CD-ROM)

Appendix B – Laboratory Analytical Reports and Quality Assurance/Quality Control Results Summary

1.0 Introduction

This appendix documents the results of a quality assurance (QA) review of the analytical data for groundwater samples that were collected s part of the groundwater pilot test that was performed in August 2015 through February 2016 at the Quail Crossing neighborhood (the Neighborhood) in Andover, Kansas (Site). The *Revised Interim Groundwater Pilot Test Report* (Apex, 2015b) presented a data quality review for soil and water samples collected during the period March 2015 through June 2015.

The data reviewed herein include are representative of groundwater samples collected from monitoring and pilot test wells during the period August 2015 through February 2016. The groundwater samples were analyzed by ALS Environmental (ALS) of Houston, Texas and ESC Lab Sciences of Mount Juliet, Tennessee.

The QA review outlines the applicable quality control criteria utilized during the data review process, as well as any deviations from those criteria. Examination and validation of the laboratory summary reports include:

- Analytical methods;
- Reporting limits;
- Detection limits and estimated concentrations;
- Sample holding times;
- Custody records and sample receipt;
- Spikes, blanks, and surrogates; and
- Duplicates.

The QA review did not include a review of calibration or raw data. Section 2.0 lists the analytical methods used in sample analysis. Section 3.0 defines the QA terms used in this report. Section 4.0 provides the QA results for each sampling event.

2.0 Quality Assurance Objectives and Review Procedures

The general QA objectives for this project were to develop and implement procedures for obtaining, evaluating, and confirming the usability of environmental data of a specified quality. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility, samples collected must be representative of actual field conditions, and samples must be collected and analyzed using unbroken chain-of-custody (COC) procedures.

Reporting limits and analytical results were compared to action levels for each parameter. Precision, accuracy, representativeness, completeness, and comparability parameters used to indicate data quality are defined below.

Reporting Limits. Method reporting limits (MRLs) are set by the laboratory and are based on instrumentation abilities, sample matrix, and suggested MRLs by the EPA or the Kansas Department of Health and Environment (KDHE). In some cases, the MRLs are raised due to high concentrations of analytes in the samples or matrix interferences. MRLs are generally consistent with industry standards and below promulgated regulatory standards when possible.

Detection Limits and Estimated Concentrations. The method detection limit (MDL) is the lowest quantity of a substance that can be distinguished from the absence of that substance within a stated confidence limit. The MDL is estimated from the mean of the blank, the standard deviation of the blank and some confidence factor.

Holding Times. Holding times are the length of time a sample can be stored after collection and prior to analysis without significantly affecting the analytical results. Holding times vary by analyte, sample matrix, and analytical methodology.

Custody Records and Sample Receipt. COC refers to the document or paper trail showing the collection, custody, control, transfer, analysis, and disposition of physical materials. The sample receipt identifies the condition of samples upon arrival at the analytical laboratory.

Method Blanks. A method, or laboratory, blank is a sample prepared in the laboratory along with the field samples and analyzed for the same parameters at the same time. It is used to assess for laboratory introduced contamination.

Laboratory Control Sample. A laboratory control sample (LCS) is analyzed by the laboratory to assess the accuracy of the analytical equipment. The sample is prepared from an analyte-free matrix that is then spiked with known levels of the constituents of interest (i.e., a standard). The concentrations are measured and the results compared to the known spiked levels. This comparison is expressed as percent recovery.

Laboratory Control Sample Duplicate. A laboratory control sample duplicate [LCSD]) is prepared and analyzed along with the LCS. The LCS and LCSD data are compared to assess the precision of the analytical method (i.e., the relative percent difference [RPD]).

Matrix Spike Analyses. Matrix spike (MS) analyses are performed on samples submitted to the laboratory that are of the same matrix as the field sample. The MS sample is spiked with known levels of the

constituents of interest and analyzed to assess the potential for matrix interference with recovery or detection of the constituents of interest and the accuracy of the determination. The spiked sample results are compared to the expected result (i.e., sample concentration plus spike amount) and reported as percent recovery.

Lab Duplicate. A laboratory duplicate is a second analysis of a QA/QC sample, which serves as an internal check on laboratory quality as well as potential variability of the sample matrix. The laboratory duplicate is analyzed and compared to the primary sample results to assess the precision of the analytical method. This comparison can be expressed by the RPD between the primary and duplicate samples.

Surrogate Recovery. Surrogates are organic compounds that are similar in chemical composition to the analytes of interest and spiked into environmental and batch QC samples prior to sample preparation and analysis. Surrogate recoveries for environmental samples are used to evaluate matrix interference on a sample-specific basis.

Field Duplicate. A field duplicate is a second field sample collected from a sampling location (e.g., a well or soil core). Field duplicate samples serve as a check on laboratory quality as well as potential variability of the sample matrix. The field duplicate is analyzed and compared to the primary sample to assess the precision of the analytical method. This comparison can be expressed by the RPD between the original and duplicate samples.

Trip Blanks. A trip blank is a sample prepared in the laboratory that is shipped along with the sample bottles to the field, kept with the soil and groundwater samples during collection, and shipped back to the laboratory with the field samples. The trip blank is analyzed for constituents of interest, along with the primary samples, to assess if detected contaminants may have been the result of contamination of the samples during transport or storage.

Equipment Blank. An equipment blank is a sample collected in the field along with the primary samples and analyzed for the same parameters. Equipment blanks are collected by pouring deionized water over or through decontaminated equipment used to collect the samples, into laboratory supplied containers. The equipment blank is used to assess if field samples may have been affected by inadequate decontamination of field equipment.

3.0 QA/QC Review Results

3.1 Lab Report HS15080823

The data reviewed includes water samples collected on August 20, 2015. Samples were analyzed for GRO, volatile organic compounds (VOCs), and a range of parameters that can be used to evaluate natural attenuation processes using the methods listed below:

- Volatile petroleum hydrocarbons as gasoline (GRO) by Method IOWA OA-1; and
- 1,2,4-Trimethylbenzene, 1,2-dichloroethane, 1,3,5-trimethylbenzene, 2-butanone, cyclohexane, isopropylbenzene methylcyclohexane BTEX (benzene, toluene, ethylbenzene, total xylenes), naphthalene, n-butylbenzene, n-propylbenzene by U.S. Environmental Protection Agency (EPA) Method SW846 8260B.
- Alkalinity by Method SM2320B;
- Potassium and Iron by EPA Method SW6020;
- Free carbon dioxide by Method RSK-175;
- Methane by Method RSK-175;
- Ammonia by Method SM4500; and
- Nitrate, phosphorus, and sulfate by Method E300.

Reporting Limits. MRLs were not elevated for samples. No data are flagged.

Detection Limits and Estimated Concentrations. MDLs and concentrations were not reported as estimates.

Holding Times. The samples were analyzed within applicable holding times.

Custody Records and Sample Receipt. The samples were received below the required temperature of 4°C and consistent with the accompanying COC.

Method Blanks. No compounds were detected in the method blanks. No data are flagged.

Laboratory Control Sample. Percent recoveries of the LCS were within control limits.

Laboratory Control Sample Duplicate. Percent recoveries of the LCSD were within control limits. LCS/LCSD RPDs were within control limits for reported constituents.

Matrix Spike Analyses. The RPD for the MS and MS duplicate (MSD) were within control limits.

Lab Duplicate. No lab duplicate was analyzed.

Surrogate Recovery. Surrogate recoveries were within control limits for samples.

Field Duplicate. One field duplicate was collected from well MW-18. Constituents were within the acceptable RPD range.

Trip Blank. No compounds were detected in the trip blank. No data are flagged.

Equipment Blank. No reusable sampling equipment was utilized during this sampling event; therefore, an equipment blank was not collected.

Conclusion. In conclusion, the overall QA objectives have been met and the data are of adequate quality for use in this project.

3.2 Lab Report HS15110261

The data reviewed includes water samples collected on November 5, 2015. Samples were analyzed for GRO, VOCs, and a range of parameters that can be used to evaluate natural attenuation processes using the methods listed below:

- Volatile petroleum hydrocarbons as gasoline (GRO) by Method IOWA OA-1; and
- 1,2,4-Trimethylbenzene, 1,2-dichloroethane, 1,3,5-trimethylbenzene, 2-butanone, cyclohexane, isopropylbenzene methylcyclohexane BTEX (benzene, toluene, ethylbenzene, total xylenes), naphthalene, n-butylbenzene, n-propylbenzene by U.S. Environmental Protection Agency (EPA) Method SW846 8260B.
- Alkalinity by Method SM2320B;
- Potassium and Iron by EPA Method SW6020;
- Free carbon dioxide by Method RSK-175;
- Methane by Method RSK-175;
- Ammonia by Method SM4500; and
- Nitrate, phosphorus, and sulfate by Method E300.

Reporting Limits. MRLs were not elevated for samples. No data are flagged.

Detection Limits and Estimated Concentrations. MDLs and concentrations were not reported as estimates.

Holding Times. The samples were analyzed within applicable holding times.

Custody Records and Sample Receipt. The samples were received below the required temperature of 4°C and consistent with the accompanying COC.

Method Blanks. No compounds were detected in the method blanks. No data are flagged.

Laboratory Control Sample. Percent recoveries of the LCS were within control limits.

Laboratory Control Sample Duplicate. Percent recoveries of the LCSD were within control limits. LCS/LCSD RPDs were within control limits for reported constituents.

Matrix Spike Analyses. The RPD for the MS and MS duplicate (MSD) were within control limits.

Lab Duplicate. No lab duplicate was analyzed.

Surrogate Recovery. Surrogate recoveries were within control limits for samples.

Field Duplicate. One field duplicate was collected from well MW-1. Constituents were within the acceptable RPD range.

Trip Blank. No compounds were detected in the trip blanks. No data are flagged.

Equipment Blank. No reusable sampling equipment was utilized during this sampling event; therefore, an equipment blank was not collected.

Conclusion. In conclusion, the overall QA objectives have been met and the data are of adequate quality for use in this project.

3.3 Lab Report L807411

The data reviewed includes water samples collected on December 15 and 16, 2015. Samples were analyzed for a range of parameters that can be used to evaluate natural attenuation processes using the methods listed below:

- Alkalinity by Method 2320 B-2011;

- Potassium and Iron by EPA Method SW6010B;
- Free carbon dioxide and orthophosphate by Method 4500CO2 D-2011;
- Methane by Method RSK-175;
- Ammonia by Method 350.1; and
- Nitrate and sulfate by Method 9056A.

Samples were analyzed for GRO and VOCs; that data review is presented in the *Fourth Quarter 2015 Groundwater Monitoring Report* (Apex, 2016b).

Reporting Limits. MRLs were not elevated for samples. No data are flagged.

Detection Limits and Estimated Concentrations. MDLs and concentrations were not reported as estimates.

Holding Times. The samples were analyzed within applicable holding times.

Custody Records and Sample Receipt. The samples were received below the required temperature of 4°C and consistent with the accompanying COC.

Method Blanks. No compounds were detected in the method blanks. No data are flagged.

Laboratory Control Sample. Percent recoveries of the LCS were within control limits.

Laboratory Control Sample Duplicate. Percent recoveries of the LCSD were within control limits. LCS/LCSD RPDs were within control limits for reported constituents.

Matrix Spike Analyses. The RPD for the MS and MS duplicate (MSD) were within control limits.

Lab Duplicate. No lab duplicate was analyzed.

Surrogate Recovery. Surrogate recoveries were within control limits for samples.

Field Duplicate. One field duplicate was collected from well MW-18. Constituents were within the acceptable RPD range.

Trip Blank. A trip blank was not analyzed.

Equipment Blank. No reusable sampling equipment was utilized during this sampling event; therefore, an equipment blank was not collected.

Conclusion. In conclusion, the overall QA objectives have been met and the data are of adequate quality for use in this project.

3.4 Lab Report L818452

The data reviewed includes water samples collected on February 17, 2016. Samples were analyzed for GRO, VOCs, and a range of parameters that can be used to evaluate natural attenuation processes using the methods listed below:

- Volatile petroleum hydrocarbons as gasoline (GRO) by Method 8015D/GRO; and
- 1,2,4-Trimethylbenzene, 1,2-dichloroethane, 1,3,5-trimethylbenzene, 2-butanone, cyclohexane, isopropylbenzene methylcyclohexane BTEX (benzene, toluene, ethylbenzene, total xylenes), naphthalene, n-butylbenzene, n-propylbenzene by U.S. Environmental Protection Agency (EPA) Method SW846 8260B.
- Alkalinity by Method 2320 B-2011;
- Potassium and Iron by EPA Method SW6010B;
- Free carbon dioxide and orthophosphate by Method 4500CO2 D-2011;
- Methane by Method RSK-175;
- Ammonia by Method 350.1; and
- Nitrate and sulfate by Method 9056A.

Reporting Limits. MRLs were not elevated for samples. No data are flagged.

Detection Limits and Estimated Concentrations. MDLs and concentrations were not reported as estimates.

Holding Times. The samples were analyzed within applicable holding times.

Custody Records and Sample Receipt. The samples were received below the required temperature of 4°C and consistent with the accompanying COC.

Method Blanks. Ammonia was detected in the method blank associated with the samples collected from wells MW-4, MW-5, MW-18, and MW-19; however, ammonia concentrations, where detected in the primary samples, are consistent with historical data for the wells. Therefore, no data are flagged.

Laboratory Control Sample. Percent recoveries of the LCS were within control limits.

Laboratory Control Sample Duplicate. Percent recoveries of the LCSD were within control limits. LCS/LCSD RPDs were within control limits for reported constituents.

Matrix Spike Analyses. The RPD for the MS and MS duplicate (MSD) were within control limits.

Lab Duplicate. No lab duplicate was analyzed.

Surrogate Recovery. Surrogate recoveries were within control limits for samples.

Field Duplicate. One field duplicate was collected from well MW-19. Constituents were within the acceptable RPD range.

Trip Blank. A trip blank was not analyzed.

Equipment Blank. No reusable sampling equipment was utilized during this sampling event; therefore, an equipment blank was not collected.

Conclusion. In conclusion, the overall QA objectives have been met and the data are of adequate quality for use in this project.

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March 30, 2015

Samuel Jackson
Apex Companies
3015 SW First Avenue
Portland, OR 97201

Work Order: **HS15030627**

Laboratory Results for: **Andover Release Site E3CE-0065**

Dear Samuel,

ALS Environmental received 27 sample(s) on Mar 18, 2015 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: Jumoke.Lawal

Ana L. Spencer

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15030627

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15030627-01	MW-19 (28)	Soil		11-Mar-2015 17:10	18-Mar-2015 12:40	☐
HS15030627-02	MW-19 (32)	Soil		11-Mar-2015 17:20	18-Mar-2015 12:40	☐
HS15030627-03	MW-19 (45)	Soil		11-Mar-2015 18:00	18-Mar-2015 12:40	☐
HS15030627-04	MW-18 (26.5)	Soil		11-Mar-2015 13:15	18-Mar-2015 12:40	☑
HS15030627-05	MW-18 (31.5)	Soil		11-Mar-2015 13:25	18-Mar-2015 12:40	☑
HS15030627-06	MW-17 (19)	Soil		12-Mar-2015 10:05	18-Mar-2015 12:40	☐
HS15030627-07	MW-17 (22)	Soil		12-Mar-2015 10:15	18-Mar-2015 12:40	☐
HS15030627-08	MW-17 (37)	Soil		12-Mar-2015 11:00	18-Mar-2015 12:40	☐
HS15030627-09	IB-1 (18.0)	Soil		14-Mar-2015 16:50	18-Mar-2015 12:40	☐
HS15030627-10	IB-1 (24.0)	Soil		14-Mar-2015 17:00	18-Mar-2015 12:40	☐
HS15030627-11	IB-2 (32)	Soil		15-Mar-2015 13:20	18-Mar-2015 12:40	☑
HS15030627-12	IB-2 (38)	Soil		15-Mar-2015 13:30	18-Mar-2015 12:40	☑
HS15030627-13	IB-3 (24)	Soil		15-Mar-2015 15:30	18-Mar-2015 12:40	☑
HS15030627-14	IB-3 (30)	Soil		15-Mar-2015 15:40	18-Mar-2015 12:40	☑
HS15030627-15	IB-3 (36)	Soil		15-Mar-2015 16:00	18-Mar-2015 12:40	☑
HS15030627-16	Trip Blank-030215-02	Water		11-Mar-2015 00:00	18-Mar-2015 12:40	☐
HS15030627-17	IB-7 (19)	Soil		18-Mar-2015 09:00	18-Mar-2015 12:40	☐
HS15030627-18	IB-7 (24)	Soil		18-Mar-2015 09:15	18-Mar-2015 12:40	☐
HS15030627-19	IB-7 (39)	Soil		18-Mar-2015 09:30	18-Mar-2015 12:40	☐
HS15030627-20	IB-8 (18)	Soil		18-Mar-2015 11:30	18-Mar-2015 12:40	☑
HS15030627-21	IB-8 (32.5)	Soil		18-Mar-2015 12:00	18-Mar-2015 12:40	☑
HS15030627-22	IB-8 (39)	Soil		18-Mar-2015 12:05	18-Mar-2015 12:40	☑
HS15030627-23	IB-4 (6)	Soil		18-Mar-2015 13:30	18-Mar-2015 12:40	☐
HS15030627-24	IB-4 (19.5)	Soil		18-Mar-2015 13:45	18-Mar-2015 12:40	☐
HS15030627-25	IB-4 (31)	Soil		18-Mar-2015 14:00	18-Mar-2015 12:40	☐
HS15030627-26	IB-4 (39)	Soil		18-Mar-2015 14:15	18-Mar-2015 12:40	☐
HS15030627-27	Trip Blank-030215-03	Water		18-Mar-2015 00:00	18-Mar-2015 12:40	☐

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15030627

CASE NARRATIVE

GC Volatiles by Method IA OA-1

Batch ID: R251602

Sample ID: **HS15030505-04**
- MSD is for an unrelated sample

Batch ID: R251737,R251800

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R251462

Sample ID: **HS15030731-01**
- MS and MSD are for an unrelated sample

Batch ID: R251522

Sample ID: **HS15030745-02**
- MS and MSD are for an unrelated sample

Batch ID: R251585

Sample ID: **HS15030822-01**
- MS and MSD are for an unrelated sample

Batch ID: R251591,R251621,R251663,R251742

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R251655

Sample ID: **HS15030560-07**
- MSD is for an unrelated sample

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	MW-19 (28)	Lab ID:HS15030627-01
Collection Date:	11-Mar-2015 17:10	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
1,3,5-Trimethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
2-Butanone	ND		0.010	mg/Kg	1	24-Mar-2015 12:36
Benzene	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
Cyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
Ethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
Isopropylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
Methylcyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
Naphthalene	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
n-Butylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
n-Propylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
Toluene	ND		0.0050	mg/Kg	1	24-Mar-2015 12:36
Xylenes, Total	ND		0.010	mg/Kg	1	24-Mar-2015 12:36
Surr: 1,2-Dichloroethane-d4	*90.8*		*70-128*	*%REC*	*1*	*24-Mar-2015 12:36*
Surr: 4-Bromofluorobenzene	*96.7*		*73-126*	*%REC*	*1*	*24-Mar-2015 12:36*
Surr: Dibromofluoromethane	*104*		*71-128*	*%REC*	*1*	*24-Mar-2015 12:36*
Surr: Toluene-d8	*96.1*		*73-127*	*%REC*	*1*	*24-Mar-2015 12:36*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	ND		0.050	mg/Kg	1	24-Mar-2015 17:27
Surr: 4-Bromofluorobenzene	*81.3*		*70-130*	*%REC*	*1*	*24-Mar-2015 17:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**	
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627	
Sample ID:	MW-19 (32)	Lab ID:HS15030627-02	
Collection Date:	11-Mar-2015 17:20	Matrix:Soil	

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	**0.020**		**0.0050**	**mg/Kg**	1	24-Mar-2015 13:04
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	24-Mar-2015 13:04
1,3,5-Trimethylbenzene	**0.16**		**0.0050**	**mg/Kg**	1	24-Mar-2015 13:04
2-Butanone	**0.021**		**0.010**	**mg/Kg**	1	24-Mar-2015 13:04
Benzene	**0.17**		**0.0050**	**mg/Kg**	1	24-Mar-2015 13:04
Cyclohexane	**0.076**		**0.0050**	**mg/Kg**	1	24-Mar-2015 13:04
Ethylbenzene	**0.081**		**0.050**	**mg/Kg**	10	24-Mar-2015 16:48
Isopropylbenzene	**0.025**		**0.0050**	**mg/Kg**	1	24-Mar-2015 13:04
Methylcyclohexane	**0.052**		**0.0050**	**mg/Kg**	1	24-Mar-2015 13:04
Naphthalene	**0.073**		**0.0050**	**mg/Kg**	1	24-Mar-2015 13:04
n-Butylbenzene	**0.053**		**0.0050**	**mg/Kg**	1	24-Mar-2015 13:04
n-Propylbenzene	**0.089**		**0.0050**	**mg/Kg**	1	24-Mar-2015 13:04
Toluene	**0.17**		**0.050**	**mg/Kg**	10	24-Mar-2015 16:48
Xylenes, Total	**0.48**		**0.10**	**mg/Kg**	10	24-Mar-2015 16:48
Surr: 1,2-Dichloroethane-d4	*88.1*		*70-128*	*%REC*	*1*	*24-Mar-2015 13:04*
Surr: 1,2-Dichloroethane-d4	*86.1*		*70-128*	*%REC*	*10*	*24-Mar-2015 16:48*
Surr: 4-Bromofluorobenzene	*96.5*		*73-126*	*%REC*	*10*	*24-Mar-2015 16:48*
Surr: 4-Bromofluorobenzene	*101*		*73-126*	*%REC*	*1*	*24-Mar-2015 13:04*
Surr: Dibromofluoromethane	*102*		*71-128*	*%REC*	*1*	*24-Mar-2015 13:04*
Surr: Dibromofluoromethane	*98.9*		*71-128*	*%REC*	*10*	*24-Mar-2015 16:48*
Surr: Toluene-d8	*95.8*		*73-127*	*%REC*	*10*	*24-Mar-2015 16:48*
Surr: Toluene-d8	*95.7*		*73-127*	*%REC*	*1*	*24-Mar-2015 13:04*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**3.4**		**0.050**	**mg/Kg**	1	24-Mar-2015 17:43
Surr: 4-Bromofluorobenzene	*116*		*70-130*	*%REC*	*1*	*24-Mar-2015 17:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	MW-19 (45)	Lab ID:HS15030627-03
Collection Date:	11-Mar-2015 18:00	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
1,3,5-Trimethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
2-Butanone	ND		0.010	mg/Kg	1	24-Mar-2015 13:32
Benzene	**0.081**		**0.0050**	**mg/Kg**	1	24-Mar-2015 13:32
Cyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
Ethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
Isopropylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
Methylcyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
Naphthalene	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
n-Butylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
n-Propylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
Toluene	ND		0.0050	mg/Kg	1	24-Mar-2015 13:32
Xylenes, Total	ND		0.010	mg/Kg	1	24-Mar-2015 13:32
Surr: 1,2-Dichloroethane-d4	*94.6*		*70-128*	*%REC*	*1*	*24-Mar-2015 13:32*
Surr: 4-Bromofluorobenzene	*97.4*		*73-126*	*%REC*	*1*	*24-Mar-2015 13:32*
Surr: Dibromofluoromethane	*101*		*71-128*	*%REC*	*1*	*24-Mar-2015 13:32*
Surr: Toluene-d8	*95.0*		*73-127*	*%REC*	*1*	*24-Mar-2015 13:32*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	ND		0.050	mg/Kg	1	24-Mar-2015 17:59
Surr: 4-Bromofluorobenzene	*81.9*		*70-130*	*%REC*	*1*	*24-Mar-2015 17:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	MW-17 (19)	Lab ID:HS15030627-06
Collection Date:	12-Mar-2015 10:05	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
1,3,5-Trimethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
2-Butanone	ND		0.010	mg/Kg	1	24-Mar-2015 14:00
Benzene	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
Cyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
Ethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
Isopropylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
Methylcyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
Naphthalene	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
n-Butylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
n-Propylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
Toluene	ND		0.0050	mg/Kg	1	24-Mar-2015 14:00
Xylenes, Total	ND		0.010	mg/Kg	1	24-Mar-2015 14:00
Surr: 1,2-Dichloroethane-d4	*89.2*		*70-128*	*%REC*	*1*	*24-Mar-2015 14:00*
Surr: 4-Bromofluorobenzene	*99.4*		*73-126*	*%REC*	*1*	*24-Mar-2015 14:00*
Surr: Dibromofluoromethane	*100*		*71-128*	*%REC*	*1*	*24-Mar-2015 14:00*
Surr: Toluene-d8	*97.1*		*73-127*	*%REC*	*1*	*24-Mar-2015 14:00*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	ND		0.050	mg/Kg	1	24-Mar-2015 18:15
Surr: 4-Bromofluorobenzene	*82.8*		*70-130*	*%REC*	*1*	*24-Mar-2015 18:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	MW-17 (22)	Lab ID:HS15030627-07
Collection Date:	12-Mar-2015 10:15	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	**2.1**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
1,2-Dichloroethane	ND		0.050	mg/Kg	10	24-Mar-2015 17:16
1,3,5-Trimethylbenzene	**0.75**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
2-Butanone	ND		0.10	mg/Kg	10	24-Mar-2015 17:16
Benzene	**0.16**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
Cyclohexane	**0.51**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
Ethylbenzene	**1.3**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
Isopropylbenzene	**0.11**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
Methylcyclohexane	**0.26**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
Naphthalene	**0.23**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
n-Butylbenzene	**0.13**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
n-Propylbenzene	**0.38**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
Toluene	**0.48**		**0.050**	**mg/Kg**	10	24-Mar-2015 17:16
Xylenes, Total	**5.2**		**0.10**	**mg/Kg**	10	24-Mar-2015 17:16
Surr: 1,2-Dichloroethane-d4	*88.1*		*70-128*	*%REC*	*10*	*24-Mar-2015 17:16*
Surr: 4-Bromofluorobenzene	*95.7*		*73-126*	*%REC*	*10*	*24-Mar-2015 17:16*
Surr: Dibromofluoromethane	*97.9*		*71-128*	*%REC*	*10*	*24-Mar-2015 17:16*
Surr: Toluene-d8	*94.8*		*73-127*	*%REC*	*10*	*24-Mar-2015 17:16*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**30**		**0.050**	**mg/Kg**	1	24-Mar-2015 18:31
Surr: 4-Bromofluorobenzene	*105*		*70-130*	*%REC*	*1*	*24-Mar-2015 18:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-17 (37)
Collection Date: 12-Mar-2015 11:00

WorkOrder:HS15030627
Lab ID:HS15030627-08
Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	**0.0065**		**0.0050**	**mg/Kg**	1	24-Mar-2015 15:24
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
1,3,5-Trimethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
2-Butanone	ND		0.010	mg/Kg	1	24-Mar-2015 15:24
Benzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
Cyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
Ethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
Isopropylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
Methylcyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
Naphthalene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
n-Butylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
n-Propylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
Toluene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:24
Xylenes, Total	ND		0.010	mg/Kg	1	24-Mar-2015 15:24
Surr: 1,2-Dichloroethane-d4	*95.0*		*70-128*	*%REC*	*1*	*24-Mar-2015 15:24*
Surr: 4-Bromofluorobenzene	*97.1*		*73-126*	*%REC*	*1*	*24-Mar-2015 15:24*
Surr: Dibromofluoromethane	*102*		*71-128*	*%REC*	*1*	*24-Mar-2015 15:24*
Surr: Toluene-d8	*95.5*		*73-127*	*%REC*	*1*	*24-Mar-2015 15:24*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	ND		0.050	mg/Kg	1	24-Mar-2015 18:47
Surr: 4-Bromofluorobenzene	*86.7*		*70-130*	*%REC*	*1*	*24-Mar-2015 18:47*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**	
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627	
Sample ID:	IB-1 (18.0)	Lab ID:HS15030627-09	
Collection Date:	14-Mar-2015 16:50	Matrix:Soil	

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	**0.0053**		**0.0050**	**mg/Kg**	1	24-Mar-2015 15:52
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
1,3,5-Trimethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
2-Butanone	ND		0.010	mg/Kg	1	24-Mar-2015 15:52
Benzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
Cyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
Ethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
Isopropylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
Methylcyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
Naphthalene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
n-Butylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
n-Propylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
Toluene	ND		0.0050	mg/Kg	1	24-Mar-2015 15:52
Xylenes, Total	ND		0.010	mg/Kg	1	24-Mar-2015 15:52
Surr: 1,2-Dichloroethane-d4	*91.1*		*70-128*	*%REC*	*1*	*24-Mar-2015 15:52*
Surr: 4-Bromofluorobenzene	*95.9*		*73-126*	*%REC*	*1*	*24-Mar-2015 15:52*
Surr: Dibromofluoromethane	*98.2*		*71-128*	*%REC*	*1*	*24-Mar-2015 15:52*
Surr: Toluene-d8	*92.4*		*73-127*	*%REC*	*1*	*24-Mar-2015 15:52*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	ND		0.050	mg/Kg	1	24-Mar-2015 19:03
Surr: 4-Bromofluorobenzene	*87.0*		*70-130*	*%REC*	*1*	*24-Mar-2015 19:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	IB-1 (24.0)	Lab ID:HS15030627-10
Collection Date:	14-Mar-2015 17:00	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	**0.16**		**0.0050**	**mg/Kg**	1	24-Mar-2015 16:20
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	24-Mar-2015 16:20
1,3,5-Trimethylbenzene	**0.056**		**0.0050**	**mg/Kg**	1	24-Mar-2015 16:20
2-Butanone	**0.056**		**0.010**	**mg/Kg**	1	24-Mar-2015 16:20
Benzene	**0.11**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:03
Cyclohexane	**0.077**		**0.0050**	**mg/Kg**	1	24-Mar-2015 16:20
Ethylbenzene	**0.059**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:03
Isopropylbenzene	**0.013**		**0.0050**	**mg/Kg**	1	24-Mar-2015 16:20
Methylcyclohexane	**0.034**		**0.0050**	**mg/Kg**	1	24-Mar-2015 16:20
Naphthalene	**0.037**		**0.0050**	**mg/Kg**	1	24-Mar-2015 16:20
n-Butylbenzene	**0.013**		**0.0050**	**mg/Kg**	1	24-Mar-2015 16:20
n-Propylbenzene	**0.036**		**0.0050**	**mg/Kg**	1	24-Mar-2015 16:20
Toluene	**0.18**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:03
Xylenes, Total	**0.21**		**0.10**	**mg/Kg**	10	25-Mar-2015 12:03
Surr: 1,2-Dichloroethane-d4	*92.0*		*70-128*	*%REC*	*1*	*24-Mar-2015 16:20*
Surr: 1,2-Dichloroethane-d4	*96.0*		*70-128*	*%REC*	*10*	*25-Mar-2015 12:03*
Surr: 4-Bromofluorobenzene	*97.4*		*73-126*	*%REC*	*1*	*24-Mar-2015 16:20*
Surr: 4-Bromofluorobenzene	*99.2*		*73-126*	*%REC*	*10*	*25-Mar-2015 12:03*
Surr: Dibromofluoromethane	*101*		*71-128*	*%REC*	*1*	*24-Mar-2015 16:20*
Surr: Dibromofluoromethane	*97.4*		*71-128*	*%REC*	*10*	*25-Mar-2015 12:03*
Surr: Toluene-d8	*92.7*		*73-127*	*%REC*	*1*	*24-Mar-2015 16:20*
Surr: Toluene-d8	*101*		*73-127*	*%REC*	*10*	*25-Mar-2015 12:03*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**5.4**		**0.050**	**mg/Kg**	1	24-Mar-2015 21:09
Surr: 4-Bromofluorobenzene	*103*		*70-130*	*%REC*	*1*	*24-Mar-2015 21:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	Trip Blank-030215-02	Lab ID:HS15030627-16
Collection Date:	11-Mar-2015 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 19:36
1,2-Dichloroethane	ND		0.0010	mg/L	1	23-Mar-2015 19:36
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 19:36
2-Butanone	ND		0.0020	mg/L	1	23-Mar-2015 19:36
Benzene	ND		0.0010	mg/L	1	23-Mar-2015 19:36
Cyclohexane	ND		0.0010	mg/L	1	23-Mar-2015 19:36
Ethylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 19:36
Isopropylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 19:36
Methylcyclohexane	ND		0.0010	mg/L	1	23-Mar-2015 19:36
Naphthalene	ND		0.0010	mg/L	1	23-Mar-2015 19:36
n-Butylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 19:36
n-Propylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 19:36
Toluene	ND		0.0010	mg/L	1	23-Mar-2015 19:36
Xylenes, Total	ND		0.0030	mg/L	1	23-Mar-2015 19:36
Surr: 1,2-Dichloroethane-d4	*104*		*71-125*	*%REC*	*1*	*23-Mar-2015 19:36*
Surr: 4-Bromofluorobenzene	*99.9*		*70-125*	*%REC*	*1*	*23-Mar-2015 19:36*
Surr: Dibromofluoromethane	*105*		*74-125*	*%REC*	*1*	*23-Mar-2015 19:36*
Surr: Toluene-d8	*113*		*75-125*	*%REC*	*1*	*23-Mar-2015 19:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	IB-7 (19)	Lab ID:HS15030627-17
Collection Date:	18-Mar-2015 09:00	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
1,3,5-Trimethylbenzene	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
2-Butanone	ND		0.010	mg/Kg	1	25-Mar-2015 16:44
Benzene	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
Cyclohexane	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
Ethylbenzene	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
Isopropylbenzene	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
Methylcyclohexane	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
Naphthalene	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
n-Butylbenzene	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
n-Propylbenzene	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
Toluene	ND		0.0050	mg/Kg	1	25-Mar-2015 16:44
Xylenes, Total	ND		0.010	mg/Kg	1	25-Mar-2015 16:44
Surr: 1,2-Dichloroethane-d4	*96.8*		*70-128*	*%REC*	*1*	*25-Mar-2015 16:44*
Surr: 4-Bromofluorobenzene	*97.8*		*73-126*	*%REC*	*1*	*25-Mar-2015 16:44*
Surr: Dibromofluoromethane	*101*		*71-128*	*%REC*	*1*	*25-Mar-2015 16:44*
Surr: Toluene-d8	*100.0*		*73-127*	*%REC*	*1*	*25-Mar-2015 16:44*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	ND		0.050	mg/Kg	1	24-Mar-2015 21:25
Surr: 4-Bromofluorobenzene	*92.7*		*70-130*	*%REC*	*1*	*24-Mar-2015 21:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	IB-7 (24)	Lab ID:HS15030627-18
Collection Date:	18-Mar-2015 09:15	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	**8.6**		**0.50**	**mg/Kg**	100	26-Mar-2015 09:51
1,2-Dichloroethane	ND		0.050	mg/Kg	10	26-Mar-2015 09:59
1,3,5-Trimethylbenzene	**3.1**		**0.50**	**mg/Kg**	100	26-Mar-2015 09:51
2-Butanone	**0.33**		**0.10**	**mg/Kg**	10	26-Mar-2015 09:59
Benzene	**1.2**		**0.050**	**mg/Kg**	10	26-Mar-2015 09:59
Cyclohexane	**5.6**		**0.50**	**mg/Kg**	100	26-Mar-2015 09:51
Ethylbenzene	**5.7**		**0.50**	**mg/Kg**	100	26-Mar-2015 09:51
Isopropylbenzene	**0.35**		**0.050**	**mg/Kg**	10	26-Mar-2015 09:59
Methylcyclohexane	**0.96**		**0.050**	**mg/Kg**	10	26-Mar-2015 09:59
Naphthalene	**1.1**		**0.050**	**mg/Kg**	10	26-Mar-2015 09:59
n-Butylbenzene	**0.42**		**0.050**	**mg/Kg**	10	26-Mar-2015 09:59
n-Propylbenzene	**1.5**		**0.050**	**mg/Kg**	10	26-Mar-2015 09:59
Toluene	**11**		**0.50**	**mg/Kg**	100	26-Mar-2015 09:51
Xylenes, Total	**21**		**1.0**	**mg/Kg**	100	26-Mar-2015 09:51
Surr: 1,2-Dichloroethane-d4	*107*		*70-128*	*%REC*	*100*	*26-Mar-2015 09:51*
Surr: 1,2-Dichloroethane-d4	*95.6*		*70-128*	*%REC*	*10*	*26-Mar-2015 09:59*
Surr: 4-Bromofluorobenzene	*96.7*		*73-126*	*%REC*	*100*	*26-Mar-2015 09:51*
Surr: 4-Bromofluorobenzene	*96.7*		*73-126*	*%REC*	*10*	*26-Mar-2015 09:59*
Surr: Dibromofluoromethane	*103*		*71-128*	*%REC*	*100*	*26-Mar-2015 09:51*
Surr: Dibromofluoromethane	*98.9*		*71-128*	*%REC*	*10*	*26-Mar-2015 09:59*
Surr: Toluene-d8	*99.7*		*73-127*	*%REC*	*100*	*26-Mar-2015 09:51*
Surr: Toluene-d8	*101*		*73-127*	*%REC*	*10*	*26-Mar-2015 09:59*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**590**		**5.0**	**mg/Kg**	100	27-Mar-2015 14:35
Surr: 4-Bromofluorobenzene	*78.1*		*70-130*	*%REC*	*100*	*27-Mar-2015 14:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	IB-7 (39)	Lab ID:HS15030627-19
Collection Date:	18-Mar-2015 09:30	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
1,3,5-Trimethylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
2-Butanone	ND		0.010	mg/Kg	1	26-Mar-2015 09:12
Benzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
Cyclohexane	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
Ethylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
Isopropylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
Methylcyclohexane	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
Naphthalene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
n-Butylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
n-Propylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
Toluene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:12
Xylenes, Total	ND		0.010	mg/Kg	1	26-Mar-2015 09:12
Surr: 1,2-Dichloroethane-d4	*101*		*70-128*	*%REC*	*1*	*26-Mar-2015 09:12*
Surr: 4-Bromofluorobenzene	*98.5*		*73-126*	*%REC*	*1*	*26-Mar-2015 09:12*
Surr: Dibromofluoromethane	*104*		*71-128*	*%REC*	*1*	*26-Mar-2015 09:12*
Surr: Toluene-d8	*99.4*		*73-127*	*%REC*	*1*	*26-Mar-2015 09:12*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	ND		0.050	mg/Kg	1	26-Mar-2015 18:53
Surr: 4-Bromofluorobenzene	*85.0*		*70-130*	*%REC*	*1*	*26-Mar-2015 18:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	IB-4 (6)	Lab ID:HS15030627-23
Collection Date:	18-Mar-2015 13:30	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
1,3,5-Trimethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
2-Butanone	ND		0.010	mg/Kg	1	24-Mar-2015 23:07
Benzene	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
Cyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
Ethylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
Isopropylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
Methylcyclohexane	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
Naphthalene	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
n-Butylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
n-Propylbenzene	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
Toluene	ND		0.0050	mg/Kg	1	24-Mar-2015 23:07
Xylenes, Total	ND		0.010	mg/Kg	1	24-Mar-2015 23:07
Surr: 1,2-Dichloroethane-d4	*93.6*		*70-128*	*%REC*	*1*	*24-Mar-2015 23:07*
Surr: 4-Bromofluorobenzene	*98.8*		*73-126*	*%REC*	*1*	*24-Mar-2015 23:07*
Surr: Dibromofluoromethane	*101*		*71-128*	*%REC*	*1*	*24-Mar-2015 23:07*
Surr: Toluene-d8	*102*		*73-127*	*%REC*	*1*	*24-Mar-2015 23:07*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	ND		0.050	mg/Kg	1	24-Mar-2015 22:13
Surr: 4-Bromofluorobenzene	*88.9*		*70-130*	*%REC*	*1*	*24-Mar-2015 22:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	IB-4 (19.5)	Lab ID:HS15030627-24
Collection Date:	18-Mar-2015 13:45	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	**5.7**		**0.50**	**mg/Kg**	100	25-Mar-2015 13:04
1,2-Dichloroethane	ND		0.050	mg/Kg	10	25-Mar-2015 12:27
1,3,5-Trimethylbenzene	**1.4**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:27
2-Butanone	ND		0.10	mg/Kg	10	25-Mar-2015 12:27
Benzene	**0.065**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:27
Cyclohexane	**1.0**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:27
Ethylbenzene	**0.83**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:27
Isopropylbenzene	**0.16**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:27
Methylcyclohexane	**0.80**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:27
Naphthalene	**0.56**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:27
n-Butylbenzene	**0.38**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:27
n-Propylbenzene	**0.87**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:27
Toluene	**0.59**		**0.050**	**mg/Kg**	10	25-Mar-2015 12:27
Xylenes, Total	**3.3**		**0.10**	**mg/Kg**	10	25-Mar-2015 12:27
Surr: 1,2-Dichloroethane-d4	*96.0*		*70-128*	*%REC*	*10*	*25-Mar-2015 12:27*
Surr: 1,2-Dichloroethane-d4	*96.8*		*70-128*	*%REC*	*100*	*25-Mar-2015 13:04*
Surr: 4-Bromofluorobenzene	*101*		*73-126*	*%REC*	*10*	*25-Mar-2015 12:27*
Surr: 4-Bromofluorobenzene	*95.2*		*73-126*	*%REC*	*100*	*25-Mar-2015 13:04*
Surr: Dibromofluoromethane	*97.2*		*71-128*	*%REC*	*10*	*25-Mar-2015 12:27*
Surr: Dibromofluoromethane	*95.0*		*71-128*	*%REC*	*100*	*25-Mar-2015 13:04*
Surr: Toluene-d8	*102*		*73-127*	*%REC*	*10*	*25-Mar-2015 12:27*
Surr: Toluene-d8	*94.0*		*73-127*	*%REC*	*100*	*25-Mar-2015 13:04*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**100**		**2.5**	**mg/Kg**	50	27-Mar-2015 16:24
Surr: 4-Bromofluorobenzene	*72.8*		*70-130*	*%REC*	*50*	*27-Mar-2015 16:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**	
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627	
Sample ID:	IB-4 (31)	Lab ID:HS15030627-25	
Collection Date:	18-Mar-2015 14:00	Matrix:Soil	

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	**30**		**5.0**	**mg/Kg**	1000	25-Mar-2015 13:30
1,2-Dichloroethane	ND		0.50	mg/Kg	100	25-Mar-2015 18:47
1,3,5-Trimethylbenzene	**17**		**0.50**	**mg/Kg**	100	25-Mar-2015 18:47
2-Butanone	ND		0.99	mg/Kg	100	25-Mar-2015 18:47
Benzene	**4.0**		**0.50**	**mg/Kg**	100	25-Mar-2015 18:47
Cyclohexane	**11**		**5.0**	**mg/Kg**	1000	25-Mar-2015 13:30
Ethylbenzene	**21**		**5.0**	**mg/Kg**	1000	25-Mar-2015 13:30
Isopropylbenzene	**2.3**		**0.50**	**mg/Kg**	100	25-Mar-2015 18:47
Methylcyclohexane	**10**		**0.50**	**mg/Kg**	100	25-Mar-2015 18:47
Naphthalene	**4.7**		**0.50**	**mg/Kg**	100	27-Mar-2015 02:37
n-Butylbenzene	**4.1**		**0.50**	**mg/Kg**	100	25-Mar-2015 18:47
n-Propylbenzene	**11**		**0.50**	**mg/Kg**	100	25-Mar-2015 18:47
Toluene	**40**		**5.0**	**mg/Kg**	1000	25-Mar-2015 13:30
Xylenes, Total	**81**		**9.9**	**mg/Kg**	1000	25-Mar-2015 13:30
Surr: 1,2-Dichloroethane-d4	*102*		*70-128*	*%REC*	*100*	*25-Mar-2015 18:47*
Surr: 1,2-Dichloroethane-d4	*96.0*		*70-128*	*%REC*	*1000*	*25-Mar-2015 13:30*
Surr: 1,2-Dichloroethane-d4	*104*		*70-128*	*%REC*	*100*	*27-Mar-2015 02:37*
Surr: 4-Bromofluorobenzene	*95.1*		*73-126*	*%REC*	*1000*	*25-Mar-2015 13:30*
Surr: 4-Bromofluorobenzene	*99.4*		*73-126*	*%REC*	*100*	*25-Mar-2015 18:47*
Surr: 4-Bromofluorobenzene	*103*		*73-126*	*%REC*	*100*	*27-Mar-2015 02:37*
Surr: Dibromofluoromethane	*96.0*		*71-128*	*%REC*	*1000*	*25-Mar-2015 13:30*
Surr: Dibromofluoromethane	*96.4*		*71-128*	*%REC*	*100*	*25-Mar-2015 18:47*
Surr: Dibromofluoromethane	*107*		*71-128*	*%REC*	*100*	*27-Mar-2015 02:37*
Surr: Toluene-d8	*95.5*		*73-127*	*%REC*	*100*	*25-Mar-2015 18:47*
Surr: Toluene-d8	*93.2*		*73-127*	*%REC*	*1000*	*25-Mar-2015 13:30*
Surr: Toluene-d8	*108*		*73-127*	*%REC*	*100*	*27-Mar-2015 02:37*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**1,600**		**5.0**	**mg/Kg**	100	27-Mar-2015 16:40
Surr: 4-Bromofluorobenzene	*94.2*		*70-130*	*%REC*	*100*	*27-Mar-2015 16:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	IB-4 (39)	Lab ID:HS15030627-26
Collection Date:	18-Mar-2015 14:15	Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**				Analyst: WLR
1,2,4-Trimethylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
1,2-Dichloroethane	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
1,3,5-Trimethylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
2-Butanone	ND		0.010	mg/Kg	1	26-Mar-2015 09:36
Benzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
Cyclohexane	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
Ethylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
Isopropylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
Methylcyclohexane	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
Naphthalene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
n-Butylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
n-Propylbenzene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
Toluene	ND		0.0050	mg/Kg	1	26-Mar-2015 09:36
Xylenes, Total	ND		0.010	mg/Kg	1	26-Mar-2015 09:36
Surr: 1,2-Dichloroethane-d4	*99.0*		*70-128*	*%REC*	*1*	*26-Mar-2015 09:36*
Surr: 4-Bromofluorobenzene	*97.8*		*73-126*	*%REC*	*1*	*26-Mar-2015 09:36*
Surr: Dibromofluoromethane	*101*		*71-128*	*%REC*	*1*	*26-Mar-2015 09:36*
Surr: Toluene-d8	*101*		*73-127*	*%REC*	*1*	*26-Mar-2015 09:36*
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**0.29**		**0.050**	**mg/Kg**	1	24-Mar-2015 23:32
Surr: 4-Bromofluorobenzene	*95.5*		*70-130*	*%REC*	*1*	*24-Mar-2015 23:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15030627
Sample ID:	Trip Blank-030215-03	Lab ID:HS15030627-27
Collection Date:	18-Mar-2015 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 20:01
1,2-Dichloroethane	ND		0.0010	mg/L	1	23-Mar-2015 20:01
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 20:01
2-Butanone	ND		0.0020	mg/L	1	23-Mar-2015 20:01
Benzene	ND		0.0010	mg/L	1	23-Mar-2015 20:01
Cyclohexane	ND		0.0010	mg/L	1	23-Mar-2015 20:01
Ethylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 20:01
Isopropylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 20:01
Methylcyclohexane	ND		0.0010	mg/L	1	23-Mar-2015 20:01
Naphthalene	ND		0.0010	mg/L	1	23-Mar-2015 20:01
n-Butylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 20:01
n-Propylbenzene	ND		0.0010	mg/L	1	23-Mar-2015 20:01
Toluene	ND		0.0010	mg/L	1	23-Mar-2015 20:01
Xylenes, Total	ND		0.0030	mg/L	1	23-Mar-2015 20:01
Surr: 1,2-Dichloroethane-d4	*105*		*71-125*	*%REC*	*1*	*23-Mar-2015 20:01*
Surr: 4-Bromofluorobenzene	*95.3*		*70-125*	*%REC*	*1*	*23-Mar-2015 20:01*
Surr: Dibromofluoromethane	*105*		*74-125*	*%REC*	*1*	*23-Mar-2015 20:01*
Surr: Toluene-d8	*109*		*75-125*	*%REC*	*1*	*23-Mar-2015 20:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R251462	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15030627-16	Trip Blank-030215-02	11 Mar 2015 00:00			23 Mar 2015 19:36	1
HS15030627-27	Trip Blank-030215-03	18 Mar 2015 00:00			23 Mar 2015 20:01	1
Batch ID R251522	**Test Name :** VOLATILES BY SW8260C			**Matrix:** Soil		
HS15030627-01	MW-19 (28)	11 Mar 2015 17:10			24 Mar 2015 12:36	1
HS15030627-02	MW-19 (32)	11 Mar 2015 17:20			24 Mar 2015 16:48	10
HS15030627-02	MW-19 (32)	11 Mar 2015 17:20			24 Mar 2015 13:04	1
HS15030627-03	MW-19 (45)	11 Mar 2015 18:00			24 Mar 2015 13:32	1
HS15030627-06	MW-17 (19)	12 Mar 2015 10:05			24 Mar 2015 14:00	1
HS15030627-07	MW-17 (22)	12 Mar 2015 10:15			24 Mar 2015 17:16	10
HS15030627-08	MW-17 (37)	12 Mar 2015 11:00			24 Mar 2015 15:24	1
HS15030627-09	IB-1 (18.0)	14 Mar 2015 16:50			24 Mar 2015 15:52	1
HS15030627-10	IB-1 (24.0)	14 Mar 2015 17:00			24 Mar 2015 16:20	1
Batch ID R251585	**Test Name :** VOLATILES BY SW8260C			**Matrix:** Soil		
HS15030627-23	IB-4 (6)	18 Mar 2015 13:30			24 Mar 2015 23:07	1
Batch ID R251591	**Test Name :** VOLATILES BY SW8260C			**Matrix:** Soil		
HS15030627-10	IB-1 (24.0)	14 Mar 2015 17:00			25 Mar 2015 12:03	10
HS15030627-17	IB-7 (19)	18 Mar 2015 09:00			25 Mar 2015 16:44	1
HS15030627-24	IB-4 (19.5)	18 Mar 2015 13:45			25 Mar 2015 12:27	10
Batch ID R251602	**Test Name :** VPH - IOWA OA-1			**Matrix:** Soil		
HS15030627-01	MW-19 (28)	11 Mar 2015 17:10			24 Mar 2015 17:27	1
HS15030627-02	MW-19 (32)	11 Mar 2015 17:20			24 Mar 2015 17:43	1
HS15030627-03	MW-19 (45)	11 Mar 2015 18:00			24 Mar 2015 17:59	1
HS15030627-06	MW-17 (19)	12 Mar 2015 10:05			24 Mar 2015 18:15	1
HS15030627-07	MW-17 (22)	12 Mar 2015 10:15			24 Mar 2015 18:31	1
HS15030627-08	MW-17 (37)	12 Mar 2015 11:00			24 Mar 2015 18:47	1
HS15030627-09	IB-1 (18.0)	14 Mar 2015 16:50			24 Mar 2015 19:03	1
HS15030627-10	IB-1 (24.0)	14 Mar 2015 17:00			24 Mar 2015 21:09	1
HS15030627-17	IB-7 (19)	18 Mar 2015 09:00			24 Mar 2015 21:25	1
HS15030627-23	IB-4 (6)	18 Mar 2015 13:30			24 Mar 2015 22:13	1
HS15030627-26	IB-4 (39)	18 Mar 2015 14:15			24 Mar 2015 23:32	1
Batch ID R251621	**Test Name :** VOLATILES BY SW8260C			**Matrix:** Soil		
HS15030627-24	IB-4 (19.5)	18 Mar 2015 13:45			25 Mar 2015 13:04	100
HS15030627-25	IB-4 (31)	18 Mar 2015 14:00			25 Mar 2015 18:47	100
HS15030627-25	IB-4 (31)	18 Mar 2015 14:00			25 Mar 2015 13:30	1000
Batch ID R251655	**Test Name :** VOLATILES BY SW8260C			**Matrix:** Soil		
HS15030627-18	IB-7 (24)	18 Mar 2015 09:15			26 Mar 2015 09:51	100

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R251663	**Test Name :** VOLATILES BY SW8260C			**Matrix:** Soil		
HS15030627-18	IB-7 (24)	18 Mar 2015 09:15			26 Mar 2015 09:59	10
HS15030627-19	IB-7 (39)	18 Mar 2015 09:30			26 Mar 2015 09:12	1
HS15030627-26	IB-4 (39)	18 Mar 2015 14:15			26 Mar 2015 09:36	1
Batch ID R251737	**Test Name :** VPH - IOWA OA-1			**Matrix:** Soil		
HS15030627-19	IB-7 (39)	18 Mar 2015 09:30			26 Mar 2015 18:53	1
Batch ID R251742	**Test Name :** VOLATILES BY SW8260C			**Matrix:** Soil		
HS15030627-25	IB-4 (31)	18 Mar 2015 14:00			27 Mar 2015 02:37	100
Batch ID R251800	**Test Name :** VPH - IOWA OA-1			**Matrix:** Soil		
HS15030627-18	IB-7 (24)	18 Mar 2015 09:15			27 Mar 2015 14:35	100
HS15030627-24	IB-4 (19.5)	18 Mar 2015 13:45			27 Mar 2015 16:24	50
HS15030627-25	IB-4 (31)	18 Mar 2015 14:00			27 Mar 2015 16:40	100

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251602 **Instrument: FID-14** **Method: IA OA-1**

MBLK Sample ID: **BBLK-032415** Units: **mg/Kg** Analysis Date: **24-Mar-2015 16:27**
Client ID: Run ID: **FID-14_251602** SeqNo: **3222580** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	*0.07749*	*0.0050*	*0.1*	*0*	*77.5*	*70 - 130*				

LCS Sample ID: **GLCS-032415** Units: **mg/Kg** Analysis Date: **24-Mar-2015 15:56**
Client ID: Run ID: **FID-14_251602** SeqNo: **3222578** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.041	0.050	1	0	104	70 - 130				
Surr: 4-Bromofluorobenzene	*0.09673*	*0.0050*	*0.1*	*0*	*96.7*	*70 - 130*				

MS Sample ID: **HS15030505-04MS** Units: **mg/Kg** Analysis Date: **24-Mar-2015 20:06**
Client ID: Run ID: **FID-14_251602** SeqNo: **3222591** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	0.9758	0.050	1	0	97.6	70 - 130				
Surr: 4-Bromofluorobenzene	*0.08248*	*0.0050*	*0.1*	*0*	*82.5*	*70 - 130*				

MSD Sample ID: **HS15030505-04MSD** Units: **mg/Kg** Analysis Date: **24-Mar-2015 20:22**
Client ID: Run ID: **FID-14_251602** SeqNo: **3222592** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	0.7626	0.050	1	0	76.3	70 - 130	0.9758	24.5	30	
Surr: 4-Bromofluorobenzene	*0.05317*	*0.0050*	*0.1*	*0*	*53.2*	*70 - 130*	*0.08248*	*43.2*	*30*	SR

The following samples were anayzed in this batch:

HS15030627-01	HS15030627-02	HS15030627-03	HS15030627-06
HS15030627-07	HS15030627-08	HS15030627-09	HS15030627-10
HS15030627-17	HS15030627-23	HS15030627-26	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251737 **Instrument: FID-14** **Method: IA OA-1**

MBLK Sample ID: **BLK-150326** Units: **mg/Kg** Analysis Date: **26-Mar-2015 18:22**
Client ID: Run ID: **FID-14_251737** SeqNo: **3224986** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	*0.0844*	*0.0050*	*0.1*	*0*	*84.4*	*70 - 130*				

LCS Sample ID: **LCS-150326** Units: **mg/Kg** Analysis Date: **26-Mar-2015 17:50**
Client ID: Run ID: **FID-14_251737** SeqNo: **3224984** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.108	0.050	1	0	111	70 - 130				
Surr: 4-Bromofluorobenzene	*0.09899*	*0.0050*	*0.1*	*0*	*99.0*	*70 - 130*				

MS Sample ID: **HS15030627-19MS** Units: **mg/Kg** Analysis Date: **26-Mar-2015 19:08**
Client ID: **IB-7 (39)** Run ID: **FID-14_251737** SeqNo: **3224988** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.002	0.050	1	0	100	70 - 130				
Surr: 4-Bromofluorobenzene	*0.0943*	*0.0050*	*0.1*	*0*	*94.3*	*70 - 130*				

MSD Sample ID: **HS15030627-19MSD** Units: **mg/Kg** Analysis Date: **26-Mar-2015 19:24**
Client ID: **IB-7 (39)** Run ID: **FID-14_251737** SeqNo: **3224989** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	0.9025	0.050	1	0	90.2	70 - 130	1.002	10.5	30	
Surr: 4-Bromofluorobenzene	*0.07193*	*0.0050*	*0.1*	*0*	*71.9*	*70 - 130*	*0.0943*	*26.9*	*30*	

The following samples were anayzed in this batch: HS15030627-19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251800 **Instrument: FID-14** **Method: IA OA-1**

MBLK Sample ID: **GBLKMW-150327** Units: **mg/Kg** Analysis Date: **27-Mar-2015 12:11**
Client ID: Run ID: **FID-14_251800** SeqNo: **3225933** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	ND	2.5								
Surr: 4-Bromofluorobenzene	*5.753*	*0.25*	*5*	*0*	*115*	*70 - 130*				

LCS Sample ID: **GLCS-150327** Units: **mg/L** Analysis Date: **27-Mar-2015 11:39**
Client ID: Run ID: **FID-14_251800** SeqNo: **3225931** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	0.9879	0.050	1	0	98.8	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1092*	*0.0050*	*0.1*	*0*	*109*	*70 - 130*				

MS Sample ID: **HS15030720-04MS** Units: **mg/Kg** Analysis Date: **27-Mar-2015 15:37**
Client ID: Run ID: **FID-14_251800** SeqNo: **3225944** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.007	0.050	1	0.0206	98.6	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1133*	*0.0050*	*0.1*	*0*	*113*	*70 - 130*				

MSD Sample ID: **HS15030720-04MSD** Units: **mg/Kg** Analysis Date: **27-Mar-2015 15:53**
Client ID: Run ID: **FID-14_251800** SeqNo: **3225945** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.097	0.050	1	0.0206	108	70 - 130	1.007	8.57	30	
Surr: 4-Bromofluorobenzene	*0.1144*	*0.0050*	*0.1*	*0*	*114*	*70 - 130*	*0.1133*	*0.999*	*30*	

The following samples were anayzed in this batch: HS15030627-18 HS15030627-24 HS15030627-25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251462** **Instrument:** **VOA4** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-150323** Units: **ug/L** Analysis Date: **23-Mar-2015 10:50**
Client ID: Run ID: **VOA4_251462** SeqNo: **3220213** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*50.59*	*1.0*	*50*	*0*	*101*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*47.69*	*1.0*	*50*	*0*	*95.4*	*70 - 125*				
Surr: Dibromofluoromethane	*50.68*	*1.0*	*50*	*0*	*101*	*74 - 125*				
Surr: Toluene-d8	*54.01*	*1.0*	*50*	*0*	*108*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251462 **Instrument: VOA4** **Method: SW8260**

LCS Sample ID: **VLCSW-150323** Units: **ug/L** Analysis Date: **23-Mar-2015 10:00**
Client ID: Run ID: **VOA4_251462** SeqNo: **3220212** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	48.96	1.0	50	0	97.9	70 - 125				
1,2-Dichloroethane	52.98	1.0	50	0	106	76 - 120				
1,3,5-Trimethylbenzene	49.11	1.0	50	0	98.2	80 - 123				
2-Butanone	113.7	2.0	100	0	114	60 - 140				
Benzene	54.29	1.0	50	0	109	80 - 120				
Cyclohexane	53.9	1.0	50	0	108	70 - 130				
Ethylbenzene	50.77	1.0	50	0	102	80 - 120				
Isopropylbenzene	50.34	1.0	50	0	101	75 - 130				
Methylcyclohexane	55.53	1.0	50	0	111	70 - 126				
Naphthalene	50.24	1.0	50	0	100	65 - 135				
n-Butylbenzene	55.92	1.0	50	0	112	75 - 128				
n-Propylbenzene	50.82	1.0	50	0	102	75 - 130				
Toluene	49.94	1.0	50	0	99.9	75 - 121				
Xylenes, Total	152.6	3.0	150	0	102	79 - 124				
Surr: 1,2-Dichloroethane-d4	*50.34*	*1.0*	*50*	*0*	*101*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.07*	*1.0*	*50*	*0*	*100*	*70 - 125*				
Surr: Dibromofluoromethane	*55.17*	*1.0*	*50*	*0*	*110*	*74 - 125*				
Surr: Toluene-d8	*52.85*	*1.0*	*50*	*0*	*106*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251462 **Instrument: VOA4** **Method: SW8260**

MS Sample ID: **HS15030731-01MS** Units: **ug/L** Analysis Date: **23-Mar-2015 13:45**
Client ID: Run ID: **VOA4_251462** SeqNo: **3220562** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	53.73	1.0	50	0	107	70 - 125				
1,2-Dichloroethane	55.71	1.0	50	0	111	76 - 120				
1,3,5-Trimethylbenzene	53.46	1.0	50	0	107	80 - 123				
2-Butanone	118.8	2.0	100	0	119	60 - 140				
Benzene	58.6	1.0	50	0	117	80 - 120				
Cyclohexane	62.91	1.0	50	0	126	70 - 130				
Ethylbenzene	57.84	1.0	50	0	116	80 - 120				
Isopropylbenzene	56.67	1.0	50	0	113	75 - 130				
Methylcyclohexane	63.64	1.0	50	0	127	70 - 126				S
Naphthalene	154.4	1.0	50	0	309	65 - 135				S
n-Butylbenzene	59.88	1.0	50	0	120	75 - 128				
n-Propylbenzene	55.8	1.0	50	0	112	75 - 130				
Toluene	56.38	1.0	50	0	113	75 - 121				
Xylenes, Total	170	3.0	150	0	113	80 - 124				
Surr: 1,2-Dichloroethane-d4	*52.69*	*1.0*	*50*	*0*	*105*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*52.89*	*1.0*	*50*	*0*	*106*	*70 - 125*				
Surr: Dibromofluoromethane	*55.84*	*1.0*	*50*	*0*	*112*	*74 - 125*				
Surr: Toluene-d8	*55.37*	*1.0*	*50*	*0*	*111*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251462 **Instrument: VOA4** **Method: SW8260**

MSD Sample ID: **HS15030731-01MSD** Units: **ug/L** Analysis Date: **23-Mar-2015 14:10**
Client ID: Run ID: **VOA4_251462** SeqNo: **3220563** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	53.21	1.0	50	0	106	70 - 125	53.73	0.977	20	
1,2-Dichloroethane	54.23	1.0	50	0	108	76 - 120	55.71	2.69	20	
1,3,5-Trimethylbenzene	53.43	1.0	50	0	107	80 - 123	53.46	0.0511	20	
2-Butanone	121.2	2.0	100	0	121	60 - 140	118.8	1.99	20	
Benzene	57.41	1.0	50	0	115	80 - 120	58.6	2.05	20	
Cyclohexane	62.08	1.0	50	0	124	70 - 130	62.91	1.33	20	
Ethylbenzene	56.51	1.0	50	0	113	80 - 120	57.84	2.34	20	
Isopropylbenzene	55.77	1.0	50	0	112	75 - 130	56.67	1.6	20	
Methylcyclohexane	62.2	1.0	50	0	124	70 - 126	63.64	2.29	20	
Naphthalene	73.61	1.0	50	0	147	65 - 135	154.4	70.9	20	SR
n-Butylbenzene	58.98	1.0	50	0	118	75 - 128	59.88	1.51	20	
n-Propylbenzene	54.86	1.0	50	0	110	75 - 130	55.8	1.7	20	
Toluene	55.26	1.0	50	0	111	75 - 121	56.38	2.02	20	
Xylenes, Total	168.7	3.0	150	0	112	80 - 124	170	0.76	20	
Surr: 1,2-Dichloroethane-d4	*53.64*	*1.0*	*50*	*0*	*107*	*71 - 125*	*52.69*	*1.78*	*20*	
Surr: 4-Bromofluorobenzene	*52.04*	*1.0*	*50*	*0*	*104*	*70 - 125*	*52.89*	*1.64*	*20*	
Surr: Dibromofluoromethane	*56.35*	*1.0*	*50*	*0*	*113*	*74 - 125*	*55.84*	*0.905*	*20*	
Surr: Toluene-d8	*54.91*	*1.0*	*50*	*0*	*110*	*75 - 125*	*55.37*	*0.827*	*20*	

The following samples were anayzed in this batch: HS15030627-16 HS15030627-27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251522** **Instrument:** **VOA3** **Method:** **SW8260**

MBLK Sample ID: **VBLKS1-032415** Units: **ug/Kg** Analysis Date: **24-Mar-2015 07:57**
Client ID: Run ID: **VOA3_251522** SeqNo: **3221141** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
2-Butanone	ND	10								
Benzene	ND	5.0								
Cyclohexane	ND	5.0								
Ethylbenzene	ND	5.0								
Isopropylbenzene	ND	5.0								
Methylcyclohexane	ND	5.0								
Naphthalene	ND	5.0								
n-Butylbenzene	ND	5.0								
n-Propylbenzene	ND	5.0								
Toluene	ND	5.0								
Xylenes, Total	ND	10								
Surr: 1,2-Dichloroethane-d4	*43.71*	*5.0*	*50*	*0*	*87.4*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*46.02*	*5.0*	*50*	*0*	*92.0*	*73 - 126*				
Surr: Dibromofluoromethane	*50.61*	*5.0*	*50*	*0*	*101*	*71 - 128*				
Surr: Toluene-d8	*48.17*	*5.0*	*50*	*0*	*96.3*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251522** **Instrument:** **VOA3** **Method:** **SW8260**

LCS Sample ID: **VLCSS1-032415** Units: **ug/Kg** Analysis Date: **24-Mar-2015 07:01**
Client ID: Run ID: **VOA3_251522** SeqNo: **3221140** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	53.29	5.0	50	0	107	79 - 123				
1,2-Dichloroethane	55.02	5.0	50	0	110	73 - 121				
1,3,5-Trimethylbenzene	53.34	5.0	50	0	107	70 - 123				
2-Butanone	108.7	10	100	0	109	65 - 130				
Benzene	54.71	5.0	50	0	109	79 - 122				
Cyclohexane	57.34	5.0	50	0	115	74 - 126				
Ethylbenzene	57.01	5.0	50	0	114	80 - 122				
Isopropylbenzene	55.72	5.0	50	0	111	72 - 127				
Methylcyclohexane	60.77	5.0	50	0	122	77 - 127				
Naphthalene	55.22	5.0	50	0	110	71 - 128				
n-Butylbenzene	54.06	5.0	50	0	108	77 - 126				
n-Propylbenzene	52.74	5.0	50	0	105	79 - 123				
Toluene	49.57	5.0	50	0	99.1	79 - 120				
Xylenes, Total	169.1	10	150	0	113	80 - 120				
Surr: 1,2-Dichloroethane-d4	*49.57*	*5.0*	*50*	*0*	*99.1*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*50.67*	*5.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Dibromofluoromethane	*52.92*	*5.0*	*50*	*0*	*106*	*71 - 128*				
Surr: Toluene-d8	*46.3*	*5.0*	*50*	*0*	*92.6*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251522 **Instrument: VOA3** **Method: SW8260**

MS Sample ID: **HS15030745-02MS** Units: **ug/Kg** Analysis Date: **24-Mar-2015 11:40**
Client ID: Run ID: **VOA3_251522** SeqNo: **3221552** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	46.86	5.0	50	0	93.7	79 - 123				
1,2-Dichloroethane	47.39	5.0	50	0	94.8	73 - 121				
1,3,5-Trimethylbenzene	47.55	5.0	50	0	95.1	70 - 123				
2-Butanone	52.63	10	100	0	52.6	65 - 130				S
Benzene	50.1	5.0	50	0	100	79 - 122				
Cyclohexane	54.26	5.0	50	0	109	74 - 126				
Ethylbenzene	50.58	5.0	50	0	101	80 - 122				
Isopropylbenzene	48.8	5.0	50	0	97.6	72 - 127				
Methylcyclohexane	54.86	5.0	50	0	110	77 - 127				
Naphthalene	44.34	5.0	50	0	88.7	71 - 128				
n-Butylbenzene	41.31	5.0	50	0	82.6	77 - 126				
n-Propylbenzene	46.67	5.0	50	0	93.3	79 - 123				
Toluene	47.11	5.0	50	0	94.2	79 - 120				
Xylenes, Total	146.4	10	150	0	97.6	80 - 120				
Surr: 1,2-Dichloroethane-d4	*44.05*	*5.0*	*50*	*0*	*88.1*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*51.28*	*5.0*	*50*	*0*	*103*	*73 - 126*				
Surr: Dibromofluoromethane	*57.07*	*5.0*	*50*	*0*	*114*	*71 - 128*				
Surr: Toluene-d8	*47.73*	*5.0*	*50*	*0*	*95.5*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251522 **Instrument: VOA3** **Method: SW8260**

MSD Sample ID: **HS15030745-02MSD** Units: **ug/Kg** Analysis Date: **24-Mar-2015 12:08**
Client ID: Run ID: **VOA3_251522** SeqNo: **3221553** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	46.39	5.0	50	0	92.8	79 - 123	46.86	1.02	30	
1,2-Dichloroethane	52.41	5.0	50	0	105	73 - 121	47.39	10.1	30	
1,3,5-Trimethylbenzene	46.75	5.0	50	0	93.5	70 - 123	47.55	1.7	30	
2-Butanone	87.04	10	100	0	87.0	65 - 130	52.63	49.3	30	R
Benzene	52.28	5.0	50	0	105	79 - 122	50.1	4.26	30	
Cyclohexane	54.17	5.0	50	0	108	74 - 126	54.26	0.174	30	
Ethylbenzene	52.41	5.0	50	0	105	80 - 122	50.58	3.56	30	
Isopropylbenzene	49.54	5.0	50	0	99.1	72 - 127	48.8	1.51	30	
Methylcyclohexane	53.11	5.0	50	0	106	77 - 127	54.86	3.24	30	
Naphthalene	41.47	5.0	50	0	82.9	71 - 128	44.34	6.71	30	
n-Butylbenzene	42.22	5.0	50	0	84.4	77 - 126	41.31	2.17	30	
n-Propylbenzene	47.18	5.0	50	0	94.4	79 - 123	46.67	1.09	30	
Toluene	48.47	5.0	50	0	96.9	79 - 120	47.11	2.85	30	
Xylenes, Total	150.5	10	150	0	100	80 - 120	146.4	2.74	30	
Surr: 1,2-Dichloroethane-d4	*49.46*	*5.0*	*50*	*0*	*98.9*	*70 - 128*	*44.05*	*11.6*	*30*	
Surr: 4-Bromofluorobenzene	*50.46*	*5.0*	*50*	*0*	*101*	*73 - 126*	*51.28*	*1.61*	*30*	
Surr: Dibromofluoromethane	*54.74*	*5.0*	*50*	*0*	*109*	*71 - 128*	*57.07*	*4.17*	*30*	
Surr: Toluene-d8	*48.3*	*5.0*	*50*	*0*	*96.6*	*73 - 127*	*47.73*	*1.19*	*30*	

The following samples were anayzed in this batch:

HS15030627-01	HS15030627-02	HS15030627-03	HS15030627-06
HS15030627-07	HS15030627-08	HS15030627-09	HS15030627-10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251585** **Instrument:** **VOA5** **Method:** **SW8260**

MBLK Sample ID: **VBLKS1-032415** Units: **ug/Kg** Analysis Date: **24-Mar-2015 14:09**
Client ID: Run ID: **VOA5_251585** SeqNo: **3222218** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
2-Butanone	ND	10								
Benzene	ND	5.0								
Cyclohexane	ND	5.0								
Ethylbenzene	ND	5.0								
Isopropylbenzene	ND	5.0								
Methylcyclohexane	ND	5.0								
Naphthalene	ND	5.0								
n-Butylbenzene	ND	5.0								
n-Propylbenzene	ND	5.0								
Toluene	ND	5.0								
Xylenes, Total	ND	10								
Surr: 1,2-Dichloroethane-d4	*45.16*	*5.0*	*50*	*0*	*90.3*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*49.73*	*5.0*	*50*	*0*	*99.5*	*73 - 126*				
Surr: Dibromofluoromethane	*48.38*	*5.0*	*50*	*0*	*96.8*	*71 - 128*				
Surr: Toluene-d8	*51.81*	*5.0*	*50*	*0*	*104*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251585** **Instrument:** **VOA5** **Method:** **SW8260**

LCS Sample ID: **VLCSS1-032415** Units: **ug/Kg** Analysis Date: **24-Mar-2015 13:23**
Client ID: Run ID: **VOA5_251585** SeqNo: **3222217** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	51.47	5.0	50	0	103	79 - 123				
1,2-Dichloroethane	50.77	5.0	50	0	102	73 - 121				
1,3,5-Trimethylbenzene	52.16	5.0	50	0	104	70 - 123				
2-Butanone	105.7	10	100	0	106	65 - 130				
Benzene	51.32	5.0	50	0	103	79 - 122				
Cyclohexane	49.37	5.0	50	0	98.7	74 - 126				
Ethylbenzene	51.69	5.0	50	0	103	80 - 122				
Isopropylbenzene	52.39	5.0	50	0	105	72 - 127				
Methylcyclohexane	49.13	5.0	50	0	98.3	77 - 127				
Naphthalene	50.58	5.0	50	0	101	71 - 128				
n-Butylbenzene	53.02	5.0	50	0	106	77 - 126				
n-Propylbenzene	53.24	5.0	50	0	106	79 - 123				
Toluene	50.78	5.0	50	0	102	79 - 120				
Xylenes, Total	153.6	10	150	0	102	80 - 120				
Surr: 1,2-Dichloroethane-d4	*50.6*	*5.0*	*50*	*0*	*101*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*50.01*	*5.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Dibromofluoromethane	*51.09*	*5.0*	*50*	*0*	*102*	*71 - 128*				
Surr: Toluene-d8	*50.38*	*5.0*	*50*	*0*	*101*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251585 **Instrument: VOA5** **Method: SW8260**

MS Sample ID: **HS15030822-01MS** Units: **ug/Kg** Analysis Date: **24-Mar-2015 16:06**
Client ID: Run ID: **VOA5_251585** SeqNo: **3222221** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	32.89	5.0	50	0	65.8	79 - 123				S
1,2-Dichloroethane	38.27	5.0	50	0	76.5	73 - 121				
1,3,5-Trimethylbenzene	33.55	5.0	50	0	67.1	70 - 123				S
2-Butanone	72.22	10	100	0	72.2	65 - 130				
Benzene	37.91	5.0	50	0	75.8	79 - 122				S
Cyclohexane	33.75	5.0	50	0	67.5	74 - 126				S
Ethylbenzene	34.41	5.0	50	0	68.8	80 - 122				S
Isopropylbenzene	33.82	5.0	50	0	67.6	72 - 127				S
Methylcyclohexane	30.99	5.0	50	0	62.0	77 - 127				S
Naphthalene	25.3	5.0	50	0	50.6	71 - 128				S
n-Butylbenzene	30.78	5.0	50	0	61.6	77 - 126				S
n-Propylbenzene	34.01	5.0	50	0	68.0	79 - 123				S
Toluene	36.05	5.0	50	1.532	69.0	79 - 120				S
Xylenes, Total	103.1	10	150	0	68.7	80 - 120				S
Surr: 1,2-Dichloroethane-d4	*50.05*	*5.0*	*50*	*0*	*100*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*48.81*	*5.0*	*50*	*0*	*97.6*	*73 - 126*				
Surr: Dibromofluoromethane	*50.96*	*5.0*	*50*	*0*	*102*	*71 - 128*				
Surr: Toluene-d8	*50.07*	*5.0*	*50*	*0*	*100*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251585 **Instrument: VOA5** **Method: SW8260**

MSD Sample ID: **HS15030822-01MSD** Units: **ug/Kg** Analysis Date: **24-Mar-2015 16:30**
Client ID: Run ID: **VOA5_251585** SeqNo: **3222222** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	52.24	5.0	50	0	104	79 - 123	32.89	45.4	30	R
1,2-Dichloroethane	52.01	5.0	50	0	104	73 - 121	38.27	30.4	30	R
1,3,5-Trimethylbenzene	53.04	5.0	50	0	106	70 - 123	33.55	45	30	R
2-Butanone	107.6	10	100	0	108	65 - 130	72.22	39.3	30	R
Benzene	53.12	5.0	50	0	106	79 - 122	37.91	33.4	30	R
Cyclohexane	49.2	5.0	50	0	98.4	74 - 126	33.75	37.3	30	R
Ethylbenzene	52.2	5.0	50	0	104	80 - 122	34.41	41.1	30	R
Isopropylbenzene	53.57	5.0	50	0	107	72 - 127	33.82	45.2	30	R
Methylcyclohexane	48.96	5.0	50	0	97.9	77 - 127	30.99	45	30	R
Naphthalene	49.94	5.0	50	0	99.9	71 - 128	25.3	65.5	30	R
n-Butylbenzene	54.36	5.0	50	0	109	77 - 126	30.78	55.4	30	R
n-Propylbenzene	54.19	5.0	50	0	108	79 - 123	34.01	45.8	30	R
Toluene	51.53	5.0	50	1.532	100.0	79 - 120	36.05	35.3	30	R
Xylenes, Total	157.1	10	150	0	105	80 - 120	103.1	41.5	30	R
Surr: 1,2-Dichloroethane-d4	*51.89*	*5.0*	*50*	*0*	*104*	*70 - 128*	*50.05*	*3.6*	*30*	
Surr: 4-Bromofluorobenzene	*50.37*	*5.0*	*50*	*0*	*101*	*73 - 126*	*48.81*	*3.15*	*30*	
Surr: Dibromofluoromethane	*51.65*	*5.0*	*50*	*0*	*103*	*71 - 128*	*50.96*	*1.36*	*30*	
Surr: Toluene-d8	*49.85*	*5.0*	*50*	*0*	*99.7*	*73 - 127*	*50.07*	*0.453*	*30*	

The following samples were anayzed in this batch: HS15030627-23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251591** **Instrument:** **VOA5** **Method:** **SW8260**

MBLK Sample ID: **VBLKS1-032515** Units: **ug/Kg** Analysis Date: **25-Mar-2015 08:57**
Client ID: Run ID: **VOA5_251591** SeqNo: **3222432** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
2-Butanone	ND	10								
Benzene	ND	5.0								
Cyclohexane	ND	5.0								
Ethylbenzene	ND	5.0								
Isopropylbenzene	ND	5.0								
Methylcyclohexane	ND	5.0								
Naphthalene	ND	5.0								
n-Butylbenzene	ND	5.0								
n-Propylbenzene	ND	5.0								
Toluene	ND	5.0								
Xylenes, Total	ND	10								
Surr: 1,2-Dichloroethane-d4	*45.33*	*5.0*	*50*	*0*	*90.7*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*47.78*	*5.0*	*50*	*0*	*95.6*	*73 - 126*				
Surr: Dibromofluoromethane	*48.01*	*5.0*	*50*	*0*	*96.0*	*71 - 128*				
Surr: Toluene-d8	*50.12*	*5.0*	*50*	*0*	*100*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251591** **Instrument:** **VOA5** **Method:** **SW8260**

LCS Sample ID: **VLCSS1-032515** Units: **ug/Kg** Analysis Date: **25-Mar-2015 08:10**
Client ID: Run ID: **VOA5_251591** SeqNo: **3222431** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	47.1	5.0	50	0	94.2	79 - 123				
1,2-Dichloroethane	48.94	5.0	50	0	97.9	73 - 121				
1,3,5-Trimethylbenzene	47.02	5.0	50	0	94.0	70 - 123				
2-Butanone	101.6	10	100	0	102	65 - 130				
Benzene	47.43	5.0	50	0	94.9	79 - 122				
Cyclohexane	46.51	5.0	50	0	93.0	74 - 126				
Ethylbenzene	46.7	5.0	50	0	93.4	80 - 122				
Isopropylbenzene	47.07	5.0	50	0	94.1	72 - 127				
Methylcyclohexane	45.13	5.0	50	0	90.3	77 - 127				
Naphthalene	46.46	5.0	50	0	92.9	71 - 128				
n-Butylbenzene	48.79	5.0	50	0	97.6	77 - 126				
n-Propylbenzene	48.34	5.0	50	0	96.7	79 - 123				
Toluene	44.92	5.0	50	0	89.8	79 - 120				
Xylenes, Total	138.8	10	150	0	92.5	80 - 120				
Surr: 1,2-Dichloroethane-d4	*52.56*	*5.0*	*50*	*0*	*105*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*50.26*	*5.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Dibromofluoromethane	*52.79*	*5.0*	*50*	*0*	*106*	*71 - 128*				
Surr: Toluene-d8	*49.38*	*5.0*	*50*	*0*	*98.8*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251591** **Instrument:** **VOA5** **Method:** **SW8260**

MS Sample ID: **HS15030696-01MS** Units: **ug/Kg** Analysis Date: **25-Mar-2015 13:13**
Client ID: Run ID: **VOA5_251591** SeqNo: **3223004** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	56.26	5.0	50	0	113	79 - 123				
1,2-Dichloroethane	49.47	5.0	50	0	98.9	73 - 121				
1,3,5-Trimethylbenzene	49.61	5.0	50	0	99.2	70 - 123				
2-Butanone	100.1	10	100	0	100	65 - 130				
Benzene	48.54	5.0	50	0	97.1	79 - 122				
Cyclohexane	46.01	5.0	50	0	92.0	74 - 126				
Ethylbenzene	49.64	5.0	50	0	99.3	80 - 122				
Isopropylbenzene	48.08	5.0	50	0	96.2	72 - 127				
Methylcyclohexane	44.06	5.0	50	0	88.1	77 - 127				
Naphthalene	57.94	5.0	50	0	116	71 - 128				
n-Butylbenzene	48.77	5.0	50	0	97.5	77 - 126				
n-Propylbenzene	49.36	5.0	50	0	98.7	79 - 123				
Toluene	50.04	5.0	50	0	100	79 - 120				
Xylenes, Total	153.9	10	150	0	103	80 - 120				
Surr: 1,2-Dichloroethane-d4	*49.88*	*5.0*	*50*	*0*	*99.8*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*49.73*	*5.0*	*50*	*0*	*99.5*	*73 - 126*				
Surr: Dibromofluoromethane	*50.03*	*5.0*	*50*	*0*	*100*	*71 - 128*				
Surr: Toluene-d8	*48.81*	*5.0*	*50*	*0*	*97.6*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251591 **Instrument: VOA5** **Method: SW8260**

MSD Sample ID: **HS15030696-01MSD** Units: **ug/Kg** Analysis Date: **25-Mar-2015 13:37**
Client ID: Run ID: **VOA5_251591** SeqNo: **3223005** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	47.72	5.0	50	0	95.4	79 - 123	56.26	16.4	30	
1,2-Dichloroethane	46.67	5.0	50	0	93.3	73 - 121	49.47	5.82	30	
1,3,5-Trimethylbenzene	45.82	5.0	50	0	91.6	70 - 123	49.61	7.93	30	
2-Butanone	96.19	10	100	0	96.2	65 - 130	100.1	3.93	30	
Benzene	46.07	5.0	50	0	92.1	79 - 122	48.54	5.23	30	
Cyclohexane	42.48	5.0	50	0	85.0	74 - 126	46.01	7.99	30	
Ethylbenzene	45.45	5.0	50	0	90.9	80 - 122	49.64	8.82	30	
Isopropylbenzene	45.06	5.0	50	0	90.1	72 - 127	48.08	6.49	30	
Methylcyclohexane	40.85	5.0	50	0	81.7	77 - 127	44.06	7.56	30	
Naphthalene	47.95	5.0	50	0	95.9	71 - 128	57.94	18.9	30	
n-Butylbenzene	45.97	5.0	50	0	91.9	77 - 126	48.77	5.91	30	
n-Propylbenzene	46.44	5.0	50	0	92.9	79 - 123	49.36	6.09	30	
Toluene	45.55	5.0	50	0	91.1	79 - 120	50.04	9.4	30	
Xylenes, Total	138.6	10	150	0	92.4	80 - 120	153.9	10.4	30	
Surr: 1,2-Dichloroethane-d4	*51.21*	*5.0*	*50*	*0*	*102*	*70 - 128*	*49.88*	*2.63*	*30*	
Surr: 4-Bromofluorobenzene	*49.9*	*5.0*	*50*	*0*	*99.8*	*73 - 126*	*49.73*	*0.343*	*30*	
Surr: Dibromofluoromethane	*50.55*	*5.0*	*50*	*0*	*101*	*71 - 128*	*50.03*	*1.04*	*30*	
Surr: Toluene-d8	*49.37*	*5.0*	*50*	*0*	*98.7*	*73 - 127*	*48.81*	*1.13*	*30*	

The following samples were anayzed in this batch: HS15030627-10 HS15030627-17 HS15030627-24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251621** **Instrument:** **VOA3** **Method:** **SW8260**

MBLK Sample ID: **VBLKM1-032515** Units: **ug/Kg** Analysis Date: **25-Mar-2015 12:11**
Client ID: Run ID: **VOA3_251621** SeqNo: **3222955** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	250								
1,2-Dichloroethane	ND	250								
1,3,5-Trimethylbenzene	ND	250								
2-Butanone	ND	500								
Benzene	ND	250								
Cyclohexane	ND	250								
Ethylbenzene	ND	250								
Isopropylbenzene	ND	250								
Methylcyclohexane	ND	250								
n-Butylbenzene	ND	250								
n-Propylbenzene	ND	250								
Toluene	ND	250								
Xylenes, Total	ND	500								
Surr: 1,2-Dichloroethane-d4	*2316*	*250*	*2500*	*0*	*92.6*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*2405*	*250*	*2500*	*0*	*96.2*	*73 - 126*				
Surr: Dibromofluoromethane	*2383*	*250*	*2500*	*0*	*95.3*	*71 - 128*				
Surr: Toluene-d8	*2430*	*250*	*2500*	*0*	*97.2*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251621** **Instrument:** **VOA3** **Method:** **SW8260**

LCS Sample ID: **VLCSW1-032515** Units: **ug/L** Analysis Date: **25-Mar-2015 11:18**
Client ID: Run ID: **VOA3_251621** SeqNo: **3222954** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	43.63	5.0	50	0	87.3	70 - 125				
1,2-Dichloroethane	43.76	5.0	50	0	87.5	76 - 120				
1,3,5-Trimethylbenzene	44.3	5.0	50	0	88.6	80 - 123				
2-Butanone	87.22	10	100	0	87.2	58 - 132				
Benzene	42.98	5.0	50	0	86.0	73 - 121				
Cyclohexane	43.07	5.0	50	0	86.1	66 - 125				
Ethylbenzene	46.13	5.0	50	0	92.3	80 - 120				
Isopropylbenzene	45.66	5.0	50	0	91.3	75 - 130				
Methylcyclohexane	46.41	5.0	50	0	92.8	70 - 122				
n-Butylbenzene	47.02	5.0	50	0	94.0	77 - 120				
n-Propylbenzene	45.21	5.0	50	0	90.4	78 - 120				
Toluene	42.75	5.0	50	0	85.5	80 - 120				
Xylenes, Total	133.9	15	150	0	89.2	80 - 120				
Surr: 1,2-Dichloroethane-d4	*47.76*	*5.0*	*50*	*0*	*95.5*	*70 - 125*				
Surr: 4-Bromofluorobenzene	*48.73*	*5.0*	*50*	*0*	*97.5*	*72 - 125*				
Surr: Dibromofluoromethane	*48.84*	*5.0*	*50*	*0*	*97.7*	*71 - 125*				
Surr: Toluene-d8	*47.7*	*5.0*	*50*	*0*	*95.4*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251621** **Instrument:** **VOA3** **Method:** **SW8260**

MS Sample ID: **HS15030651-07MS** Units: **ug/Kg** Analysis Date: **25-Mar-2015 13:57**
Client ID: Run ID: **VOA3_251621** SeqNo: **3223515** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4316	500	5000	0	86.3	79 - 123				
1,2-Dichloroethane	4452	500	5000	0	89.0	73 - 121				
1,3,5-Trimethylbenzene	4437	500	5000	0	88.7	70 - 123				
2-Butanone	8618	1000	10000	0	86.2	65 - 130				
Benzene	4303	500	5000	0	86.1	79 - 122				
Cyclohexane	4493	500	5000	0	89.9	74 - 126				
Ethylbenzene	4619	500	5000	0	92.4	80 - 122				
Isopropylbenzene	4638	500	5000	0	92.8	72 - 127				
Methylcyclohexane	5234	500	5000	0	105	77 - 127				
n-Butylbenzene	4669	500	5000	0	93.4	77 - 126				
n-Propylbenzene	4482	500	5000	0	89.6	79 - 123				
Toluene	4304	500	5000	0	86.1	79 - 120				
Xylenes, Total	13560	1000	15000	0	90.4	80 - 120				
Surr: 1,2-Dichloroethane-d4	*4647*	*500*	*5000*	*0*	*92.9*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*4859*	*500*	*5000*	*0*	*97.2*	*73 - 126*				
Surr: Dibromofluoromethane	*4856*	*500*	*5000*	*0*	*97.1*	*71 - 128*				
Surr: Toluene-d8	*4641*	*500*	*5000*	*0*	*92.8*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251621 **Instrument: VOA3** **Method: SW8260**

MSD Sample ID: **HS15030651-07MSD** Units: **ug/Kg** Analysis Date: **25-Mar-2015 14:24**
Client ID: Run ID: **VOA3_251621** SeqNo: **3223516** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4893	500	5000	0	97.9	79 - 123	4316	12.5	30	
1,2-Dichloroethane	5085	500	5000	0	102	73 - 121	4452	13.3	30	
1,3,5-Trimethylbenzene	5064	500	5000	0	101	70 - 123	4437	13.2	30	
2-Butanone	9696	1000	10000	0	97.0	65 - 130	8618	11.8	30	
Benzene	4854	500	5000	0	97.1	79 - 122	4303	12	30	
Cyclohexane	4976	500	5000	0	99.5	74 - 126	4493	10.2	30	
Ethylbenzene	5222	500	5000	0	104	80 - 122	4619	12.3	30	
Isopropylbenzene	5303	500	5000	0	106	72 - 127	4638	13.4	30	
Methylcyclohexane	5697	500	5000	0	114	77 - 127	5234	8.47	30	
n-Butylbenzene	5240	500	5000	0	105	77 - 126	4669	11.5	30	
n-Propylbenzene	5139	500	5000	0	103	79 - 123	4482	13.6	30	
Toluene	4804	500	5000	0	96.1	79 - 120	4304	11	30	
Xylenes, Total	15300	1000	15000	0	102	80 - 120	13560	12.1	30	
Surr: 1,2-Dichloroethane-d4	*4611*	*500*	*5000*	*0*	*92.2*	*70 - 128*	*4647*	*0.764*	*30*	
Surr: 4-Bromofluorobenzene	*4890*	*500*	*5000*	*0*	*97.8*	*73 - 126*	*4859*	*0.627*	*30*	
Surr: Dibromofluoromethane	*4746*	*500*	*5000*	*0*	*94.9*	*71 - 128*	*4856*	*2.28*	*30*	
Surr: Toluene-d8	*4683*	*500*	*5000*	*0*	*93.7*	*73 - 127*	*4641*	*0.907*	*30*	

The following samples were anayzed in this batch: HS15030627-24 HS15030627-25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251655 **Instrument: VOA3** **Method: SW8260**

MBLK Sample ID: **VBLKM1-032615** Units: **ug/Kg** Analysis Date: **26-Mar-2015 09:00**
Client ID: Run ID: **VOA3_251655** SeqNo: **3223739** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	250								
1,3,5-Trimethylbenzene	ND	250								
Cyclohexane	ND	250								
Ethylbenzene	ND	250								
Toluene	ND	250								
Xylenes, Total	ND	500								
Surr: 1,2-Dichloroethane-d4	*2592*	*250*	*2500*	*0*	*104*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*2429*	*250*	*2500*	*0*	*97.2*	*73 - 126*				
Surr: Dibromofluoromethane	*2527*	*250*	*2500*	*0*	*101*	*71 - 128*				
Surr: Toluene-d8	*2477*	*250*	*2500*	*0*	*99.1*	*73 - 127*				

LCS Sample ID: **VLCSW1-032615** Units: **ug/L** Analysis Date: **26-Mar-2015 08:08**
Client ID: Run ID: **VOA3_251655** SeqNo: **3223738** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	46.94	5.0	50	0	93.9	70 - 125				
1,3,5-Trimethylbenzene	47.94	5.0	50	0	95.9	80 - 123				
Cyclohexane	49.92	5.0	50	0	99.8	66 - 125				
Ethylbenzene	48.44	5.0	50	0	96.9	80 - 120				
Toluene	45.86	5.0	50	0	91.7	80 - 120				
Xylenes, Total	143.4	15	150	0	95.6	80 - 120				
Surr: 1,2-Dichloroethane-d4	*49.29*	*5.0*	*50*	*0*	*98.6*	*70 - 125*				
Surr: 4-Bromofluorobenzene	*50.37*	*5.0*	*50*	*0*	*101*	*72 - 125*				
Surr: Dibromofluoromethane	*50.08*	*5.0*	*50*	*0*	*100*	*71 - 125*				
Surr: Toluene-d8	*48.78*	*5.0*	*50*	*0*	*97.6*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251655 **Instrument: VOA3** **Method: SW8260**

MS Sample ID: **HS15030560-07MS** Units: **ug/Kg** Analysis Date: **26-Mar-2015 10:17**
Client ID: Run ID: **VOA3_251655** SeqNo: **3223832** PrepDate: DF: **1000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	40460	3700	37000	0	109	79 - 123				
1,3,5-Trimethylbenzene	40720	3700	37000	0	110	70 - 123				
Cyclohexane	50250	3700	37000	6659	118	74 - 126				
Ethylbenzene	41280	3700	37000	0	112	80 - 122				
Toluene	39960	3700	37000	0	108	79 - 120				
Xylenes, Total	123000	7400	111000	0	111	80 - 120				
Surr: 1,2-Dichloroethane-d4	*39100*	*3700*	*37000*	*0*	*106*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*38520*	*3700*	*37000*	*0*	*104*	*73 - 126*				
Surr: Dibromofluoromethane	*37880*	*3700*	*37000*	*0*	*102*	*71 - 128*				
Surr: Toluene-d8	*37010*	*3700*	*37000*	*0*	*100*	*73 - 127*				

MSD Sample ID: **HS15030560-07MSD** Units: **ug/Kg** Analysis Date: **26-Mar-2015 10:43**
Client ID: Run ID: **VOA3_251655** SeqNo: **3223833** PrepDate: DF: **1000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	45250	3700	37000	0	122	79 - 123	40460	11.2	30	
1,3,5-Trimethylbenzene	46100	3700	37000	0	125	70 - 123	40720	12.4	30	S
Cyclohexane	58250	3700	37000	6659	139	74 - 126	50250	14.7	30	S
Ethylbenzene	45400	3700	37000	0	123	80 - 122	41280	9.5	30	S
Toluene	44020	3700	37000	0	119	79 - 120	39960	9.68	30	
Xylenes, Total	134500	7400	111000	0	121	80 - 120	123000	8.98	30	S
Surr: 1,2-Dichloroethane-d4	*38590*	*3700*	*37000*	*0*	*104*	*70 - 128*	*39100*	*1.33*	*30*	
Surr: 4-Bromofluorobenzene	*37700*	*3700*	*37000*	*0*	*102*	*73 - 126*	*38520*	*2.14*	*30*	
Surr: Dibromofluoromethane	*37980*	*3700*	*37000*	*0*	*103*	*71 - 128*	*37880*	*0.25*	*30*	
Surr: Toluene-d8	*36810*	*3700*	*37000*	*0*	*99.5*	*73 - 127*	*37010*	*0.561*	*30*	

The following samples were anayzed in this batch: HS15030627-18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251663** **Instrument:** **VOA5** **Method:** **SW8260**

MBLK Sample ID: **VBLKS1-032615** Units: **ug/Kg** Analysis Date: **26-Mar-2015 08:49**
Client ID: Run ID: **VOA5_251663** SeqNo: **3223781** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
2-Butanone	ND	10								
Benzene	ND	5.0								
Cyclohexane	ND	5.0								
Ethylbenzene	ND	5.0								
Isopropylbenzene	ND	5.0								
Methylcyclohexane	ND	5.0								
Naphthalene	ND	5.0								
n-Butylbenzene	ND	5.0								
n-Propylbenzene	ND	5.0								
Toluene	ND	5.0								
Xylenes, Total	ND	10								
Surr: 1,2-Dichloroethane-d4	*47.24*	*5.0*	*50*	*0*	*94.5*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*47.91*	*5.0*	*50*	*0*	*95.8*	*73 - 126*				
Surr: Dibromofluoromethane	*48.94*	*5.0*	*50*	*0*	*97.9*	*71 - 128*				
Surr: Toluene-d8	*50.44*	*5.0*	*50*	*0*	*101*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251663** **Instrument:** **VOA5** **Method:** **SW8260**

LCS Sample ID: **VLCSS1-032615** Units: **ug/Kg** Analysis Date: **26-Mar-2015 08:03**
Client ID: Run ID: **VOA5_251663** SeqNo: **3223780** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	45.35	5.0	50	0	90.7	79 - 123				
1,2-Dichloroethane	47.13	5.0	50	0	94.3	73 - 121				
1,3,5-Trimethylbenzene	45.76	5.0	50	0	91.5	70 - 123				
2-Butanone	97.45	10	100	0	97.5	65 - 130				
Benzene	46.33	5.0	50	0	92.7	79 - 122				
Cyclohexane	45.28	5.0	50	0	90.6	74 - 126				
Ethylbenzene	45.91	5.0	50	0	91.8	80 - 122				
Isopropylbenzene	46.27	5.0	50	0	92.5	72 - 127				
Methylcyclohexane	44.37	5.0	50	0	88.7	77 - 127				
Naphthalene	45.94	5.0	50	0	91.9	71 - 128				
n-Butylbenzene	46.89	5.0	50	0	93.8	77 - 126				
n-Propylbenzene	46.88	5.0	50	0	93.8	79 - 123				
Toluene	44.57	5.0	50	0	89.1	79 - 120				
Xylenes, Total	136.1	10	150	0	90.7	80 - 120				
Surr: 1,2-Dichloroethane-d4	*52.45*	*5.0*	*50*	*0*	*105*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*50.45*	*5.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Dibromofluoromethane	*51.82*	*5.0*	*50*	*0*	*104*	*71 - 128*				
Surr: Toluene-d8	*49.67*	*5.0*	*50*	*0*	*99.3*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251663** **Instrument:** **VOA5** **Method:** **SW8260**

MS Sample ID: **HS15030627-19MS** Units: **ug/Kg** Analysis Date: **26-Mar-2015 10:23**
Client ID: **IB-7 (39)** Run ID: **VOA5_251663** SeqNo: **3223841** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	45.42	5.0	50	0	90.8	79 - 123				
1,2-Dichloroethane	44	5.0	50	0	88.0	73 - 121				
1,3,5-Trimethylbenzene	44.7	5.0	50	0	89.4	70 - 123				
2-Butanone	89.13	10	100	0	89.1	65 - 130				
Benzene	45.07	5.0	50	0	90.1	79 - 122				
Cyclohexane	44.42	5.0	50	0	88.8	74 - 126				
Ethylbenzene	44.9	5.0	50	0	89.8	80 - 122				
Isopropylbenzene	44.53	5.0	50	0	89.1	72 - 127				
Methylcyclohexane	42.47	5.0	50	0	84.9	77 - 127				
Naphthalene	42.53	5.0	50	0	85.1	71 - 128				
n-Butylbenzene	44.62	5.0	50	0	89.2	77 - 126				
n-Propylbenzene	45.78	5.0	50	0	91.6	79 - 123				
Toluene	45.02	5.0	50	1.564	86.9	79 - 120				
Xylenes, Total	134.9	10	150	0	89.9	80 - 120				
Surr: 1,2-Dichloroethane-d4	*53.01*	*5.0*	*50*	*0*	*106*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*49.94*	*5.0*	*50*	*0*	*99.9*	*73 - 126*				
Surr: Dibromofluoromethane	*51.75*	*5.0*	*50*	*0*	*103*	*71 - 128*				
Surr: Toluene-d8	*49.7*	*5.0*	*50*	*0*	*99.4*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251663** **Instrument:** **VOA5** **Method:** **SW8260**

MSD Sample ID: **HS15030627-19MSD** Units: **ug/Kg** Analysis Date: **26-Mar-2015 10:46**
Client ID: **IB-7 (39)** Run ID: **VOA5_251663** SeqNo: **3223842** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	44.97	5.0	50	0	89.9	79 - 123	45.42	0.998	30	
1,2-Dichloroethane	44.46	5.0	50	0	88.9	73 - 121	44	1.05	30	
1,3,5-Trimethylbenzene	45.48	5.0	50	0	91.0	70 - 123	44.7	1.75	30	
2-Butanone	112.9	10	100	0	113	65 - 130	89.13	23.5	30	
Benzene	45.03	5.0	50	0	90.1	79 - 122	45.07	0.0881	30	
Cyclohexane	44.81	5.0	50	0	89.6	74 - 126	44.42	0.886	30	
Ethylbenzene	45.02	5.0	50	0	90.0	80 - 122	44.9	0.271	30	
Isopropylbenzene	45.14	5.0	50	0	90.3	72 - 127	44.53	1.37	30	
Methylcyclohexane	43.24	5.0	50	0	86.5	77 - 127	42.47	1.78	30	
Naphthalene	42.5	5.0	50	0	85.0	71 - 128	42.53	0.0557	30	
n-Butylbenzene	44.85	5.0	50	0	89.7	77 - 126	44.62	0.519	30	
n-Propylbenzene	46.55	5.0	50	0	93.1	79 - 123	45.78	1.67	30	
Toluene	45.06	5.0	50	1.564	87.0	79 - 120	45.02	0.0931	30	
Xylenes, Total	134.5	10	150	0	89.7	80 - 120	134.9	0.314	30	
Surr: 1,2-Dichloroethane-d4	*52.99*	*5.0*	*50*	*0*	*106*	*70 - 128*	*53.01*	*0.0395*	*30*	
Surr: 4-Bromofluorobenzene	*50.16*	*5.0*	*50*	*0*	*100*	*73 - 126*	*49.94*	*0.442*	*30*	
Surr: Dibromofluoromethane	*50.14*	*5.0*	*50*	*0*	*100*	*71 - 128*	*51.75*	*3.16*	*30*	
Surr: Toluene-d8	*49.04*	*5.0*	*50*	*0*	*98.1*	*73 - 127*	*49.7*	*1.34*	*30*	

The following samples were anayzed in this batch: HS15030627-18 HS15030627-19 HS15030627-26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: R251742 **Instrument: VOA4** **Method: SW8260**

MBLK Sample ID: **VBLKW-150326** Units: **ug/Kg** Analysis Date: **26-Mar-2015 23:42**
Client ID: Run ID: **VOA4_251742** SeqNo: **3225122** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	ND	250								
Surr: 1,2-Dichloroethane-d4	*2357*	*250*	*2500*	*0*	*94.3*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*2323*	*250*	*2500*	*0*	*92.9*	*73 - 126*				
Surr: Dibromofluoromethane	*2598*	*250*	*2500*	*0*	*104*	*71 - 128*				
Surr: Toluene-d8	*2631*	*250*	*2500*	*0*	*105*	*73 - 127*				

LCS Sample ID: **VLCSW-150326** Units: **ug/L** Analysis Date: **26-Mar-2015 22:52**
Client ID: Run ID: **VOA4_251742** SeqNo: **3225138** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	56.7	5.0	50	0	113	65 - 135				
Surr: 1,2-Dichloroethane-d4	*48.58*	*5.0*	*50*	*0*	*97.2*	*70 - 125*				
Surr: 4-Bromofluorobenzene	*48.64*	*5.0*	*50*	*0*	*97.3*	*72 - 125*				
Surr: Dibromofluoromethane	*52.79*	*5.0*	*50*	*0*	*106*	*71 - 125*				
Surr: Toluene-d8	*51.39*	*5.0*	*50*	*0*	*103*	*75 - 125*				

MS Sample ID: **HS15030936-09MS** Units: **ug/Kg** Analysis Date: **27-Mar-2015 03:02**
Client ID: Run ID: **VOA4_251742** SeqNo: **3225125** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	54.37	5.0	50	0	109	71 - 128				
Surr: 1,2-Dichloroethane-d4	*49*	*5.0*	*50*	*0*	*98.0*	*70 - 128*				
Surr: 4-Bromofluorobenzene	*51.19*	*5.0*	*50*	*0*	*102*	*73 - 126*				
Surr: Dibromofluoromethane	*53.79*	*5.0*	*50*	*0*	*108*	*71 - 128*				
Surr: Toluene-d8	*55.31*	*5.0*	*50*	*0*	*111*	*73 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15030627

QC BATCH REPORT

Batch ID: **R251742** **Instrument:** **VOA4** **Method:** **SW8260**

MSD Sample ID: **HS15030936-09MSD** Units: **ug/Kg** Analysis Date: **27-Mar-2015 03:27**
Client ID: Run ID: **VOA4_251742** SeqNo: **3225126** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	56.37	5.0	50	0	113	71 - 128	54.37	3.63	30	
Surr: 1,2-Dichloroethane-d4	*49*	*5.0*	*50*	*0*	*98.0*	*70 - 128*	*49*	*0*	*30*	
Surr: 4-Bromofluorobenzene	*49.63*	*5.0*	*50*	*0*	*99.3*	*73 - 126*	*51.19*	*3.09*	*30*	
Surr: Dibromofluoromethane	*53.3*	*5.0*	*50*	*0*	*107*	*71 - 128*	*53.79*	*0.903*	*30*	
Surr: Toluene-d8	*53.32*	*5.0*	*50*	*0*	*107*	*73 - 127*	*55.31*	*3.66*	*30*	

The following samples were anayzed in this batch: HS15030627-25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: **HS15030627**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003403	09-May-2015
Kansas	E-10352 2014-2015	31-Jul-2015
Kentucky	KY 2014-2015	30-Apr-2015
Louisiana	03087 2014/2015	30-Jun-2015
North Carolina	624 - 2015	31-Dec-2015
North Dakota	R-193 2025	30-Apr-2015
Oklahoma	2014-128	31-Aug-2015
Texas	T104704231-14-14	30-Apr-2015

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15030627

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15030627-01	MW-19 (28)	Login	3/18/2015 4:47:06 PM	BHH	VW-2
HS15030627-01	MW-19 (28)	Login	3/18/2015 4:47:06 PM	BHH	BTEX B1
HS15030627-02	MW-19 (32)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-02	MW-19 (32)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-03	MW-19 (45)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-03	MW-19 (45)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-04	MW-18 (26.5)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-04	MW-18 (26.5)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-05	MW-18 (31.5)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-05	MW-18 (31.5)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-06	MW-17 (19)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-06	MW-17 (19)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-07	MW-17 (22)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-07	MW-17 (22)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-08	MW-17 (37)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-08	MW-17 (37)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-09	IB-1 (18.0)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-09	IB-1 (18.0)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-10	IB-1 (24.0)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-10	IB-1 (24.0)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-11	IB-2 (32)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-11	IB-2 (32)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-12	IB-2 (38)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-12	IB-2 (38)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-13	IB-3 (24)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-13	IB-3 (24)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-14	IB-3 (30)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-14	IB-3 (30)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-15	IB-3 (36)	Login	3/18/2015 4:47:07 PM	BHH	VW-2
HS15030627-15	IB-3 (36)	Login	3/18/2015 4:47:07 PM	BHH	BTEX B1
HS15030627-16	Trip Blank-030215-02	Login	3/18/2015 4:48:55 PM	BHH	VW-3
HS15030627-17	IB-7 (19)	Login	3/20/2015 5:04:35 PM	BHH	VW-2
HS15030627-17	IB-7 (19)	Login	3/20/2015 5:04:35 PM	BHH	BTEX B1
HS15030627-18	IB-7 (24)	Login	3/20/2015 5:04:35 PM	BHH	VW-2
HS15030627-18	IB-7 (24)	Login	3/20/2015 5:04:35 PM	BHH	BTEX B1
HS15030627-19	IB-7 (39)	Login	3/20/2015 5:04:35 PM	BHH	VW-2
HS15030627-19	IB-7 (39)	Login	3/20/2015 5:04:35 PM	BHH	BTEX B1
HS15030627-20	IB-8 (18)	Login	3/20/2015 5:04:35 PM	BHH	VW-2
HS15030627-20	IB-8 (18)	Login	3/20/2015 5:04:35 PM	BHH	BTEX B1
HS15030627-21	IB-8 (32.5)	Login	3/20/2015 5:04:35 PM	BHH	VW-2

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15030627

SAMPLE TRACKING

HS15030627-21	IB-8 (32.5)	Login	3/20/2015 5:04:35 PM	BHH	BTEX B1
HS15030627-22	IB-8 (39)	Login	3/20/2015 5:04:35 PM	BHH	VW-2
HS15030627-22	IB-8 (39)	Login	3/20/2015 5:04:35 PM	BHH	BTEX B1
HS15030627-23	IB-4 (6)	Login	3/20/2015 5:04:35 PM	BHH	VW-2
HS15030627-23	IB-4 (6)	Login	3/20/2015 5:04:35 PM	BHH	BTEX B1
HS15030627-24	IB-4 (19.5)	Login	3/20/2015 5:04:36 PM	BHH	VW-2
HS15030627-24	IB-4 (19.5)	Login	3/20/2015 5:04:36 PM	BHH	BTEX B1
HS15030627-25	IB-4 (31)	Login	3/20/2015 5:04:36 PM	BHH	VW-2
HS15030627-25	IB-4 (31)	Login	3/20/2015 5:04:36 PM	BHH	BTEX B1
HS15030627-26	IB-4 (39)	Login	3/20/2015 5:04:36 PM	BHH	VW-2
HS15030627-26	IB-4 (39)	Login	3/20/2015 5:04:36 PM	BHH	BTEX B1
HS15030627-27	Trip Blank-030215-03	Login	3/20/2015 5:04:36 PM	BHH	VW-3

Sample Receipt Checklist

Client Name:	APEX-PORTLAND	Date/Time Received:	**18-Mar-2015 12:40**
Work Order:	HS15030627	Received by:	**PMG**

Checklist completed by:	*Baudelio Hernandez* eSignature	18-Mar-2015 Date	Reviewed by: *Ana L. Spencer* eSignature	19-Mar-2015 Date

Matrices: **Soil** Carrier name: **FedEx**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☐	☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	0.4c / 0.4c c/uc	IR#1
Cooler(s)/Kit(s):	2780	
Date/Time sample(s) sent to storage:	03/18/2015 17:00	

	Yes	No	
Water - VOA vials have zero headspace?	☐	☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	☐	☐	N/A ☑
pH adjusted?	☐	☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

Sample Receipt Checklist

Client Name:	APEX-PORTLAND	Date/Time Received:	**18-Mar-2015 12:40**
Work Order:	HS15030627	Received by:	**PMG**

Checklist completed by:	*Baudelio Hernandez* eSignature	20-Mar-2015 Date	Reviewed by: *Ana L. Spencer* eSignature	23-Mar-2015 Date

Matrices: **Soil** Carrier name: **FedEx**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☐	☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	2.8c / 2.8c c/uc	IR#1
Cooler(s)/Kit(s):	3039	
Date/Time sample(s) sent to storage:	03/20/2015 17:20	

	Yes	No		
Water - VOA vials have zero headspace?	☐	☐	No VOA vials submitted	☑
Water - pH acceptable upon receipt?	☐	☐	N/A	☑
pH adjusted?	☐	☐	N/A	☑
pH adjusted by:				

Login Notes: Samples 17-27 added to existing work order.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

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Chain of Custody Form

Page 1 of 2

COC ID: 118554

HS15030627

Apex Companies
E3CE-0065 Andover Release Site

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	H = HOLD FOR INSTRUCTIONS FROM PM
				F	(NOT ALL SAMPLES WILL BE RUN FOR ANALYSIS)
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	
Phone	(503) 924-4704	Phone	(503) 924-4704	H	
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-19 (28)	03-11	1710	S	–	2	H	H									
2	MW-19 (32)	03-11	1720	S	–	2	H	H									
3	MW-19 (45)	03-11	1800	S	–	2	H	H									
4	MW-18 (26.5)	03-11	1315	S	–	2	H	H									
5	MW-18 (31.5)	03-11	1325	S	–	2	H	H									
6	MW-17 (19)	03-12	1005	S	–	2	H	H									
7	MW-17 (22)	03-12	1015	S	–	2	H	H									
8	MW-17 (37)	03-12	1100	S	–	2	H	H									
9	IB-1 (18.0)	03-14	1650	S	–	2	H	H									
10	IB-1 (24.0)	03-14	1700	S	–	2	H	H									

Sampler(s) Please Print & Sign: MICHAEL WHITSON

Shipment Method: FED EX

Required Turnaround Time: (Check Box) [X] Std 10 WK days [ ] 5 WK Days [ ] 2 WK Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date: 03-17	Time: 1530	Received by:
Relinquished by:	Date:	Time:	Received by (Laboratory): 3/18/15 12:40
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp.
2780.	

QC Package: (Check One Box Below)
[X] Level 2 Std QC
[ ] Level 3 Std QC/Row da
[ ] Level 4 SW846/CLP
[ ] Other/EDD
[ ] TRRP ChkList
[ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Page 2 of 2

COC ID: 118555

HS15030627

Apex Companies

E3CE-0065 Andover Release Site

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	H = HOLD FOR INSTRUCTIONS FROM PM
				F	(NOT ALL SAMPLES RUN FOR ANALYSIS)
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	
Phone	(503) 924-4704	Phone	(503) 924-4704	H	
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	IB-2 (32)	03-15	1320	S	–	2	H	H									
2	IB-2 (38)	03-15	1330	S	–	2	H	H									
3	IB-3 (24)	03-15	1530	S	–	2	H	H									
4	IB-3 (30)	03-15	1540	S	–	2	H	H									
5	IB-3 (36)	03-15	1600	S	–	2	H	H									
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: MICHAEL WHITSON

Shipment Method: FED EX

Required Turnaround Time: (Check Box) [X] Std 10 WK days [ ] 5 WK Days [ ] 2 WK Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	03-17	1530	
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- [X] Level 2 Std QC
- [ ] Level 3 Std QC/Row da
- [ ] Level 4 SW846/CLP
- [ ] Other/EDD
- [ ] TRRP ChkList
- [ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Page 1 of 2

COC ID: 118557

HS15030627

Apex Companies
Andover Release Site E3CE-0065

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	
				F	H = HOLD FOR INSTRUCTIONS FROM PM
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	(NOT ALL SAMPLES WILL BE RUN FOR
Phone	(503) 924-4704	Phone	(503) 924-4704	H	ANALYSIS)
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	IB-7 (19)	03-18-15	0900	S	–	2	H	H									
2	IB-7 (24)	03-18-15	0915	S	–	2	H	H									
3	IB-7 (39)	03-18-15	0930	S	–	2	H	H									
4	IB-8 (18)	03-18-15	1130	S	–	2	H	H									
5	IB-8 (32.5)	03-18-15	1200	S	–	2	H	H									
6	IB-8 (39)	03-18-15	1205	S	–	2	H	H									
7	IB-4 (6)	03-18-15	1330	S	–	2	H	H									
8	IB-4 (19.5)	03-18-15	1345	S	–	2	H	H									
9	IB-4 (31)	03-18-15	1400	S	–	2	H	H									
10	IB-4 (39)	03-18-15	1415	S	–	2	H	H									

Sampler(s) Please Print & Sign: MIKE WHITSON

Shipment Method: FEDEX OVERNIGHT

Required Turnaround Time: (Check Box) [X] Std-10 Wk days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 03-19 Time: 1700 Received by:

Relinquished by: Date: 3/20/15 Time: 925 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp.
3030	1.8

QC Package: (Check One Box Below)
[X] Level 2 Std QC
[ ] Level 3 Std QC/Row da
[ ] Level 4 SW846/CLP
[ ] Other/EDD
[ ] TRRP ChkList
[ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Chain of Custody Form

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COC ID: 118556

HS15030627

Apex Companies
Andover Release Site E3CE-0065

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Andover Release Site	A	VOCs (8260) 14 compound Select List
Work Order		Project Number	E3CE-0065	B	GRO - VPH OA-1
Company Name	Apex Companies	Bill To Company	Apex Companies	C	
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	
				F	
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	
Phone	(503) 924-4704	Phone	(503) 924-4704	H	
Fax		Fax		I	
e-Mail Address	sjackson@apexcos.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	TRIP BLANK	—	—	W	1	2	X										
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: MIKE WHITSON

Shipment Method: FEDEX OVERNIGHT

Required Turnaround Time: (Check Box) [X] Std 10 WK days [ ] 5 WK Days [ ] 2 WK Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 03-19 Time: 1700 Received by:

Relinquished by: Date: 3/20/15 Time: 975 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: Andover Quail Crossing Soil Investigation

Cooler ID	Cooler Temp.
3039	2.0°

QC Package: (Check One Box Below)
[X] Level 2 Std QC
[ ] Level 3 Std QC/Row da
[ ] Level 4 SW846/CLP
[ ] Other/EDD
[ ] TRRP ChkList
[ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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CUSTODY SEAL

Date:
Name:
Company:
Time:

Seal Broken By:
Date: 3-18-15

TRK# 0215 8033 8132 3171

WED – 18 MAR 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX–US IAH

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 03-19-15 Time:
Name: MICHAEL WHITSON
Company: APEX COMPANIES

Seal Broken By:
Date: 3/20/15

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 03-19-15 Time:
Name: MICHAEL WHITSON
Company: APEX COMPANIES

Seal Broken By:
Date: 3/20/15

FedEx
TRK# 0215 8033 8132 0301

FRI – 20 MAR 10:30A
PRIORITY OVERNIGHT

XH SGRA

77099
TX-US IAH

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F: +1 281 530 5887
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March 30, 2015

Samuel Jackson
Apex Companies
3015 SW First Avenue
Portland, OR 97201

Work Order: **HS15030718**

Laboratory Results for: **E3CE-0065 Andover Release Site**

Dear Samuel,

ALS Environmental received 7 sample(s) on Mar 21, 2015 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: Dayna.Fisher

Ana L. Spencer

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Work Order: HS15030718

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15030718-01	MW-4	Water		20-Mar-2015 09:59	21-Mar-2015 10:15	☐
HS15030718-02	MW-5	Water		20-Mar-2015 10:37	21-Mar-2015 10:15	☐
HS15030718-03	MW-1	Water		20-Mar-2015 11:30	21-Mar-2015 10:15	☐
HS15030718-04	MW-17	Water		20-Mar-2015 12:09	21-Mar-2015 10:15	☐
HS15030718-05	MW-18	Water		20-Mar-2015 12:59	21-Mar-2015 10:15	☐
HS15030718-06	MW-19	Water		20-Mar-2015 13:29	21-Mar-2015 10:15	☐
HS15030718-07	021715-73	Water		20-Mar-2015 00:00	21-Mar-2015 10:15	☐

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Work Order: HS15030718

CASE NARRATIVE

Work Order Comments

- The analyses for Carbon Dioxide were subcontracted to ALS Environmental in Simi Valley, CA.

GC Semivolatiles by Method RSK-175

Batch ID: R251525

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Volatiles by Method IA OA-1

Batch ID: R251837

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R251560

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R251524

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 91642,91714

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500 NH3-D

Batch ID: R251632

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R251458

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R251451

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15030718
Sample ID:	MW-4	Lab ID:HS15030718-01
Collection Date:	20-Mar-2015 09:59	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.19**		**0.0010**	**mg/L**	1	24-Mar-2015 06:50
1,2-Dichloroethane	ND		0.0010	mg/L	1	24-Mar-2015 06:50
1,3,5-Trimethylbenzene	**0.088**		**0.0010**	**mg/L**	1	24-Mar-2015 06:50
2-Butanone	ND		0.0020	mg/L	1	24-Mar-2015 06:50
Benzene	**0.26**		**0.010**	**mg/L**	10	24-Mar-2015 11:59
Cyclohexane	**0.094**		**0.0010**	**mg/L**	1	24-Mar-2015 06:50
Ethylbenzene	**0.20**		**0.010**	**mg/L**	10	24-Mar-2015 11:59
Isopropylbenzene	**0.012**		**0.0010**	**mg/L**	1	24-Mar-2015 06:50
m,p-Xylene	**0.099**		**0.0020**	**mg/L**	1	24-Mar-2015 06:50
Methylcyclohexane	**0.014**		**0.0010**	**mg/L**	1	24-Mar-2015 06:50
Naphthalene	**0.044**		**0.0010**	**mg/L**	1	24-Mar-2015 06:50
n-Butylbenzene	**0.0095**		**0.0010**	**mg/L**	1	24-Mar-2015 06:50
n-Propylbenzene	**0.022**		**0.0010**	**mg/L**	1	24-Mar-2015 06:50
o-Xylene	**0.13**		**0.0010**	**mg/L**	1	24-Mar-2015 06:50
Toluene	**0.18**		**0.0010**	**mg/L**	1	24-Mar-2015 06:50
Xylenes, Total	**0.23**		**0.0030**	**mg/L**	1	24-Mar-2015 06:50
Surr: 1,2-Dichloroethane-d4	*99.5*		*71-125*	*%REC*	*1*	*24-Mar-2015 06:50*
Surr: 1,2-Dichloroethane-d4	*95.0*		*71-125*	*%REC*	*10*	*24-Mar-2015 11:59*
Surr: 4-Bromofluorobenzene	*98.7*		*70-125*	*%REC*	*1*	*24-Mar-2015 06:50*
Surr: 4-Bromofluorobenzene	*94.3*		*70-125*	*%REC*	*10*	*24-Mar-2015 11:59*
Surr: Dibromofluoromethane	*100*		*74-125*	*%REC*	*1*	*24-Mar-2015 06:50*
Surr: Dibromofluoromethane	*99.6*		*74-125*	*%REC*	*10*	*24-Mar-2015 11:59*
Surr: Toluene-d8	*106*		*75-125*	*%REC*	*1*	*24-Mar-2015 06:50*
Surr: Toluene-d8	*105*		*75-125*	*%REC*	*10*	*24-Mar-2015 11:59*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**467**		**5.00**	**mg/L**	1	22-Mar-2015 16:51
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 16:51
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 16:51
Alkalinity, Total (As CaCO3)	**467**		**5.00**	**mg/L**	1	22-Mar-2015 16:51
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Mar-2015		Analyst: JDE
Iron	ND		0.200	mg/L	1	27-Mar-2015 11:28
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: MYA
Methane	**38.7**		**5.00**	**ug/L**	10	23-Mar-2015 16:39
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	30-Mar-2015 07:44
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	25-Mar-2015 16:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15030718
Sample ID:	MW-4	Lab ID:HS15030718-01
Collection Date:	20-Mar-2015 09:59	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 23-Mar-2015		Analyst: JDE
Potassium	**1.30**		**0.200**	**mg/L**	1	24-Mar-2015 10:39
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**4.6**		**0.050**	**mg/L**	1	27-Mar-2015 16:56
Surr: 4-Bromofluorobenzene	*119*		*70-130*	*%REC*	*1*	*27-Mar-2015 16:56*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.468**		**0.100**	**mg/L**	1	21-Mar-2015 15:06
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Mar-2015 15:06
Sulfate	**41.4**		**0.500**	**mg/L**	1	21-Mar-2015 15:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**	
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15030718	
Sample ID:	MW-5	Lab ID:HS15030718-02	
Collection Date:	20-Mar-2015 10:37	Matrix:Water	

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	24-Mar-2015 11:34
1,2-Dichloroethane	ND		0.0010	mg/L	1	24-Mar-2015 11:34
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	24-Mar-2015 11:34
2-Butanone	ND		0.0020	mg/L	1	24-Mar-2015 11:34
Benzene	**0.023**		**0.0010**	**mg/L**	1	24-Mar-2015 11:34
Cyclohexane	ND		0.0010	mg/L	1	24-Mar-2015 11:34
Ethylbenzene	**0.0015**		**0.0010**	**mg/L**	1	24-Mar-2015 11:34
Isopropylbenzene	ND		0.0010	mg/L	1	24-Mar-2015 11:34
m,p-Xylene	ND		0.0020	mg/L	1	24-Mar-2015 11:34
Methylcyclohexane	ND		0.0010	mg/L	1	24-Mar-2015 11:34
Naphthalene	ND		0.0010	mg/L	1	24-Mar-2015 11:34
n-Butylbenzene	ND		0.0010	mg/L	1	24-Mar-2015 11:34
n-Propylbenzene	ND		0.0010	mg/L	1	24-Mar-2015 11:34
o-Xylene	ND		0.0010	mg/L	1	24-Mar-2015 11:34
Toluene	**0.0010**		**0.0010**	**mg/L**	1	24-Mar-2015 11:34
Xylenes, Total	ND		0.0030	mg/L	1	24-Mar-2015 11:34
Surr: 1,2-Dichloroethane-d4	*95.3*		*71-125*	*%REC*	*1*	*24-Mar-2015 11:34*
Surr: 4-Bromofluorobenzene	*92.2*		*70-125*	*%REC*	*1*	*24-Mar-2015 11:34*
Surr: Dibromofluoromethane	*102*		*74-125*	*%REC*	*1*	*24-Mar-2015 11:34*
Surr: Toluene-d8	*106*		*75-125*	*%REC*	*1*	*24-Mar-2015 11:34*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**446**		**5.00**	**mg/L**	1	22-Mar-2015 16:57
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 16:57
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 16:57
Alkalinity, Total (As CaCO3)	**446**		**5.00**	**mg/L**	1	22-Mar-2015 16:57
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Mar-2015		Analyst: JDE
Iron	ND		0.200	mg/L	1	27-Mar-2015 11:31
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: MYA
Methane	**2.37**		**0.500**	**ug/L**	1	23-Mar-2015 14:38
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	30-Mar-2015 07:44
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	25-Mar-2015 16:06
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 23-Mar-2015		Analyst: JDE
Potassium	**0.668**		**0.200**	**mg/L**	1	24-Mar-2015 10:42
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**0.20**		**0.050**	**mg/L**	1	27-Mar-2015 17:11
Surr: 4-Bromofluorobenzene	*115*		*70-130*	*%REC*	*1*	*27-Mar-2015 17:11*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ANALYTICAL REPORT

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Sample ID: MW-5
Collection Date: 20-Mar-2015 10:37

WorkOrder:HS15030718
Lab ID:HS15030718-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**5.78**		**0.100**	**mg/L**	1	21-Mar-2015 16:11
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Mar-2015 16:11
Sulfate	**167**		**10.0**	**mg/L**	20	21-Mar-2015 19:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15030718
Sample ID:	MW-1	Lab ID:HS15030718-03
Collection Date:	20-Mar-2015 11:30	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.11**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
1,2-Dichloroethane	**0.0014**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
1,3,5-Trimethylbenzene	**0.044**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
2-Butanone	ND		0.0020	mg/L	1	24-Mar-2015 07:40
Benzene	**0.052**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
Cyclohexane	**0.035**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
Ethylbenzene	**0.045**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
Isopropylbenzene	**0.0029**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
m,p-Xylene	**0.16**		**0.0020**	**mg/L**	1	24-Mar-2015 07:40
Methylcyclohexane	**0.010**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
Naphthalene	**0.014**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
n-Butylbenzene	**0.0080**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
n-Propylbenzene	**0.0075**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
o-Xylene	**0.11**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
Toluene	**0.11**		**0.0010**	**mg/L**	1	24-Mar-2015 07:40
Xylenes, Total	**0.27**		**0.0030**	**mg/L**	1	24-Mar-2015 07:40
Surr: 1,2-Dichloroethane-d4	*102*		*71-125*	*%REC*	*1*	*24-Mar-2015 07:40*
Surr: 4-Bromofluorobenzene	*101*		*70-125*	*%REC*	*1*	*24-Mar-2015 07:40*
Surr: Dibromofluoromethane	*103*		*74-125*	*%REC*	*1*	*24-Mar-2015 07:40*
Surr: Toluene-d8	*107*		*75-125*	*%REC*	*1*	*24-Mar-2015 07:40*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**537**		**5.00**	**mg/L**	1	22-Mar-2015 17:02
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 17:02
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 17:02
Alkalinity, Total (As CaCO3)	**537**		**5.00**	**mg/L**	1	22-Mar-2015 17:02
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Mar-2015		Analyst: JDE
Iron	ND		0.200	mg/L	1	27-Mar-2015 11:34
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: MYA
Methane	**96.8**		**2.50**	**ug/L**	5	23-Mar-2015 16:53
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	30-Mar-2015 07:44
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	25-Mar-2015 16:06
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 23-Mar-2015		Analyst: JDE
Potassium	**1.57**		**0.200**	**mg/L**	1	24-Mar-2015 10:45
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**2.5**		**0.050**	**mg/L**	1	27-Mar-2015 17:27
Surr: 4-Bromofluorobenzene	*115*		*70-130*	*%REC*	*1*	*27-Mar-2015 17:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ANALYTICAL REPORT

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Sample ID: MW-1
Collection Date: 20-Mar-2015 11:30

WorkOrder:HS15030718
Lab ID:HS15030718-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.161**		**0.100**	**mg/L**	1	21-Mar-2015 16:33
Phosphorus, Orthophosphate (As P)	**0.160**		**0.100**	**mg/L**	1	21-Mar-2015 16:33
Sulfate	**8.08**		**0.500**	**mg/L**	1	21-Mar-2015 16:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15030718
Sample ID:	MW-17	Lab ID:HS15030718-04
Collection Date:	20-Mar-2015 12:09	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.14**		**0.0010**	**mg/L**	1	24-Mar-2015 08:05
1,2-Dichloroethane	ND		0.0010	mg/L	1	24-Mar-2015 08:05
1,3,5-Trimethylbenzene	**0.043**		**0.0010**	**mg/L**	1	24-Mar-2015 08:05
2-Butanone	ND		0.0020	mg/L	1	24-Mar-2015 08:05
Benzene	**0.80**		**0.010**	**mg/L**	10	24-Mar-2015 14:29
Cyclohexane	**0.11**		**0.0010**	**mg/L**	1	24-Mar-2015 08:05
Ethylbenzene	**0.14**		**0.0010**	**mg/L**	1	24-Mar-2015 08:05
Isopropylbenzene	**0.0060**		**0.0010**	**mg/L**	1	24-Mar-2015 08:05
m,p-Xylene	**0.50**		**0.020**	**mg/L**	10	24-Mar-2015 14:29
Methylcyclohexane	**0.0099**		**0.0010**	**mg/L**	1	24-Mar-2015 08:05
Naphthalene	**0.020**		**0.0010**	**mg/L**	1	24-Mar-2015 08:05
n-Butylbenzene	**0.0022**		**0.0010**	**mg/L**	1	24-Mar-2015 08:05
n-Propylbenzene	**0.0070**		**0.0010**	**mg/L**	1	24-Mar-2015 08:05
o-Xylene	**0.30**		**0.010**	**mg/L**	10	24-Mar-2015 14:29
Toluene	**0.79**		**0.010**	**mg/L**	10	24-Mar-2015 14:29
Xylenes, Total	**0.80**		**0.030**	**mg/L**	10	24-Mar-2015 14:29
Surr: 1,2-Dichloroethane-d4	*100*		*71-125*	*%REC*	*1*	*24-Mar-2015 08:05*
Surr: 1,2-Dichloroethane-d4	*97.2*		*71-125*	*%REC*	*10*	*24-Mar-2015 14:29*
Surr: 4-Bromofluorobenzene	*95.3*		*70-125*	*%REC*	*1*	*24-Mar-2015 08:05*
Surr: 4-Bromofluorobenzene	*92.8*		*70-125*	*%REC*	*10*	*24-Mar-2015 14:29*
Surr: Dibromofluoromethane	*103*		*74-125*	*%REC*	*1*	*24-Mar-2015 08:05*
Surr: Dibromofluoromethane	*103*		*74-125*	*%REC*	*10*	*24-Mar-2015 14:29*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*24-Mar-2015 08:05*
Surr: Toluene-d8	*103*		*75-125*	*%REC*	*10*	*24-Mar-2015 14:29*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**430**		**5.00**	**mg/L**	1	22-Mar-2015 17:09
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 17:09
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 17:09
Alkalinity, Total (As CaCO3)	**430**		**5.00**	**mg/L**	1	22-Mar-2015 17:09
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Mar-2015		Analyst: JDE
Iron	ND		0.200	mg/L	1	27-Mar-2015 11:10
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: MYA
Methane	**5.14**		**0.500**	**ug/L**	1	23-Mar-2015 15:10
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	30-Mar-2015 07:44
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	25-Mar-2015 16:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15030718
Sample ID:	MW-17	Lab ID:HS15030718-04
Collection Date:	20-Mar-2015 12:09	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 23-Mar-2015		Analyst: JDE
Potassium	**18.4**		**0.200**	**mg/L**	1	24-Mar-2015 10:48
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**8.9**		**0.050**	**mg/L**	1	27-Mar-2015 17:43
Surr: 4-Bromofluorobenzene	*119*		*70-130*	*%REC*	*1*	*27-Mar-2015 17:43*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.175**		**0.100**	**mg/L**	1	21-Mar-2015 16:54
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Mar-2015 16:54
Sulfate	**39.5**		**0.500**	**mg/L**	1	21-Mar-2015 16:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15030718
Sample ID:	MW-18	Lab ID:HS15030718-05
Collection Date:	20-Mar-2015 12:59	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.45**		**0.025**	**mg/L**	25	24-Mar-2015 14:54
1,2-Dichloroethane	ND		0.0010	mg/L	1	24-Mar-2015 08:30
1,3,5-Trimethylbenzene	**0.13**		**0.0010**	**mg/L**	1	24-Mar-2015 08:30
2-Butanone	ND		0.0020	mg/L	1	24-Mar-2015 08:30
Benzene	**2.0**		**0.025**	**mg/L**	25	24-Mar-2015 14:54
Cyclohexane	**0.23**		**0.025**	**mg/L**	25	24-Mar-2015 14:54
Ethylbenzene	**0.56**		**0.025**	**mg/L**	25	24-Mar-2015 14:54
Isopropylbenzene	**0.020**		**0.0010**	**mg/L**	1	24-Mar-2015 08:30
m,p-Xylene	**2.3**		**0.050**	**mg/L**	25	24-Mar-2015 14:54
Methylcyclohexane	**0.031**		**0.0010**	**mg/L**	1	24-Mar-2015 08:30
Naphthalene	**0.097**		**0.0010**	**mg/L**	1	24-Mar-2015 08:30
n-Butylbenzene	**0.0077**		**0.0010**	**mg/L**	1	24-Mar-2015 08:30
n-Propylbenzene	**0.027**		**0.0010**	**mg/L**	1	24-Mar-2015 08:30
o-Xylene	**1.2**		**0.025**	**mg/L**	25	24-Mar-2015 14:54
Toluene	**6.2**		**0.10**	**mg/L**	100	24-Mar-2015 16:34
Xylenes, Total	**3.4**		**0.075**	**mg/L**	25	24-Mar-2015 14:54
Surr: 1,2-Dichloroethane-d4	*98.8*		*71-125*	*%REC*	*1*	*24-Mar-2015 08:30*
Surr: 1,2-Dichloroethane-d4	*95.3*		*71-125*	*%REC*	*25*	*24-Mar-2015 14:54*
Surr: 1,2-Dichloroethane-d4	*97.4*		*71-125*	*%REC*	*100*	*24-Mar-2015 16:34*
Surr: 4-Bromofluorobenzene	*95.7*		*70-125*	*%REC*	*1*	*24-Mar-2015 08:30*
Surr: 4-Bromofluorobenzene	*92.4*		*70-125*	*%REC*	*100*	*24-Mar-2015 16:34*
Surr: 4-Bromofluorobenzene	*94.6*		*70-125*	*%REC*	*25*	*24-Mar-2015 14:54*
Surr: Dibromofluoromethane	*101*		*74-125*	*%REC*	*1*	*24-Mar-2015 08:30*
Surr: Dibromofluoromethane	*99.1*		*74-125*	*%REC*	*25*	*24-Mar-2015 14:54*
Surr: Dibromofluoromethane	*99.9*		*74-125*	*%REC*	*100*	*24-Mar-2015 16:34*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*24-Mar-2015 08:30*
Surr: Toluene-d8	*104*		*75-125*	*%REC*	*25*	*24-Mar-2015 14:54*
Surr: Toluene-d8	*104*		*75-125*	*%REC*	*100*	*24-Mar-2015 16:34*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**394**		**5.00**	**mg/L**	1	22-Mar-2015 17:15
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 17:15
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 17:15
Alkalinity, Total (As CaCO3)	**394**		**5.00**	**mg/L**	1	22-Mar-2015 17:15
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Mar-2015		Analyst: JDE
Iron	ND		0.200	mg/L	1	27-Mar-2015 11:42
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: MYA
Methane	**6.13**		**0.500**	**ug/L**	1	23-Mar-2015 15:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15030718
Sample ID:	MW-18	Lab ID:HS15030718-05
Collection Date:	20-Mar-2015 12:59	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	30-Mar-2015 07:44
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	25-Mar-2015 16:06
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 23-Mar-2015		Analyst: JDE
Potassium	**7.63**		**0.200**	**mg/L**	1	24-Mar-2015 10:51
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**40**		**0.050**	**mg/L**	1	27-Mar-2015 18:30
Surr: 4-Bromofluorobenzene	*114*		*70-130*	*%REC*	*1*	*27-Mar-2015 18:30*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.175**		**0.100**	**mg/L**	1	21-Mar-2015 17:16
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Mar-2015 17:16
Sulfate	**27.8**		**0.500**	**mg/L**	1	21-Mar-2015 17:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15030718
Sample ID:	MW-19	Lab ID:HS15030718-06
Collection Date:	20-Mar-2015 13:29	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.039**		**0.0010**	**mg/L**	1	24-Mar-2015 16:09
1,2-Dichloroethane	ND		0.0010	mg/L	1	24-Mar-2015 16:09
1,3,5-Trimethylbenzene	**0.011**		**0.0010**	**mg/L**	1	24-Mar-2015 16:09
2-Butanone	**0.0098**		**0.0020**	**mg/L**	1	24-Mar-2015 16:09
Benzene	**0.14**		**0.0010**	**mg/L**	1	24-Mar-2015 16:09
Cyclohexane	**0.033**		**0.0010**	**mg/L**	1	24-Mar-2015 16:09
Ethylbenzene	**0.0057**		**0.0010**	**mg/L**	1	24-Mar-2015 16:09
Isopropylbenzene	ND		0.0010	mg/L	1	24-Mar-2015 16:09
m,p-Xylene	**0.17**		**0.0020**	**mg/L**	1	24-Mar-2015 16:09
Methylcyclohexane	**0.0021**		**0.0010**	**mg/L**	1	24-Mar-2015 16:09
Naphthalene	**0.0037**		**0.0010**	**mg/L**	1	24-Mar-2015 16:09
n-Butylbenzene	ND		0.0010	mg/L	1	24-Mar-2015 16:09
n-Propylbenzene	ND		0.0010	mg/L	1	24-Mar-2015 16:09
o-Xylene	**0.098**		**0.0010**	**mg/L**	1	24-Mar-2015 16:09
Toluene	**0.16**		**0.0010**	**mg/L**	1	24-Mar-2015 16:09
Xylenes, Total	**0.27**		**0.0030**	**mg/L**	1	24-Mar-2015 16:09
Surr: 1,2-Dichloroethane-d4	*97.4*		*71-125*	*%REC*	*1*	*24-Mar-2015 16:09*
Surr: 4-Bromofluorobenzene	*94.4*		*70-125*	*%REC*	*1*	*24-Mar-2015 16:09*
Surr: Dibromofluoromethane	*102*		*74-125*	*%REC*	*1*	*24-Mar-2015 16:09*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*24-Mar-2015 16:09*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**361**		**5.00**	**mg/L**	1	22-Mar-2015 17:20
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 17:20
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	22-Mar-2015 17:20
Alkalinity, Total (As CaCO3)	**361**		**5.00**	**mg/L**	1	22-Mar-2015 17:20
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Mar-2015		Analyst: JDE
Iron	ND		0.200	mg/L	1	27-Mar-2015 11:45
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: MYA
Methane	**2.16**		**0.500**	**ug/L**	1	23-Mar-2015 17:34
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	30-Mar-2015 07:44
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	25-Mar-2015 16:06
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 23-Mar-2015		Analyst: JDE
Potassium	**8.95**		**0.200**	**mg/L**	1	24-Mar-2015 10:54
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**2.2**		**0.050**	**mg/L**	1	27-Mar-2015 18:45
Surr: 4-Bromofluorobenzene	*115*		*70-130*	*%REC*	*1*	*27-Mar-2015 18:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ANALYTICAL REPORT

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Sample ID: MW-19
Collection Date: 20-Mar-2015 13:29

WorkOrder:HS15030718
Lab ID:HS15030718-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.466**		**0.100**	**mg/L**	1	21-Mar-2015 18:21
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Mar-2015 18:21
Sulfate	**60.7**		**0.500**	**mg/L**	1	21-Mar-2015 18:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 91642	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS15030718-01	MW-4	20 Mar 2015 09:59		23 Mar 2015 10:22	24 Mar 2015 10:39	1
HS15030718-02	MW-5	20 Mar 2015 10:37		23 Mar 2015 10:22	24 Mar 2015 10:42	1
HS15030718-03	MW-1	20 Mar 2015 11:30		23 Mar 2015 10:22	24 Mar 2015 10:45	1
HS15030718-04	MW-17	20 Mar 2015 12:09		23 Mar 2015 10:22	24 Mar 2015 10:48	1
HS15030718-05	MW-18	20 Mar 2015 12:59		23 Mar 2015 10:22	24 Mar 2015 10:51	1
HS15030718-06	MW-19	20 Mar 2015 13:29		23 Mar 2015 10:22	24 Mar 2015 10:54	1
Batch ID 91714	**Test Name :** DISSOLVED METALS BY SW6020A			**Matrix:** Water		
HS15030718-01	MW-4	20 Mar 2015 09:59		26 Mar 2015 10:00	27 Mar 2015 11:28	1
HS15030718-02	MW-5	20 Mar 2015 10:37		26 Mar 2015 10:00	27 Mar 2015 11:31	1
HS15030718-03	MW-1	20 Mar 2015 11:30		26 Mar 2015 10:00	27 Mar 2015 11:34	1
HS15030718-04	MW-17	20 Mar 2015 12:09		26 Mar 2015 10:00	27 Mar 2015 11:10	1
HS15030718-05	MW-18	20 Mar 2015 12:59		26 Mar 2015 10:00	27 Mar 2015 11:42	1
HS15030718-06	MW-19	20 Mar 2015 13:29		26 Mar 2015 10:00	27 Mar 2015 11:45	1
Batch ID R251451	**Test Name :** ALKALINITY BY SM2320B			**Matrix:** Water		
HS15030718-01	MW-4	20 Mar 2015 09:59			22 Mar 2015 16:51	1
HS15030718-02	MW-5	20 Mar 2015 10:37			22 Mar 2015 16:57	1
HS15030718-03	MW-1	20 Mar 2015 11:30			22 Mar 2015 17:02	1
HS15030718-04	MW-17	20 Mar 2015 12:09			22 Mar 2015 17:09	1
HS15030718-05	MW-18	20 Mar 2015 12:59			22 Mar 2015 17:15	1
HS15030718-06	MW-19	20 Mar 2015 13:29			22 Mar 2015 17:20	1
Batch ID R251458	**Test Name :** ANIONS BY E300.0			**Matrix:** Water		
HS15030718-01	MW-4	20 Mar 2015 09:59			21 Mar 2015 15:06	1
HS15030718-02	MW-5	20 Mar 2015 10:37			21 Mar 2015 19:48	20
HS15030718-02	MW-5	20 Mar 2015 10:37			21 Mar 2015 16:11	1
HS15030718-03	MW-1	20 Mar 2015 11:30			21 Mar 2015 16:33	1
HS15030718-04	MW-17	20 Mar 2015 12:09			21 Mar 2015 16:54	1
HS15030718-05	MW-18	20 Mar 2015 12:59			21 Mar 2015 17:16	1
HS15030718-06	MW-19	20 Mar 2015 13:29			21 Mar 2015 18:21	1
Batch ID R251524	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15030718-01	MW-4	20 Mar 2015 09:59			24 Mar 2015 06:50	1
HS15030718-03	MW-1	20 Mar 2015 11:30			24 Mar 2015 07:40	1
HS15030718-04	MW-17	20 Mar 2015 12:09			24 Mar 2015 08:05	1
HS15030718-05	MW-18	20 Mar 2015 12:59			24 Mar 2015 08:30	1

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R251525	**Test Name :** DISSOLVED GASES BY RSK-175			**Matrix:** Water		
HS15030718-01	MW-4	20 Mar 2015 09:59			23 Mar 2015 16:39	10
HS15030718-02	MW-5	20 Mar 2015 10:37			23 Mar 2015 14:38	1
HS15030718-03	MW-1	20 Mar 2015 11:30			23 Mar 2015 16:53	5
HS15030718-04	MW-17	20 Mar 2015 12:09			23 Mar 2015 15:10	1
HS15030718-05	MW-18	20 Mar 2015 12:59			23 Mar 2015 15:23	1
HS15030718-06	MW-19	20 Mar 2015 13:29			23 Mar 2015 17:34	1
Batch ID R251560	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15030718-01	MW-4	20 Mar 2015 09:59			24 Mar 2015 11:59	10
HS15030718-02	MW-5	20 Mar 2015 10:37			24 Mar 2015 11:34	1
HS15030718-04	MW-17	20 Mar 2015 12:09			24 Mar 2015 14:29	10
HS15030718-05	MW-18	20 Mar 2015 12:59			24 Mar 2015 16:34	100
HS15030718-05	MW-18	20 Mar 2015 12:59			24 Mar 2015 14:54	25
HS15030718-06	MW-19	20 Mar 2015 13:29			24 Mar 2015 16:09	1
Batch ID R251632	**Test Name :** AMMONIA AS N BY SM4500 NH3-D (ISE)			**Matrix:** Water		
HS15030718-01	MW-4	20 Mar 2015 09:59			25 Mar 2015 16:06	1
HS15030718-02	MW-5	20 Mar 2015 10:37			25 Mar 2015 16:06	1
HS15030718-03	MW-1	20 Mar 2015 11:30			25 Mar 2015 16:06	1
HS15030718-04	MW-17	20 Mar 2015 12:09			25 Mar 2015 16:06	1
HS15030718-05	MW-18	20 Mar 2015 12:59			25 Mar 2015 16:06	1
HS15030718-06	MW-19	20 Mar 2015 13:29			25 Mar 2015 16:06	1
Batch ID R251825	**Test Name :** SUBCONTRACT ANALYSIS			**Matrix:** Water		
HS15030718-01	MW-4	20 Mar 2015 09:59			30 Mar 2015 07:44	1
HS15030718-02	MW-5	20 Mar 2015 10:37			30 Mar 2015 07:44	1
HS15030718-03	MW-1	20 Mar 2015 11:30			30 Mar 2015 07:44	1
HS15030718-04	MW-17	20 Mar 2015 12:09			30 Mar 2015 07:44	1
HS15030718-05	MW-18	20 Mar 2015 12:59			30 Mar 2015 07:44	1
HS15030718-06	MW-19	20 Mar 2015 13:29			30 Mar 2015 07:44	1
Batch ID R251837	**Test Name :** VPH - IOWA OA-1			**Matrix:** Water		
HS15030718-01	MW-4	20 Mar 2015 09:59			27 Mar 2015 16:56	1
HS15030718-02	MW-5	20 Mar 2015 10:37			27 Mar 2015 17:11	1
HS15030718-03	MW-1	20 Mar 2015 11:30			27 Mar 2015 17:27	1
HS15030718-04	MW-17	20 Mar 2015 12:09			27 Mar 2015 17:43	1
HS15030718-05	MW-18	20 Mar 2015 12:59			27 Mar 2015 18:30	1
HS15030718-06	MW-19	20 Mar 2015 13:29			27 Mar 2015 18:45	1

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251525 **Instrument: FID-4** **Method: RSK-175**

MBLK Sample ID: **GBLKW1-150323** Units: **ug/L** Analysis Date: **23-Mar-2015 12:20**
Client ID: Run ID: **FID-4_251525** SeqNo: **3221227** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	ND	0.500								

LCS Sample ID: **GLCSW1-150323** Units: **ug/L** Analysis Date: **23-Mar-2015 11:31**
Client ID: Run ID: **FID-4_251525** SeqNo: **3221225** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	9.415	0.500	9.647	0	97.6	75 - 125				

LCSD Sample ID: **GLCSDW1-150323** Units: **ug/L** Analysis Date: **23-Mar-2015 11:54**
Client ID: Run ID: **FID-4_251525** SeqNo: **3221226** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	9.039	0.500	9.647	0	93.7	75 - 125	9.415	4.08	30	

DUP Sample ID: **HS15030718-04DUP** Units: **ug/L** Analysis Date: **23-Mar-2015 15:50**
Client ID: **MW-17** Run ID: **FID-4_251525** SeqNo: **3221234** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	5.103	0.500					5.14	0.716	30	

The following samples were anayzed in this batch: HS15030718-01 HS15030718-02 HS15030718-03 HS15030718-04 HS15030718-05 HS15030718-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251837 **Instrument: FID-14** **Method: IA OA-1**

MBLK Sample ID: **GBLKW-150327** Units: **mg/L** Analysis Date: **27-Mar-2015 11:55**
Client ID: Run ID: **FID-14_251837** SeqNo: **3226902** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	*0.106*	*0.0050*	*0.1*	*0*	*106*	*70 - 130*				

LCS Sample ID: **GLCS-150327** Units: **mg/L** Analysis Date: **27-Mar-2015 11:39**
Client ID: Run ID: **FID-14_251837** SeqNo: **3226901** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	0.9879	0.050	1	0	98.8	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1092*	*0.0050*	*0.1*	*0*	*109*	*70 - 130*				

MS Sample ID: **HS15030720-04MS** Units: **mg/L** Analysis Date: **27-Mar-2015 15:37**
Client ID: Run ID: **FID-14_251837** SeqNo: **3226905** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.007	0.050	1	0.0206	98.6	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1133*	*0.0050*	*0.1*	*0*	*113*	*70 - 130*				

MSD Sample ID: **HS15030720-04MSD** Units: **mg/L** Analysis Date: **27-Mar-2015 15:53**
Client ID: Run ID: **FID-14_251837** SeqNo: **3226906** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.097	0.050	1	0.0206	108	70 - 130	1.007	8.57	30	
Surr: 4-Bromofluorobenzene	*0.1144*	*0.0050*	*0.1*	*0*	*114*	*70 - 130*	*0.1133*	*0.999*	*30*	

The following samples were anayzed in this batch: HS15030718-01 HS15030718-02 HS15030718-03 HS15030718-04 HS15030718-05 HS15030718-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: 91642 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-91642** Units: **mg/L** Analysis Date: **24-Mar-2015 10:09**
Client ID: Run ID: **ICPMS05_251532** SeqNo: **3221373** PrepDate: **23-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	ND	0.200								

LCS Sample ID: **MLCS-91642** Units: **mg/L** Analysis Date: **24-Mar-2015 10:12**
Client ID: Run ID: **ICPMS05_251532** SeqNo: **3221374** PrepDate: **23-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	5.07	0.200	5	0	101	80 - 120				

MS Sample ID: **HS15030739-06MS** Units: **mg/L** Analysis Date: **24-Mar-2015 10:30**
Client ID: Run ID: **ICPMS05_251532** SeqNo: **3221381** PrepDate: **23-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	4.809	0.200	5	0	96.2	80 - 120				

MSD Sample ID: **HS15030739-06MSD** Units: **mg/L** Analysis Date: **24-Mar-2015 10:33**
Client ID: Run ID: **ICPMS05_251532** SeqNo: **3221382** PrepDate: **23-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	5.019	0.200	5	0	100	80 - 120	4.809	4.29	20	

DUP Sample ID: **HS15030739-06DUP** Units: **mg/L** Analysis Date: **24-Mar-2015 10:20**
Client ID: Run ID: **ICPMS05_251532** SeqNo: **3221377** PrepDate: **23-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	ND	0.200					0.01154	0	20	

PDS Sample ID: **HS15030739-06BS** Units: **mg/L** Analysis Date: **24-Mar-2015 10:36**
Client ID: Run ID: **ICPMS05_251532** SeqNo: **3221383** PrepDate: **23-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	9.219	0.200	10	0	92.2	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: 91642 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS15030739-06 DIL SX** Units: **mg/L** Analysis Date: **24-Mar-2015 10:28**
Client ID: Run ID: **ICPMS05_251532** SeqNo: **3221380** PrepDate: **23-Mar-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	ND	1.00					0	0	10	

The following samples were anayzed in this batch: HS15030718-01 HS15030718-02 HS15030718-03 HS15030718-04 HS15030718-05 HS15030718-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: 91714 **Instrument: ICPMS05** **Method: SW6020 (DISSOLVED)**

MBLK Sample ID: **MBLKF2-91714** Units: **mg/L** Analysis Date: **27-Mar-2015 10:54**
Client ID: Run ID: **ICPMS05_251739** SeqNo: **3225171** PrepDate: **26-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

MBLK Sample ID: **MBLK-91714** Units: **mg/L** Analysis Date: **27-Mar-2015 10:57**
Client ID: Run ID: **ICPMS05_251739** SeqNo: **3225172** PrepDate: **26-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

LCS Sample ID: **MLCS-91714** Units: **mg/L** Analysis Date: **27-Mar-2015 10:59**
Client ID: Run ID: **ICPMS05_251739** SeqNo: **3225173** PrepDate: **26-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.03	0.200	5	0	101	80 - 120				

MS Sample ID: **HS15030718-04MS** Units: **mg/L** Analysis Date: **27-Mar-2015 11:19**
Client ID: **MW-17** Run ID: **ICPMS05_251739** SeqNo: **3225303** PrepDate: **26-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.023	0.200	5	0.0127	100	75 - 125				

MSD Sample ID: **HS15030718-04MSD** Units: **mg/L** Analysis Date: **27-Mar-2015 11:22**
Client ID: **MW-17** Run ID: **ICPMS05_251739** SeqNo: **3225304** PrepDate: **26-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.026	0.200	5	0.0127	100	75 - 125	5.023	0.0555	20	

DUP Sample ID: **HS15030718-04DUP** Units: **mg/L** Analysis Date: **27-Mar-2015 11:13**
Client ID: **MW-17** Run ID: **ICPMS05_251739** SeqNo: **3225301** PrepDate: **26-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200					0.0127	0	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: 91714 **Instrument: ICPMS05** **Method: SW6020 (DISSOLVED)**

PDS Sample ID: **HS15030718-04BS** Units: **mg/L** Analysis Date: **27-Mar-2015 11:25**
Client ID: **MW-17** Run ID: **ICPMS05_251739** SeqNo: **3225305** PrepDate: **26-Mar-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.557	0.200	10	0.0127	95.4	75 - 125				

SD Sample ID: **HS15030718-04 DIL SX** Units: **mg/L** Analysis Date: **27-Mar-2015 11:16**
Client ID: **MW-17** Run ID: **ICPMS05_251739** SeqNo: **3225302** PrepDate: **26-Mar-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	0.2916	1.00					0.0127	0	10	J

The following samples were anayzed in this batch: HS15030718-01 HS15030718-02 HS15030718-03 HS15030718-04 HS15030718-05 HS15030718-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251524 **Instrument: VOA4** **Method: SW8260**

MBLK Sample ID: **VBLKW-150323** Units: **ug/L** Analysis Date: **23-Mar-2015 23:20**
Client ID: Run ID: **VOA4_251524** SeqNo: **3221177** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*52.03*	*1.0*	*50*	*0*	*104*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*47.63*	*1.0*	*50*	*0*	*95.3*	*70 - 125*				
Surr: Dibromofluoromethane	*51.78*	*1.0*	*50*	*0*	*104*	*74 - 125*				
Surr: Toluene-d8	*53.13*	*1.0*	*50*	*0*	*106*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251524 **Instrument: VOA4** **Method: SW8260**

LCS Sample ID: **VLCSW-150323** Units: **ug/L** Analysis Date: **23-Mar-2015 22:30**
Client ID: Run ID: **VOA4_251524** SeqNo: **3221176** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	47.42	1.0	50	0	94.8	70 - 125				
1,2-Dichloroethane	52.23	1.0	50	0	104	76 - 120				
1,3,5-Trimethylbenzene	47.18	1.0	50	0	94.4	80 - 123				
2-Butanone	121.9	2.0	100	0	122	60 - 140				
Benzene	51.85	1.0	50	0	104	80 - 120				
Cyclohexane	53.37	1.0	50	0	107	70 - 130				
Ethylbenzene	50.15	1.0	50	0	100	80 - 120				
Isopropylbenzene	49.31	1.0	50	0	98.6	75 - 130				
m,p-Xylene	101.3	2.0	100	0	101	80 - 120				
Methylcyclohexane	51.78	1.0	50	0	104	70 - 126				
Naphthalene	55.63	1.0	50	0	111	65 - 135				
n-Butylbenzene	51.64	1.0	50	0	103	75 - 128				
n-Propylbenzene	48.07	1.0	50	0	96.1	75 - 130				
o-Xylene	49.87	1.0	50	0	99.7	80 - 120				
Toluene	49.79	1.0	50	0	99.6	75 - 121				
Xylenes, Total	151.2	3.0	150	0	101	79 - 124				
Surr: 1,2-Dichloroethane-d4	*50.52*	*1.0*	*50*	*0*	*101*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.93*	*1.0*	*50*	*0*	*99.9*	*70 - 125*				
Surr: Dibromofluoromethane	*53.7*	*1.0*	*50*	*0*	*107*	*74 - 125*				
Surr: Toluene-d8	*52.92*	*1.0*	*50*	*0*	*106*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251524 **Instrument: VOA4** **Method: SW8260**

MS Sample ID: **HS15030740-02MS** Units: **ug/L** Analysis Date: **24-Mar-2015 00:35**
Client ID: Run ID: **VOA4_251524** SeqNo: **3221180** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	491.2	10	500	5.974	97.1	70 - 125				
1,2-Dichloroethane	526.3	10	500	0	105	76 - 120				
1,3,5-Trimethylbenzene	484.9	10	500	6.251	95.7	80 - 123				
2-Butanone	1053	20	1000	24.74	103	60 - 140				
Benzene	534.5	10	500	6.657	106	80 - 120				
Cyclohexane	551.5	10	500	0	110	70 - 130				
Ethylbenzene	515.6	10	500	6.116	102	80 - 120				
Isopropylbenzene	500.5	10	500	3.552	99.4	75 - 130				
m,p-Xylene	1032	20	1000	0	103	80 - 120				
Methylcyclohexane	538.8	10	500	0	108	70 - 126				
Naphthalene	428.1	10	500	49.68	75.7	65 - 135				
n-Butylbenzene	530.1	10	500	8.868	104	75 - 128				
n-Propylbenzene	500.5	10	500	4.123	99.3	75 - 130				
o-Xylene	506.5	10	500	3.317	101	80 - 120				
Toluene	513.4	10	500	0	103	75 - 121				
Xylenes, Total	1539	30	1500	3.317	102	80 - 124				
Surr: 1,2-Dichloroethane-d4	*497.4*	*10*	*500*	*0*	*99.5*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*493.7*	*10*	*500*	*0*	*98.7*	*70 - 125*				
Surr: Dibromofluoromethane	*530.8*	*10*	*500*	*0*	*106*	*74 - 125*				
Surr: Toluene-d8	*519*	*10*	*500*	*0*	*104*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251524 **Instrument: VOA4** **Method: SW8260**

MSD Sample ID: **HS15030740-02MSD** Units: **ug/L** Analysis Date: **24-Mar-2015 01:00**
Client ID: Run ID: **VOA4_251524** SeqNo: **3221181** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	491.2	10	500	5.974	97.0	70 - 125	491.2	0.016	20	
1,2-Dichloroethane	531.1	10	500	0	106	76 - 120	526.3	0.904	20	
1,3,5-Trimethylbenzene	484.9	10	500	6.251	95.7	80 - 123	484.9	0.0121	20	
2-Butanone	1134	20	1000	24.74	111	60 - 140	1053	7.33	20	
Benzene	538.2	10	500	6.657	106	80 - 120	534.5	0.702	20	
Cyclohexane	537.5	10	500	0	107	70 - 130	551.5	2.58	20	
Ethylbenzene	524.4	10	500	6.116	104	80 - 120	515.6	1.69	20	
Isopropylbenzene	503.7	10	500	3.552	100	75 - 130	500.5	0.639	20	
m,p-Xylene	1041	20	1000	0	104	80 - 120	1032	0.874	20	
Methylcyclohexane	532.7	10	500	0	107	70 - 126	538.8	1.15	20	
Naphthalene	503.5	10	500	49.68	90.8	65 - 135	428.1	16.2	20	
n-Butylbenzene	523.7	10	500	8.868	103	75 - 128	530.1	1.2	20	
n-Propylbenzene	495.5	10	500	4.123	98.3	75 - 130	500.5	0.991	20	
o-Xylene	513.3	10	500	3.317	102	80 - 120	506.5	1.33	20	
Toluene	511.9	10	500	0	102	75 - 121	513.4	0.291	20	
Xylenes, Total	1554	30	1500	3.317	103	80 - 124	1539	1.03	20	
Surr: 1,2-Dichloroethane-d4	*502.4*	*10*	*500*	*0*	*100*	*71 - 125*	*497.4*	*1.01*	*20*	
Surr: 4-Bromofluorobenzene	*507.4*	*10*	*500*	*0*	*101*	*70 - 125*	*493.7*	*2.73*	*20*	
Surr: Dibromofluoromethane	*547.4*	*10*	*500*	*0*	*109*	*74 - 125*	*530.8*	*3.07*	*20*	
Surr: Toluene-d8	*525.6*	*10*	*500*	*0*	*105*	*75 - 125*	*519*	*1.28*	*20*	

The following samples were anayzed in this batch: HS15030718-01 HS15030718-03 HS15030718-04 HS15030718-05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251560 **Instrument: VOA4** **Method: SW8260**

MBLK Sample ID: **VBLKW-150324** Units: **ug/L** Analysis Date: **24-Mar-2015 11:09**
Client ID: Run ID: **VOA4_251560** SeqNo: **3221901** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*47.41*	*1.0*	*50*	*0*	*94.8*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*45.67*	*1.0*	*50*	*0*	*91.3*	*70 - 125*				
Surr: Dibromofluoromethane	*50.79*	*1.0*	*50*	*0*	*102*	*74 - 125*				
Surr: Toluene-d8	*52.62*	*1.0*	*50*	*0*	*105*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251560 **Instrument: VOA4** **Method: SW8260**

LCS Sample ID: **VLCSW-150324** Units: **ug/L** Analysis Date: **24-Mar-2015 10:19**
Client ID: Run ID: **VOA4_251560** SeqNo: **3221900** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	47.02	1.0	50	0	94.0	70 - 125				
1,2-Dichloroethane	47.12	1.0	50	0	94.2	76 - 120				
1,3,5-Trimethylbenzene	46.61	1.0	50	0	93.2	80 - 123				
2-Butanone	104	2.0	100	0	104	60 - 140				
Benzene	50.04	1.0	50	0	100	80 - 120				
Cyclohexane	49.25	1.0	50	0	98.5	70 - 130				
Ethylbenzene	48.52	1.0	50	0	97.0	80 - 120				
Isopropylbenzene	47.55	1.0	50	0	95.1	75 - 130				
m,p-Xylene	99.14	2.0	100	0	99.1	80 - 120				
Methylcyclohexane	50.26	1.0	50	0	101	70 - 126				
Naphthalene	50.15	1.0	50	0	100	65 - 135				
n-Butylbenzene	51.24	1.0	50	0	102	75 - 128				
n-Propylbenzene	47.8	1.0	50	0	95.6	75 - 130				
o-Xylene	48.85	1.0	50	0	97.7	80 - 120				
Toluene	49.13	1.0	50	0	98.3	75 - 121				
Xylenes, Total	148	3.0	150	0	98.7	79 - 124				
Surr: 1,2-Dichloroethane-d4	*46.88*	*1.0*	*50*	*0*	*93.8*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.02*	*1.0*	*50*	*0*	*98.0*	*70 - 125*				
Surr: Dibromofluoromethane	*51.12*	*1.0*	*50*	*0*	*102*	*74 - 125*				
Surr: Toluene-d8	*51.07*	*1.0*	*50*	*0*	*102*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: **R251560** **Instrument:** **VOA4** **Method:** **SW8260**

MS Sample ID: **HS15030718-01MS** Units: **ug/L** Analysis Date: **24-Mar-2015 12:24**
Client ID: **MW-4** Run ID: **VOA4_251560** SeqNo: **3221904** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	695.1	10	500	196.6	99.7	70 - 125				
1,2-Dichloroethane	527.2	10	500	0	105	76 - 120				
1,3,5-Trimethylbenzene	583.3	10	500	87.31	99.2	80 - 123				
2-Butanone	1052	20	1000	0	105	60 - 140				
Benzene	822.2	10	500	258.9	113	80 - 120				
Cyclohexane	646.2	10	500	77.8	114	70 - 130				
Ethylbenzene	741.3	10	500	197.8	109	80 - 120				
Isopropylbenzene	525.2	10	500	10.76	103	75 - 130				
m,p-Xylene	1162	20	1000	94.13	107	80 - 120				
Methylcyclohexane	562.8	10	500	12.28	110	70 - 126				
Naphthalene	502.8	10	500	39.61	92.6	65 - 135				
n-Butylbenzene	560.4	10	500	9.547	110	75 - 128				
n-Propylbenzene	538.2	10	500	22.47	103	75 - 130				
o-Xylene	654.6	10	500	121.5	107	80 - 120				
Toluene	704	10	500	176.7	105	75 - 121				
Xylenes, Total	1816	30	1500	215.6	107	80 - 124				
Surr: 1,2-Dichloroethane-d4	*488.9*	*10*	*500*	*0*	*97.8*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*492.5*	*10*	*500*	*0*	*98.5*	*70 - 125*				
Surr: Dibromofluoromethane	*523.7*	*10*	*500*	*0*	*105*	*74 - 125*				
Surr: Toluene-d8	*525*	*10*	*500*	*0*	*105*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: **R251560** **Instrument:** **VOA4** **Method:** **SW8260**

MSD Sample ID: **HS15030718-01MSD** Units: **ug/L** Analysis Date: **24-Mar-2015 12:49**
Client ID: **MW-4** Run ID: **VOA4_251560** SeqNo: **3221905** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	682.4	10	500	196.6	97.2	70 - 125	695.1	1.84	20	
1,2-Dichloroethane	527.5	10	500	0	106	76 - 120	527.2	0.0556	20	
1,3,5-Trimethylbenzene	577.1	10	500	87.31	98.0	80 - 123	583.3	1.08	20	
2-Butanone	1088	20	1000	0	109	60 - 140	1052	3.36	20	
Benzene	819.2	10	500	258.9	112	80 - 120	822.2	0.367	20	
Cyclohexane	612.4	10	500	77.8	107	70 - 130	646.2	5.36	20	
Ethylbenzene	729.2	10	500	197.8	106	80 - 120	741.3	1.65	20	
Isopropylbenzene	519.9	10	500	10.76	102	75 - 130	525.2	1.02	20	
m,p-Xylene	1151	20	1000	94.13	106	80 - 120	1162	0.954	20	
Methylcyclohexane	572.8	10	500	12.28	112	70 - 126	562.8	1.77	20	
Naphthalene	578	10	500	39.61	108	65 - 135	502.8	13.9	20	
n-Butylbenzene	557.2	10	500	9.547	110	75 - 128	560.4	0.572	20	
n-Propylbenzene	533.7	10	500	22.47	102	75 - 130	538.2	0.844	20	
o-Xylene	641.6	10	500	121.5	104	80 - 120	654.6	2.01	20	
Toluene	697.3	10	500	176.7	104	75 - 121	704	0.96	20	
Xylenes, Total	1792	30	1500	215.6	105	80 - 124	1816	1.33	20	
Surr: 1,2-Dichloroethane-d4	*487.7*	*10*	*500*	*0*	*97.5*	*71 - 125*	*488.9*	*0.258*	*20*	
Surr: 4-Bromofluorobenzene	*500.8*	*10*	*500*	*0*	*100*	*70 - 125*	*492.5*	*1.67*	*20*	
Surr: Dibromofluoromethane	*513.7*	*10*	*500*	*0*	*103*	*74 - 125*	*523.7*	*1.94*	*20*	
Surr: Toluene-d8	*529*	*10*	*500*	*0*	*106*	*75 - 125*	*525*	*0.757*	*20*	

The following samples were anayzed in this batch: HS15030718-01 HS15030718-02 HS15030718-04 HS15030718-05 HS15030718-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251451 **Instrument: ManTech01** **Method: SM2320B**

MBLK Sample ID: **WBLKW1-150322** Units: **mg/L** Analysis Date: **22-Mar-2015 14:32**
Client ID: Run ID: **ManTech01_251451** SeqNo: **3219883** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								
Alkalinity, Hydroxide (As CaCO3)	ND	5.00								
Alkalinity, Total (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS-ALK-150322** Units: **mg/L** Analysis Date: **22-Mar-2015 14:39**
Client ID: Run ID: **ManTech01_251451** SeqNo: **3219884** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1003	5.00	1000	0	100	80 - 120				

LCSD Sample ID: **LCSD-ALK-150322** Units: **mg/L** Analysis Date: **22-Mar-2015 14:45**
Client ID: Run ID: **ManTech01_251451** SeqNo: **3219885** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1015	5.00	1000	0	102	80 - 120	1003	1.19	20	

DUP Sample ID: **HS15030606-01DUP** Units: **mg/L** Analysis Date: **22-Mar-2015 15:00**
Client ID: Run ID: **ManTech01_251451** SeqNo: **3219889** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	285.6	5.00					290.3	1.63	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	285.6	5.00					290.3	1.63	20	

The following samples were anayzed in this batch: HS15030718-01 HS15030718-02 HS15030718-03 HS15030718-04 HS15030718-05 HS15030718-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251458 **Instrument: ICS3K2** **Method: E300**

MBLK Sample ID: **WBLKW1-032115** Units: **mg/L** Analysis Date: **21-Mar-2015 12:00**
Client ID: Run ID: **ICS3K2_251458** SeqNo: **3220097** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	ND	0.100								
Phosphorus, Orthophosphate (As P)	ND	0.100								
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW1-032115** Units: **mg/L** Analysis Date: **21-Mar-2015 12:21**
Client ID: Run ID: **ICS3K2_251458** SeqNo: **3220098** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	4.163	0.100	4	0	104	90 - 110				
Phosphorus, Orthophosphate (As P)	3.982	0.100	4	0	99.6	90 - 110				
Sulfate	21.19	0.500	20	0	106	90 - 110				

LCSD Sample ID: **WLCSDW1-032115** Units: **mg/L** Analysis Date: **21-Mar-2015 12:43**
Client ID: Run ID: **ICS3K2_251458** SeqNo: **3220099** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	4.164	0.100	4	0	104	90 - 110	4.163	0.024	20	
Phosphorus, Orthophosphate (As P)	4.125	0.100	4	0	103	90 - 110	3.982	3.53	20	
Sulfate	20.98	0.500	20	0	105	90 - 110	21.19	1	20	

MS Sample ID: **HS15030718-01MS** Units: **mg/L** Analysis Date: **21-Mar-2015 15:27**
Client ID: **MW-4** Run ID: **ICS3K2_251458** SeqNo: **3220101** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.485	0.100	2	0.468	101	80 - 120				
Phosphorus, Orthophosphate (As P)	1.686	0.100	2	0	84.3	80 - 120				
Sulfate	51.51	0.500	10	41.43	101	80 - 120				O

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: **R251458** **Instrument:** **ICS3K2** **Method:** **E300**

MSD Sample ID: **HS15030718-01MSD** Units: **mg/L** Analysis Date: **21-Mar-2015 15:49**
Client ID: **MW-4** Run ID: **ICS3K2_251458** SeqNo: **3220102** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.482	0.100	2	0.468	101	80 - 120	2.485	0.121	20	
Phosphorus, Orthophosphate (As P)	1.695	0.100	2	0	84.8	80 - 120	1.686	0.532	20	
Sulfate	51.56	0.500	10	41.43	101	80 - 120	51.51	0.099	20	O

The following samples were anayzed in this batch: HS15030718-01 HS15030718-02 HS15030718-03 HS15030718-04 HS15030718-05 HS15030718-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15030718

QC BATCH REPORT

Batch ID: R251632 **Instrument: WetChem_HS** **Method: SM4500 NH3-D**

MBLK Sample ID: **MBLK-251632** Units: **mg/L** Analysis Date: **25-Mar-2015 16:06**
Client ID: Run ID: **WetChem_HS_251632** SeqNo: **3223258** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	ND	0.20								

LCS Sample ID: **LCS-251632** Units: **mg/L** Analysis Date: **25-Mar-2015 16:06**
Client ID: Run ID: **WetChem_HS_251632** SeqNo: **3223259** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	9.83	0.20	10	0	98.3	80 - 120				

MS Sample ID: **HS15030838-01MS** Units: **mg/L** Analysis Date: **25-Mar-2015 16:06**
Client ID: Run ID: **WetChem_HS_251632** SeqNo: **3223262** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	10.2	0.20	10	0.066	101	80 - 120				

MSD Sample ID: **HS15030838-01MSD** Units: **mg/L** Analysis Date: **25-Mar-2015 16:06**
Client ID: Run ID: **WetChem_HS_251632** SeqNo: **3223263** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	10.6	0.20	10	0.066	105	80 - 120	10.2	3.85	20	

The following samples were anayzed in this batch: HS15030718-01 HS15030718-02 HS15030718-03 HS15030718-04 HS15030718-05 HS15030718-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: **HS15030718**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003403	09-May-2015
Kansas	E-10352 2014-2015	31-Jul-2015
Kentucky	KY 2014-2015	30-Apr-2015
Louisiana	03087 2014/2015	30-Jun-2015
North Carolina	624 - 2015	31-Dec-2015
North Dakota	R-193 2025	30-Apr-2015
Oklahoma	2014-128	31-Aug-2015
Texas	T104704231-14-14	30-Apr-2015

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Work Order: HS15030718

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15030718-01	MW-4	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-01	MW-4	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-01	MW-4	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-01	MW-4	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-01	MW-4	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-01	MW-4	Login	3/20/2015 4:21:43 PM	DES	VW-3
HS15030718-01	MW-4	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-01	MW-4	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-01	MW-4	Login	3/20/2015 4:21:43 PM	DES	Sub
HS15030718-02	MW-5	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-02	MW-5	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-02	MW-5	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-02	MW-5	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-02	MW-5	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-02	MW-5	Login	3/20/2015 4:21:43 PM	DES	VW-3
HS15030718-02	MW-5	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-02	MW-5	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-02	MW-5	Login	3/20/2015 4:21:43 PM	DES	Sub
HS15030718-03	MW-1	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-03	MW-1	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-03	MW-1	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-03	MW-1	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-03	MW-1	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-03	MW-1	Login	3/20/2015 4:21:43 PM	DES	VW-3
HS15030718-03	MW-1	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-03	MW-1	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-03	MW-1	Login	3/20/2015 4:21:43 PM	DES	Sub
HS15030718-04	MW-17	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-04	MW-17	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-04	MW-17	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-04	MW-17	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-04	MW-17	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-04	MW-17	Login	3/20/2015 4:21:43 PM	DES	VW-3
HS15030718-04	MW-17	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-04	MW-17	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-04	MW-17	Login	3/20/2015 4:21:43 PM	DES	Sub
HS15030718-05	MW-18	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-05	MW-18	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-05	MW-18	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-05	MW-18	Login	3/20/2015 4:21:43 PM	DES	17D

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Work Order: HS15030718

SAMPLE TRACKING

HS15030718-05	MW-18	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-05	MW-18	Login	3/20/2015 4:21:43 PM	DES	VW-3
HS15030718-05	MW-18	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-05	MW-18	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-05	MW-18	Login	3/20/2015 4:21:43 PM	DES	Sub
HS15030718-06	MW-19	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-06	MW-19	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-06	MW-19	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-06	MW-19	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-06	MW-19	Login	3/20/2015 4:21:43 PM	DES	17D
HS15030718-06	MW-19	Login	3/20/2015 4:21:43 PM	DES	VW-3
HS15030718-06	MW-19	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-06	MW-19	Login	3/20/2015 4:21:43 PM	DES	TPH C2
HS15030718-06	MW-19	Login	3/20/2015 4:21:43 PM	DES	Sub
HS15030718-07	021715-73	Login	3/21/2015 11:49:56 AM	DES	VW-3

Sample Receipt Checklist

Client Name:	APEX-PORTLAND	Date/Time Received:	**21-Mar-2015 10:15**
Work Order:	HS15030718	Received by:	**DES**

Checklist completed by:	*Derek E Sholl* eSignature	21-Mar-2015 Date	Reviewed by: *Ana L. Spencer* eSignature	23-Mar-2015 Date

Matrices: **Water** Carrier name: **FedEx**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☐	☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	1.6/1.6c C/UC	1
Cooler(s)/Kit(s):	3074	
Date/Time sample(s) sent to storage:	03/21/2015 12:30	

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 118685

HS15030718

Apex Companies

E3CE-0065 Andover Release Site

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	E3CE-0065 Andover Release Site	A	300_W (Sulfate, nitrate, O-Phos)
Work Order		Project Number		B	8260_LL_W (Colt Court GW List)
Company Name	Apex Companies	Bill To Company	Apex Companies	C	ALK_W 2320B
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	ICP_DISS (Dissolved Iron)
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	ICP_TW (Potassium only)
				F	NIT_AMM_W_ISE
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	RSK175 (Methane)
Phone	(503) 924-4704	Phone	(503) 924-4704	H	VPH OA-1_W (HYD-5)
Fax		Fax		I	XXX SUB (SUB CO2 (Simi Valley))
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-4	3-20-2015	0959	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
2	MW-5		1037	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
3	MW-1		1130	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
4	MW-17		1209	GW	VARIOS	15	X	X	X	X	X	X	X	X	X		
5	MW-18	1259	~~1329~~	GW	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
6	MW-19		1329	GW													
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Paul Ward

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) TAT 7 days Other

Results Due Date:

Relinquished by: Date: 3-20-15 Time: 14:30

Received by:

Relinquished by: Date: 3/21/15 Time: 10:15

Received by (Laboratory):

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: [E3CE-0065 Andover Release Site]

Cooler ID	Cooler Temp.
3074	1-6°C

QC Package: (Check One Box Below)

QC Level STD

Other:

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be [illegible]

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ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: [illegible] Time: 14:30
Name: [illegible]
Company: [illegible]

Seal Broken By: [illegible]
Date: 3/21/15

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: [illegible] Time: 14:30
Name: [illegible]
Company: [illegible]

Seal Broken By: [illegible]
Date: 3/21/15

TRK# |0215| 8033 8132 3263

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO SGRA

77099
TX-US IAH

LABORATORY REPORT

March 27, 2015

Kristin Brown
ALS Group USA, Corp.
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS15030718

Dear Kristin:

Enclosed are the results of the samples submitted to our laboratory on March 24, 2015. For your reference, these analyses have been assigned our service request number P1501176.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 3:19 pm, Mar 27, 2015

Kelly Horiuchi
Laboratory Director

CASE NARRATIVE

The samples were received intact under chain of custody on March 24, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is not included on the laboratory's NELAP or AIHA-LAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	876241
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-14-5
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272014-4
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Group USA, Corp.
Project ID: HS15030718

Service Request: P1501176

Date Received: 3/24/2015
Time Received: 10:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2
MW-4	P1501176-001	Water	3/20/2015	09:59	X
MW-5	P1501176-002	Water	3/20/2015	10:37	X
MW-1	P1501176-003	Water	3/20/2015	11:30	X
MW-17	P1501176-004	Water	3/20/2015	12:09	X
MW-18	P1501176-005	Water	3/20/2015	12:59	X
MW-19	P1501176-006	Water	3/21/2015	13:29	X

CHAIN OF CUSTODY RECORD

(ALS) Environmental

Page 1 of 1

Date	21 Mar 2015
COC ID	2469
Due date	31 MAR 15

Subcontractor

ALS Environmental	Phone
2655 Park Center Drive, Suite A	8055267161
Simi Valley, CA 93065	Fax

PISO 1176

Customer Information		Project Information	
PO		Project Name	HS15030718

Company Name	ALS Houston	Company Name	ALS Houston
		Inv Attn	Accounts Payable
Address	10450 Stancliff Rd, Ste 210	Address	10450 Stancliff Rd, Ste 210
	Houston, TX 77099		Houston, TX 77099
Phone	281-530-5656	Phone	281-530-5656
Email1	ana.spencer@alsglobal.com	Email2	jumoke.lawal@alsglobal.com

	Lab ID	Client Samp ID	Collection Date	Matrix	Analysis Requested
1	HS15030718-01	MW-4	20-Mar-15 09:59 am	Water	XXX-NOTANALYZED
2	HS15030718-02	MW-5	20-Mar-15 10:37 am	Water	XXX-NOTANALYZED
3	HS15030718-03	MW-1	20-Mar-15 11:30 am	Water	XXX-NOTANALYZED
4	HS15030718-04	MW-17	20-Mar-15 12:09 pm	Water	XXX-NOTANALYZED
5	HS15030718-05	MW-18	20-Mar-15 12:59 pm	Water	XXX-NOTANALYZED
6	HS15030718-06	MW-19	21-Mar-15 01:29 pm	Water	XXX-NOTANALYZED

CO2

Comments Please analyze for the above and send report to email 1 and cc to email 2.

Relinquished by:	Date/Time:	Received by:	Date/Time:	Cooler IDs:	Report/QC Level
D.S. [signature]	3/23/15 1800	FED EX			
FED EX		K Kepe	3/24/15 1000	2° Blank Wet	

ALS Environmental
Sample Acceptance Check Form

Client: ALS Group USA, Corp. Work order: P1501176

Project: HS15030718

Sample(s) received on: 3/24/15 Date opened: 3/24/15 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by ALS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☒	☐
10	Were **custody seals** on outside of cooler/Box?	☒	☐	☐
	Location of seal(s)? _____ Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1501176-001.01	40mL VOA NP		7		A	MC/WH 3/25/2015
P1501176-002.01	40mL VOA NP		7		A	MC/WH 3/25/2015
P1501176-003.01	40mL VOA NP		7		A	MC/WH 3/25/2015
P1501176-004.01	40mL VOA NP		7		A	MC/WH 3/25/2015
P1501176-005.01	40mL VOA NP		7		A	MC/WH 3/25/2015
P1501176-006.01	40mL VOA NP		7		A	MC/WH 3/25/2015

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Group USA, Corp.**
Client Project ID: **HS15030718**

ALS Project ID: P1501176

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date(s) Collected: 3/20 - 3/21/15
Date Received: 3/24/15
Date Analyzed: 3/25/15

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
MW-4	P1501176-001	0.10	**62,000**	1,000	
MW-5	P1501176-002	0.10	**48,000**	1,000	
MW-1	P1501176-003	0.10	**86,000**	1,000	
MW-17	P1501176-004	0.10	**63,000**	1,000	
MW-18	P1501176-005	0.10	**44,000**	1,000	
MW-19	P1501176-006	0.10	**23,000**	1,000	
Method Control Sample	P150325-MB	0.10	ND	1,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Group USA, Corp.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS15030718**

ALS Project ID: P1501176
ALS Sample ID: P150325-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/25/15
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	21,600	21,200	**94**	**93**	62-139	1	24	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

April 29, 2015

Samuel Jackson
Apex Companies
3015 SW First Avenue
Portland, OR 97201

Work Order: **HS15040819**

Laboratory Results for: **E3CE-0065 Andover Release Site**

Dear Samuel,

ALS Environmental received 8 sample(s) on Apr 21, 2015 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: Dayna.Fisher

Ana L. Spencer

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Work Order: HS15040819

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15040819-01	MW-18	Water		20-Apr-2015 12:27	21-Apr-2015 09:10	☐
HS15040819-02	MW-19	Water		20-Apr-2015 13:15	21-Apr-2015 09:10	☐
HS15040819-03	MW-17	Water		20-Apr-2015 14:40	21-Apr-2015 09:10	☐
HS15040819-04	MW-1	Water		20-Apr-2015 15:22	21-Apr-2015 09:10	☐
HS15040819-05	MW-4	Water		20-Apr-2015 16:04	21-Apr-2015 09:10	☐
HS15040819-06	MW-5	Water		20-Apr-2015 16:47	21-Apr-2015 09:10	☐
HS15040819-07	Trip Blank - 040115-77	Water		20-Apr-2015 00:00	21-Apr-2015 09:10	☐
HS15040819-08	Trip Blank - 040115-76	Water		20-Apr-2015 00:00	21-Apr-2015 09:10	☐

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Work Order: HS15040819

CASE NARRATIVE

Work Order Comments

- The analysis for Carbon Dioxide was subcontracted to ALS Simi Valley, CA.

GC Semivolatiles by Method RSK-175

Batch ID: R253385

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Volatiles by Method IA OA-1

Batch ID: R253178

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R253607,R253680

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R253601

Sample ID: **HS15040888-06**
- MS/MSD is for an unrelated sample.

Metals by Method SW6020

Batch ID: 92635

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 92634

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500 NH3-D

Batch ID: R253566

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R253514

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R253366

Sample ID: **HS15040892-04**
- MS and MSD are for an unrelated sample

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15040819
Sample ID:	MW-18	Lab ID:HS15040819-01
Collection Date:	20-Apr-2015 12:27	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.016**		**0.0010**	**mg/L**	1	28-Apr-2015 03:20
1,2-Dichloroethane	ND		0.0010	mg/L	1	28-Apr-2015 03:20
1,3,5-Trimethylbenzene	**0.016**		**0.0010**	**mg/L**	1	28-Apr-2015 03:20
2-Butanone	ND		0.0020	mg/L	1	28-Apr-2015 03:20
Benzene	**0.20**		**0.0010**	**mg/L**	1	28-Apr-2015 03:20
Cyclohexane	**0.032**		**0.0010**	**mg/L**	1	28-Apr-2015 03:20
Ethylbenzene	**0.091**		**0.0010**	**mg/L**	1	28-Apr-2015 03:20
Isopropylbenzene	**0.094**		**0.0010**	**mg/L**	1	28-Apr-2015 03:20
m,p-Xylene	**0.24**		**0.0020**	**mg/L**	1	28-Apr-2015 03:20
Methylcyclohexane	**0.0039**		**0.0010**	**mg/L**	1	28-Apr-2015 03:20
Naphthalene	**0.0087**		**0.0010**	**mg/L**	1	28-Apr-2015 03:20
n-Butylbenzene	ND		0.0010	mg/L	1	28-Apr-2015 03:20
n-Propylbenzene	**0.0061**		**0.0010**	**mg/L**	1	28-Apr-2015 03:20
o-Xylene	**0.13**		**0.0010**	**mg/L**	1	28-Apr-2015 03:20
Toluene	**0.52**		**0.025**	**mg/L**	25	28-Apr-2015 03:48
Xylenes, Total	**0.37**		**0.0030**	**mg/L**	1	28-Apr-2015 03:20
Surr: 1,2-Dichloroethane-d4	*100*		*71-125*	*%REC*	*1*	*28-Apr-2015 03:20*
Surr: 1,2-Dichloroethane-d4	*98.0*		*71-125*	*%REC*	*25*	*28-Apr-2015 03:48*
Surr: 4-Bromofluorobenzene	*100.0*		*70-125*	*%REC*	*25*	*28-Apr-2015 03:48*
Surr: 4-Bromofluorobenzene	*99.2*		*70-125*	*%REC*	*1*	*28-Apr-2015 03:20*
Surr: Dibromofluoromethane	*96.5*		*74-125*	*%REC*	*25*	*28-Apr-2015 03:48*
Surr: Dibromofluoromethane	*99.5*		*74-125*	*%REC*	*1*	*28-Apr-2015 03:20*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*28-Apr-2015 03:20*
Surr: Toluene-d8	*99.8*		*75-125*	*%REC*	*25*	*28-Apr-2015 03:48*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**343**		**5.00**	**mg/L**	1	26-Apr-2015 12:30
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 12:30
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 12:30
Alkalinity, Total (As CaCO3)	**343**		**5.00**	**mg/L**	1	26-Apr-2015 12:30
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Iron	ND		0.200	mg/L	1	28-Apr-2015 00:56
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: KMB
Methane	**7.72**		**0.500**	**ug/L**	1	23-Apr-2015 10:28
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	29-Apr-2015 07:33
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Apr-2015 15:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15040819
Sample ID:	MW-18	Lab ID:HS15040819-01
Collection Date:	20-Apr-2015 12:27	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Potassium	**21.6**		**0.200**	**mg/L**	1	27-Apr-2015 23:18
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**4.4**		**0.050**	**mg/L**	1	21-Apr-2015 16:15
Surr: 4-Bromofluorobenzene	*123*		*70-130*	*%REC*	*1*	*21-Apr-2015 16:15*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.415**		**0.100**	**mg/L**	1	22-Apr-2015 07:41
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	22-Apr-2015 07:41
Sulfate	**38.0**		**0.500**	**mg/L**	1	22-Apr-2015 07:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15040819
Sample ID:	MW-19	Lab ID:HS15040819-02
Collection Date:	20-Apr-2015 13:15	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.0054**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
1,2-Dichloroethane	ND		0.0010	mg/L	1	27-Apr-2015 19:23
1,3,5-Trimethylbenzene	**0.0053**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
2-Butanone	ND		0.0020	mg/L	1	27-Apr-2015 19:23
Benzene	**0.096**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
Cyclohexane	**0.018**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
Ethylbenzene	**0.027**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
Isopropylbenzene	**0.027**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
m,p-Xylene	**0.060**		**0.0020**	**mg/L**	1	27-Apr-2015 19:23
Methylcyclohexane	**0.0020**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
Naphthalene	**0.0038**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
n-Butylbenzene	ND		0.0010	mg/L	1	27-Apr-2015 19:23
n-Propylbenzene	**0.0022**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
o-Xylene	**0.037**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
Toluene	**0.088**		**0.0010**	**mg/L**	1	27-Apr-2015 19:23
Xylenes, Total	**0.098**		**0.0030**	**mg/L**	1	27-Apr-2015 19:23
Surr: 1,2-Dichloroethane-d4	*94.9*		*71-125*	*%REC*	*1*	*27-Apr-2015 19:23*
Surr: 4-Bromofluorobenzene	*99.2*		*70-125*	*%REC*	*1*	*27-Apr-2015 19:23*
Surr: Dibromofluoromethane	*96.2*		*74-125*	*%REC*	*1*	*27-Apr-2015 19:23*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*27-Apr-2015 19:23*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**332**		**5.00**	**mg/L**	1	26-Apr-2015 12:36
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 12:36
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 12:36
Alkalinity, Total (As CaCO3)	**332**		**5.00**	**mg/L**	1	26-Apr-2015 12:36
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Iron	ND		0.200	mg/L	1	28-Apr-2015 01:01
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: KMB
Methane	**3.36**		**0.500**	**ug/L**	1	23-Apr-2015 10:43
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	29-Apr-2015 07:33
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Apr-2015 15:09
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Potassium	**10.7**		**0.200**	**mg/L**	1	27-Apr-2015 23:23
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**1.5**		**0.050**	**mg/L**	1	21-Apr-2015 16:30
Surr: 4-Bromofluorobenzene	*126*		*70-130*	*%REC*	*1*	*21-Apr-2015 16:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ANALYTICAL REPORT

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Sample ID: MW-19
Collection Date: 20-Apr-2015 13:15

WorkOrder:HS15040819
Lab ID:HS15040819-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.258**		**0.100**	**mg/L**	1	22-Apr-2015 08:05
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	22-Apr-2015 08:05
Sulfate	**53.5**		**0.500**	**mg/L**	1	22-Apr-2015 08:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15040819
Sample ID:	MW-17	Lab ID:HS15040819-03
Collection Date:	20-Apr-2015 14:40	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.020**		**0.0010**	**mg/L**	1	28-Apr-2015 04:13
1,2-Dichloroethane	ND		0.0010	mg/L	1	28-Apr-2015 04:13
1,3,5-Trimethylbenzene	**0.022**		**0.0010**	**mg/L**	1	28-Apr-2015 04:13
2-Butanone	ND		0.0020	mg/L	1	28-Apr-2015 04:13
Benzene	**0.36**		**0.010**	**mg/L**	10	28-Apr-2015 04:41
Cyclohexane	**0.075**		**0.0010**	**mg/L**	1	28-Apr-2015 04:13
Ethylbenzene	**0.084**		**0.0010**	**mg/L**	1	28-Apr-2015 04:13
Isopropylbenzene	**0.098**		**0.0010**	**mg/L**	1	28-Apr-2015 04:13
m,p-Xylene	**0.23**		**0.0020**	**mg/L**	1	28-Apr-2015 04:13
Methylcyclohexane	**0.0087**		**0.0010**	**mg/L**	1	28-Apr-2015 04:13
Naphthalene	**0.0072**		**0.0010**	**mg/L**	1	28-Apr-2015 04:13
n-Butylbenzene	ND		0.0010	mg/L	1	28-Apr-2015 04:13
n-Propylbenzene	**0.0052**		**0.0010**	**mg/L**	1	28-Apr-2015 04:13
o-Xylene	**0.13**		**0.0010**	**mg/L**	1	28-Apr-2015 04:13
Toluene	**0.29**		**0.010**	**mg/L**	10	28-Apr-2015 04:41
Xylenes, Total	**0.36**		**0.0030**	**mg/L**	1	28-Apr-2015 04:13
Surr: 1,2-Dichloroethane-d4	*101*		*71-125*	*%REC*	*10*	*28-Apr-2015 04:41*
Surr: 1,2-Dichloroethane-d4	*97.1*		*71-125*	*%REC*	*1*	*28-Apr-2015 04:13*
Surr: 4-Bromofluorobenzene	*100*		*70-125*	*%REC*	*1*	*28-Apr-2015 04:13*
Surr: 4-Bromofluorobenzene	*97.9*		*70-125*	*%REC*	*10*	*28-Apr-2015 04:41*
Surr: Dibromofluoromethane	*97.5*		*74-125*	*%REC*	*10*	*28-Apr-2015 04:41*
Surr: Dibromofluoromethane	*98.0*		*74-125*	*%REC*	*1*	*28-Apr-2015 04:13*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*10*	*28-Apr-2015 04:41*
Surr: Toluene-d8	*99.6*		*75-125*	*%REC*	*1*	*28-Apr-2015 04:13*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**455**		**5.00**	**mg/L**	1	26-Apr-2015 12:42
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 12:42
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 12:42
Alkalinity, Total (As CaCO3)	**455**		**5.00**	**mg/L**	1	26-Apr-2015 12:42
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Iron	ND		0.200	mg/L	1	28-Apr-2015 01:05
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: KMB
Methane	**3.11**		**0.500**	**ug/L**	1	23-Apr-2015 11:00
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	29-Apr-2015 07:33
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Apr-2015 15:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15040819
Sample ID:	MW-17	Lab ID:HS15040819-03
Collection Date:	20-Apr-2015 14:40	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Potassium	**15.7**		**0.200**	**mg/L**	1	27-Apr-2015 23:27
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**5.1**		**0.050**	**mg/L**	1	21-Apr-2015 16:46
Surr: 4-Bromofluorobenzene	*127*		*70-130*	*%REC*	*1*	*21-Apr-2015 16:46*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.280**		**0.100**	**mg/L**	1	22-Apr-2015 08:29
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	22-Apr-2015 08:29
Sulfate	**36.0**		**0.500**	**mg/L**	1	22-Apr-2015 08:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15040819
Sample ID:	MW-1	Lab ID:HS15040819-04
Collection Date:	20-Apr-2015 15:22	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.074**		**0.0010**	**mg/L**	1	27-Apr-2015 19:48
1,2-Dichloroethane	ND		0.0010	mg/L	1	27-Apr-2015 19:48
1,3,5-Trimethylbenzene	**0.093**		**0.0010**	**mg/L**	1	27-Apr-2015 19:48
2-Butanone	ND		0.0020	mg/L	1	27-Apr-2015 19:48
Benzene	**0.077**		**0.0010**	**mg/L**	1	27-Apr-2015 19:48
Cyclohexane	**0.072**		**0.0010**	**mg/L**	1	27-Apr-2015 19:48
Ethylbenzene	**0.11**		**0.0010**	**mg/L**	1	27-Apr-2015 19:48
Isopropylbenzene	**0.15**		**0.0010**	**mg/L**	1	27-Apr-2015 19:48
m,p-Xylene	**0.39**		**0.010**	**mg/L**	5	28-Apr-2015 20:00
Methylcyclohexane	**0.023**		**0.0010**	**mg/L**	1	27-Apr-2015 19:48
Naphthalene	**0.027**		**0.0010**	**mg/L**	1	27-Apr-2015 19:48
n-Butylbenzene	**0.019**		**0.0010**	**mg/L**	1	27-Apr-2015 19:48
n-Propylbenzene	**0.025**		**0.0010**	**mg/L**	1	27-Apr-2015 19:48
o-Xylene	**0.21**		**0.0050**	**mg/L**	5	28-Apr-2015 20:00
Toluene	**0.25**		**0.0050**	**mg/L**	5	28-Apr-2015 20:00
Xylenes, Total	**0.60**		**0.015**	**mg/L**	5	28-Apr-2015 20:00
Surr: 1,2-Dichloroethane-d4	*96.6*		*71-125*	*%REC*	*1*	*27-Apr-2015 19:48*
Surr: 1,2-Dichloroethane-d4	*100*		*71-125*	*%REC*	*5*	*28-Apr-2015 20:00*
Surr: 4-Bromofluorobenzene	*102*		*70-125*	*%REC*	*1*	*27-Apr-2015 19:48*
Surr: 4-Bromofluorobenzene	*99.8*		*70-125*	*%REC*	*5*	*28-Apr-2015 20:00*
Surr: Dibromofluoromethane	*99.2*		*74-125*	*%REC*	*1*	*27-Apr-2015 19:48*
Surr: Dibromofluoromethane	*97.1*		*74-125*	*%REC*	*5*	*28-Apr-2015 20:00*
Surr: Toluene-d8	*99.9*		*75-125*	*%REC*	*1*	*27-Apr-2015 19:48*
Surr: Toluene-d8	*104*		*75-125*	*%REC*	*5*	*28-Apr-2015 20:00*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**465**		**5.00**	**mg/L**	1	26-Apr-2015 12:47
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 12:47
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 12:47
Alkalinity, Total (As CaCO3)	**465**		**5.00**	**mg/L**	1	26-Apr-2015 12:47
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Iron	ND		0.200	mg/L	1	28-Apr-2015 01:10
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: KMB
Methane	**132**		**5.00**	**ug/L**	10	23-Apr-2015 12:51
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	29-Apr-2015 07:33
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Apr-2015 15:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ANALYTICAL REPORT

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Sample ID: MW-1
Collection Date: 20-Apr-2015 15:22

WorkOrder:HS15040819
Lab ID:HS15040819-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Potassium	**5.87**		**0.200**	**mg/L**	1	27-Apr-2015 23:31
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**7.0**		**0.050**	**mg/L**	1	21-Apr-2015 17:02
Surr: 4-Bromofluorobenzene	*127*		*70-130*	*%REC*	*1*	*21-Apr-2015 17:02*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.288**		**0.100**	**mg/L**	1	22-Apr-2015 08:53
Phosphorus, Orthophosphate (As P)	**0.476**		**0.100**	**mg/L**	1	22-Apr-2015 08:53
Sulfate	**6.17**		**0.500**	**mg/L**	1	22-Apr-2015 08:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15040819
Sample ID:	MW-4	Lab ID:HS15040819-05
Collection Date:	20-Apr-2015 16:04	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	27-Apr-2015 20:39
1,2-Dichloroethane	ND		0.0010	mg/L	1	27-Apr-2015 20:39
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	27-Apr-2015 20:39
2-Butanone	ND		0.0020	mg/L	1	27-Apr-2015 20:39
Benzene	ND		0.0010	mg/L	1	27-Apr-2015 20:39
Cyclohexane	ND		0.0010	mg/L	1	27-Apr-2015 20:39
Ethylbenzene	**0.0013**		**0.0010**	**mg/L**	1	27-Apr-2015 20:39
Isopropylbenzene	ND		0.0010	mg/L	1	27-Apr-2015 20:39
m,p-Xylene	**0.0032**		**0.0020**	**mg/L**	1	27-Apr-2015 20:39
Methylcyclohexane	ND		0.0010	mg/L	1	27-Apr-2015 20:39
Naphthalene	**0.0017**		**0.0010**	**mg/L**	1	27-Apr-2015 20:39
n-Butylbenzene	ND		0.0010	mg/L	1	27-Apr-2015 20:39
n-Propylbenzene	ND		0.0010	mg/L	1	27-Apr-2015 20:39
o-Xylene	**0.0015**		**0.0010**	**mg/L**	1	27-Apr-2015 20:39
Toluene	**0.0018**		**0.0010**	**mg/L**	1	27-Apr-2015 20:39
Xylenes, Total	**0.0047**		**0.0030**	**mg/L**	1	27-Apr-2015 20:39
Surr: 1,2-Dichloroethane-d4	*99.2*		*71-125*	*%REC*	*1*	*27-Apr-2015 20:39*
Surr: 4-Bromofluorobenzene	*98.7*		*70-125*	*%REC*	*1*	*27-Apr-2015 20:39*
Surr: Dibromofluoromethane	*98.4*		*74-125*	*%REC*	*1*	*27-Apr-2015 20:39*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*27-Apr-2015 20:39*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**319**		**5.00**	**mg/L**	1	26-Apr-2015 12:53
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 12:53
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 12:53
Alkalinity, Total (As CaCO3)	**319**		**5.00**	**mg/L**	1	26-Apr-2015 12:53
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Iron	ND		0.200	mg/L	1	28-Apr-2015 01:14
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: KMB
Methane	**41.7**		**1.00**	**ug/L**	2	23-Apr-2015 13:16
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	29-Apr-2015 07:33
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Apr-2015 15:09
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Potassium	**2.44**		**0.200**	**mg/L**	1	27-Apr-2015 23:36
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**0.083**		**0.050**	**mg/L**	1	21-Apr-2015 17:18
Surr: 4-Bromofluorobenzene	*124*		*70-130*	*%REC*	*1*	*21-Apr-2015 17:18*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15040819
Sample ID:	MW-4	Lab ID:HS15040819-05
Collection Date:	20-Apr-2015 16:04	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**1.12**		**0.100**	**mg/L**	1	22-Apr-2015 09:17
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	22-Apr-2015 09:17
Sulfate	**45.1**		**0.500**	**mg/L**	1	22-Apr-2015 09:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	E3CE-0065 Andover Release Site	WorkOrder:HS15040819
Sample ID:	MW-5	Lab ID:HS15040819-06
Collection Date:	20-Apr-2015 16:47	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.0015**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
1,2-Dichloroethane	ND		0.0010	mg/L	1	27-Apr-2015 20:13
1,3,5-Trimethylbenzene	**0.0062**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
2-Butanone	ND		0.0020	mg/L	1	27-Apr-2015 20:13
Benzene	**0.057**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
Cyclohexane	**0.052**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
Ethylbenzene	**0.039**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
Isopropylbenzene	**0.0052**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
m,p-Xylene	**0.024**		**0.0020**	**mg/L**	1	27-Apr-2015 20:13
Methylcyclohexane	**0.0042**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
Naphthalene	**0.022**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
n-Butylbenzene	**0.0019**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
n-Propylbenzene	**0.0096**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
o-Xylene	**0.0072**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
Toluene	**0.012**		**0.0010**	**mg/L**	1	27-Apr-2015 20:13
Xylenes, Total	**0.031**		**0.0030**	**mg/L**	1	27-Apr-2015 20:13
Surr: 1,2-Dichloroethane-d4	*97.8*		*71-125*	*%REC*	*1*	*27-Apr-2015 20:13*
Surr: 4-Bromofluorobenzene	*99.3*		*70-125*	*%REC*	*1*	*27-Apr-2015 20:13*
Surr: Dibromofluoromethane	*98.3*		*74-125*	*%REC*	*1*	*27-Apr-2015 20:13*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*27-Apr-2015 20:13*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**434**		**5.00**	**mg/L**	1	26-Apr-2015 13:00
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 13:00
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	26-Apr-2015 13:00
Alkalinity, Total (As CaCO3)	**434**		**5.00**	**mg/L**	1	26-Apr-2015 13:00
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Iron	ND		0.200	mg/L	1	28-Apr-2015 00:08
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: KMB
Methane	**2.72**		**0.500**	**ug/L**	1	23-Apr-2015 11:42
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	29-Apr-2015 07:33
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Apr-2015 15:09
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Apr-2015		Analyst: ALR
Potassium	**0.655**		**0.200**	**mg/L**	1	27-Apr-2015 23:40
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**1.5**		**0.050**	**mg/L**	1	21-Apr-2015 17:33
Surr: 4-Bromofluorobenzene	*126*		*70-130*	*%REC*	*1*	*21-Apr-2015 17:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ANALYTICAL REPORT

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Sample ID: MW-5
Collection Date: 20-Apr-2015 16:47

WorkOrder:HS15040819
Lab ID:HS15040819-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**3.55**		**0.100**	**mg/L**	1	22-Apr-2015 10:29
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	22-Apr-2015 10:29
Sulfate	**176**		**2.50**	**mg/L**	5	22-Apr-2015 10:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 92634	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS15040819-01	MW-18	20 Apr 2015 12:27		22 Apr 2015 10:18	27 Apr 2015 23:18	1
HS15040819-02	MW-19	20 Apr 2015 13:15		22 Apr 2015 10:18	27 Apr 2015 23:23	1
HS15040819-03	MW-17	20 Apr 2015 14:40		22 Apr 2015 10:18	27 Apr 2015 23:27	1
HS15040819-04	MW-1	20 Apr 2015 15:22		22 Apr 2015 10:18	27 Apr 2015 23:31	1
HS15040819-05	MW-4	20 Apr 2015 16:04		22 Apr 2015 10:18	27 Apr 2015 23:36	1
HS15040819-06	MW-5	20 Apr 2015 16:47		22 Apr 2015 10:18	27 Apr 2015 23:40	1
Batch ID 92635	**Test Name :** DISSOLVED METALS BY SW6020A			**Matrix:** Water		
HS15040819-01	MW-18	20 Apr 2015 12:27		22 Apr 2015 10:30	28 Apr 2015 00:56	1
HS15040819-02	MW-19	20 Apr 2015 13:15		22 Apr 2015 10:30	28 Apr 2015 01:01	1
HS15040819-03	MW-17	20 Apr 2015 14:40		22 Apr 2015 10:30	28 Apr 2015 01:05	1
HS15040819-04	MW-1	20 Apr 2015 15:22		22 Apr 2015 10:30	28 Apr 2015 01:10	1
HS15040819-05	MW-4	20 Apr 2015 16:04		22 Apr 2015 10:30	28 Apr 2015 01:14	1
HS15040819-06	MW-5	20 Apr 2015 16:47		22 Apr 2015 10:30	28 Apr 2015 00:08	1
Batch ID R253178	**Test Name :** VPH - IOWA OA-1			**Matrix:** Water		
HS15040819-01	MW-18	20 Apr 2015 12:27			21 Apr 2015 16:15	1
HS15040819-02	MW-19	20 Apr 2015 13:15			21 Apr 2015 16:30	1
HS15040819-03	MW-17	20 Apr 2015 14:40			21 Apr 2015 16:46	1
HS15040819-04	MW-1	20 Apr 2015 15:22			21 Apr 2015 17:02	1
HS15040819-05	MW-4	20 Apr 2015 16:04			21 Apr 2015 17:18	1
HS15040819-06	MW-5	20 Apr 2015 16:47			21 Apr 2015 17:33	1
Batch ID R253366	**Test Name :** ANIONS BY E300.0			**Matrix:** Water		
HS15040819-01	MW-18	20 Apr 2015 12:27			22 Apr 2015 07:41	1
HS15040819-02	MW-19	20 Apr 2015 13:15			22 Apr 2015 08:05	1
HS15040819-03	MW-17	20 Apr 2015 14:40			22 Apr 2015 08:29	1
HS15040819-04	MW-1	20 Apr 2015 15:22			22 Apr 2015 08:53	1
HS15040819-05	MW-4	20 Apr 2015 16:04			22 Apr 2015 09:17	1
HS15040819-06	MW-5	20 Apr 2015 16:47			22 Apr 2015 10:53	5
HS15040819-06	MW-5	20 Apr 2015 16:47			22 Apr 2015 10:29	1
Batch ID R253385	**Test Name :** DISSOLVED GASES BY RSK-175			**Matrix:** Water		
HS15040819-01	MW-18	20 Apr 2015 12:27			23 Apr 2015 10:28	1
HS15040819-02	MW-19	20 Apr 2015 13:15			23 Apr 2015 10:43	1
HS15040819-03	MW-17	20 Apr 2015 14:40			23 Apr 2015 11:00	1
HS15040819-04	MW-1	20 Apr 2015 15:22			23 Apr 2015 12:51	10
HS15040819-05	MW-4	20 Apr 2015 16:04			23 Apr 2015 13:16	2
HS15040819-06	MW-5	20 Apr 2015 16:47			23 Apr 2015 11:42	1

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R253514	**Test Name :** ALKALINITY BY SM2320B			**Matrix:** Water		
HS15040819-01	MW-18	20 Apr 2015 12:27			26 Apr 2015 12:30	1
HS15040819-02	MW-19	20 Apr 2015 13:15			26 Apr 2015 12:36	1
HS15040819-03	MW-17	20 Apr 2015 14:40			26 Apr 2015 12:42	1
HS15040819-04	MW-1	20 Apr 2015 15:22			26 Apr 2015 12:47	1
HS15040819-05	MW-4	20 Apr 2015 16:04			26 Apr 2015 12:53	1
HS15040819-06	MW-5	20 Apr 2015 16:47			26 Apr 2015 13:00	1
Batch ID R253566	**Test Name :** AMMONIA AS N BY SM4500 NH3-D (ISE)			**Matrix:** Water		
HS15040819-01	MW-18	20 Apr 2015 12:27			27 Apr 2015 15:09	1
HS15040819-02	MW-19	20 Apr 2015 13:15			27 Apr 2015 15:09	1
HS15040819-03	MW-17	20 Apr 2015 14:40			27 Apr 2015 15:09	1
HS15040819-04	MW-1	20 Apr 2015 15:22			27 Apr 2015 15:09	1
HS15040819-05	MW-4	20 Apr 2015 16:04			27 Apr 2015 15:09	1
HS15040819-06	MW-5	20 Apr 2015 16:47			27 Apr 2015 15:09	1
Batch ID R253601	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15040819-02	MW-19	20 Apr 2015 13:15			27 Apr 2015 19:23	1
HS15040819-04	MW-1	20 Apr 2015 15:22			27 Apr 2015 19:48	1
HS15040819-05	MW-4	20 Apr 2015 16:04			27 Apr 2015 20:39	1
HS15040819-06	MW-5	20 Apr 2015 16:47			27 Apr 2015 20:13	1
Batch ID R253607	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15040819-01	MW-18	20 Apr 2015 12:27			28 Apr 2015 03:48	25
HS15040819-01	MW-18	20 Apr 2015 12:27			28 Apr 2015 03:20	1
HS15040819-03	MW-17	20 Apr 2015 14:40			28 Apr 2015 04:41	10
HS15040819-03	MW-17	20 Apr 2015 14:40			28 Apr 2015 04:13	1
Batch ID R253665	**Test Name :** SUBCONTRACT ANALYSIS			**Matrix:** Water		
HS15040819-01	MW-18	20 Apr 2015 12:27			29 Apr 2015 07:33	1
HS15040819-02	MW-19	20 Apr 2015 13:15			29 Apr 2015 07:33	1
HS15040819-03	MW-17	20 Apr 2015 14:40			29 Apr 2015 07:33	1
HS15040819-04	MW-1	20 Apr 2015 15:22			29 Apr 2015 07:33	1
HS15040819-05	MW-4	20 Apr 2015 16:04			29 Apr 2015 07:33	1
HS15040819-06	MW-5	20 Apr 2015 16:47			29 Apr 2015 07:33	1
Batch ID R253680	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15040819-04	MW-1	20 Apr 2015 15:22			28 Apr 2015 20:00	5

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253385 **Instrument: FID-4** **Method: RSK-175**

MBLK Sample ID: **GBLKW1-150423** Units: **ug/L** Analysis Date: **23-Apr-2015 09:20**
Client ID: Run ID: **FID-4_253385** SeqNo: **3259164** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	ND	0.500								

LCS Sample ID: **GLCSW1-150423** Units: **ug/L** Analysis Date: **23-Apr-2015 08:45**
Client ID: Run ID: **FID-4_253385** SeqNo: **3259162** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	10.3	0.500	9.647	0	107	75 - 125				

LCSD Sample ID: **GLCSDW1-150423** Units: **ug/L** Analysis Date: **23-Apr-2015 09:06**
Client ID: Run ID: **FID-4_253385** SeqNo: **3259163** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	10.48	0.500	9.647	0	109	75 - 125	10.3	1.73	30	

DUP Sample ID: **HS15040892-06DUP** Units: **ug/L** Analysis Date: **23-Apr-2015 12:27**
Client ID: Run ID: **FID-4_253385** SeqNo: **3259167** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	12.5	0.500					12.26	1.95	30	

The following samples were anayzed in this batch: HS15040819-01 HS15040819-02 HS15040819-03 HS15040819-04 HS15040819-05 HS15040819-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253178 **Instrument: FID-14** **Method: IA OA-1**

MBLK Sample ID: **GBLKW-150421** Units: **mg/L** Analysis Date: **21-Apr-2015 12:46**
Client ID: Run ID: **FID-14_253178** SeqNo: **3256159** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	*0.1247*	*0.0050*	*0.1*	*0*	*125*	*70 - 130*				

LCS Sample ID: **GLCS-150421** Units: **mg/L** Analysis Date: **21-Apr-2015 11:30**
Client ID: Run ID: **FID-14_253178** SeqNo: **3256157** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.207	0.050	1	0	121	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1204*	*0.0050*	*0.1*	*0*	*120*	*70 - 130*				

MS Sample ID: **HS15040704-01MS** Units: **mg/L** Analysis Date: **21-Apr-2015 13:17**
Client ID: Run ID: **FID-14_253178** SeqNo: **3256161** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.621	0.050	1	0.6171	100	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1234*	*0.0050*	*0.1*	*0*	*123*	*70 - 130*				

MSD Sample ID: **HS15040704-01MSD** Units: **mg/L** Analysis Date: **21-Apr-2015 13:33**
Client ID: Run ID: **FID-14_253178** SeqNo: **3256162** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.717	0.050	1	0.6171	110	70 - 130	1.621	5.77	30	
Surr: 4-Bromofluorobenzene	*0.124*	*0.0050*	*0.1*	*0*	*124*	*70 - 130*	*0.1234*	*0.534*	*30*	

The following samples were anayzed in this batch: HS15040819-01 HS15040819-02 HS15040819-03 HS15040819-04 HS15040819-05 HS15040819-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: 92634 **Instrument: ICPMS04** **Method: SW6020**

MBLK Sample ID: **MBLK-92634** Units: **mg/L** Analysis Date: **27-Apr-2015 21:52**
Client ID: Run ID: **ICPMS04_253547** SeqNo: **3263784** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	ND	0.200								

LCS Sample ID: **MLCS-92634** Units: **mg/L** Analysis Date: **28-Apr-2015 17:11**
Client ID: Run ID: **ICPMS04_253632** SeqNo: **3265246** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	5.187	0.200	5	0	104	80 - 120				

MS Sample ID: **HS15040846-03MS** Units: **mg/L** Analysis Date: **28-Apr-2015 17:29**
Client ID: Run ID: **ICPMS04_253632** SeqNo: **3265250** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	8.952	0.200	5	4.172	95.6	80 - 120				

MSD Sample ID: **HS15040846-03MSD** Units: **mg/L** Analysis Date: **28-Apr-2015 17:33**
Client ID: Run ID: **ICPMS04_253632** SeqNo: **3265251** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	9.494	0.200	5	4.172	106	80 - 120	8.952	5.88	20	

DUP Sample ID: **HS15040846-03DUP** Units: **mg/L** Analysis Date: **28-Apr-2015 17:20**
Client ID: Run ID: **ICPMS04_253632** SeqNo: **3265248** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	4.191	0.200					4.172	0.445	20	

PDS Sample ID: **HS15040846-03BS** Units: **mg/L** Analysis Date: **28-Apr-2015 17:37**
Client ID: Run ID: **ICPMS04_253632** SeqNo: **3265252** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	13.8	0.200	10	4.172	96.2	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: 92634 **Instrument: ICPMS04** **Method: SW6020**

SD Sample ID: **HS15040846-03 DIL SX** Units: **mg/L** Analysis Date: **28-Apr-2015 17:24**
Client ID: Run ID: **ICPMS04_253632** SeqNo: **3265249** PrepDate: **22-Apr-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Potassium	4.329	1.00					4.172	3.75	10	

The following samples were anayzed in this batch: HS15040819-01 HS15040819-02 HS15040819-03 HS15040819-04 HS15040819-05 HS15040819-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: 92635 **Instrument: ICPMS04** **Method: SW6020 (DISSOLVED)**

MBLK Sample ID: **MBLKF1-92635** Units: **mg/L** Analysis Date: **27-Apr-2015 23:54**
Client ID: Run ID: **ICPMS04_253547** SeqNo: **3263838** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

MBLK Sample ID: **MBLK-92635** Units: **mg/L** Analysis Date: **27-Apr-2015 23:58**
Client ID: Run ID: **ICPMS04_253547** SeqNo: **3263839** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

LCS Sample ID: **MLCS-92635** Units: **mg/L** Analysis Date: **28-Apr-2015 00:03**
Client ID: Run ID: **ICPMS04_253547** SeqNo: **3263840** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.177	0.200	5	0	104	80 - 120				

MS Sample ID: **HS15040819-06MS** Units: **mg/L** Analysis Date: **28-Apr-2015 00:21**
Client ID: **MW-5** Run ID: **ICPMS04_253547** SeqNo: **3263844** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.152	0.200	5	0.01157	103	75 - 125				

MSD Sample ID: **HS15040819-06MSD** Units: **mg/L** Analysis Date: **28-Apr-2015 00:25**
Client ID: **MW-5** Run ID: **ICPMS04_253547** SeqNo: **3263845** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.176	0.200	5	0.01157	103	75 - 125	5.152	0.457	20	

DUP Sample ID: **HS15040819-06DUP** Units: **mg/L** Analysis Date: **28-Apr-2015 00:12**
Client ID: **MW-5** Run ID: **ICPMS04_253547** SeqNo: **3263842** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200					0.01157	0	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: 92635 **Instrument: ICPMS04** **Method: SW6020 (DISSOLVED)**

PDS Sample ID: **HS15040819-06BS** Units: **mg/L** Analysis Date: **28-Apr-2015 00:30**
Client ID: **MW-5** Run ID: **ICPMS04_253547** SeqNo: **3263846** PrepDate: **22-Apr-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.86	0.200	10	0.01157	98.5	75 - 125				

SD Sample ID: **HS15040819-06 DIL SX** Units: **mg/L** Analysis Date: **28-Apr-2015 00:17**
Client ID: **MW-5** Run ID: **ICPMS04_253547** SeqNo: **3263843** PrepDate: **22-Apr-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	ND	1.00					0.01157	0	10	

The following samples were anayzed in this batch: HS15040819-01 HS15040819-02 HS15040819-03 HS15040819-04 HS15040819-05 HS15040819-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253601 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-150427** Units: **ug/L** Analysis Date: **27-Apr-2015 11:40**
Client ID: Run ID: **VOA2_253601** SeqNo: **3263678** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*49.09*	*1.0*	*50*	*0*	*98.2*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.51*	*1.0*	*50*	*0*	*99.0*	*70 - 125*				
Surr: Dibromofluoromethane	*49.1*	*1.0*	*50*	*0*	*98.2*	*74 - 125*				
Surr: Toluene-d8	*50.41*	*1.0*	*50*	*0*	*101*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253601 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-150427** Units: **ug/L** Analysis Date: **27-Apr-2015 10:49**
Client ID: Run ID: **VOA2_253601** SeqNo: **3263677** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	46.64	1.0	50	0	93.3	70 - 125				
1,2-Dichloroethane	44.54	1.0	50	0	89.1	76 - 120				
1,3,5-Trimethylbenzene	47.87	1.0	50	0	95.7	80 - 123				
2-Butanone	82.36	2.0	100	0	82.4	60 - 140				
Benzene	45.7	1.0	50	0	91.4	80 - 120				
Cyclohexane	46.75	1.0	50	0	93.5	70 - 130				
Ethylbenzene	48.25	1.0	50	0	96.5	80 - 120				
Isopropylbenzene	46.35	1.0	50	0	92.7	75 - 130				
m,p-Xylene	93.5	2.0	100	0	93.5	80 - 120				
Methylcyclohexane	47.61	1.0	50	0	95.2	70 - 126				
Naphthalene	44.36	1.0	50	0	88.7	65 - 135				
n-Butylbenzene	48.3	1.0	50	0	96.6	75 - 128				
n-Propylbenzene	47.7	1.0	50	0	95.4	75 - 130				
o-Xylene	46.8	1.0	50	0	93.6	80 - 120				
Toluene	45.92	1.0	50	0	91.8	75 - 121				
Xylenes, Total	140.3	3.0	150	0	93.5	79 - 124				
Surr: 1,2-Dichloroethane-d4	*46.67*	*1.0*	*50*	*0*	*93.3*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.12*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*49.96*	*1.0*	*50*	*0*	*99.9*	*74 - 125*				
Surr: Toluene-d8	*50.61*	*1.0*	*50*	*0*	*101*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253601 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS15040888-06MS** Units: **ug/L** Analysis Date: **27-Apr-2015 13:46**
Client ID: Run ID: **VOA2_253601** SeqNo: **3263682** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	42.15	1.0	50	0.4628	83.4	70 - 125				
1,2-Dichloroethane	44.27	1.0	50	0.4188	87.7	76 - 120				
1,3,5-Trimethylbenzene	42.3	1.0	50	0.5366	83.5	80 - 123				
2-Butanone	86.5	2.0	100	0	86.5	60 - 140				
Benzene	65.35	1.0	50	19.39	91.9	80 - 120				
Cyclohexane	44.76	1.0	50	2.179	85.2	70 - 130				
Ethylbenzene	44.75	1.0	50	0.8107	87.9	80 - 120				
Isopropylbenzene	42.67	1.0	50	0	85.3	75 - 130				
m,p-Xylene	87.33	2.0	100	0.6528	86.7	80 - 120				
Methylcyclohexane	42.32	1.0	50	0	84.6	70 - 126				
Naphthalene	38.48	1.0	50	1.886	73.2	65 - 135				
n-Butylbenzene	36.22	1.0	50	1.031	70.4	75 - 128				S
n-Propylbenzene	40.98	1.0	50	0.4767	81.0	75 - 130				
o-Xylene	43.98	1.0	50	0.6716	86.6	80 - 120				
Toluene	45.84	1.0	50	2.029	87.6	75 - 121				
Xylenes, Total	131.3	3.0	150	1.324	86.7	80 - 124				
Surr: 1,2-Dichloroethane-d4	*47.56*	*1.0*	*50*	*0*	*95.1*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.84*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*48.76*	*1.0*	*50*	*0*	*97.5*	*74 - 125*				
Surr: Toluene-d8	*49.99*	*1.0*	*50*	*0*	*100.0*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253601 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS15040888-06MSD** Units: **ug/L** Analysis Date: **27-Apr-2015 14:11**
Client ID: Run ID: **VOA2_253601** SeqNo: **3263683** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	42.45	1.0	50	0.4628	84.0	70 - 125	42.15	0.711	20	
1,2-Dichloroethane	44.96	1.0	50	0.4188	89.1	76 - 120	44.27	1.57	20	
1,3,5-Trimethylbenzene	42.4	1.0	50	0.5366	83.7	80 - 123	42.3	0.232	20	
2-Butanone	86.98	2.0	100	0	87.0	60 - 140	86.5	0.554	20	
Benzene	63.8	1.0	50	19.39	88.8	80 - 120	65.35	2.4	20	
Cyclohexane	44.99	1.0	50	2.179	85.6	70 - 130	44.76	0.511	20	
Ethylbenzene	44.64	1.0	50	0.8107	87.7	80 - 120	44.75	0.228	20	
Isopropylbenzene	42.42	1.0	50	0	84.8	75 - 130	42.67	0.595	20	
m,p-Xylene	87.59	2.0	100	0.6528	86.9	80 - 120	87.33	0.297	20	
Methylcyclohexane	40.01	1.0	50	0	80.0	70 - 126	42.32	5.61	20	
Naphthalene	39.73	1.0	50	1.886	75.7	65 - 135	38.48	3.21	20	
n-Butylbenzene	36.4	1.0	50	1.031	70.7	75 - 128	36.22	0.494	20	S
n-Propylbenzene	41.44	1.0	50	0.4767	81.9	75 - 130	40.98	1.1	20	
o-Xylene	44.39	1.0	50	0.6716	87.4	80 - 120	43.98	0.933	20	
Toluene	45.61	1.0	50	2.029	87.2	75 - 121	45.84	0.489	20	
Xylenes, Total	132	3.0	150	1.324	87.1	80 - 124	131.3	0.511	20	
Surr: 1,2-Dichloroethane-d4	*49.03*	*1.0*	*50*	*0*	*98.1*	*71 - 125*	*47.56*	*3.05*	*20*	
Surr: 4-Bromofluorobenzene	*51.11*	*1.0*	*50*	*0*	*102*	*70 - 125*	*50.84*	*0.529*	*20*	
Surr: Dibromofluoromethane	*49.11*	*1.0*	*50*	*0*	*98.2*	*74 - 125*	*48.76*	*0.712*	*20*	
Surr: Toluene-d8	*49.99*	*1.0*	*50*	*0*	*100.0*	*75 - 125*	*49.99*	*0.00789*	*20*	

The following samples were anayzed in this batch: HS15040819-02 HS15040819-04 HS15040819-05 HS15040819-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253607 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-150427** Units: **ug/L** Analysis Date: **27-Apr-2015 23:09**
Client ID: Run ID: **VOA2_253607** SeqNo: **3263815** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*48.86*	*1.0*	*50*	*0*	*97.7*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*48.81*	*1.0*	*50*	*0*	*97.6*	*70 - 125*				
Surr: Dibromofluoromethane	*49.41*	*1.0*	*50*	*0*	*98.8*	*74 - 125*				
Surr: Toluene-d8	*51.18*	*1.0*	*50*	*0*	*102*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253607 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-150427** Units: **ug/L** Analysis Date: **27-Apr-2015 22:19**
Client ID: Run ID: **VOA2_253607** SeqNo: **3263814** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	46.13	1.0	50	0	92.3	70 - 125				
1,2-Dichloroethane	45.42	1.0	50	0	90.8	76 - 120				
1,3,5-Trimethylbenzene	46.46	1.0	50	0	92.9	80 - 123				
2-Butanone	86.88	2.0	100	0	86.9	60 - 140				
Benzene	44.56	1.0	50	0	89.1	80 - 120				
Cyclohexane	43.71	1.0	50	0	87.4	70 - 130				
Ethylbenzene	46.37	1.0	50	0	92.7	80 - 120				
Isopropylbenzene	44.67	1.0	50	0	89.3	75 - 130				
m,p-Xylene	89.03	2.0	100	0	89.0	80 - 120				
Methylcyclohexane	43.5	1.0	50	0	87.0	70 - 126				
Naphthalene	43.74	1.0	50	0	87.5	65 - 135				
n-Butylbenzene	46.59	1.0	50	0	93.2	75 - 128				
n-Propylbenzene	45.38	1.0	50	0	90.8	75 - 130				
o-Xylene	44.89	1.0	50	0	89.8	80 - 120				
Toluene	44.09	1.0	50	0	88.2	75 - 121				
Xylenes, Total	133.9	3.0	150	0	89.3	79 - 124				
Surr: 1,2-Dichloroethane-d4	*48.12*	*1.0*	*50*	*0*	*96.2*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.03*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*49.65*	*1.0*	*50*	*0*	*99.3*	*74 - 125*				
Surr: Toluene-d8	*50.4*	*1.0*	*50*	*0*	*101*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253607 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS15041009-01MS** Units: **ug/L** Analysis Date: **27-Apr-2015 23:59**
Client ID: Run ID: **VOA2_253607** SeqNo: **3263817** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	44.05	1.0	50	0	88.1	70 - 125				
1,2-Dichloroethane	42.24	1.0	50	0	84.5	76 - 120				
1,3,5-Trimethylbenzene	46.46	1.0	50	0	92.9	80 - 123				
2-Butanone	78.58	2.0	100	0	78.6	60 - 140				
Benzene	44.76	1.0	50	0	89.5	80 - 120				
Cyclohexane	49.06	1.0	50	0	98.1	70 - 130				
Ethylbenzene	46.89	1.0	50	0	93.8	80 - 120				
Isopropylbenzene	44.23	1.0	50	0	88.5	75 - 130				
m,p-Xylene	90.74	2.0	100	0	90.7	80 - 120				
Methylcyclohexane	49.13	1.0	50	0	98.3	70 - 126				
Naphthalene	38.75	1.0	50	0	77.5	65 - 135				
n-Butylbenzene	45.84	1.0	50	0	91.7	75 - 128				
n-Propylbenzene	45.18	1.0	50	0	90.4	75 - 130				
o-Xylene	45.46	1.0	50	0	90.9	80 - 120				
Toluene	44.74	1.0	50	0	89.5	75 - 121				
Xylenes, Total	136.2	3.0	150	0	90.8	80 - 124				
Surr: 1,2-Dichloroethane-d4	*48.4*	*1.0*	*50*	*0*	*96.8*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.1*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*49.61*	*1.0*	*50*	*0*	*99.2*	*74 - 125*				
Surr: Toluene-d8	*50.94*	*1.0*	*50*	*0*	*102*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253607 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS15041009-01MSD** Units: **ug/L** Analysis Date: **28-Apr-2015 09:02**
Client ID: Run ID: **VOA2_253607** SeqNo: **3263837** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	47.85	1.0	50	0	95.7	70 - 125	44.05	8.28	20	
1,2-Dichloroethane	46.45	1.0	50	0	92.9	76 - 120	42.24	9.49	20	
1,3,5-Trimethylbenzene	48.41	1.0	50	0	96.8	80 - 123	46.46	4.11	20	
2-Butanone	71.18	2.0	100	0	71.2	60 - 140	78.58	9.89	20	
Benzene	46.25	1.0	50	0	92.5	80 - 120	44.76	3.28	20	
Cyclohexane	49.15	1.0	50	0	98.3	70 - 130	49.06	0.181	20	
Ethylbenzene	47.03	1.0	50	0	94.1	80 - 120	46.89	0.309	20	
Isopropylbenzene	45.27	1.0	50	0	90.5	75 - 130	44.23	2.34	20	
m,p-Xylene	90.01	2.0	100	0	90.0	80 - 120	90.74	0.801	20	
Methylcyclohexane	46.78	1.0	50	0	93.6	70 - 126	49.13	4.9	20	
Naphthalene	39.79	1.0	50	0	79.6	65 - 135	38.75	2.66	20	
n-Butylbenzene	44.54	1.0	50	0	89.1	75 - 128	45.84	2.88	20	
n-Propylbenzene	47.03	1.0	50	0	94.1	75 - 130	45.18	4.01	20	
o-Xylene	45.71	1.0	50	0	91.4	80 - 120	45.46	0.544	20	
Toluene	44.77	1.0	50	0	89.5	75 - 121	44.74	0.0671	20	
Xylenes, Total	135.7	3.0	150	0	90.5	80 - 124	136.2	0.35	20	
Surr: 1,2-Dichloroethane-d4	*48*	*1.0*	*50*	*0*	*96.0*	*71 - 125*	*48.4*	*0.813*	*20*	
Surr: 4-Bromofluorobenzene	*51.23*	*1.0*	*50*	*0*	*102*	*70 - 125*	*51.1*	*0.262*	*20*	
Surr: Dibromofluoromethane	*48.33*	*1.0*	*50*	*0*	*96.7*	*74 - 125*	*49.61*	*2.63*	*20*	
Surr: Toluene-d8	*50.55*	*1.0*	*50*	*0*	*101*	*75 - 125*	*50.94*	*0.78*	*20*	

The following samples were anayzed in this batch: HS15040819-01 HS15040819-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253680 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-150428** Units: **ug/L** Analysis Date: **28-Apr-2015 11:08**
Client ID: Run ID: **VOA2_253680** SeqNo: **3265695** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
m,p-Xylene	ND	2.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*48.31*	*1.0*	*50*	*0*	*96.6*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.22*	*1.0*	*50*	*0*	*100*	*70 - 125*				
Surr: Dibromofluoromethane	*49.18*	*1.0*	*50*	*0*	*98.4*	*74 - 125*				
Surr: Toluene-d8	*51.11*	*1.0*	*50*	*0*	*102*	*75 - 125*				

LCS Sample ID: **VLCSW-150428** Units: **ug/L** Analysis Date: **28-Apr-2015 10:18**
Client ID: Run ID: **VOA2_253680** SeqNo: **3265694** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
m,p-Xylene	93.1	2.0	100	0	93.1	80 - 120				
o-Xylene	47.18	1.0	50	0	94.4	80 - 120				
Toluene	45.33	1.0	50	0	90.7	75 - 121				
Xylenes, Total	140.3	3.0	150	0	93.5	79 - 124				
Surr: 1,2-Dichloroethane-d4	*47.66*	*1.0*	*50*	*0*	*95.3*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.76*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*49.07*	*1.0*	*50*	*0*	*98.1*	*74 - 125*				
Surr: Toluene-d8	*50.45*	*1.0*	*50*	*0*	*101*	*75 - 125*				

MS Sample ID: **HS15040952-01MS** Units: **ug/L** Analysis Date: **28-Apr-2015 16:12**
Client ID: Run ID: **VOA2_253680** SeqNo: **3265707** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
m,p-Xylene	87.28	2.0	100	0	87.3	80 - 120				
o-Xylene	43.21	1.0	50	0	86.4	80 - 120				
Toluene	43.78	1.0	50	0	87.6	75 - 121				
Xylenes, Total	130.5	3.0	150	0	87.0	80 - 124				
Surr: 1,2-Dichloroethane-d4	*47.88*	*1.0*	*50*	*0*	*95.8*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.03*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*48.79*	*1.0*	*50*	*0*	*97.6*	*74 - 125*				
Surr: Toluene-d8	*50.1*	*1.0*	*50*	*0*	*100*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: **R253680** **Instrument:** **VOA2** **Method:** **SW8260**

MSD Sample ID: **HS15040952-01MSD** Units: **ug/L** Analysis Date: **28-Apr-2015 16:37**
Client ID: Run ID: **VOA2_253680** SeqNo: **3265708** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
m,p-Xylene	84.88	2.0	100	0	84.9	80 - 120	87.28	2.79	20	
o-Xylene	42.77	1.0	50	0	85.5	80 - 120	43.21	1.02	20	
Toluene	42.18	1.0	50	0	84.4	75 - 121	43.78	3.7	20	
Xylenes, Total	127.7	3.0	150	0	85.1	80 - 124	130.5	2.2	20	
Surr: 1,2-Dichloroethane-d4	*46.9*	*1.0*	*50*	*0*	*93.8*	*71 - 125*	*47.88*	*2.08*	*20*	
Surr: 4-Bromofluorobenzene	*50.18*	*1.0*	*50*	*0*	*100*	*70 - 125*	*51.03*	*1.68*	*20*	
Surr: Dibromofluoromethane	*48.69*	*1.0*	*50*	*0*	*97.4*	*74 - 125*	*48.79*	*0.198*	*20*	
Surr: Toluene-d8	*50.57*	*1.0*	*50*	*0*	*101*	*75 - 125*	*50.1*	*0.941*	*20*	

The following samples were anayzed in this batch: HS15040819-04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253366 **Instrument: ICS3000** **Method: E300**

MBLK Sample ID: **WBLKW1-052215** Units: **mg/L** Analysis Date: **22-Apr-2015 13:19**
Client ID: Run ID: **ICS3000_253366** SeqNo: **3258547** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	ND	0.100								
Phosphorus, Orthophosphate (As P)	ND	0.100								
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW1-052215** Units: **mg/L** Analysis Date: **22-Apr-2015 14:31**
Client ID: Run ID: **ICS3000_253366** SeqNo: **3258550** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.802	0.100	4	0	95.0	90 - 110				
Phosphorus, Orthophosphate (As P)	4.118	0.100	4	0	103	90 - 110				
Sulfate	21.08	0.500	20	0	105	90 - 110				

LCSD Sample ID: **WLCSDW1-052215** Units: **mg/L** Analysis Date: **22-Apr-2015 14:55**
Client ID: Run ID: **ICS3000_253366** SeqNo: **3258551** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.818	0.100	4	0	95.4	90 - 110	3.802	0.42	20	
Phosphorus, Orthophosphate (As P)	4.182	0.100	4	0	105	90 - 110	4.118	1.54	20	
Sulfate	21.01	0.500	20	0	105	90 - 110	21.08	0.342	20	

MS Sample ID: **HS15040892-04MS** Units: **mg/L** Analysis Date: **22-Apr-2015 18:07**
Client ID: Run ID: **ICS3000_253366** SeqNo: **3258559** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.458	0.100	2	0.333	106	80 - 120				
Phosphorus, Orthophosphate (As P)	2.296	0.100	2	0	115	80 - 120				
Sulfate	152.5	0.500	10	143.4	91.6	80 - 120				EO

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253366 **Instrument: ICS3000** **Method: E300**

MS Sample ID: **HS15040819-05MS** Units: **mg/L** Analysis Date: **22-Apr-2015 09:41**
Client ID: **MW-4** Run ID: **ICS3000_253366** SeqNo: **3258543** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.193	0.100	2	1.122	104	80 - 120				
Phosphorus, Orthophosphate (As P)	2.164	0.100	2	0	108	80 - 120				
Sulfate	54.81	0.500	10	45.1	97.0	80 - 120				O

MSD Sample ID: **HS15040892-04MSD** Units: **mg/L** Analysis Date: **22-Apr-2015 19:19**
Client ID: Run ID: **ICS3000_253366** SeqNo: **3258562** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.261	0.100	2	0.333	96.4	80 - 120	2.458	8.35	20	
Phosphorus, Orthophosphate (As P)	2.26	0.100	2	0	113	80 - 120	2.296	1.58	20	
Sulfate	150.9	0.500	10	143.4	75.4	80 - 120	152.5	1.07	20	SEO

MSD Sample ID: **HS15040819-05MSD** Units: **mg/L** Analysis Date: **22-Apr-2015 10:05**
Client ID: **MW-4** Run ID: **ICS3000_253366** SeqNo: **3258544** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.206	0.100	2	1.122	104	80 - 120	3.193	0.406	20	
Phosphorus, Orthophosphate (As P)	2.207	0.100	2	0	110	80 - 120	2.164	1.97	20	
Sulfate	55.01	0.500	10	45.1	99.0	80 - 120	54.81	0.364	20	O

The following samples were anayzed in this batch: HS15040819-01 HS15040819-02 HS15040819-03 HS15040819-04 HS15040819-05 HS15040819-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253514 **Instrument: ManTech01** **Method: SM2320B**

MBLK Sample ID: **WBLKW1-150426** Units: **mg/L** Analysis Date: **26-Apr-2015 11:40**
Client ID: Run ID: **ManTech01_253514** SeqNo: **3261792** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								
Alkalinity, Hydroxide (As CaCO3)	ND	5.00								
Alkalinity, Total (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS-ALK-150426** Units: **mg/L** Analysis Date: **26-Apr-2015 11:46**
Client ID: Run ID: **ManTech01_253514** SeqNo: **3261793** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1027	5.00	1000	0	103	80 - 120				

LCSD Sample ID: **LCSD-ALK-150426** Units: **mg/L** Analysis Date: **26-Apr-2015 11:52**
Client ID: Run ID: **ManTech01_253514** SeqNo: **3261794** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1024	5.00	1000	0	102	80 - 120	1027	0.287	20	

DUP Sample ID: **HS15041012-01DUP** Units: **mg/L** Analysis Date: **26-Apr-2015 14:22**
Client ID: Run ID: **ManTech01_253514** SeqNo: **3261820** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	53.44	5.00					53.9	0.857	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	53.44	5.00					53.9	0.857	20	

The following samples were anayzed in this batch: HS15040819-01 HS15040819-02 HS15040819-03 HS15040819-04 HS15040819-05 HS15040819-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: HS15040819

QC BATCH REPORT

Batch ID: R253566 **Instrument: WetChem_HS** **Method: SM4500 NH3-D**

MBLK Sample ID: **MBLK-253566** Units: **mg/L** Analysis Date: **27-Apr-2015 15:09**
Client ID: Run ID: **WetChem_HS_253566** SeqNo: **3262989** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	ND	0.20								

LCS Sample ID: **LCS-253566** Units: **mg/L** Analysis Date: **27-Apr-2015 15:09**
Client ID: Run ID: **WetChem_HS_253566** SeqNo: **3262990** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	9.53	0.20	10	0	95.3	80 - 120				

MS Sample ID: **HS15040819-06MS** Units: **mg/L** Analysis Date: **27-Apr-2015 15:09**
Client ID: **MW-5** Run ID: **WetChem_HS_253566** SeqNo: **3262991** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	11.4	0.20	10	0.0348	114	80 - 120				

MSD Sample ID: **HS15040819-06MSD** Units: **mg/L** Analysis Date: **27-Apr-2015 15:09**
Client ID: **MW-5** Run ID: **WetChem_HS_253566** SeqNo: **3262992** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	11.1	0.20	10	0.0348	111	80 - 120	11.4	2.67	20	

The following samples were anayzed in this batch: HS15040819-01 HS15040819-02 HS15040819-03 HS15040819-04 HS15040819-05 HS15040819-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
WorkOrder: **HS15040819**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	31-Jul-2015
Kentucky	KY 2014-2015	30-Apr-2015
Louisiana	03087 2014/2015	30-Jun-2015
North Carolina	624 - 2015	31-Dec-2015
North Dakota	R-193 2025	30-Apr-2015
Oklahoma	2014-128	31-Aug-2015
Texas	T104704231-14-14	30-Apr-2015

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Work Order: HS15040819

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15040819-01	MW-18	Login	4/21/2015 11:12:15 AM	PMG	24C
HS15040819-01	MW-18	Login	4/21/2015 11:12:15 AM	PMG	24C
HS15040819-01	MW-18	Login	4/21/2015 11:12:15 AM	PMG	24C
HS15040819-01	MW-18	Login	4/21/2015 11:12:15 AM	PMG	24C
HS15040819-01	MW-18	Login	4/21/2015 11:12:15 AM	PMG	24C
HS15040819-01	MW-18	Login	4/21/2015 11:12:15 AM	PMG	VW-3
HS15040819-01	MW-18	Login	4/21/2015 11:12:15 AM	PMG	TPH C2
HS15040819-01	MW-18	Login	4/21/2015 11:12:15 AM	PMG	TPH C2
HS15040819-01	MW-18	Login	4/21/2015 11:12:15 AM	PMG	Sub
HS15040819-02	MW-19	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-02	MW-19	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-02	MW-19	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-02	MW-19	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-02	MW-19	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-02	MW-19	Login	4/21/2015 11:16:24 AM	PMG	VW-3
HS15040819-02	MW-19	Login	4/21/2015 11:16:24 AM	PMG	TPH C2
HS15040819-02	MW-19	Login	4/21/2015 11:16:24 AM	PMG	TPH C2
HS15040819-02	MW-19	Login	4/21/2015 11:16:24 AM	PMG	Sub
HS15040819-03	MW-17	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-03	MW-17	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-03	MW-17	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-03	MW-17	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-03	MW-17	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-03	MW-17	Login	4/21/2015 11:16:24 AM	PMG	VW-3
HS15040819-03	MW-17	Login	4/21/2015 11:16:24 AM	PMG	TPH C2
HS15040819-03	MW-17	Login	4/21/2015 11:16:24 AM	PMG	TPH C2
HS15040819-03	MW-17	Login	4/21/2015 11:16:24 AM	PMG	Sub
HS15040819-04	MW-1	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-04	MW-1	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-04	MW-1	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-04	MW-1	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-04	MW-1	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-04	MW-1	Login	4/21/2015 11:16:24 AM	PMG	VW-3
HS15040819-04	MW-1	Login	4/21/2015 11:16:24 AM	PMG	TPH C2
HS15040819-04	MW-1	Login	4/21/2015 11:16:24 AM	PMG	TPH C2
HS15040819-04	MW-1	Login	4/21/2015 11:16:24 AM	PMG	Sub
HS15040819-05	MW-4	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-05	MW-4	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-05	MW-4	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-05	MW-4	Login	4/21/2015 11:16:24 AM	PMG	24C

Client: Apex Companies
Project: E3CE-0065 Andover Release Site
Work Order: HS15040819

SAMPLE TRACKING

HS15040819-05	MW-4	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-05	MW-4	Login	4/21/2015 11:16:24 AM	PMG	VW-3
HS15040819-05	MW-4	Login	4/21/2015 11:16:24 AM	PMG	TPH C2
HS15040819-05	MW-4	Login	4/21/2015 11:16:24 AM	PMG	TPH C2
HS15040819-05	MW-4	Login	4/21/2015 11:16:24 AM	PMG	Sub
HS15040819-06	MW-5	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-06	MW-5	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-06	MW-5	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-06	MW-5	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-06	MW-5	Login	4/21/2015 11:16:24 AM	PMG	24C
HS15040819-06	MW-5	Login	4/21/2015 11:16:24 AM	PMG	VW-3
HS15040819-06	MW-5	Login	4/21/2015 11:16:24 AM	PMG	TPH C2
HS15040819-06	MW-5	Login	4/21/2015 11:16:24 AM	PMG	TPH C2
HS15040819-06	MW-5	Login	4/21/2015 11:16:24 AM	PMG	Sub
HS15040819-07	Trip Blank - 040115-77	Login	4/21/2015 11:18:46 AM	PMG	VW-3
HS15040819-08	Trip Blank - 040115-76	Login	4/21/2015 11:18:46 AM	PMG	VW-3

ALS Group USA, Corp Date: 29-Apr-15

Sample Receipt Checklist

Client Name: APEX-PORTLAND Date/Time Received: **21-Apr-2015 09:10**

Work Order: HS15040819 Received by: **DES**

Checklist completed by: *Paresh M. Giga* (eSignature) 21-Apr-2015 (Date) Reviewed by: *Ana L. Spencer* (eSignature) 22-Apr-2015 (Date)

Matrices: **Water** Carrier name: **FedEx**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☑	☐
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	1.2c/1.2c,0.9c/0.9c c/U	IR3
Cooler(s)/Kit(s):	5995,5665	
Date/Time sample(s) sent to storage:	4/21/15 11:45	

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes: Trip Blanks received not on chain - Logged in with no analysis

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody Fc

Page 1 of 1

COC ID: 12487

HS15040819

Apex Companies

E3CE-0065 Andover Release Site

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	E3CE-0065 Andover Release Site
Work Order		Project Number	
Company Name	Apex Companies	Bill To Company	Apex Companies
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson
Address	3015 SW First Avenue	Address	3015 SW First Avenue
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201
Phone	(503) 924-4704	Phone	(503) 924-4704
Fax		Fax	
e-Mail Address		e-Mail Address	

A	300_W (Sulfate, nitrate, O-Phos)
B	8260_LL_W (Colt Court GW List)
C	ALK_W 2320B
D	ICP_DISS (Dissolved Iron)
E	ICP_TW (Potassium only)
F	NIT_AMM_W_ISE
G	RSK175 (Methane)
H	VPH OA-1_W (HYD-5)
I	XXX SUB (SUB CO2 (Simi Valley))
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-18	4/20/15	1227	W	HCl, Neat H_2SO_4, HNO_3	17	X	X	X	X	X	X	X	X	X		
2	MW-19		1315														
3	MW-17		1440														
4	MW-1		1522														
5	MW-4		1604														
6	MW-5		1647														
7					1,2,3 7-Neat												
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ted Alfred

Shipment Method:

Required Turnaround Time: (Check Box) TAT 7 days Other

Results Due Date:

Relinquished by:	Date: 4/20/15	Time: 1830	Received by:
Relinquished by:	Date: 4-21-15	Time: 910	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: [E3CE-0065 Andover Release Site]

Cooler ID	Cooler Temp.
S995	0.9° #3

QC Package: (Check One Box Below)
QC Level STD
Other:

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

5955

CUSTODY SEAL

Date: 4/20/15 Time: 1830
Name: TED ALFRED
Company: APEX

Seal Broken By:
Date: 4/21/15

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 4/20/15 Time: 1830
Name: TED ALFRED
Company: APEX

Seal Broken By:
Date: 4/21/15

ALS Environmental
Client: Apex Companies Project:
Sample ID: 02:07
Date: Time:
Tests: VPH-Iowa QA 1

VOAHCL
Preserved
Unpreserved
4/20
DS-0005 Andover Rel Sh

2 of 2
MPS# 0601 7805 3001 7785
Mstr# 8033 8132 4535 0215
TUE – 21 APR 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US IAH

1 of 2
TRK# 0215 8033 8132 4535
MASTER
TUE – 21 APR 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US IAH

LABORATORY REPORT

April 28, 2015

Ana Spencer
ALS Group USA, Corp.
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS15040819

Dear Ana:

Enclosed are the results of the samples submitted to our laboratory on April 22, 2015. For your reference, these analyses have been assigned our service request number P1501627.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 1:40 pm, Apr 28, 2015

Kelly Horiuchi
Laboratory Director

CASE NARRATIVE

The samples were received intact under chain of custody on April 22, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gas (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is not included on the laboratory's NELAP or AIHA-LAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	876241
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-14-5
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272014-4
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Group USA, Corp.
Project ID: HS15040819

Service Request: P1501627

Date Received: 4/22/2015
Time Received: 09:40

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2
HS15040819-01	P1501627-001	Water	4/20/2015	12:27	X
HS15040819-02	P1501627-002	Water	4/20/2015	13:15	X
HS15040819-03	P1501627-003	Water	4/20/2015	14:40	X
HS15040819-04	P1501627-004	Water	4/20/2015	15:22	X
HS15040819-05	P1501627-005	Water	4/20/2015	16:04	X
HS15040819-06	P1501627-006	Water	4/20/2015	16:47	X

CHAIN OF CUSTODY RECORD

(ALS) Environmental

Page 1 of 1

Date	21 Apr 2015
COC ID	2633
Due date	30 APR 15

Subcontractor

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone 8055267161
Fax

Customer Information		Project Information	
PO		Project Name	HS15040819

Company Name	ALS Houston	Company Name	ALS Houston
		Inv Attn	Accounts Payable
Address	10450 Stancliff Rd, Ste 210	Address	10450 Stancliff Rd, Ste 210
	Houston, TX 77099		Houston, TX 77099
Phone	281-530-5656	Phone	281-530-5656
Email1	ana.spencer@alsglobal.com	Email2	

P15Ø1627

	Lab ID	Client Samp ID	Collection Date	Matrix	Analysis Requested
1	HS15040819-01	MW-18	20-Apr-15 12:27 pm	Water	XXX SUB
2	HS15040819-02	MW-19	20-Apr-15 01:15 pm	Water	XXX SUB
3	HS15040819-03	MW-17	20-Apr-15 02:40 pm	Water	XXX SUB
4	HS15040819-04	MW-1	20-Apr-15 03:22 pm	Water	XXX SUB
5	HS15040819-05	MW-4	20-Apr-15 04:04 pm	Water	XXX SUB
6	HS15040819-06	MW-5	20-Apr-15 04:47 pm	Water	XXX SUB

1° blank notice

Comments Please analyze for the above. Send report to ana.spencer@alsglobal.com & cc : results to jumoke.lawal@alsglobal.com

Relinquished by:	Date/Time:	Received by:	Date/Time:	Cooler IDs:	Report/QC Level
[illegible]	4/21/15 1800	Fed X			
Fed X		[illegible]	4/22/14 0940		

ALS Environmental
Sample Acceptance Check Form

Client: ALS Group USA, Corp. Work order: P1501627

Project: HS15040819

Sample(s) received on: 4/22/15 Date opened: 4/22/15 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by ALS**?	☐	☒	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 1° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☒	☐
10	Were **custody seals** on outside of cooler/Box?	☒	☐	☐
	Location of seal(s)? _____ Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☒	☐	☐
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1501627-001.01	40mL VOA NP		7		A	wh 4/22/15
P1501627-001.02	40mL VOA NP				A	
P1501627-001.03	40mL VOA NP				A	
P1501627-002.01	40mL VOA NP		7		A	wh 4/22/15
P1501627-002.02	40mL VOA NP				A	
P1501627-002.03	40mL VOA NP				A	
P1501627-003.01	40mL VOA NP		7		A	wh 4/22/15
P1501627-003.02	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Group USA, Corp. Work order: P1501627

Project: HS15040819

Sample(s) received on: 4/22/15 Date opened: 4/22/15 by: KKELPE

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1501627-003.03	40mL VOA NP				A	
P1501627-004.01	40mL VOA NP		7		A	wh 4/22/15
P1501627-004.02	40mL VOA NP				A	
P1501627-004.03	40mL VOA NP				A	
P1501627-005.01	40mL VOA NP		7		A	wh 4/22/15
P1501627-005.02	40mL VOA NP				A	
P1501627-005.03	40mL VOA NP				A	
P1501627-006.01	40mL VOA NP		7		A	wh 4/22/15
P1501627-006.02	40mL VOA NP				A	
P1501627-006.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Group USA, Corp.**
Client Project ID: **HS15040819** ALS Project ID: P1501627

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 4/20/15
Analyst: Wade Henton Date Received: 4/22/15
Matrix: Water Date Analyzed: 4/22/15
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
HS15040819-01	P1501627-001	0.10	**35,000**	1,000	
HS15040819-02	P1501627-002	0.10	**18,000**	1,000	
HS15040819-03	P1501627-003	0.10	**40,000**	1,000	
HS15040819-04	P1501627-004	0.10	**81,000**	1,000	
HS15040819-05	P1501627-005	0.10	**20,000**	1,000	
HS15040819-06	P1501627-006	0.10	**23,000**	1,000	
Method Control Sample	P150422-MB	0.10	ND	1,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Group USA, Corp.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS15040819**

ALS Project ID: P1501627
ALS Sample ID: P150422-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 4/22/15
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	17,700	17,900	**77**	**78**	62-139	1	24	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

10450 Stancliff Rd. Suite 210
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June 25, 2015

Samuel Jackson
Apex Companies
3015 SW First Avenue
Portland, OR 97201

Work Order: **HS15060728**

Laboratory Results for: **Andover Release Site E3CE-0065**

Dear Samuel,

ALS Environmental received 9 sample(s) on Jun 17, 2015 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: Jumoke.Lawal

Ana L. Spencer

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15060728

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15060728-01	MW-5	Water		16-Jun-2015 08:59	17-Jun-2015 09:15	☐
HS15060728-02	MW-17	Water		16-Jun-2015 09:40	17-Jun-2015 09:15	☐
HS15060728-03	MW-1	Water		16-Jun-2015 10:10	17-Jun-2015 09:15	☐
HS15060728-04	MW-18	Water		16-Jun-2015 10:45	17-Jun-2015 09:15	☐
HS15060728-05	MW-19	Water		16-Jun-2015 11:18	17-Jun-2015 09:15	☐
HS15060728-06	MW-4	Water		16-Jun-2015 12:10	17-Jun-2015 09:15	☐
HS15060728-07	DUP-1	Water		16-Jun-2015 00:00	17-Jun-2015 09:15	☐
HS15060728-08	TB-05515-72	Water		16-Jun-2015 00:00	17-Jun-2015 09:15	☐
HS15060728-09	TB-052215-71	Water		16-Jun-2015 00:00	17-Jun-2015 09:15	☐

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15060728

CASE NARRATIVE

Work Order Comments

- The analysis for Carbon Dioxide was subcontracted to ALS Environmental in Simi Valley, CA.

GC Semivolatiles by Method RSK-175

Batch ID: R256692

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Volatiles by Method IA OA-1

Batch ID: R256445

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R256592

Sample ID: **MW-19 (HS15060728-05)**
- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: **MW-19 (HS15060728-05)**
- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

GCMS Volatiles by Method SW8260

Batch ID: R256468

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R256499

Sample ID: **VSTD050**
- 2-Butanone exceeded %D limits on CCV. Samples are non detect

Batch ID: R256524

Sample ID: **HS15060744-05**
- MS and MSD are for an unrelated sample

Batch ID: R256530

Sample ID: **VSTD050**
- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 94438

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 94483

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 94484

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15060728

CASE NARRATIVE

WetChemistry by Method SM2320B

Batch ID: R256695

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500 NH3-D

Batch ID: R256451

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R256424

Sample ID: **HS15060729-01**
- MS and MSD are for an unrelated sample

Sample ID: **MW-5 (HS15060728-01)**
- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount for Sulfate

Batch ID: R256495

Sample ID: **HS15060729-23**
- MS and MSD are for an unrelated sample

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	MW-5	Lab ID:HS15060728-01
Collection Date:	16-Jun-2015 08:59	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 19:27
1,2-Dichloroethane	ND		0.0010	mg/L	1	18-Jun-2015 19:27
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 19:27
2-Butanone	ND		0.0020	mg/L	1	18-Jun-2015 19:27
Benzene	ND		0.0010	mg/L	1	18-Jun-2015 19:27
Cyclohexane	ND		0.0010	mg/L	1	18-Jun-2015 19:27
Ethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 19:27
Isopropylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 19:27
m,p-Xylene	ND		0.0020	mg/L	1	18-Jun-2015 19:27
Methylcyclohexane	ND		0.0010	mg/L	1	18-Jun-2015 19:27
Naphthalene	ND		0.0010	mg/L	1	18-Jun-2015 19:27
n-Butylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 19:27
n-Propylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 19:27
o-Xylene	ND		0.0010	mg/L	1	18-Jun-2015 19:27
Toluene	ND		0.0010	mg/L	1	18-Jun-2015 19:27
Xylenes, Total	ND		0.0030	mg/L	1	18-Jun-2015 19:27
Surr: 1,2-Dichloroethane-d4	*108*		*71-125*	*%REC*	*1*	*18-Jun-2015 19:27*
Surr: 4-Bromofluorobenzene	*98.6*		*70-125*	*%REC*	*1*	*18-Jun-2015 19:27*
Surr: Dibromofluoromethane	*107*		*74-125*	*%REC*	*1*	*18-Jun-2015 19:27*
Surr: Toluene-d8	*110*		*75-125*	*%REC*	*1*	*18-Jun-2015 19:27*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**491**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Total (As CaCO3)	**491**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Jun-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	23-Jun-2015 13:54
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**1.59**		**0.500**	**ug/L**	1	23-Jun-2015 11:40
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	25-Jun-2015 07:25
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	18-Jun-2015 13:35
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Jun-2015		Analyst: JDE
Potassium	**0.675**		**0.200**	**mg/L**	1	23-Jun-2015 21:16
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	ND		0.050	mg/L	1	17-Jun-2015 20:13
Surr: 4-Bromofluorobenzene	*122*		*70-130*	*%REC*	*1*	*17-Jun-2015 20:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-5
Collection Date: 16-Jun-2015 08:59

WorkOrder:HS15060728
Lab ID:HS15060728-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**5.18**		**0.100**	**mg/L**	1	17-Jun-2015 15:28
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	17-Jun-2015 15:28
Sulfate	**162**		**10.0**	**mg/L**	20	17-Jun-2015 17:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	MW-17	Lab ID:HS15060728-02
Collection Date:	16-Jun-2015 09:40	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.19**		**0.0010**	**mg/L**	1	18-Jun-2015 23:01
1,2-Dichloroethane	ND		0.0010	mg/L	1	18-Jun-2015 23:01
1,3,5-Trimethylbenzene	**0.31**		**0.010**	**mg/L**	10	18-Jun-2015 23:29
2-Butanone	**0.044**		**0.0020**	**mg/L**	1	18-Jun-2015 23:01
Benzene	**2.0**		**0.010**	**mg/L**	10	18-Jun-2015 23:29
Cyclohexane	**0.37**		**0.010**	**mg/L**	10	18-Jun-2015 23:29
Ethylbenzene	**1.5**		**0.010**	**mg/L**	10	18-Jun-2015 23:29
Isopropylbenzene	**0.044**		**0.0010**	**mg/L**	1	18-Jun-2015 23:01
m,p-Xylene	**3.4**		**0.20**	**mg/L**	100	19-Jun-2015 14:43
Methylcyclohexane	**0.038**		**0.0010**	**mg/L**	1	18-Jun-2015 23:01
Naphthalene	**0.14**		**0.0010**	**mg/L**	1	18-Jun-2015 23:01
n-Butylbenzene	**0.015**		**0.0010**	**mg/L**	1	18-Jun-2015 23:01
n-Propylbenzene	**0.10**		**0.0010**	**mg/L**	1	18-Jun-2015 23:01
o-Xylene	**1.8**		**0.10**	**mg/L**	100	19-Jun-2015 14:43
Toluene	**6.8**		**0.10**	**mg/L**	100	19-Jun-2015 14:43
Xylenes, Total	**5.2**		**0.30**	**mg/L**	100	19-Jun-2015 14:43
Surr: 1,2-Dichloroethane-d4	*80.9*		*71-125*	*%REC*	*1*	*18-Jun-2015 23:01*
Surr: 1,2-Dichloroethane-d4	*92.4*		*71-125*	*%REC*	*10*	*18-Jun-2015 23:29*
Surr: 1,2-Dichloroethane-d4	*82.9*		*71-125*	*%REC*	*100*	*19-Jun-2015 14:43*
Surr: 4-Bromofluorobenzene	*108*		*70-125*	*%REC*	*1*	*18-Jun-2015 23:01*
Surr: 4-Bromofluorobenzene	*107*		*70-125*	*%REC*	*10*	*18-Jun-2015 23:29*
Surr: 4-Bromofluorobenzene	*93.8*		*70-125*	*%REC*	*100*	*19-Jun-2015 14:43*
Surr: Dibromofluoromethane	*97.1*		*74-125*	*%REC*	*10*	*18-Jun-2015 23:29*
Surr: Dibromofluoromethane	*89.0*		*74-125*	*%REC*	*1*	*18-Jun-2015 23:01*
Surr: Dibromofluoromethane	*94.7*		*74-125*	*%REC*	*100*	*19-Jun-2015 14:43*
Surr: Toluene-d8	*97.8*		*75-125*	*%REC*	*10*	*18-Jun-2015 23:29*
Surr: Toluene-d8	*90.6*		*75-125*	*%REC*	*1*	*18-Jun-2015 23:01*
Surr: Toluene-d8	*93.6*		*75-125*	*%REC*	*100*	*19-Jun-2015 14:43*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**471**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Total (As CaCO3)	**471**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Jun-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	23-Jun-2015 13:57
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**11.0**		**0.500**	**ug/L**	1	23-Jun-2015 11:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-17
Collection Date: 16-Jun-2015 09:40

WorkOrder:HS15060728
Lab ID:HS15060728-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	25-Jun-2015 07:25
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	18-Jun-2015 13:35
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Jun-2015		Analyst: JDE
Potassium	**2.21**		**0.200**	**mg/L**	1	23-Jun-2015 21:20
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**95**		**2.5**	**mg/L**	50	19-Jun-2015 17:06
Surr: 4-Bromofluorobenzene	*111*		*70-130*	*%REC*	*50*	*19-Jun-2015 17:06*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.258**		**0.100**	**mg/L**	1	17-Jun-2015 17:52
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	17-Jun-2015 17:52
Sulfate	**32.8**		**0.500**	**mg/L**	1	17-Jun-2015 17:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	MW-1	Lab ID:HS15060728-03
Collection Date:	16-Jun-2015 10:10	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.32**		**0.010**	**mg/L**	10	19-Jun-2015 17:44
1,2-Dichloroethane	ND		0.010	mg/L	10	19-Jun-2015 17:44
1,3,5-Trimethylbenzene	**0.30**		**0.010**	**mg/L**	10	19-Jun-2015 17:44
2-Butanone	ND		0.020	mg/L	10	19-Jun-2015 17:44
Benzene	**5.2**		**0.10**	**mg/L**	100	19-Jun-2015 18:10
Cyclohexane	**0.12**		**0.010**	**mg/L**	10	19-Jun-2015 17:44
Ethylbenzene	**0.47**		**0.010**	**mg/L**	10	19-Jun-2015 17:44
Isopropylbenzene	**0.011**		**0.010**	**mg/L**	10	19-Jun-2015 17:44
m,p-Xylene	**5.3**		**0.20**	**mg/L**	100	19-Jun-2015 18:10
Methylcyclohexane	ND		0.010	mg/L	10	19-Jun-2015 17:44
Naphthalene	**0.11**		**0.010**	**mg/L**	10	19-Jun-2015 17:44
n-Butylbenzene	ND		0.010	mg/L	10	19-Jun-2015 17:44
n-Propylbenzene	**0.012**		**0.010**	**mg/L**	10	19-Jun-2015 17:44
o-Xylene	**2.8**		**0.10**	**mg/L**	100	19-Jun-2015 18:10
Toluene	**11**		**0.10**	**mg/L**	100	19-Jun-2015 18:10
Xylenes, Total	**8.1**		**0.30**	**mg/L**	100	19-Jun-2015 18:10
Surr: 1,2-Dichloroethane-d4	*85.8*		*71-125*	*%REC*	*100*	*19-Jun-2015 18:10*
Surr: 1,2-Dichloroethane-d4	*83.9*		*71-125*	*%REC*	*10*	*19-Jun-2015 17:44*
Surr: 4-Bromofluorobenzene	*92.7*		*70-125*	*%REC*	*10*	*19-Jun-2015 17:44*
Surr: 4-Bromofluorobenzene	*94.4*		*70-125*	*%REC*	*100*	*19-Jun-2015 18:10*
Surr: Dibromofluoromethane	*93.2*		*74-125*	*%REC*	*100*	*19-Jun-2015 18:10*
Surr: Dibromofluoromethane	*95.1*		*74-125*	*%REC*	*10*	*19-Jun-2015 17:44*
Surr: Toluene-d8	*93.1*		*75-125*	*%REC*	*10*	*19-Jun-2015 17:44*
Surr: Toluene-d8	*94.6*		*75-125*	*%REC*	*100*	*19-Jun-2015 18:10*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**503**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Total (As CaCO3)	**503**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Jun-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	23-Jun-2015 13:59
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**8.18**		**0.500**	**ug/L**	1	23-Jun-2015 12:10
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	25-Jun-2015 07:25
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	18-Jun-2015 13:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	MW-1	Lab ID:HS15060728-03
Collection Date:	16-Jun-2015 10:10	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Jun-2015		Analyst: JDE
Potassium	**0.935**		**0.200**	**mg/L**	1	23-Jun-2015 21:25
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**140**		**2.5**	**mg/L**	50	19-Jun-2015 17:24
Surr: 4-Bromofluorobenzene	*115*		*70-130*	*%REC*	*50*	*19-Jun-2015 17:24*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.257**		**0.100**	**mg/L**	1	17-Jun-2015 18:16
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	17-Jun-2015 18:16
Sulfate	**36.0**		**0.500**	**mg/L**	1	17-Jun-2015 18:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	MW-18	Lab ID:HS15060728-04
Collection Date:	16-Jun-2015 10:45	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.021**		**0.0010**	**mg/L**	1	18-Jun-2015 23:54
1,2-Dichloroethane	ND		0.0010	mg/L	1	18-Jun-2015 23:54
1,3,5-Trimethylbenzene	**0.021**		**0.0010**	**mg/L**	1	18-Jun-2015 23:54
2-Butanone	ND		0.0020	mg/L	1	18-Jun-2015 23:54
Benzene	**0.26**		**0.010**	**mg/L**	10	19-Jun-2015 00:22
Cyclohexane	**0.036**		**0.0010**	**mg/L**	1	18-Jun-2015 23:54
Ethylbenzene	**0.12**		**0.0010**	**mg/L**	1	18-Jun-2015 23:54
Isopropylbenzene	**0.0041**		**0.0010**	**mg/L**	1	18-Jun-2015 23:54
m,p-Xylene	**0.24**		**0.0020**	**mg/L**	1	18-Jun-2015 23:54
Methylcyclohexane	**0.0035**		**0.0010**	**mg/L**	1	18-Jun-2015 23:54
Naphthalene	**0.015**		**0.0010**	**mg/L**	1	18-Jun-2015 23:54
n-Butylbenzene	**0.0016**		**0.0010**	**mg/L**	1	18-Jun-2015 23:54
n-Propylbenzene	**0.0089**		**0.0010**	**mg/L**	1	18-Jun-2015 23:54
o-Xylene	**0.17**		**0.0010**	**mg/L**	1	18-Jun-2015 23:54
Toluene	**0.59**		**0.010**	**mg/L**	10	19-Jun-2015 00:22
Xylenes, Total	**0.41**		**0.0030**	**mg/L**	1	18-Jun-2015 23:54
Surr: 1,2-Dichloroethane-d4	*84.9*		*71-125*	*%REC*	*10*	*19-Jun-2015 00:22*
Surr: 1,2-Dichloroethane-d4	*88.2*		*71-125*	*%REC*	*1*	*18-Jun-2015 23:54*
Surr: 4-Bromofluorobenzene	*94.0*		*70-125*	*%REC*	*10*	*19-Jun-2015 00:22*
Surr: 4-Bromofluorobenzene	*97.0*		*70-125*	*%REC*	*1*	*18-Jun-2015 23:54*
Surr: Dibromofluoromethane	*95.8*		*74-125*	*%REC*	*1*	*18-Jun-2015 23:54*
Surr: Dibromofluoromethane	*91.1*		*74-125*	*%REC*	*10*	*19-Jun-2015 00:22*
Surr: Toluene-d8	*95.1*		*75-125*	*%REC*	*1*	*18-Jun-2015 23:54*
Surr: Toluene-d8	*97.5*		*75-125*	*%REC*	*10*	*19-Jun-2015 00:22*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**406**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Total (As CaCO3)	**406**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Jun-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	23-Jun-2015 14:02
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**3.85**		**0.500**	**ug/L**	1	23-Jun-2015 12:24
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	25-Jun-2015 07:25
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	18-Jun-2015 13:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	MW-18	Lab ID:HS15060728-04
Collection Date:	16-Jun-2015 10:45	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 19-Jun-2015		Analyst: RPM
Potassium	**9.15**		**0.200**	**mg/L**	1	22-Jun-2015 15:11
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**6.3**		**0.050**	**mg/L**	1	19-Jun-2015 17:40
Surr: 4-Bromofluorobenzene	*127*		*70-130*	*%REC*	*1*	*19-Jun-2015 17:40*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.387**		**0.100**	**mg/L**	1	17-Jun-2015 18:40
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	17-Jun-2015 18:40
Sulfate	**27.0**		**0.500**	**mg/L**	1	17-Jun-2015 18:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	MW-19	Lab ID:HS15060728-05
Collection Date:	16-Jun-2015 11:18	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.024**		**0.0010**	**mg/L**	1	19-Jun-2015 11:14
1,2-Dichloroethane	ND		0.0010	mg/L	1	19-Jun-2015 11:14
1,3,5-Trimethylbenzene	**0.0074**		**0.0010**	**mg/L**	1	19-Jun-2015 11:14
2-Butanone	ND		0.0020	mg/L	1	19-Jun-2015 11:14
Benzene	**0.11**		**0.0010**	**mg/L**	1	19-Jun-2015 11:14
Cyclohexane	**0.013**		**0.0010**	**mg/L**	1	19-Jun-2015 11:14
Ethylbenzene	**0.045**		**0.0010**	**mg/L**	1	19-Jun-2015 11:14
Isopropylbenzene	**0.0015**		**0.0010**	**mg/L**	1	19-Jun-2015 11:14
m,p-Xylene	**0.16**		**0.0020**	**mg/L**	1	19-Jun-2015 11:14
Methylcyclohexane	ND		0.0010	mg/L	1	19-Jun-2015 11:14
Naphthalene	**0.0029**		**0.0010**	**mg/L**	1	19-Jun-2015 11:14
n-Butylbenzene	ND		0.0010	mg/L	1	19-Jun-2015 11:14
n-Propylbenzene	**0.0031**		**0.0010**	**mg/L**	1	19-Jun-2015 11:14
o-Xylene	**0.068**		**0.0010**	**mg/L**	1	19-Jun-2015 11:14
Toluene	**0.30**		**0.010**	**mg/L**	10	19-Jun-2015 11:41
Xylenes, Total	**0.23**		**0.0030**	**mg/L**	1	19-Jun-2015 11:14
Surr: 1,2-Dichloroethane-d4	*115*		*71-125*	*%REC*	*10*	*19-Jun-2015 11:41*
Surr: 1,2-Dichloroethane-d4	*114*		*71-125*	*%REC*	*1*	*19-Jun-2015 11:14*
Surr: 4-Bromofluorobenzene	*96.7*		*70-125*	*%REC*	*1*	*19-Jun-2015 11:14*
Surr: 4-Bromofluorobenzene	*99.0*		*70-125*	*%REC*	*10*	*19-Jun-2015 11:41*
Surr: Dibromofluoromethane	*114*		*74-125*	*%REC*	*10*	*19-Jun-2015 11:41*
Surr: Dibromofluoromethane	*111*		*74-125*	*%REC*	*1*	*19-Jun-2015 11:14*
Surr: Toluene-d8	*109*		*75-125*	*%REC*	*10*	*19-Jun-2015 11:41*
Surr: Toluene-d8	*108*		*75-125*	*%REC*	*1*	*19-Jun-2015 11:14*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**349**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Total (As CaCO3)	**349**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Jun-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	23-Jun-2015 14:05
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**5.43**		**0.500**	**ug/L**	1	23-Jun-2015 12:40
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	25-Jun-2015 07:25
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	18-Jun-2015 13:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	MW-19	Lab ID:HS15060728-05
Collection Date:	16-Jun-2015 11:18	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 19-Jun-2015		Analyst: RPM
Potassium	**7.75**		**0.200**	**mg/L**	1	22-Jun-2015 15:14
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**0.99**		**0.050**	**mg/L**	1	19-Jun-2015 16:15
Surr: 4-Bromofluorobenzene	*128*		*70-130*	*%REC*	*1*	*19-Jun-2015 16:15*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.222**		**0.100**	**mg/L**	1	17-Jun-2015 19:51
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	17-Jun-2015 19:51
Sulfate	**40.6**		**0.500**	**mg/L**	1	17-Jun-2015 19:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	MW-4	Lab ID:HS15060728-06
Collection Date:	16-Jun-2015 12:10	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 15:46
1,2-Dichloroethane	ND		0.0010	mg/L	1	18-Jun-2015 15:46
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 15:46
2-Butanone	ND		0.0020	mg/L	1	18-Jun-2015 15:46
Benzene	ND		0.0010	mg/L	1	18-Jun-2015 15:46
Cyclohexane	ND		0.0010	mg/L	1	18-Jun-2015 15:46
Ethylbenzene	**0.0013**		**0.0010**	**mg/L**	1	18-Jun-2015 15:46
Isopropylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 15:46
m,p-Xylene	**0.0046**		**0.0020**	**mg/L**	1	18-Jun-2015 15:46
Methylcyclohexane	ND		0.0010	mg/L	1	18-Jun-2015 15:46
Naphthalene	ND		0.0010	mg/L	1	18-Jun-2015 15:46
n-Butylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 15:46
n-Propylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 15:46
o-Xylene	**0.0030**		**0.0010**	**mg/L**	1	18-Jun-2015 15:46
Toluene	**0.0059**		**0.0010**	**mg/L**	1	18-Jun-2015 15:46
Xylenes, Total	**0.0077**		**0.0030**	**mg/L**	1	18-Jun-2015 15:46
Surr: 1,2-Dichloroethane-d4	*88.0*		*71-125*	*%REC*	*1*	*18-Jun-2015 15:46*
Surr: 4-Bromofluorobenzene	*93.5*		*70-125*	*%REC*	*1*	*18-Jun-2015 15:46*
Surr: Dibromofluoromethane	*96.1*		*74-125*	*%REC*	*1*	*18-Jun-2015 15:46*
Surr: Toluene-d8	*93.1*		*75-125*	*%REC*	*1*	*18-Jun-2015 15:46*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**419**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Total (As CaCO3)	**419**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Jun-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	23-Jun-2015 14:07
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	ND		0.500	ug/L	1	23-Jun-2015 12:54
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	25-Jun-2015 07:25
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	18-Jun-2015 13:35
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 19-Jun-2015		Analyst: RPM
Potassium	**1.72**		**0.200**	**mg/L**	1	22-Jun-2015 15:16
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**0.14**		**0.050**	**mg/L**	1	17-Jun-2015 22:35
Surr: 4-Bromofluorobenzene	*125*		*70-130*	*%REC*	*1*	*17-Jun-2015 22:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-4
Collection Date: 16-Jun-2015 12:10

WorkOrder:HS15060728
Lab ID:HS15060728-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**1.96**		**0.100**	**mg/L**	1	17-Jun-2015 20:15
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	17-Jun-2015 20:15
Sulfate	**117**		**2.50**	**mg/L**	5	18-Jun-2015 18:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies		**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:	HS15060728
Sample ID:	DUP-1	Lab ID:	HS15060728-07
Collection Date:	16-Jun-2015 00:00	Matrix:	Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.0071**		**0.0010**	**mg/L**	1	19-Jun-2015 19:52
1,2-Dichloroethane	ND		0.0010	mg/L	1	19-Jun-2015 19:52
1,3,5-Trimethylbenzene	**0.0062**		**0.0010**	**mg/L**	1	19-Jun-2015 19:52
2-Butanone	ND		0.0020	mg/L	1	19-Jun-2015 19:52
Benzene	**0.11**		**0.0010**	**mg/L**	1	19-Jun-2015 19:52
Cyclohexane	**0.012**		**0.0010**	**mg/L**	1	19-Jun-2015 19:52
Ethylbenzene	**0.046**		**0.0010**	**mg/L**	1	19-Jun-2015 19:52
Isopropylbenzene	**0.0016**		**0.0010**	**mg/L**	1	19-Jun-2015 19:52
m,p-Xylene	**0.13**		**0.0020**	**mg/L**	1	19-Jun-2015 19:52
Methylcyclohexane	ND		0.0010	mg/L	1	19-Jun-2015 19:52
Naphthalene	**0.0051**		**0.0010**	**mg/L**	1	19-Jun-2015 19:52
n-Butylbenzene	ND		0.0010	mg/L	1	19-Jun-2015 19:52
n-Propylbenzene	**0.0027**		**0.0010**	**mg/L**	1	19-Jun-2015 19:52
o-Xylene	**0.067**		**0.0010**	**mg/L**	1	19-Jun-2015 19:52
Toluene	**0.30**		**0.010**	**mg/L**	10	19-Jun-2015 20:20
Xylenes, Total	**0.19**		**0.0030**	**mg/L**	1	19-Jun-2015 19:52
Surr: 1,2-Dichloroethane-d4	*84.7*		*71-125*	*%REC*	*10*	*19-Jun-2015 20:20*
Surr: 1,2-Dichloroethane-d4	*88.1*		*71-125*	*%REC*	*1*	*19-Jun-2015 19:52*
Surr: 4-Bromofluorobenzene	*94.8*		*70-125*	*%REC*	*1*	*19-Jun-2015 19:52*
Surr: 4-Bromofluorobenzene	*91.8*		*70-125*	*%REC*	*10*	*19-Jun-2015 20:20*
Surr: Dibromofluoromethane	*95.9*		*74-125*	*%REC*	*10*	*19-Jun-2015 20:20*
Surr: Dibromofluoromethane	*95.9*		*74-125*	*%REC*	*1*	*19-Jun-2015 19:52*
Surr: Toluene-d8	*95.2*		*75-125*	*%REC*	*1*	*19-Jun-2015 19:52*
Surr: Toluene-d8	*96.7*		*75-125*	*%REC*	*10*	*19-Jun-2015 20:20*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: MJC
Alkalinity, Bicarbonate (As CaCO3)	**351**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	23-Jun-2015 12:30
Alkalinity, Total (As CaCO3)	**351**		**5.00**	**mg/L**	1	23-Jun-2015 12:30
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 22-Jun-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	23-Jun-2015 14:10
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**7.08**		**0.500**	**ug/L**	1	23-Jun-2015 13:09
SUBCONTRACT ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	25-Jun-2015 07:25
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	18-Jun-2015 13:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	DUP-1	Lab ID:HS15060728-07
Collection Date:	16-Jun-2015 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 19-Jun-2015		Analyst: RPM
Potassium	**8.17**		**0.200**	**mg/L**	1	22-Jun-2015 15:19
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**2.5**		**0.050**	**mg/L**	1	17-Jun-2015 22:51
Surr: 4-Bromofluorobenzene	*129*		*70-130*	*%REC*	*1*	*17-Jun-2015 22:51*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.216**		**0.100**	**mg/L**	1	17-Jun-2015 20:39
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	17-Jun-2015 20:39
Sulfate	**40.0**		**0.500**	**mg/L**	1	17-Jun-2015 20:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	TB-05515-72	Lab ID:HS15060728-08
Collection Date:	16-Jun-2015 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:31
1,2-Dichloroethane	ND		0.0010	mg/L	1	18-Jun-2015 18:31
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:31
2-Butanone	ND		0.0020	mg/L	1	18-Jun-2015 18:31
Benzene	ND		0.0010	mg/L	1	18-Jun-2015 18:31
Cyclohexane	ND		0.0010	mg/L	1	18-Jun-2015 18:31
Ethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:31
Isopropylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:31
m,p-Xylene	ND		0.0020	mg/L	1	18-Jun-2015 18:31
Methylcyclohexane	ND		0.0010	mg/L	1	18-Jun-2015 18:31
Naphthalene	ND		0.0010	mg/L	1	18-Jun-2015 18:31
n-Butylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:31
n-Propylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:31
o-Xylene	ND		0.0010	mg/L	1	18-Jun-2015 18:31
Toluene	ND		0.0010	mg/L	1	18-Jun-2015 18:31
Xylenes, Total	ND		0.0030	mg/L	1	18-Jun-2015 18:31
Surr: 1,2-Dichloroethane-d4	*107*		*71-125*	*%REC*	*1*	*18-Jun-2015 18:31*
Surr: 4-Bromofluorobenzene	*98.4*		*70-125*	*%REC*	*1*	*18-Jun-2015 18:31*
Surr: Dibromofluoromethane	*108*		*74-125*	*%REC*	*1*	*18-Jun-2015 18:31*
Surr: Toluene-d8	*109*		*75-125*	*%REC*	*1*	*18-Jun-2015 18:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15060728
Sample ID:	TB-052215-71	Lab ID:HS15060728-09
Collection Date:	16-Jun-2015 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:59
1,2-Dichloroethane	ND		0.0010	mg/L	1	18-Jun-2015 18:59
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:59
2-Butanone	ND		0.0020	mg/L	1	18-Jun-2015 18:59
Benzene	ND		0.0010	mg/L	1	18-Jun-2015 18:59
Cyclohexane	ND		0.0010	mg/L	1	18-Jun-2015 18:59
Ethylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:59
Isopropylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:59
m,p-Xylene	ND		0.0020	mg/L	1	18-Jun-2015 18:59
Methylcyclohexane	ND		0.0010	mg/L	1	18-Jun-2015 18:59
Naphthalene	ND		0.0010	mg/L	1	18-Jun-2015 18:59
n-Butylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:59
n-Propylbenzene	ND		0.0010	mg/L	1	18-Jun-2015 18:59
o-Xylene	ND		0.0010	mg/L	1	18-Jun-2015 18:59
Toluene	ND		0.0010	mg/L	1	18-Jun-2015 18:59
Xylenes, Total	ND		0.0030	mg/L	1	18-Jun-2015 18:59
Surr: 1,2-Dichloroethane-d4	*107*		*71-125*	*%REC*	*1*	*18-Jun-2015 18:59*
Surr: 4-Bromofluorobenzene	*99.1*		*70-125*	*%REC*	*1*	*18-Jun-2015 18:59*
Surr: Dibromofluoromethane	*111*		*74-125*	*%REC*	*1*	*18-Jun-2015 18:59*
Surr: Toluene-d8	*111*		*75-125*	*%REC*	*1*	*18-Jun-2015 18:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 94438	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS15060728-04	MW-18	16 Jun 2015 10:45		19 Jun 2015 08:08	22 Jun 2015 15:11	1
HS15060728-05	MW-19	16 Jun 2015 11:18		19 Jun 2015 08:08	22 Jun 2015 15:14	1
HS15060728-06	MW-4	16 Jun 2015 12:10		19 Jun 2015 08:08	22 Jun 2015 15:16	1
HS15060728-07	DUP-1	16 Jun 2015 00:00		19 Jun 2015 08:08	22 Jun 2015 15:19	1
Batch ID 94483	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS15060728-01	MW-5	16 Jun 2015 08:59		22 Jun 2015 10:06	23 Jun 2015 21:16	1
HS15060728-02	MW-17	16 Jun 2015 09:40		22 Jun 2015 10:06	23 Jun 2015 21:20	1
HS15060728-03	MW-1	16 Jun 2015 10:10		22 Jun 2015 10:06	23 Jun 2015 21:25	1
Batch ID 94484	**Test Name :** DISSOLVED METALS BY SW6020A			**Matrix:** Water		
HS15060728-01	MW-5	16 Jun 2015 08:59		22 Jun 2015 10:12	23 Jun 2015 13:54	1
HS15060728-02	MW-17	16 Jun 2015 09:40		22 Jun 2015 10:12	23 Jun 2015 13:57	1
HS15060728-03	MW-1	16 Jun 2015 10:10		22 Jun 2015 10:12	23 Jun 2015 13:59	1
HS15060728-04	MW-18	16 Jun 2015 10:45		22 Jun 2015 10:12	23 Jun 2015 14:02	1
HS15060728-05	MW-19	16 Jun 2015 11:18		22 Jun 2015 10:12	23 Jun 2015 14:05	1
HS15060728-06	MW-4	16 Jun 2015 12:10		22 Jun 2015 10:12	23 Jun 2015 14:07	1
HS15060728-07	DUP-1	16 Jun 2015 00:00		22 Jun 2015 10:12	23 Jun 2015 14:10	1
Batch ID R256424	**Test Name :** ANIONS BY E300.0			**Matrix:** Water		
HS15060728-01	MW-5	16 Jun 2015 08:59			17 Jun 2015 17:28	20
HS15060728-01	MW-5	16 Jun 2015 08:59			17 Jun 2015 15:28	1
HS15060728-02	MW-17	16 Jun 2015 09:40			17 Jun 2015 17:52	1
HS15060728-03	MW-1	16 Jun 2015 10:10			17 Jun 2015 18:16	1
HS15060728-04	MW-18	16 Jun 2015 10:45			17 Jun 2015 18:40	1
HS15060728-05	MW-19	16 Jun 2015 11:18			17 Jun 2015 19:51	1
HS15060728-06	MW-4	16 Jun 2015 12:10			17 Jun 2015 20:15	1
HS15060728-07	DUP-1	16 Jun 2015 00:00			17 Jun 2015 20:39	1
Batch ID R256445	**Test Name :** VPH - IOWA OA-1			**Matrix:** Water		
HS15060728-01	MW-5	16 Jun 2015 08:59			17 Jun 2015 20:13	1
HS15060728-06	MW-4	16 Jun 2015 12:10			17 Jun 2015 22:35	1
HS15060728-07	DUP-1	16 Jun 2015 00:00			17 Jun 2015 22:51	1
Batch ID R256451	**Test Name :** AMMONIA AS N BY SM4500 NH3-D (ISE)			**Matrix:** Water		
HS15060728-01	MW-5	16 Jun 2015 08:59			18 Jun 2015 13:35	1
HS15060728-02	MW-17	16 Jun 2015 09:40			18 Jun 2015 13:35	1
HS15060728-03	MW-1	16 Jun 2015 10:10			18 Jun 2015 13:35	1
HS15060728-04	MW-18	16 Jun 2015 10:45			18 Jun 2015 13:35	1
HS15060728-05	MW-19	16 Jun 2015 11:18			18 Jun 2015 13:35	1
HS15060728-06	MW-4	16 Jun 2015 12:10			18 Jun 2015 13:35	1
HS15060728-07	DUP-1	16 Jun 2015 00:00			18 Jun 2015 13:35	1

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R256468	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15060728-01	MW-5	16 Jun 2015 08:59			18 Jun 2015 19:27	1
HS15060728-08	TB-05515-72	16 Jun 2015 00:00			18 Jun 2015 18:31	1
HS15060728-09	TB-052215-71	16 Jun 2015 00:00			18 Jun 2015 18:59	1
Batch ID R256495	**Test Name :** ANIONS BY E300.0			**Matrix:** Water		
HS15060728-06	MW-4	16 Jun 2015 12:10			18 Jun 2015 18:54	5
Batch ID R256499	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15060728-02	MW-17	16 Jun 2015 09:40			18 Jun 2015 23:29	10
HS15060728-02	MW-17	16 Jun 2015 09:40			18 Jun 2015 23:01	1
HS15060728-04	MW-18	16 Jun 2015 10:45			19 Jun 2015 00:22	10
HS15060728-04	MW-18	16 Jun 2015 10:45			18 Jun 2015 23:54	1
HS15060728-06	MW-4	16 Jun 2015 12:10			18 Jun 2015 15:46	1
Batch ID R256524	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15060728-05	MW-19	16 Jun 2015 11:18			19 Jun 2015 11:41	10
HS15060728-05	MW-19	16 Jun 2015 11:18			19 Jun 2015 11:14	1
Batch ID R256530	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15060728-02	MW-17	16 Jun 2015 09:40			19 Jun 2015 14:43	100
HS15060728-03	MW-1	16 Jun 2015 10:10			19 Jun 2015 18:10	100
HS15060728-03	MW-1	16 Jun 2015 10:10			19 Jun 2015 17:44	10
HS15060728-07	DUP-1	16 Jun 2015 00:00			19 Jun 2015 20:20	10
HS15060728-07	DUP-1	16 Jun 2015 00:00			19 Jun 2015 19:52	1
Batch ID R256592	**Test Name :** VPH - IOWA OA-1			**Matrix:** Water		
HS15060728-02	MW-17	16 Jun 2015 09:40			19 Jun 2015 17:06	50
HS15060728-03	MW-1	16 Jun 2015 10:10			19 Jun 2015 17:24	50
HS15060728-04	MW-18	16 Jun 2015 10:45			19 Jun 2015 17:40	1
HS15060728-05	MW-19	16 Jun 2015 11:18			19 Jun 2015 16:15	1
Batch ID R256692	**Test Name :** DISSOLVED GASES BY RSK-175			**Matrix:** Water		
HS15060728-01	MW-5	16 Jun 2015 08:59			23 Jun 2015 11:40	1
HS15060728-02	MW-17	16 Jun 2015 09:40			23 Jun 2015 11:54	1
HS15060728-03	MW-1	16 Jun 2015 10:10			23 Jun 2015 12:10	1
HS15060728-04	MW-18	16 Jun 2015 10:45			23 Jun 2015 12:24	1
HS15060728-05	MW-19	16 Jun 2015 11:18			23 Jun 2015 12:40	1
HS15060728-06	MW-4	16 Jun 2015 12:10			23 Jun 2015 12:54	1
HS15060728-07	DUP-1	16 Jun 2015 00:00			23 Jun 2015 13:09	1

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R256695	**Test Name :** ALKALINITY BY SM2320B			**Matrix:** Water		
HS15060728-01	MW-5	16 Jun 2015 08:59			23 Jun 2015 12:30	1
HS15060728-02	MW-17	16 Jun 2015 09:40			23 Jun 2015 12:30	1
HS15060728-03	MW-1	16 Jun 2015 10:10			23 Jun 2015 12:30	1
HS15060728-04	MW-18	16 Jun 2015 10:45			23 Jun 2015 12:30	1
HS15060728-05	MW-19	16 Jun 2015 11:18			23 Jun 2015 12:30	1
HS15060728-06	MW-4	16 Jun 2015 12:10			23 Jun 2015 12:30	1
HS15060728-07	DUP-1	16 Jun 2015 00:00			23 Jun 2015 12:30	1
Batch ID R256804	**Test Name :** SUBCONTRACT ANALYSIS			**Matrix:** Water		
HS15060728-01	MW-5	16 Jun 2015 08:59			25 Jun 2015 07:25	1
HS15060728-02	MW-17	16 Jun 2015 09:40			25 Jun 2015 07:25	1
HS15060728-03	MW-1	16 Jun 2015 10:10			25 Jun 2015 07:25	1
HS15060728-04	MW-18	16 Jun 2015 10:45			25 Jun 2015 07:25	1
HS15060728-05	MW-19	16 Jun 2015 11:18			25 Jun 2015 07:25	1
HS15060728-06	MW-4	16 Jun 2015 12:10			25 Jun 2015 07:25	1
HS15060728-07	DUP-1	16 Jun 2015 00:00			25 Jun 2015 07:25	1

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256692** **Instrument:** **FID-4** **Method:** **RSK-175**

MBLK Sample ID: **GBLKW1-150611** Units: **ug/L** Analysis Date: **23-Jun-2015 11:01**
Client ID: Run ID: **FID-4_256692** SeqNo: **3330240** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	ND	0.500								

LCS Sample ID: **GLCSW1-150623** Units: **ug/L** Analysis Date: **23-Jun-2015 09:55**
Client ID: Run ID: **FID-4_256692** SeqNo: **3330238** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	8.649	0.500	9.647	0	89.7	75 - 125				

LCSD Sample ID: **GLCSDW1-150611** Units: **ug/L** Analysis Date: **23-Jun-2015 10:43**
Client ID: Run ID: **FID-4_256692** SeqNo: **3330239** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	9.093	0.500	9.647	0	94.3	75 - 125	8.649	5.01	30	

DUP Sample ID: **HS15060728-07dup** Units: **ug/L** Analysis Date: **23-Jun-2015 13:24**
Client ID: **DUP-1** Run ID: **FID-4_256692** SeqNo: **3330249** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	7.265	0.500					7.078	2.6	30	

The following samples were anayzed in this batch: HS15060728-01 HS15060728-02 HS15060728-03 HS15060728-04 HS15060728-05 HS15060728-06 HS15060728-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256445 **Instrument: FID-14** **Method: IA OA-1**

MBLK Sample ID: **GBLKW-150617** Units: **mg/L** Analysis Date: **17-Jun-2015 18:38**
Client ID: Run ID: **FID-14_256445** SeqNo: **3325066** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	*0.1264*	*0.0050*	*0.1*	*0*	*126*	*70 - 130*				

LCS Sample ID: **GLCS-150617** Units: **mg/L** Analysis Date: **17-Jun-2015 18:07**
Client ID: Run ID: **FID-14_256445** SeqNo: **3325065** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.099	0.050	1	0	110	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1165*	*0.0050*	*0.1*	*0*	*117*	*70 - 130*				

MS Sample ID: **HS15060578-05MS** Units: **mg/L** Analysis Date: **17-Jun-2015 19:10**
Client ID: Run ID: **FID-14_256445** SeqNo: **3325068** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.149	0.050	1	0	115	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1158*	*0.0050*	*0.1*	*0*	*116*	*70 - 130*				

MSD Sample ID: **HS15060578-05MSD** Units: **mg/L** Analysis Date: **17-Jun-2015 19:26**
Client ID: Run ID: **FID-14_256445** SeqNo: **3325069** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.169	0.050	1	0	117	70 - 130	1.149	1.72	30	
Surr: 4-Bromofluorobenzene	*0.1149*	*0.0050*	*0.1*	*0*	*115*	*70 - 130*	*0.1158*	*0.795*	*30*	

The following samples were anayzed in this batch: HS15060728-01 HS15060728-06 HS15060728-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256592 **Instrument: FID-14** **Method: IA OA-1**

MBLK Sample ID: **GBLKW-150619** Units: **mg/L** Analysis Date: **19-Jun-2015 15:44**
Client ID: Run ID: **FID-14_256592** SeqNo: **3328172** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	*0.1208*	*0.0050*	*0.1*	*0*	*121*	*70 - 130*				

LCS Sample ID: **GLCS-150619** Units: **mg/L** Analysis Date: **19-Jun-2015 15:28**
Client ID: Run ID: **FID-14_256592** SeqNo: **3328171** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.067	0.050	1	0	107	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1162*	*0.0050*	*0.1*	*0*	*116*	*70 - 130*				

MS Sample ID: **HS15060728-05MS** Units: **mg/L** Analysis Date: **19-Jun-2015 16:31**
Client ID: **MW-19** Run ID: **FID-14_256592** SeqNo: **3328175** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	2.917	0.050	1	0.9891	193	70 - 130				S
Surr: 4-Bromofluorobenzene	*0.118*	*0.0050*	*0.1*	*0*	*118*	*70 - 130*				

MSD Sample ID: **HS15060728-05MSD** Units: **mg/L** Analysis Date: **19-Jun-2015 16:47**
Client ID: **MW-19** Run ID: **FID-14_256592** SeqNo: **3328176** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	3.051	0.050	1	0.9891	206	70 - 130	2.917	4.47	30	S
Surr: 4-Bromofluorobenzene	*0.1162*	*0.0050*	*0.1*	*0*	*116*	*70 - 130*	*0.118*	*1.6*	*30*	

The following samples were anayzed in this batch: HS15060728-02 HS15060728-03 HS15060728-04 HS15060728-05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: 94438 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-94438** Units: **mg/L** Analysis Date: **22-Jun-2015 13:09**
Client ID: Run ID: **ICPMS05_256584** SeqNo: **3328638** PrepDate: **19-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	ND	0.200								

LCS Sample ID: **MLCS-94438** Units: **mg/L** Analysis Date: **22-Jun-2015 13:11**
Client ID: Run ID: **ICPMS05_256584** SeqNo: **3328639** PrepDate: **19-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	5.047	0.200	5	0	101	80 - 120				

MS Sample ID: **HS15060729-17MS** Units: **mg/L** Analysis Date: **22-Jun-2015 13:32**
Client ID: Run ID: **ICPMS05_256584** SeqNo: **3328647** PrepDate: **19-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	15.7	0.200	5	11.43	85.4	80 - 120				

MSD Sample ID: **HS15060729-17MSD** Units: **mg/L** Analysis Date: **22-Jun-2015 13:40**
Client ID: Run ID: **ICPMS05_256584** SeqNo: **3328650** PrepDate: **19-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	15.95	0.200	5	11.43	90.4	80 - 120	15.7	1.56	20	

DUP Sample ID: **HS15060729-17DUP** Units: **mg/L** Analysis Date: **22-Jun-2015 13:27**
Client ID: Run ID: **ICPMS05_256584** SeqNo: **3328645** PrepDate: **19-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	11.54	0.200					11.43	0.931	20	

PDS Sample ID: **HS15060729-17BS** Units: **mg/L** Analysis Date: **22-Jun-2015 13:43**
Client ID: Run ID: **ICPMS05_256584** SeqNo: **3328651** PrepDate: **19-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	20.59	0.200	10	11.43	91.6	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: 94438 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS15060729-17 DIL SX** Units: **mg/L** Analysis Date: **22-Jun-2015 13:30**
Client ID: Run ID: **ICPMS05_256584** SeqNo: **3328646** PrepDate: **19-Jun-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Potassium	11.57	1.00					11.43	1.24	10	

The following samples were anayzed in this batch: HS15060728-04 HS15060728-05 HS15060728-06 HS15060728-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: 94483 **Instrument: ICPMS04** **Method: SW6020**

MBLK Sample ID: **MBLK-94483** Units: **mg/L** Analysis Date: **23-Jun-2015 21:07**
Client ID: Run ID: **ICPMS04_256663** SeqNo: **3330881** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	ND	0.200								

LCS Sample ID: **MLCS-94483** Units: **mg/L** Analysis Date: **23-Jun-2015 21:11**
Client ID: Run ID: **ICPMS04_256663** SeqNo: **3330882** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	4.895	0.200	5	0	97.9	80 - 120				

MS Sample ID: **HS15060844-09MS** Units: **mg/L** Analysis Date: **23-Jun-2015 23:25**
Client ID: Run ID: **ICPMS04_256663** SeqNo: **3330911** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	13.47	0.200	5	7.923	111	80 - 120				

MSD Sample ID: **HS15060844-09MSD** Units: **mg/L** Analysis Date: **23-Jun-2015 23:30**
Client ID: Run ID: **ICPMS04_256663** SeqNo: **3330912** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	13.5	0.200	5	7.923	112	80 - 120	13.47	0.196	20	

DUP Sample ID: **HS15060844-09DUP** Units: **mg/L** Analysis Date: **23-Jun-2015 23:16**
Client ID: Run ID: **ICPMS04_256663** SeqNo: **3330909** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	8.253	0.200					7.923	4.08	20	

PDS Sample ID: **HS15060844-09BS** Units: **mg/L** Analysis Date: **23-Jun-2015 23:35**
Client ID: Run ID: **ICPMS04_256663** SeqNo: **3330913** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	17.45	0.200	10	7.923	95.2	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: 94483 **Instrument: ICPMS04** **Method: SW6020**

SD Sample ID: **HS15060844-09 DIL SX** Units: **mg/L** Analysis Date: **23-Jun-2015 23:21**
Client ID: Run ID: **ICPMS04_256663** SeqNo: **3330910** PrepDate: **22-Jun-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Potassium	8.006	1.00					7.923	1.04	10	

The following samples were anayzed in this batch: HS15060728-01 HS15060728-02 HS15060728-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: 94484 **Instrument: ICPMS05** **Method: SW6020 (DISSOLVED)**

MBLK Sample ID: **MBLKF2-94484** Units: **mg/L** Analysis Date: **23-Jun-2015 13:02**
Client ID: Run ID: **ICPMS05_256665** SeqNo: **3330184** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

MBLK Sample ID: **MBLKF1-94484** Units: **mg/L** Analysis Date: **23-Jun-2015 12:59**
Client ID: Run ID: **ICPMS05_256665** SeqNo: **3330183** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

MBLK Sample ID: **MBLK-94484** Units: **mg/L** Analysis Date: **23-Jun-2015 13:04**
Client ID: Run ID: **ICPMS05_256665** SeqNo: **3330185** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

LCS Sample ID: **MLCS-94484** Units: **mg/L** Analysis Date: **23-Jun-2015 13:12**
Client ID: Run ID: **ICPMS05_256665** SeqNo: **3330188** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.665	0.200	5	0	93.3	80 - 120				

MS Sample ID: **HS15060571-09MS** Units: **mg/L** Analysis Date: **23-Jun-2015 13:46**
Client ID: Run ID: **ICPMS05_256665** SeqNo: **3330201** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.758	0.200	5	0.0386	94.4	75 - 125				

MSD Sample ID: **HS15060571-09MSD** Units: **mg/L** Analysis Date: **23-Jun-2015 13:49**
Client ID: Run ID: **ICPMS05_256665** SeqNo: **3330202** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.618	0.200	5	0.0386	91.6	75 - 125	4.758	2.99	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: 94484 **Instrument: ICPMS05** **Method: SW6020 (DISSOLVED)**

DUP Sample ID: **HS15060571-09DUP** Units: **mg/L** Analysis Date: **23-Jun-2015 13:33**
Client ID: Run ID: **ICPMS05_256665** SeqNo: **3330196** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200					0.0386	0	20	

PDS Sample ID: **HS15060571-09BS** Units: **mg/L** Analysis Date: **23-Jun-2015 13:52**
Client ID: Run ID: **ICPMS05_256665** SeqNo: **3330203** PrepDate: **22-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	8.57	0.200	10	0.0386	85.3	75 - 125				

SD Sample ID: **HS15060571-09 DIL SX** Units: **mg/L** Analysis Date: **23-Jun-2015 13:36**
Client ID: Run ID: **ICPMS05_256665** SeqNo: **3330197** PrepDate: **22-Jun-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	ND	1.00					0.0386	0	10	

The following samples were anayzed in this batch: HS15060728-01 HS15060728-02 HS15060728-03 HS15060728-04 HS15060728-05 HS15060728-06 HS15060728-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256468** **Instrument:** **VOA4** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-150618** Units: **ug/L** Analysis Date: **18-Jun-2015 10:39**
Client ID: Run ID: **VOA4_256468** SeqNo: **3325398** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*57.58*	*1.0*	*50*	*0*	*115*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*48.31*	*1.0*	*50*	*0*	*96.6*	*70 - 125*				
Surr: Dibromofluoromethane	*56.84*	*1.0*	*50*	*0*	*114*	*74 - 125*				
Surr: Toluene-d8	*54.54*	*1.0*	*50*	*0*	*109*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256468** **Instrument:** **VOA4** **Method:** **SW8260**

LCS Sample ID: **VLCSW-150618** Units: **ug/L** Analysis Date: **18-Jun-2015 09:47**
Client ID: Run ID: **VOA4_256468** SeqNo: **3325397** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	53	1.0	50	0	106	70 - 125				
1,2-Dichloroethane	50.79	1.0	50	0	102	76 - 120				
1,3,5-Trimethylbenzene	53.24	1.0	50	0	106	80 - 123				
2-Butanone	105.2	2.0	100	0	105	60 - 140				
Benzene	51.19	1.0	50	0	102	80 - 120				
Cyclohexane	51.61	1.0	50	0	103	70 - 130				
Ethylbenzene	50.89	1.0	50	0	102	80 - 120				
Isopropylbenzene	54.16	1.0	50	0	108	75 - 130				
m,p-Xylene	102.5	2.0	100	0	103	80 - 120				
Methylcyclohexane	57.62	1.0	50	0	115	70 - 126				
Naphthalene	57.73	1.0	50	0	115	65 - 135				
n-Butylbenzene	57.22	1.0	50	0	114	75 - 128				
n-Propylbenzene	54.99	1.0	50	0	110	75 - 130				
o-Xylene	51.82	1.0	50	0	104	80 - 120				
Toluene	50.68	1.0	50	0	101	75 - 121				
Xylenes, Total	154.4	3.0	150	0	103	79 - 124				
Surr: 1,2-Dichloroethane-d4	*51.87*	*1.0*	*50*	*0*	*104*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.4*	*1.0*	*50*	*0*	*103*	*70 - 125*				
Surr: Dibromofluoromethane	*55.19*	*1.0*	*50*	*0*	*110*	*74 - 125*				
Surr: Toluene-d8	*54.51*	*1.0*	*50*	*0*	*109*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256468** **Instrument:** **VOA4** **Method:** **SW8260**

MS Sample ID: **HS15060532-04MS** Units: **ug/L** Analysis Date: **18-Jun-2015 12:50**
Client ID: Run ID: **VOA4_256468** SeqNo: **3325403** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	51.82	1.0	50	0	104	70 - 125				
1,2-Dichloroethane	48.49	1.0	50	0	97.0	76 - 120				
1,3,5-Trimethylbenzene	52.26	1.0	50	0	105	80 - 123				
2-Butanone	99.08	2.0	100	0	99.1	60 - 140				
Benzene	51.02	1.0	50	0	102	80 - 120				
Cyclohexane	55.5	1.0	50	0	111	70 - 130				
Ethylbenzene	49.64	1.0	50	0	99.3	80 - 120				
Isopropylbenzene	53.92	1.0	50	0	108	75 - 130				
m,p-Xylene	101.6	2.0	100	0	102	80 - 120				
Methylcyclohexane	58.29	1.0	50	0	117	70 - 126				
Naphthalene	50.36	1.0	50	0	101	65 - 135				
n-Butylbenzene	55.27	1.0	50	0	111	75 - 128				
n-Propylbenzene	54.75	1.0	50	0	109	75 - 130				
o-Xylene	50.88	1.0	50	0	102	80 - 120				
Toluene	50.17	1.0	50	0	100	75 - 121				
Xylenes, Total	152.5	3.0	150	0	102	80 - 124				
Surr: 1,2-Dichloroethane-d4	*51.14*	*1.0*	*50*	*0*	*102*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.92*	*1.0*	*50*	*0*	*99.8*	*70 - 125*				
Surr: Dibromofluoromethane	*53.37*	*1.0*	*50*	*0*	*107*	*74 - 125*				
Surr: Toluene-d8	*53.58*	*1.0*	*50*	*0*	*107*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256468 **Instrument: VOA4** **Method: SW8260**

MSD Sample ID: **HS15060532-04MSD** Units: **ug/L** Analysis Date: **18-Jun-2015 13:17**
Client ID: Run ID: **VOA4_256468** SeqNo: **3325404** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	53.92	1.0	50	0	108	70 - 125	51.82	3.98	20	
1,2-Dichloroethane	50.54	1.0	50	0	101	76 - 120	48.49	4.15	20	
1,3,5-Trimethylbenzene	55.63	1.0	50	0	111	80 - 123	52.26	6.23	20	
2-Butanone	108.2	2.0	100	0	108	60 - 140	99.08	8.81	20	
Benzene	52.02	1.0	50	0	104	80 - 120	51.02	1.94	20	
Cyclohexane	55.17	1.0	50	0	110	70 - 130	55.5	0.586	20	
Ethylbenzene	52.37	1.0	50	0	105	80 - 120	49.64	5.35	20	
Isopropylbenzene	55.05	1.0	50	0	110	75 - 130	53.92	2.07	20	
m,p-Xylene	104.5	2.0	100	0	105	80 - 120	101.6	2.82	20	
Methylcyclohexane	59.35	1.0	50	0	119	70 - 126	58.29	1.8	20	
Naphthalene	58.94	1.0	50	0	118	65 - 135	50.36	15.7	20	
n-Butylbenzene	59.35	1.0	50	0	119	75 - 128	55.27	7.12	20	
n-Propylbenzene	56.74	1.0	50	0	113	75 - 130	54.75	3.57	20	
o-Xylene	51.62	1.0	50	0	103	80 - 120	50.88	1.44	20	
Toluene	51.03	1.0	50	0	102	75 - 121	50.17	1.71	20	
Xylenes, Total	156.1	3.0	150	0	104	80 - 124	152.5	2.36	20	
Surr: 1,2-Dichloroethane-d4	*51.18*	*1.0*	*50*	*0*	*102*	*71 - 125*	*51.14*	*0.0785*	*20*	
Surr: 4-Bromofluorobenzene	*50.03*	*1.0*	*50*	*0*	*100*	*70 - 125*	*49.92*	*0.219*	*20*	
Surr: Dibromofluoromethane	*55.85*	*1.0*	*50*	*0*	*112*	*74 - 125*	*53.37*	*4.54*	*20*	
Surr: Toluene-d8	*53.7*	*1.0*	*50*	*0*	*107*	*75 - 125*	*53.58*	*0.226*	*20*	

The following samples were anayzed in this batch: HS15060728-01 HS15060728-08 HS15060728-09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256499** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-150618** Units: **ug/L** Analysis Date: **18-Jun-2015 15:21**
Client ID: Run ID: **VOA2_256499** SeqNo: **3326027** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*44.25*	*1.0*	*50*	*0*	*88.5*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*47.36*	*1.0*	*50*	*0*	*94.7*	*70 - 125*				
Surr: Dibromofluoromethane	*47.69*	*1.0*	*50*	*0*	*95.4*	*74 - 125*				
Surr: Toluene-d8	*47.67*	*1.0*	*50*	*0*	*95.3*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256499** **Instrument:** **VOA2** **Method:** **SW8260**

LCS Sample ID: **VLCSW-150618** Units: **ug/L** Analysis Date: **18-Jun-2015 14:30**
Client ID: Run ID: **VOA2_256499** SeqNo: **3326026** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	45.87	1.0	50	0	91.7	70 - 125				
1,2-Dichloroethane	42.19	1.0	50	0	84.4	76 - 120				
1,3,5-Trimethylbenzene	48.01	1.0	50	0	96.0	80 - 123				
2-Butanone	122.1	2.0	100	0	122	60 - 140				
Benzene	44.75	1.0	50	0	89.5	80 - 120				
Cyclohexane	45.9	1.0	50	0	91.8	70 - 130				
Ethylbenzene	47.56	1.0	50	0	95.1	80 - 120				
Isopropylbenzene	49.89	1.0	50	0	99.8	75 - 130				
m,p-Xylene	91.75	2.0	100	0	91.7	80 - 120				
Methylcyclohexane	48.99	1.0	50	0	98.0	70 - 126				
Naphthalene	52.41	1.0	50	0	105	65 - 135				
n-Butylbenzene	51.21	1.0	50	0	102	75 - 128				
n-Propylbenzene	48.82	1.0	50	0	97.6	75 - 130				
o-Xylene	47.54	1.0	50	0	95.1	80 - 120				
Toluene	44.34	1.0	50	0	88.7	75 - 121				
Xylenes, Total	139.3	3.0	150	0	92.9	79 - 124				
Surr: 1,2-Dichloroethane-d4	*43.81*	*1.0*	*50*	*0*	*87.6*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*48.04*	*1.0*	*50*	*0*	*96.1*	*70 - 125*				
Surr: Dibromofluoromethane	*48.68*	*1.0*	*50*	*0*	*97.4*	*74 - 125*				
Surr: Toluene-d8	*46.67*	*1.0*	*50*	*0*	*93.3*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256499** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS15060490-04MS** Units: **ug/L** Analysis Date: **18-Jun-2015 20:02**
Client ID: Run ID: **VOA2_256499** SeqNo: **3326038** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	44.52	1.0	50	0	89.0	70 - 125				
1,2-Dichloroethane	38.75	1.0	50	0	77.5	76 - 120				
1,3,5-Trimethylbenzene	47.55	1.0	50	0	95.1	80 - 123				
2-Butanone	112.2	2.0	100	0	112	60 - 140				
Benzene	42.09	1.0	50	0	84.2	80 - 120				
Cyclohexane	49.95	1.0	50	0	99.9	70 - 130				
Ethylbenzene	46.22	1.0	50	0	92.4	80 - 120				
Isopropylbenzene	49.43	1.0	50	0	98.9	75 - 130				
m,p-Xylene	88.84	2.0	100	0	88.8	80 - 120				
Methylcyclohexane	53.41	1.0	50	1.902	103	70 - 126				
Naphthalene	51.08	1.0	50	0	102	65 - 135				
n-Butylbenzene	50.88	1.0	50	0	102	75 - 128				
n-Propylbenzene	48.66	1.0	50	0	97.3	75 - 130				
o-Xylene	46.11	1.0	50	0.529	91.2	80 - 120				
Toluene	40.61	1.0	50	0	81.2	75 - 121				
Xylenes, Total	134.9	3.0	150	0.529	89.6	80 - 124				
Surr: 1,2-Dichloroethane-d4	*43.44*	*1.0*	*50*	*0*	*86.9*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*47.66*	*1.0*	*50*	*0*	*95.3*	*70 - 125*				
Surr: Dibromofluoromethane	*48.34*	*1.0*	*50*	*0*	*96.7*	*74 - 125*				
Surr: Toluene-d8	*45.15*	*1.0*	*50*	*0*	*90.3*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256499 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS15060490-04MSD** Units: **ug/L** Analysis Date: **18-Jun-2015 20:28**
Client ID: Run ID: **VOA2_256499** SeqNo: **3326039** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	43.25	1.0	50	0	86.5	70 - 125	44.52	2.9	20	
1,2-Dichloroethane	38.66	1.0	50	0	77.3	76 - 120	38.75	0.228	20	
1,3,5-Trimethylbenzene	45.25	1.0	50	0	90.5	80 - 123	47.55	4.94	20	
2-Butanone	107.4	2.0	100	0	107	60 - 140	112.2	4.4	20	
Benzene	41.98	1.0	50	0	84.0	80 - 120	42.09	0.248	20	
Cyclohexane	49.19	1.0	50	0	98.4	70 - 130	49.95	1.53	20	
Ethylbenzene	45.35	1.0	50	0	90.7	80 - 120	46.22	1.9	20	
Isopropylbenzene	49.07	1.0	50	0	98.1	75 - 130	49.43	0.719	20	
m,p-Xylene	88.34	2.0	100	0	88.3	80 - 120	88.84	0.563	20	
Methylcyclohexane	51.75	1.0	50	1.902	99.7	70 - 126	53.41	3.16	20	
Naphthalene	51.46	1.0	50	0	103	65 - 135	51.08	0.735	20	
n-Butylbenzene	49.49	1.0	50	0	99.0	75 - 128	50.88	2.78	20	
n-Propylbenzene	46.19	1.0	50	0	92.4	75 - 130	48.66	5.2	20	
o-Xylene	44.97	1.0	50	0.529	88.9	80 - 120	46.11	2.5	20	
Toluene	41.85	1.0	50	0	83.7	75 - 121	40.61	2.99	20	
Xylenes, Total	133.3	3.0	150	0.529	88.5	80 - 124	134.9	1.22	20	
Surr: 1,2-Dichloroethane-d4	*44.14*	*1.0*	*50*	*0*	*88.3*	*71 - 125*	*43.44*	*1.62*	*20*	
Surr: 4-Bromofluorobenzene	*49.08*	*1.0*	*50*	*0*	*98.2*	*70 - 125*	*47.66*	*2.95*	*20*	
Surr: Dibromofluoromethane	*48.5*	*1.0*	*50*	*0*	*97.0*	*74 - 125*	*48.34*	*0.34*	*20*	
Surr: Toluene-d8	*47.05*	*1.0*	*50*	*0*	*94.1*	*75 - 125*	*45.15*	*4.12*	*20*	

The following samples were anayzed in this batch: HS15060728-02 HS15060728-04 HS15060728-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256524** **Instrument:** **VOA4** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-150619** Units: **ug/L** Analysis Date: **19-Jun-2015 10:48**
Client ID: Run ID: **VOA4_256524** SeqNo: **3326922** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*59.27*	*1.0*	*50*	*0*	*119*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.35*	*1.0*	*50*	*0*	*98.7*	*70 - 125*				
Surr: Dibromofluoromethane	*57.41*	*1.0*	*50*	*0*	*115*	*74 - 125*				
Surr: Toluene-d8	*45.33*	*1.0*	*50*	*0*	*90.7*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256524** **Instrument:** **VOA4** **Method:** **SW8260**

LCS Sample ID: **VLCSW-150619** Units: **ug/L** Analysis Date: **19-Jun-2015 09:54**
Client ID: Run ID: **VOA4_256524** SeqNo: **3326940** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	51.89	1.0	50	0	104	70 - 125				
1,2-Dichloroethane	55.93	1.0	50	0	112	76 - 120				
1,3,5-Trimethylbenzene	52.11	1.0	50	0	104	80 - 123				
2-Butanone	105.6	2.0	100	0	106	60 - 140				
Benzene	49.45	1.0	50	0	98.9	80 - 120				
Cyclohexane	46.87	1.0	50	0	93.7	70 - 130				
Ethylbenzene	48.32	1.0	50	0	96.6	80 - 120				
Isopropylbenzene	55.77	1.0	50	0	112	75 - 130				
m,p-Xylene	97.43	2.0	100	0	97.4	80 - 120				
Methylcyclohexane	55.08	1.0	50	0	110	70 - 126				
Naphthalene	56.97	1.0	50	0	114	65 - 135				
n-Butylbenzene	59.87	1.0	50	0	120	75 - 128				
n-Propylbenzene	53.1	1.0	50	0	106	75 - 130				
o-Xylene	49.22	1.0	50	0	98.4	80 - 120				
Toluene	48.9	1.0	50	0	97.8	75 - 121				
Xylenes, Total	146.7	3.0	150	0	97.8	79 - 124				
Surr: 1,2-Dichloroethane-d4	*58.61*	*1.0*	*50*	*0*	*117*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.17*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*56.82*	*1.0*	*50*	*0*	*114*	*74 - 125*				
Surr: Toluene-d8	*52.98*	*1.0*	*50*	*0*	*106*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256524 **Instrument: VOA4** **Method: SW8260**

MS Sample ID: **HS15060744-05MS** Units: **ug/L** Analysis Date: **19-Jun-2015 14:19**
Client ID: Run ID: **VOA4_256524** SeqNo: **3328052** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	51.18	1.0	50	0	102	70 - 125				
1,2-Dichloroethane	53.27	1.0	50	0	107	76 - 120				
1,3,5-Trimethylbenzene	51.51	1.0	50	0	103	80 - 123				
2-Butanone	104.9	2.0	100	0	105	60 - 140				
Benzene	67.84	1.0	50	18.37	98.9	80 - 120				
Cyclohexane	52.62	1.0	50	1.216	103	70 - 130				
Ethylbenzene	49.38	1.0	50	0	98.8	80 - 120				
Isopropylbenzene	53.93	1.0	50	0	108	75 - 130				
m,p-Xylene	99.79	2.0	100	0	99.8	80 - 120				
Methylcyclohexane	53.78	1.0	50	0	108	70 - 126				
Naphthalene	53.77	1.0	50	0	108	65 - 135				
n-Butylbenzene	54.03	1.0	50	0	108	75 - 128				
n-Propylbenzene	52.95	1.0	50	0	106	75 - 130				
o-Xylene	50.29	1.0	50	0	101	80 - 120				
Toluene	50.6	1.0	50	0.6196	100.0	75 - 121				
Xylenes, Total	150.1	3.0	150	0	100	80 - 124				
Surr: 1,2-Dichloroethane-d4	*59.55*	*1.0*	*50*	*0*	*119*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*52.01*	*1.0*	*50*	*0*	*104*	*70 - 125*				
Surr: Dibromofluoromethane	*59.63*	*1.0*	*50*	*0*	*119*	*74 - 125*				
Surr: Toluene-d8	*52.73*	*1.0*	*50*	*0*	*105*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256524 **Instrument: VOA4** **Method: SW8260**

MSD Sample ID: **HS15060744-05MSD** Units: **ug/L** Analysis Date: **19-Jun-2015 14:45**
Client ID: Run ID: **VOA4_256524** SeqNo: **3328053** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	51.33	1.0	50	0	103	70 - 125	51.18	0.278	20	
1,2-Dichloroethane	55.19	1.0	50	0	110	76 - 120	53.27	3.54	20	
1,3,5-Trimethylbenzene	52.92	1.0	50	0	106	80 - 123	51.51	2.68	20	
2-Butanone	100.9	2.0	100	0	101	60 - 140	104.9	3.88	20	
Benzene	69.16	1.0	50	18.37	102	80 - 120	67.84	1.92	20	
Cyclohexane	51.2	1.0	50	1.216	100.0	70 - 130	52.62	2.74	20	
Ethylbenzene	50.41	1.0	50	0	101	80 - 120	49.38	2.05	20	
Isopropylbenzene	54.98	1.0	50	0	110	75 - 130	53.93	1.92	20	
m,p-Xylene	102.9	2.0	100	0	103	80 - 120	99.79	3.1	20	
Methylcyclohexane	54.35	1.0	50	0	109	70 - 126	53.78	1.06	20	
Naphthalene	69.51	1.0	50	0	139	65 - 135	53.77	25.5	20	SR
n-Butylbenzene	55.03	1.0	50	0	110	75 - 128	54.03	1.83	20	
n-Propylbenzene	53.88	1.0	50	0	108	75 - 130	52.95	1.75	20	
o-Xylene	50.19	1.0	50	0	100	80 - 120	50.29	0.198	20	
Toluene	51.17	1.0	50	0.6196	101	75 - 121	50.6	1.11	20	
Xylenes, Total	153.1	3.0	150	0	102	80 - 124	150.1	2.01	20	
Surr: 1,2-Dichloroethane-d4	*56.85*	*1.0*	*50*	*0*	*114*	*71 - 125*	*59.55*	*4.63*	*20*	
Surr: 4-Bromofluorobenzene	*52.14*	*1.0*	*50*	*0*	*104*	*70 - 125*	*52.01*	*0.236*	*20*	
Surr: Dibromofluoromethane	*57.98*	*1.0*	*50*	*0*	*116*	*74 - 125*	*59.63*	*2.81*	*20*	
Surr: Toluene-d8	*53.35*	*1.0*	*50*	*0*	*107*	*75 - 125*	*52.73*	*1.16*	*20*	

The following samples were anayzed in this batch: HS15060728-05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256530** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-150619** Units: **ug/L** Analysis Date: **19-Jun-2015 11:44**
Client ID: Run ID: **VOA2_256530** SeqNo: **3326965** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
2-Butanone	ND	10								
Benzene	ND	5.0								
Cyclohexane	ND	5.0								
Ethylbenzene	ND	5.0								
Isopropylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylcyclohexane	ND	5.0								
Naphthalene	ND	5.0								
n-Butylbenzene	ND	5.0								
n-Propylbenzene	ND	5.0								
o-Xylene	ND	5.0								
Toluene	ND	5.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	*41.42*	*0*	*50*	*0*	*82.8*	*70 - 125*				
Surr: 4-Bromofluorobenzene	*46.6*	*0*	*50*	*0*	*93.2*	*72 - 125*				
Surr: Dibromofluoromethane	*48.08*	*0*	*50*	*0*	*96.2*	*71 - 125*				
Surr: Toluene-d8	*47.32*	*0*	*50*	*0*	*94.6*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256530** **Instrument:** **VOA2** **Method:** **SW8260**

LCS Sample ID: **VLCSW-150619** Units: **ug/L** Analysis Date: **19-Jun-2015 10:53**
Client ID: Run ID: **VOA2_256530** SeqNo: **3326964** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	46.23	5.0	50	0	92.5	70 - 125				
1,2-Dichloroethane	42.41	5.0	50	0	84.8	76 - 120				
1,3,5-Trimethylbenzene	49.29	5.0	50	0	98.6	80 - 123				
2-Butanone	115.4	10	100	0	115	58 - 132				
Benzene	43.4	5.0	50	0	86.8	73 - 121				
Cyclohexane	47.86	5.0	50	0	95.7	66 - 125				
Ethylbenzene	49.27	5.0	50	0	98.5	80 - 120				
Isopropylbenzene	51.49	5.0	50	0	103	75 - 130				
m,p-Xylene	94.43	10	100	0	94.4	78 - 121				
Methylcyclohexane	51.53	5.0	50	0	103	70 - 122				
Naphthalene	52.03	5.0	50	0	104	65 - 135				
n-Butylbenzene	53.77	5.0	50	0	108	77 - 120				
n-Propylbenzene	49.67	5.0	50	0	99.3	78 - 120				
o-Xylene	48.63	5.0	50	0	97.3	80 - 120				
Toluene	43.91	5.0	50	0	87.8	80 - 120				
Xylenes, Total	143.1	15	150	0	95.4	80 - 120				
Surr: 1,2-Dichloroethane-d4	*42.19*	*0*	*50*	*0*	*84.4*	*70 - 125*				
Surr: 4-Bromofluorobenzene	*47.59*	*0*	*50*	*0*	*95.2*	*72 - 125*				
Surr: Dibromofluoromethane	*47.14*	*0*	*50*	*0*	*94.3*	*71 - 125*				
Surr: Toluene-d8	*46.26*	*0*	*50*	*0*	*92.5*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256530 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS15060574-12MS** Units: **ug/L** Analysis Date: **19-Jun-2015 13:51**
Client ID: Run ID: **VOA2_256530** SeqNo: **3326970** PrepDate: DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	11250	1200	12500	0	90.0	70 - 125				
1,2-Dichloroethane	10040	1200	12500	0	80.3	76 - 120				
1,3,5-Trimethylbenzene	12280	1200	12500	0	98.2	80 - 120				
2-Butanone	28050	2500	25000	0	112	58 - 132				
Benzene	10920	1200	12500	0	87.3	73 - 121				
Cyclohexane	12580	1200	12500	0	101	66 - 125				
Ethylbenzene	12520	1200	12500	0	100	80 - 120				
Isopropylbenzene	12930	1200	12500	0	103	75 - 130				
m,p-Xylene	23990	2500	25000	0	95.9	78 - 121				
Methylcyclohexane	13550	1200	12500	0	108	70 - 122				
Naphthalene	12010	1200	12500	0	96.0	65 - 135				
n-Butylbenzene	12980	1200	12500	0	104	77 - 120				
n-Propylbenzene	12400	1200	12500	0	99.2	78 - 120				
o-Xylene	12230	1200	12500	0	97.9	80 - 120				
Toluene	11280	1200	12500	0	90.3	80 - 120				
Xylenes, Total	36220	3800	37500	0	96.6	80 - 120				
Surr: 1,2-Dichloroethane-d4	*10440*	*0*	*12500*	*0*	*83.5*	*70 - 125*				
Surr: 4-Bromofluorobenzene	*11950*	*0*	*12500*	*0*	*95.6*	*72 - 125*				
Surr: Dibromofluoromethane	*11920*	*0*	*12500*	*0*	*95.3*	*71 - 125*				
Surr: Toluene-d8	*11880*	*0*	*12500*	*0*	*95.1*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256530 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS15060574-12MSD** Units: **ug/L** Analysis Date: **19-Jun-2015 14:17**
Client ID: Run ID: **VOA2_256530** SeqNo: **3326971** PrepDate: DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	11330	1200	12500	0	90.7	70 - 125	11250	0.708	20	
1,2-Dichloroethane	10370	1200	12500	0	83.0	76 - 120	10040	3.28	20	
1,3,5-Trimethylbenzene	12210	1200	12500	0	97.7	80 - 123	12280	0.552	20	
2-Butanone	28380	2500	25000	0	114	58 - 132	28050	1.16	20	
Benzene	10840	1200	12500	0	86.7	73 - 121	10920	0.745	20	
Cyclohexane	12670	1200	12500	0	101	66 - 125	12580	0.772	20	
Ethylbenzene	12480	1200	12500	0	99.8	80 - 120	12520	0.352	20	
Isopropylbenzene	12910	1200	12500	0	103	75 - 130	12930	0.121	20	
m,p-Xylene	23970	2500	25000	0	95.9	78 - 121	23990	0.0606	20	
Methylcyclohexane	12830	1200	12500	0	103	70 - 122	13550	5.42	20	
Naphthalene	12550	1200	12500	0	100	65 - 135	12010	4.43	20	
n-Butylbenzene	13260	1200	12500	0	106	77 - 120	12980	2.15	20	
n-Propylbenzene	12300	1200	12500	0	98.4	78 - 120	12400	0.813	20	
o-Xylene	12210	1200	12500	0	97.6	80 - 120	12230	0.231	20	
Toluene	11240	1200	12500	0	89.9	80 - 120	11280	0.407	20	
Xylenes, Total	36180	3800	37500	0	96.5	78 - 121	36220	0.118	20	
Surr: 1,2-Dichloroethane-d4	*10830*	*0*	*12500*	*0*	*86.6*	*70 - 125*	*10440*	*3.68*	*20*	
Surr: 4-Bromofluorobenzene	*12110*	*0*	*12500*	*0*	*96.8*	*72 - 125*	*11950*	*1.32*	*20*	
Surr: Dibromofluoromethane	*11870*	*0*	*12500*	*0*	*94.9*	*71 - 125*	*11920*	*0.437*	*20*	
Surr: Toluene-d8	*11870*	*0*	*12500*	*0*	*95.0*	*75 - 125*	*11880*	*0.104*	*20*	

The following samples were anayzed in this batch: HS15060728-02 HS15060728-03 HS15060728-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256424 **Instrument: ICS3000** **Method: E300**

MBLK Sample ID: **WBLKW1-061715** Units: **mg/L** Analysis Date: **17-Jun-2015 12:15**
Client ID: Run ID: **ICS3000_256424** SeqNo: **3324702** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	ND	0.100								
Phosphorus, Orthophosphate (As P)	ND	0.100								
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW1-061715** Units: **mg/L** Analysis Date: **17-Jun-2015 12:39**
Client ID: Run ID: **ICS3000_256424** SeqNo: **3324703** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.944	0.100	4	0	98.6	90 - 110				
Phosphorus, Orthophosphate (As P)	3.801	0.100	4	0	95.0	90 - 110				
Sulfate	19.69	0.500	20	0	98.5	90 - 110				

LCSD Sample ID: **WLCSDW1-061715** Units: **mg/L** Analysis Date: **17-Jun-2015 13:02**
Client ID: Run ID: **ICS3000_256424** SeqNo: **3324704** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.979	0.100	4	0	99.5	90 - 110	3.944	0.884	20	
Phosphorus, Orthophosphate (As P)	3.869	0.100	4	0	96.7	90 - 110	3.801	1.77	20	
Sulfate	19.97	0.500	20	0	99.9	90 - 110	19.69	1.42	20	

MS Sample ID: **HS15060729-01MS** Units: **mg/L** Analysis Date: **17-Jun-2015 22:14**
Client ID: Run ID: **ICS3000_256424** SeqNo: **3324720** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.339	0.100	2	1.41	96.4	80 - 120				
Phosphorus, Orthophosphate (As P)	1.607	0.100	2	0	80.4	80 - 120				
Sulfate	226.9	0.500	10	223.7	32.7	80 - 120				SEO

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: **R256424** **Instrument:** **ICS3000** **Method:** **E300**

MS Sample ID: **HS15060728-01MS** Units: **mg/L** Analysis Date: **17-Jun-2015 15:52**
Client ID: **MW-5** Run ID: **ICS3000_256424** SeqNo: **3324706** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	7.178	0.100	2	5.181	99.8	80 - 120				
Phosphorus, Orthophosphate (As P)	1.601	0.100	2	0	80.0	80 - 120				
Sulfate	170.1	0.500	10	162.3	77.5	80 - 120				SEO

MSD Sample ID: **HS15060729-01MSD** Units: **mg/L** Analysis Date: **17-Jun-2015 22:38**
Client ID: Run ID: **ICS3000_256424** SeqNo: **3324721** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.361	0.100	2	1.41	97.6	80 - 120	3.339	0.657	20	
Phosphorus, Orthophosphate (As P)	1.643	0.100	2	0	82.2	80 - 120	1.607	2.22	20	
Sulfate	229	0.500	10	223.7	52.9	80 - 120	226.9	0.886	20	SEO

MSD Sample ID: **HS15060728-01MSD** Units: **mg/L** Analysis Date: **17-Jun-2015 16:15**
Client ID: **MW-5** Run ID: **ICS3000_256424** SeqNo: **3324707** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	7.335	0.100	2	5.181	108	80 - 120	7.178	2.16	20	
Phosphorus, Orthophosphate (As P)	1.631	0.100	2	0	81.6	80 - 120	1.601	1.86	20	
Sulfate	173.6	0.500	10	162.3	113	80 - 120	170.1	2.08	20	EO

The following samples were anayzed in this batch: HS15060728-01 HS15060728-02 HS15060728-03 HS15060728-04 HS15060728-05 HS15060728-06 HS15060728-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256451 **Instrument: WetChem_HS** **Method: SM4500 NH3-D**

MBLK Sample ID: **MBLK-256451** Units: **mg/L** Analysis Date: **18-Jun-2015 13:35**
Client ID: Run ID: **WetChem_HS_256451** SeqNo: **3325159** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	ND	0.20								

LCS Sample ID: **LCS-256451** Units: **mg/L** Analysis Date: **18-Jun-2015 13:35**
Client ID: Run ID: **WetChem_HS_256451** SeqNo: **3325160** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	10.2	0.20	10	0	102	80 - 120				

MS Sample ID: **HS15060717-02MS** Units: **mg/L** Analysis Date: **18-Jun-2015 13:35**
Client ID: Run ID: **WetChem_HS_256451** SeqNo: **3325161** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	12.5	0.20	10	1.64	109	80 - 120				

MSD Sample ID: **HS15060717-02MSD** Units: **mg/L** Analysis Date: **18-Jun-2015 13:35**
Client ID: Run ID: **WetChem_HS_256451** SeqNo: **3325162** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	12.6	0.20	10	1.64	110	80 - 120	12.5	0.797	20	

The following samples were anayzed in this batch: HS15060728-01 HS15060728-02 HS15060728-03 HS15060728-04 HS15060728-05 HS15060728-06 HS15060728-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256495 **Instrument: ICS3K2** **Method: E300**

MBLK Sample ID: **WBLKW3-061715** Units: **mg/L** Analysis Date: **18-Jun-2015 05:36**
Client ID: Run ID: **ICS3K2_256495** SeqNo: **3325971** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW3-061715** Units: **mg/L** Analysis Date: **18-Jun-2015 05:58**
Client ID: Run ID: **ICS3K2_256495** SeqNo: **3325972** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.66	0.500	20	0	98.3	90 - 110				

LCSD Sample ID: **WLCSDW3-061715** Units: **mg/L** Analysis Date: **18-Jun-2015 06:19**
Client ID: Run ID: **ICS3K2_256495** SeqNo: **3325973** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.61	0.500	20	0	98.1	90 - 110	19.66	0.25	20	

MS Sample ID: **HS15060729-23MS** Units: **mg/L** Analysis Date: **17-Jun-2015 22:00**
Client ID: Run ID: **ICS3K2_256495** SeqNo: **3325959** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	168.8	0.500	10	161.1	76.8	80 - 120				SEO

MSD Sample ID: **HS15060729-23MSD** Units: **mg/L** Analysis Date: **17-Jun-2015 22:22**
Client ID: Run ID: **ICS3K2_256495** SeqNo: **3325960** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	168.6	0.500	10	161.1	75.2	80 - 120	168.8	0.0925	20	SEO

The following samples were anayzed in this batch: HS15060728-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15060728

QC BATCH REPORT

Batch ID: R256695 **Instrument: ManTech01** **Method: SM2320B**

MBLK Sample ID: **MBLK-256695** Units: **mg/L** Analysis Date: **23-Jun-2015 12:30**
Client ID: Run ID: **ManTech01_256695** SeqNo: **3330293** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								
Alkalinity, Hydroxide (As CaCO3)	ND	5.00								
Alkalinity, Total (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS-256695** Units: **mg/L** Analysis Date: **23-Jun-2015 12:30**
Client ID: Run ID: **ManTech01_256695** SeqNo: **3330294** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1039	5.00	1000	0	104	80 - 120				

LCSD Sample ID: **LCSD-256695** Units: **mg/L** Analysis Date: **23-Jun-2015 12:30**
Client ID: Run ID: **ManTech01_256695** SeqNo: **3330295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1037	5.00	1000	0	104	80 - 120	1039	0.133	20	

DUP Sample ID: **HS15060728-01DUP** Units: **mg/L** Analysis Date: **23-Jun-2015 12:30**
Client ID: **MW-5** Run ID: **ManTech01_256695** SeqNo: **3330296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	490.1	5.00					491.1	0.21	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	490.1	5.00					491.1	0.209	20	

The following samples were anayzed in this batch: HS15060728-01 HS15060728-02 HS15060728-03 HS15060728-04 HS15060728-05 HS15060728-06 HS15060728-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: **HS15060728**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	31-Jul-2015
Louisiana	03087 2014/2015	30-Jun-2015
North Carolina	624 - 2015	31-Dec-2015
Oklahoma	2014-128	31-Aug-2015
Texas	T104704231-15-15	30-Apr-2016

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15060728

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15060728-01	MW-5	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-01	MW-5	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-01	MW-5	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-01	MW-5	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-01	MW-5	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-01	MW-5	Login	6/17/2015 1:28:05 PM	CGG	VW-3
HS15060728-01	MW-5	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-01	MW-5	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-01	MW-5	Login	6/17/2015 1:28:05 PM	CGG	Sub
HS15060728-02	MW-17	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-02	MW-17	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-02	MW-17	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-02	MW-17	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-02	MW-17	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-02	MW-17	Login	6/17/2015 1:28:05 PM	CGG	VW-3
HS15060728-02	MW-17	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-02	MW-17	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-02	MW-17	Login	6/17/2015 1:28:05 PM	CGG	Sub
HS15060728-03	MW-1	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-03	MW-1	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-03	MW-1	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-03	MW-1	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-03	MW-1	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-03	MW-1	Login	6/17/2015 1:28:05 PM	CGG	VW-3
HS15060728-03	MW-1	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-03	MW-1	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-03	MW-1	Login	6/17/2015 1:28:05 PM	CGG	Sub
HS15060728-04	MW-18	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-04	MW-18	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-04	MW-18	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-04	MW-18	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-04	MW-18	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-04	MW-18	Login	6/17/2015 1:28:05 PM	CGG	VW-3
HS15060728-04	MW-18	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-04	MW-18	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-04	MW-18	Login	6/17/2015 1:28:05 PM	CGG	Sub
HS15060728-05	MW-19	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-05	MW-19	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-05	MW-19	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-05	MW-19	Login	6/17/2015 1:28:05 PM	CGG	24C

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15060728

SAMPLE TRACKING

HS15060728-05	MW-19	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-05	MW-19	Login	6/17/2015 1:28:05 PM	CGG	VW-3
HS15060728-05	MW-19	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-05	MW-19	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-05	MW-19	Login	6/17/2015 1:28:05 PM	CGG	Sub
HS15060728-06	MW-4	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-06	MW-4	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-06	MW-4	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-06	MW-4	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-06	MW-4	Login	6/17/2015 1:28:05 PM	CGG	24C
HS15060728-06	MW-4	Login	6/17/2015 1:28:05 PM	CGG	VW-3
HS15060728-06	MW-4	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-06	MW-4	Login	6/17/2015 1:28:05 PM	CGG	TPH C2
HS15060728-06	MW-4	Login	6/17/2015 1:28:05 PM	CGG	Sub
HS15060728-07	DUP-1	Login	6/17/2015 1:36:07 PM	CGG	11B
HS15060728-07	DUP-1	Login	6/17/2015 1:36:07 PM	CGG	11B
HS15060728-07	DUP-1	Login	6/17/2015 1:36:07 PM	CGG	11B
HS15060728-07	DUP-1	Login	6/17/2015 1:36:07 PM	CGG	11B
HS15060728-07	DUP-1	Login	6/17/2015 1:36:07 PM	CGG	11B
HS15060728-07	DUP-1	Login	6/17/2015 1:36:07 PM	CGG	VW-3
HS15060728-07	DUP-1	Login	6/17/2015 1:36:07 PM	CGG	VW-3
HS15060728-07	DUP-1	Login	6/17/2015 1:36:07 PM	CGG	TPH C2
HS15060728-07	DUP-1	Login	6/17/2015 1:36:07 PM	CGG	Sub
HS15060728-08	TB-05515-72	Login	6/17/2015 1:36:07 PM	CGG	VW-3
HS15060728-09	TB-052215-71	Login	6/17/2015 1:36:07 PM	CGG	VW-3
HS15060728-01	MW-5	Out	6/18/2015 8:53:03 AM	AAP	METPREP
HS15060728-02	MW-17	Out	6/18/2015 8:53:03 AM	AAP	METPREP
HS15060728-03	MW-1	Out	6/18/2015 8:53:03 AM	AAP	METPREP
HS15060728-04	MW-18	Out	6/18/2015 8:53:03 AM	AAP	METPREP
HS15060728-05	MW-19	Out	6/18/2015 8:53:03 AM	AAP	METPREP
HS15060728-06	MW-4	Out	6/18/2015 8:53:03 AM	AAP	METPREP
HS15060728-07	DUP-1	Out	6/18/2015 8:53:03 AM	AAP	METPREP
HS15060728-01	MW-5	Return	6/18/2015 9:22:36 AM	AAP	11B
HS15060728-02	MW-17	Return	6/18/2015 9:22:36 AM	AAP	11B
HS15060728-03	MW-1	Return	6/18/2015 9:22:36 AM	AAP	11B
HS15060728-04	MW-18	Return	6/18/2015 9:22:36 AM	AAP	11B
HS15060728-05	MW-19	Return	6/18/2015 9:22:36 AM	AAP	11B
HS15060728-06	MW-4	Return	6/18/2015 9:22:36 AM	AAP	11B
HS15060728-07	DUP-1	Return	6/18/2015 9:22:36 AM	AAP	11B
HS15060728-01	MW-5	Out	6/19/2015 8:13:46 AM	AAP	METPREP
HS15060728-02	MW-17	Out	6/19/2015 8:13:46 AM	AAP	METPREP
HS15060728-03	MW-1	Out	6/19/2015 8:13:46 AM	AAP	METPREP

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15060728

SAMPLE TRACKING

HS15060728-04	MW-18	Out	6/19/2015 8:13:46 AM	AAP	METPREP
HS15060728-05	MW-19	Out	6/19/2015 8:13:46 AM	AAP	METPREP
HS15060728-06	MW-4	Out	6/19/2015 8:13:46 AM	AAP	METPREP
HS15060728-07	DUP-1	Out	6/19/2015 8:13:46 AM	AAP	METPREP
HS15060728-01	MW-5	Return	6/19/2015 12:41:51 PM	AAP	11B
HS15060728-01	MW-5	Return	6/19/2015 12:41:51 PM	AAP	11B
HS15060728-02	MW-17	Return	6/19/2015 12:41:51 PM	AAP	11B
HS15060728-02	MW-17	Return	6/19/2015 12:41:51 PM	AAP	11B
HS15060728-03	MW-1	Return	6/19/2015 12:41:51 PM	AAP	11B
HS15060728-03	MW-1	Return	6/19/2015 12:41:51 PM	AAP	11B
HS15060728-04	MW-18	Return	6/19/2015 1:06:35 PM	AAP	11B
HS15060728-05	MW-19	Return	6/19/2015 1:06:35 PM	AAP	11B
HS15060728-06	MW-4	Return	6/19/2015 1:06:35 PM	AAP	11B
HS15060728-07	DUP-1	Return	6/19/2015 1:06:35 PM	AAP	11B
HS15060728-01	MW-5	Out	6/22/2015 10:11:42 AM	AAP	METPREP
HS15060728-02	MW-17	Out	6/22/2015 10:11:42 AM	AAP	METPREP
HS15060728-03	MW-1	Out	6/22/2015 10:11:42 AM	AAP	METPREP
HS15060728-01	MW-5	Return	6/22/2015 4:11:47 PM	AAP	11B
HS15060728-02	MW-17	Return	6/22/2015 4:11:47 PM	AAP	11B
HS15060728-03	MW-1	Return	6/22/2015 4:11:47 PM	AAP	11B

Sample Receipt Checklist

Client Name: APEX-PORTLAND
Work Order: HS15060728

Date/Time Received: **17-Jun-2015 09:15**
Received by: **NDR**

Checklist completed by: *Corey Grandits* (eSignature) 17-Jun-2015 (Date)

Reviewed by: *Ana L. Spencer* (eSignature) 17-Jun-2015 (Date)

Matrices: **Water**

Carrier name: **FedEx Priority Overnight**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☐	☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☐	☑	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	2.5c / 3.1c , 2.4c / 2.9c c/uc	IR5
Cooler(s)/Kit(s):	24188 , 24353	
Date/Time sample(s) sent to storage:	06/17/2015 14:05	

	Yes	No	No VOA vials submitted / N/A
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐

pH adjusted by:

Login Notes:
No TOC received
Received two trip blanks not on chain placed on hold

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 128189

HS15060728

Apex Companies
E3CE-0065 Andover Release Site

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	Andover Release Site
Work Order		Project Number	E3CE-0065
Company Name	Apex Companies	Bill To Company	Apex Companies
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson
Address	3015 SW First Avenue	Address	3015 SW First Avenue
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201
Phone	(503) 924-4704	Phone	(503) 924-4704
Fax		Fax	
e-Mail Address	sjackson@apexcos.com	e-Mail Address	sjackson@apexcos.com

A	300-Sulfate, ortho-phos, and Nitrate (short hold)
B	RSK175-methane
C	6020-Potassium only
D	Ammonia-4500
E	6020-Dissolved Iron-Lab filtered
F	TOC
G	Alkalinity by SM2320B
H	Sub RSK - CO_2
I	Volatiles - SW8260C
J	VPH - Iowa OA-1

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-5	6-16-15	0959	W	1,2,3 + Neat	17	X	X	X	X	X	X	X	X	X	X	
2	MW-17	6-16-15	0940	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
3	MW-1	↓	1010	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
4	MW-18	↓	1045	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
5	MW-19	↓	1118	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
6	MW-4	↓	1210	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
7	DUP-1	6-16-15	—	W	1,2,3 + Neat	17	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ted Alfred

Shipment Method:

Required Turnaround Time: (Check Box) [X] Std 10 WK days [ ] 5 WK Days [ ] 2 WK Days [ ] 24 Hour [ ] Other _____

Results Due Date:

Relinquished by:	Date: 6-16-15	Time: 1800	Received by:
Relinquished by:	Date: 6/17/15	Time: 9:15	Received by (Laboratory): NK
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: Andover 3Q GWM-MNA

Cooler ID	Cooler Temp.
	n/a
24353	2.4
24188	2.5

QC Package: (Check One Box Below)
[X] Level 2 Std QC
[ ] Level 3 Std QC/Raw da
[ ] Level 4 SW846/CLP
[ ] Other/EDD _____
[ ] TRRP ChkList
[ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

IR # 5 C/F 05

Copyright 2011 by ALS Environmental.

2 of 2
1808 3144 7040
Mstr# 8071 0710 5502 [0215]

WED – 17 JUN 10:30A
PRIORITY OVERNIGHT

AB SGRA 24188

77099
TX-US IAH

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 6-16-15 Time: 1800
Name: Ted Alford
Company: APEX
Seal Broken By: CG
Date: 6/17

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 6-16-15 Time: 1800
Name: Ted Alford
Company: APEX
Seal Broken By: CG
Date: 6/17

1 of 2

TRK# 0215 8071 0710 5502

WED – 17 Ju

PRIORITY OV

MASTER

AB SGRA 24353

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 6-16-15 Time: 1800

Name: Ted Aird

Company: ALS

Seal Broken By:

Date: 6/17

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 6-16-15 Time: 1800

Name: Ted Aird

Company: ALS

Seal Broken By:

Date: 6/17

LABORATORY REPORT

June 24, 2015

Ana Spencer
ALS Group USA, Corp.
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS15060728

Dear Ana:

Enclosed are the results of the samples submitted to our laboratory on June 18, 2015. For your reference, these analyses have been assigned our service request number P1502454.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 5:13 pm, Jun 24, 2015

Kelly Horiuchi
Laboratory Director

CASE NARRATIVE

The samples were received intact under chain of custody on June 18, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gas (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP or AIHA-LAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	876241
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-14-5
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272014-4
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Group USA, Corp.
Project ID: HS15060728

Service Request: P1502454

Date Received: 6/18/2015
Time Received: 09:45

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2
HS15060728-01	P1502454-001	Water	6/16/2015	08:59	X
HS15060728-02	P1502454-002	Water	6/16/2015	09:40	X
HS15060728-03	P1502454-003	Water	6/16/2015	10:10	X
HS15060728-04	P1502454-004	Water	6/16/2015	10:45	X
HS15060728-05	P1502454-005	Water	6/16/2015	11:18	X
HS15060728-06	P1502454-006	Water	6/16/2015	12:10	X
HS15060728-07	P1502454-007	Water	6/16/2015	12:00	X

CHAIN OF CUSTODY RECORD

(ALS) Environmental

Page 1 of 1

Date	17 Jun 2015
COC ID	2982
Due date	26 JUN 15

Subcontractor

ALS Environmental	Phone
2655 Park Center Drive, Suite A	8055267161
Simi Valley, CA 93065	Fax

Customer Information		Project Information	
PO	HS15060728	Project Name	HS15060728

Company Name	ALS Houston	Company Name	ALS Houston
		Inv Attn	Accounts Payable
Address	10450 Stancliff Rd, Ste 210	Address	10450 Stancliff Rd, Ste 210
	Houston, TX 77099		Houston, TX 77099
Phone	281-530-5656	Phone	281-530-5656
Email1	ana.spencer@alsglobal.com	Email2	jumoke.lawal@alsglobal.com

P15D2454

Lab ID	Client Samp ID	Collection Date	Matrix	Analysis Requested
HS15060728-01	MW-5	16-Jun-15 08:59 am	Water	XXX SUB
HS15060728-02	MW-17	16-Jun-15 09:40 am	Water	XXX SUB
HS15060728-03	MW-1	16-Jun-15 10:10 am	Water	XXX SUB
HS15060728-04	MW-18	16-Jun-15 10:45 am	Water	XXX SUB
HS15060728-05	MW-19	16-Jun-15 11:18 am	Water	XXX SUB
HS15060728-06	MW-4	16-Jun-15 12:10 pm	Water	XXX SUB
HS15060728-07	DUP-1	16-Jun-15 12:00 am	Water	XXX SUB

Comments Please analyze for the analysis listed above. Send report to the emails shown above.

0° wet ice
blank

Relinquished by:	Date/Time:	Received by:	Date/Time:	Cooler IDs:	Report/QC Level
FED X		K KBUPP	6/19/15 0945		STD

ALS Environmental
Sample Acceptance Check Form

Client: ALS Group USA, Corp. Work order: P1502454

Project: HS15060728

Sample(s) received on: 6/18/15 Date opened: 6/18/15 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by ALS**?	☐	☒	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 0° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☒	☐
10	Were **custody seals** on outside of cooler/Box?	☒	☐	☐
	Location of seal(s)? SEALING COOLER Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1502454-001.01	40mL VOA NP		7		A	MC 6/23/2015
P1502454-001.02	40mL VOA NP				A	
P1502454-001.03	40mL VOA NP				A	
P1502454-002.01	40mL VOA NP		7		A	MC 6/23/2015
P1502454-002.02	40mL VOA NP				A	
P1502454-002.03	40mL VOA NP				A	
P1502454-003.01	40mL VOA NP		7		A	MC 6/23/2015
P1502454-003.02	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Group USA, Corp. Work order: P1502454

Project: HS15060728

Sample(s) received on: 6/18/15 Date opened: 6/18/15 by: KKELPE

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1502454-003.03	40mL VOA NP				A	
P1502454-004.01	40mL VOA NP		7		A	MC 6/23/2015
P1502454-004.02	40mL VOA NP				A	
P1502454-004.03	40mL VOA NP				A	
P1502454-005.01	40mL VOA NP		7		A	MC 6/23/2015
P1502454-005.02	40mL VOA NP				A	
P1502454-005.03	40mL VOA NP				A	
P1502454-006.01	40mL VOA NP				A	
P1502454-006.02	40mL VOA NP		7		A	MC 6/23/2015
P1502454-006.03	40mL VOA NP				A	
P1502454-007.01	40mL VOA NP		7		A	MC 6/23/2015
P1502454-007.02	40mL VOA NP				A	
P1502454-007.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Group USA, Corp.**
Client Project ID: **HS15060728** ALS Project ID: P1502454

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 6/16/15
Analyst: Mike Conejo Date Received: 6/18/15
Matrix: Water Date Analyzed: 6/23/15
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
HS15060728-01	P1502454-001	0.10	**60,000**	1,000	
HS15060728-02	P1502454-002	0.10	**72,000**	1,000	
HS15060728-03	P1502454-003	0.10	**81,000**	1,000	
HS15060728-04	P1502454-004	0.10	**42,000**	1,000	
HS15060728-05	P1502454-005	0.10	**22,000**	1,000	
HS15060728-06	P1502454-006	0.10	**30,000**	1,000	
HS15060728-07	P1502454-007	0.10	**21,000**	1,000	
Method Control Sample	P150623-MB	0.10	ND	1,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Group USA, Corp.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS15060728**

ALS Project ID: P1502454
ALS Sample ID: P150623-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 6/23/15
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	19,900	18,000	**87**	**79**	62-139	10	24	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

September 16, 2015

Samuel Jackson
Apex Companies
3015 SW First Avenue
Portland, OR 97201

Work Order: **HS15080823**

Laboratory Results for: **Andover Release Site E3CE-0065**

Dear Samuel,

ALS Environmental received 9 sample(s) on Aug 21, 2015 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: Erica.Padilla

Erica Padilla
PM

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15080823

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15080823-01	MW-18	Water		20-Aug-2015 13:15	21-Aug-2015 09:10	☐
HS15080823-02	MW-19	Water		20-Aug-2015 14:12	21-Aug-2015 09:10	☐
HS15080823-03	MW-4	Water		20-Aug-2015 14:48	21-Aug-2015 09:10	☐
HS15080823-04	MW-1	Water		20-Aug-2015 15:34	21-Aug-2015 09:10	☐
HS15080823-05	MW-17	Water		20-Aug-2015 16:14	21-Aug-2015 09:10	☐
HS15080823-06	MW-5	Water		20-Aug-2015 16:50	21-Aug-2015 09:10	☐
HS15080823-07	DUP-1	Water		20-Aug-2015 00:00	21-Aug-2015 09:10	☐
HS15080823-08	Trip Blank	Water	081215-20	20-Aug-2015 00:00	21-Aug-2015 09:10	☐
HS15080823-09	TB-081215-19	Water	081215-19	20-Aug-2015 00:00	21-Aug-2015 09:10	☑

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies **CASE NARRATIVE**
Project: Andover Release Site E3CE-0065
Work Order: HS15080823

Work Order Comments

- The analysis for Carbon Dioxide Method RSK175 was subcontracted to ALS Environmental in Simi Valley, CA. Final Report is attached

GC Semivolatiles by Method RSK-175

Batch ID: R260461

Sample ID: **GLCSW1-150831**
- Insufficient sample received to perform MS/MSD. LCS/LCSD provided as batch quality control.

GC Volatiles by Method IA OA-1

Batch ID: R260009

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R260028,R260086

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R260152

Sample ID: **DUP-1 (HS15080823-07MSD)**
- The MSD recovery was above the upper control limit.

Metals by Method SW6020

Batch ID: 96463

Sample ID: **HS15080843-02MS**
- MS and MSD are for an unrelated sample

Batch ID: 96558

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500 NH3-D

Batch ID: R260276

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R260138,,R260301

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R260060

Sample ID: **MW-18 (HS15080823-01MS)**
- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference for Phosphorus

Sample ID: **MW-18 (HS15080823-01MSD)**
- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference for Phosphorus

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15080823
Sample ID:	MW-18	Lab ID:HS15080823-01
Collection Date:	20-Aug-2015 13:15	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.032**		**0.0010**	**mg/L**	1	22-Aug-2015 09:31
1,2-Dichloroethane	ND		0.0010	mg/L	1	22-Aug-2015 09:31
1,3,5-Trimethylbenzene	**0.030**		**0.0010**	**mg/L**	1	22-Aug-2015 09:31
2-Butanone	ND		0.0020	mg/L	1	22-Aug-2015 09:31
Benzene	**0.46**		**0.010**	**mg/L**	10	22-Aug-2015 09:58
Cyclohexane	**0.088**		**0.0010**	**mg/L**	1	22-Aug-2015 09:31
Ethylbenzene	**0.30**		**0.010**	**mg/L**	10	22-Aug-2015 09:58
Isopropylbenzene	**0.0084**		**0.0010**	**mg/L**	1	22-Aug-2015 09:31
m,p-Xylene	**0.24**		**0.0020**	**mg/L**	1	22-Aug-2015 09:31
Methylcyclohexane	**0.011**		**0.0010**	**mg/L**	1	22-Aug-2015 09:31
Naphthalene	**0.027**		**0.0010**	**mg/L**	1	22-Aug-2015 09:31
n-Butylbenzene	ND		0.0010	mg/L	1	22-Aug-2015 09:31
n-Propylbenzene	**0.017**		**0.0010**	**mg/L**	1	22-Aug-2015 09:31
o-Xylene	**0.17**		**0.0010**	**mg/L**	1	22-Aug-2015 09:31
Toluene	**0.16**		**0.0010**	**mg/L**	1	22-Aug-2015 09:31
Xylenes, Total	**0.41**		**0.0030**	**mg/L**	1	22-Aug-2015 09:31
Surr: 1,2-Dichloroethane-d4	*121*		*71-125*	*%REC*	*10*	*22-Aug-2015 09:58*
Surr: 1,2-Dichloroethane-d4	*115*		*71-125*	*%REC*	*1*	*22-Aug-2015 09:31*
Surr: 4-Bromofluorobenzene	*105*		*70-125*	*%REC*	*10*	*22-Aug-2015 09:58*
Surr: 4-Bromofluorobenzene	*106*		*70-125*	*%REC*	*1*	*22-Aug-2015 09:31*
Surr: Dibromofluoromethane	*96.5*		*74-125*	*%REC*	*1*	*22-Aug-2015 09:31*
Surr: Dibromofluoromethane	*99.5*		*74-125*	*%REC*	*10*	*22-Aug-2015 09:58*
Surr: Toluene-d8	*105*		*75-125*	*%REC*	*10*	*22-Aug-2015 09:58*
Surr: Toluene-d8	*98.0*		*75-125*	*%REC*	*1*	*22-Aug-2015 09:31*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: AP
Alkalinity, Bicarbonate (As CaCO3)	**419**		**5.00**	**mg/L**	1	25-Aug-2015 12:56
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	25-Aug-2015 12:56
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	25-Aug-2015 12:56
Alkalinity, Total (As CaCO3)	**419**		**5.00**	**mg/L**	1	25-Aug-2015 12:56
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Aug-2015		Analyst: JCJ
Iron	ND		0.200	mg/L	1	26-Aug-2015 20:04
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**1.46**		**0.500**	**ug/L**	1	31-Aug-2015 11:10
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	04-Sep-2015 15:55
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Aug-2015 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15080823
Sample ID:	MW-18	Lab ID:HS15080823-01
Collection Date:	20-Aug-2015 13:15	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 24-Aug-2015		Analyst: RPM
Potassium	**3.68**		**0.200**	**mg/L**	1	25-Aug-2015 13:58
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**5.6**		**0.050**	**mg/L**	1	21-Aug-2015 17:49
Surr: 4-Bromofluorobenzene	*101*		*70-130*	*%REC*	*1*	*21-Aug-2015 17:49*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.168**		**0.100**	**mg/L**	1	21-Aug-2015 14:46
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Aug-2015 14:46
Sulfate	**13.1**		**0.500**	**mg/L**	1	21-Aug-2015 14:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15080823
Sample ID:	MW-19	Lab ID:HS15080823-02
Collection Date:	20-Aug-2015 14:12	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:16
1,2-Dichloroethane	ND		0.0010	mg/L	1	24-Aug-2015 17:16
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:16
2-Butanone	ND		0.0020	mg/L	1	24-Aug-2015 17:16
Benzene	**0.0060**		**0.0010**	**mg/L**	1	24-Aug-2015 17:16
Cyclohexane	ND		0.0010	mg/L	1	24-Aug-2015 17:16
Ethylbenzene	**0.0027**		**0.0010**	**mg/L**	1	24-Aug-2015 17:16
Isopropylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:16
m,p-Xylene	ND		0.0020	mg/L	1	24-Aug-2015 17:16
Methylcyclohexane	ND		0.0010	mg/L	1	24-Aug-2015 17:16
Naphthalene	ND		0.0010	mg/L	1	24-Aug-2015 17:16
n-Butylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:16
n-Propylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:16
o-Xylene	ND		0.0010	mg/L	1	24-Aug-2015 17:16
Toluene	ND		0.0010	mg/L	1	24-Aug-2015 17:16
Xylenes, Total	ND		0.0030	mg/L	1	24-Aug-2015 17:16
Surr: 1,2-Dichloroethane-d4	*116*		*71-125*	*%REC*	*1*	*24-Aug-2015 17:16*
Surr: 4-Bromofluorobenzene	*104*		*70-125*	*%REC*	*1*	*24-Aug-2015 17:16*
Surr: Dibromofluoromethane	*99.6*		*74-125*	*%REC*	*1*	*24-Aug-2015 17:16*
Surr: Toluene-d8	*102*		*75-125*	*%REC*	*1*	*24-Aug-2015 17:16*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: AP
Alkalinity, Bicarbonate (As CaCO3)	**356**		**5.00**	**mg/L**	1	25-Aug-2015 13:02
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	25-Aug-2015 13:02
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	25-Aug-2015 13:02
Alkalinity, Total (As CaCO3)	**356**		**5.00**	**mg/L**	1	25-Aug-2015 13:02
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Aug-2015		Analyst: JCJ
Iron	ND		0.200	mg/L	1	26-Aug-2015 20:08
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	ND		0.500	ug/L	1	31-Aug-2015 11:22
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	04-Sep-2015 15:55
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Aug-2015 14:15
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 24-Aug-2015		Analyst: RPM
Potassium	**3.99**		**0.200**	**mg/L**	1	25-Aug-2015 14:00
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**0.064**		**0.050**	**mg/L**	1	21-Aug-2015 20:01
Surr: 4-Bromofluorobenzene	*98.2*		*70-130*	*%REC*	*1*	*21-Aug-2015 20:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-19
Collection Date: 20-Aug-2015 14:12

WorkOrder:HS15080823
Lab ID:HS15080823-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.146**		**0.100**	**mg/L**	1	21-Aug-2015 15:30
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Aug-2015 15:30
Sulfate	**31.1**		**0.500**	**mg/L**	1	21-Aug-2015 15:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15080823
Sample ID:	MW-4	Lab ID:HS15080823-03
Collection Date:	20-Aug-2015 14:48	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:42
1,2-Dichloroethane	ND		0.0010	mg/L	1	24-Aug-2015 17:42
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:42
2-Butanone	ND		0.0020	mg/L	1	24-Aug-2015 17:42
Benzene	ND		0.0010	mg/L	1	24-Aug-2015 17:42
Cyclohexane	ND		0.0010	mg/L	1	24-Aug-2015 17:42
Ethylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:42
Isopropylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:42
m,p-Xylene	ND		0.0020	mg/L	1	24-Aug-2015 17:42
Methylcyclohexane	ND		0.0010	mg/L	1	24-Aug-2015 17:42
Naphthalene	ND		0.0010	mg/L	1	24-Aug-2015 17:42
n-Butylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:42
n-Propylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 17:42
o-Xylene	ND		0.0010	mg/L	1	24-Aug-2015 17:42
Toluene	ND		0.0010	mg/L	1	24-Aug-2015 17:42
Xylenes, Total	ND		0.0030	mg/L	1	24-Aug-2015 17:42
Surr: 1,2-Dichloroethane-d4	*115*		*71-125*	*%REC*	*1*	*24-Aug-2015 17:42*
Surr: 4-Bromofluorobenzene	*105*		*70-125*	*%REC*	*1*	*24-Aug-2015 17:42*
Surr: Dibromofluoromethane	*99.2*		*74-125*	*%REC*	*1*	*24-Aug-2015 17:42*
Surr: Toluene-d8	*99.8*		*75-125*	*%REC*	*1*	*24-Aug-2015 17:42*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: AP
Alkalinity, Bicarbonate (As CaCO3)	**430**		**5.00**	**mg/L**	1	25-Aug-2015 13:07
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	25-Aug-2015 13:07
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	25-Aug-2015 13:07
Alkalinity, Total (As CaCO3)	**430**		**5.00**	**mg/L**	1	25-Aug-2015 13:07
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Aug-2015		Analyst: JCJ
Iron	ND		0.200	mg/L	1	26-Aug-2015 20:13
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	ND		0.500	ug/L	1	31-Aug-2015 11:32
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	04-Sep-2015 15:55
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Aug-2015 14:15
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 24-Aug-2015		Analyst: RPM
Potassium	**2.76**		**0.200**	**mg/L**	1	25-Aug-2015 14:03
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	ND		0.050	mg/L	1	21-Aug-2015 18:05
Surr: 4-Bromofluorobenzene	*101*		*70-130*	*%REC*	*1*	*21-Aug-2015 18:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-4
Collection Date: 20-Aug-2015 14:48

WorkOrder:HS15080823
Lab ID:HS15080823-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**1.94**		**0.100**	**mg/L**	1	21-Aug-2015 15:44
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Aug-2015 15:44
Sulfate	**125**		**10.0**	**mg/L**	20	21-Aug-2015 19:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15080823
Sample ID:	MW-1	Lab ID:HS15080823-04
Collection Date:	20-Aug-2015 15:34	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.33**		**0.010**	**mg/L**	10	22-Aug-2015 10:26
1,2-Dichloroethane	ND		0.010	mg/L	10	22-Aug-2015 10:26
1,3,5-Trimethylbenzene	**0.33**		**0.010**	**mg/L**	10	22-Aug-2015 10:26
2-Butanone	ND		0.020	mg/L	10	22-Aug-2015 10:26
Benzene	**2.9**		**0.10**	**mg/L**	100	22-Aug-2015 10:54
Cyclohexane	**0.19**		**0.010**	**mg/L**	10	22-Aug-2015 10:26
Ethylbenzene	**0.77**		**0.010**	**mg/L**	10	22-Aug-2015 10:26
Isopropylbenzene	**0.013**		**0.010**	**mg/L**	10	22-Aug-2015 10:26
m,p-Xylene	**6.4**		**0.20**	**mg/L**	100	22-Aug-2015 10:54
Methylcyclohexane	**0.032**		**0.010**	**mg/L**	10	22-Aug-2015 10:26
Naphthalene	**0.093**		**0.010**	**mg/L**	10	22-Aug-2015 10:26
n-Butylbenzene	**0.018**		**0.010**	**mg/L**	10	22-Aug-2015 10:26
n-Propylbenzene	**0.029**		**0.010**	**mg/L**	10	22-Aug-2015 10:26
o-Xylene	**3.2**		**0.10**	**mg/L**	100	22-Aug-2015 10:54
Toluene	**8.0**		**0.10**	**mg/L**	100	22-Aug-2015 10:54
Xylenes, Total	**9.6**		**0.30**	**mg/L**	100	22-Aug-2015 10:54
Surr: 1,2-Dichloroethane-d4	*116*		*71-125*	*%REC*	*10*	*22-Aug-2015 10:26*
Surr: 1,2-Dichloroethane-d4	*119*		*71-125*	*%REC*	*100*	*22-Aug-2015 10:54*
Surr: 4-Bromofluorobenzene	*101*		*70-125*	*%REC*	*100*	*22-Aug-2015 10:54*
Surr: 4-Bromofluorobenzene	*104*		*70-125*	*%REC*	*10*	*22-Aug-2015 10:26*
Surr: Dibromofluoromethane	*99.1*		*74-125*	*%REC*	*10*	*22-Aug-2015 10:26*
Surr: Dibromofluoromethane	*96.8*		*74-125*	*%REC*	*100*	*22-Aug-2015 10:54*
Surr: Toluene-d8	*103*		*75-125*	*%REC*	*10*	*22-Aug-2015 10:26*
Surr: Toluene-d8	*97.8*		*75-125*	*%REC*	*100*	*22-Aug-2015 10:54*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: AP
Alkalinity, Bicarbonate (As CaCO3)	**538**		**5.00**	**mg/L**	1	25-Aug-2015 13:13
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	25-Aug-2015 13:13
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	25-Aug-2015 13:13
Alkalinity, Total (As CaCO3)	**538**		**5.00**	**mg/L**	1	25-Aug-2015 13:13
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Aug-2015		Analyst: JCJ
Iron	ND		0.200	mg/L	1	26-Aug-2015 20:17
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**50.7**		**1.00**	**ug/L**	2	31-Aug-2015 12:44
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	04-Sep-2015 15:55
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Aug-2015 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-1
Collection Date: 20-Aug-2015 15:34

WorkOrder:HS15080823
Lab ID:HS15080823-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 24-Aug-2015		Analyst: RPM
Potassium	**2.65**		**0.200**	**mg/L**	1	25-Aug-2015 14:06
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**110**		**2.5**	**mg/L**	50	21-Aug-2015 18:23
Surr: 4-Bromofluorobenzene	*114*		*70-130*	*%REC*	*50*	*21-Aug-2015 18:23*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.144**		**0.100**	**mg/L**	1	21-Aug-2015 15:59
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Aug-2015 15:59
Sulfate	**3.42**		**0.500**	**mg/L**	1	21-Aug-2015 15:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15080823
Sample ID:	MW-17	Lab ID:HS15080823-05
Collection Date:	20-Aug-2015 16:14	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.21**		**0.010**	**mg/L**	10	22-Aug-2015 11:22
1,2-Dichloroethane	ND		0.010	mg/L	10	22-Aug-2015 11:22
1,3,5-Trimethylbenzene	**0.22**		**0.010**	**mg/L**	10	22-Aug-2015 11:22
2-Butanone	ND		0.020	mg/L	10	22-Aug-2015 11:22
Benzene	**1.2**		**0.010**	**mg/L**	10	22-Aug-2015 11:22
Cyclohexane	**0.31**		**0.010**	**mg/L**	10	22-Aug-2015 11:22
Ethylbenzene	**1.2**		**0.010**	**mg/L**	10	22-Aug-2015 11:22
Isopropylbenzene	**0.043**		**0.010**	**mg/L**	10	22-Aug-2015 11:22
m,p-Xylene	**2.8**		**0.020**	**mg/L**	10	22-Aug-2015 11:22
Methylcyclohexane	**0.049**		**0.010**	**mg/L**	10	22-Aug-2015 11:22
Naphthalene	**0.16**		**0.010**	**mg/L**	10	22-Aug-2015 11:22
n-Butylbenzene	ND		0.010	mg/L	10	22-Aug-2015 11:22
n-Propylbenzene	**0.10**		**0.010**	**mg/L**	10	22-Aug-2015 11:22
o-Xylene	**1.4**		**0.010**	**mg/L**	10	22-Aug-2015 11:22
Toluene	**2.6**		**0.10**	**mg/L**	100	22-Aug-2015 11:50
Xylenes, Total	**4.2**		**0.030**	**mg/L**	10	22-Aug-2015 11:22
Surr: 1,2-Dichloroethane-d4	*122*		*71-125*	*%REC*	*100*	*22-Aug-2015 11:50*
Surr: 1,2-Dichloroethane-d4	*118*		*71-125*	*%REC*	*10*	*22-Aug-2015 11:22*
Surr: 4-Bromofluorobenzene	*105*		*70-125*	*%REC*	*10*	*22-Aug-2015 11:22*
Surr: 4-Bromofluorobenzene	*101*		*70-125*	*%REC*	*100*	*22-Aug-2015 11:50*
Surr: Dibromofluoromethane	*101*		*74-125*	*%REC*	*100*	*22-Aug-2015 11:50*
Surr: Dibromofluoromethane	*97.2*		*74-125*	*%REC*	*10*	*22-Aug-2015 11:22*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*100*	*22-Aug-2015 11:50*
Surr: Toluene-d8	*104*		*75-125*	*%REC*	*10*	*22-Aug-2015 11:22*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: AP
Alkalinity, Bicarbonate (As CaCO3)	**490**		**5.00**	**mg/L**	1	25-Aug-2015 13:18
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	25-Aug-2015 13:18
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	25-Aug-2015 13:18
Alkalinity, Total (As CaCO3)	**490**		**5.00**	**mg/L**	1	25-Aug-2015 13:18
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Aug-2015		Analyst: JCJ
Iron	ND		0.200	mg/L	1	26-Aug-2015 20:22
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**3.37**		**0.500**	**ug/L**	1	31-Aug-2015 12:01
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	04-Sep-2015 15:55
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Aug-2015 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-17
Collection Date: 20-Aug-2015 16:14

WorkOrder:HS15080823
Lab ID:HS15080823-05
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 24-Aug-2015		Analyst: RPM
Potassium	**1.12**		**0.200**	**mg/L**	1	25-Aug-2015 14:08
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**54**		**2.5**	**mg/L**	50	21-Aug-2015 18:42
Surr: 4-Bromofluorobenzene	*112*		*70-130*	*%REC*	*50*	*21-Aug-2015 18:42*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.153**		**0.100**	**mg/L**	1	21-Aug-2015 16:13
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Aug-2015 16:13
Sulfate	**56.3**		**0.500**	**mg/L**	1	21-Aug-2015 16:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15080823
Sample ID:	MW-5	Lab ID:HS15080823-06
Collection Date:	20-Aug-2015 16:50	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.0013**		**0.0010**	**mg/L**	1	22-Aug-2015 09:05
1,2-Dichloroethane	ND		0.0010	mg/L	1	22-Aug-2015 09:05
1,3,5-Trimethylbenzene	**0.0012**		**0.0010**	**mg/L**	1	22-Aug-2015 09:05
2-Butanone	ND		0.0020	mg/L	1	22-Aug-2015 09:05
Benzene	**0.0045**		**0.0010**	**mg/L**	1	22-Aug-2015 09:05
Cyclohexane	ND		0.0010	mg/L	1	22-Aug-2015 09:05
Ethylbenzene	**0.0053**		**0.0010**	**mg/L**	1	22-Aug-2015 09:05
Isopropylbenzene	ND		0.0010	mg/L	1	22-Aug-2015 09:05
m,p-Xylene	**0.017**		**0.0020**	**mg/L**	1	22-Aug-2015 09:05
Methylcyclohexane	ND		0.0010	mg/L	1	22-Aug-2015 09:05
Naphthalene	ND		0.0010	mg/L	1	22-Aug-2015 09:05
n-Butylbenzene	ND		0.0010	mg/L	1	22-Aug-2015 09:05
n-Propylbenzene	ND		0.0010	mg/L	1	22-Aug-2015 09:05
o-Xylene	**0.0088**		**0.0010**	**mg/L**	1	22-Aug-2015 09:05
Toluene	**0.023**		**0.0010**	**mg/L**	1	22-Aug-2015 09:05
Xylenes, Total	**0.026**		**0.0030**	**mg/L**	1	22-Aug-2015 09:05
Surr: 1,2-Dichloroethane-d4	*120*		*71-125*	*%REC*	*1*	*22-Aug-2015 09:05*
Surr: 4-Bromofluorobenzene	*103*		*70-125*	*%REC*	*1*	*22-Aug-2015 09:05*
Surr: Dibromofluoromethane	*99.6*		*74-125*	*%REC*	*1*	*22-Aug-2015 09:05*
Surr: Toluene-d8	*102*		*75-125*	*%REC*	*1*	*22-Aug-2015 09:05*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: KMU
Alkalinity, Bicarbonate (As CaCO3)	**499**		**5.00**	**mg/L**	1	27-Aug-2015 13:06
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	27-Aug-2015 13:06
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	27-Aug-2015 13:06
Alkalinity, Total (As CaCO3)	**499**		**5.00**	**mg/L**	1	27-Aug-2015 13:06
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Aug-2015		Analyst: JCJ
Iron	ND		0.200	mg/L	1	26-Aug-2015 20:35
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**0.630**		**0.500**	**ug/L**	1	31-Aug-2015 12:12
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	04-Sep-2015 15:55
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Aug-2015 14:15
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 24-Aug-2015		Analyst: RPM
Potassium	**1.01**		**0.200**	**mg/L**	1	25-Aug-2015 14:16
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**0.24**		**0.050**	**mg/L**	1	21-Aug-2015 17:02
Surr: 4-Bromofluorobenzene	*103*		*70-130*	*%REC*	*1*	*21-Aug-2015 17:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15080823
Sample ID:	MW-5	Lab ID:HS15080823-06
Collection Date:	20-Aug-2015 16:50	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**6.09**		**0.100**	**mg/L**	1	21-Aug-2015 16:57
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Aug-2015 16:57
Sulfate	**170**		**10.0**	**mg/L**	20	21-Aug-2015 20:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies		**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:	HS15080823
Sample ID:	DUP-1	Lab ID:	HS15080823-07
Collection Date:	20-Aug-2015 00:00	Matrix:	Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.031**		**0.0010**	**mg/L**	1	24-Aug-2015 18:09
1,2-Dichloroethane	ND		0.0010	mg/L	1	24-Aug-2015 18:09
1,3,5-Trimethylbenzene	**0.029**		**0.0010**	**mg/L**	1	24-Aug-2015 18:09
2-Butanone	ND		0.0020	mg/L	1	24-Aug-2015 18:09
Benzene	**0.40**		**0.010**	**mg/L**	10	25-Aug-2015 13:42
Cyclohexane	**0.086**		**0.0010**	**mg/L**	1	24-Aug-2015 18:09
Ethylbenzene	**0.22**		**0.010**	**mg/L**	10	25-Aug-2015 13:42
Isopropylbenzene	**0.0086**		**0.0010**	**mg/L**	1	24-Aug-2015 18:09
m,p-Xylene	**0.23**		**0.0020**	**mg/L**	1	24-Aug-2015 18:09
Methylcyclohexane	**0.011**		**0.0010**	**mg/L**	1	24-Aug-2015 18:09
Naphthalene	**0.028**		**0.0010**	**mg/L**	1	24-Aug-2015 18:09
n-Butylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 18:09
n-Propylbenzene	**0.017**		**0.0010**	**mg/L**	1	24-Aug-2015 18:09
o-Xylene	**0.17**		**0.0010**	**mg/L**	1	24-Aug-2015 18:09
Toluene	**0.15**		**0.0010**	**mg/L**	1	24-Aug-2015 18:09
Xylenes, Total	**0.40**		**0.0030**	**mg/L**	1	24-Aug-2015 18:09
Surr: 1,2-Dichloroethane-d4	*117*		*71-125*	*%REC*	*1*	*24-Aug-2015 18:09*
Surr: 1,2-Dichloroethane-d4	*120*		*71-125*	*%REC*	*10*	*25-Aug-2015 13:42*
Surr: 4-Bromofluorobenzene	*107*		*70-125*	*%REC*	*1*	*24-Aug-2015 18:09*
Surr: 4-Bromofluorobenzene	*103*		*70-125*	*%REC*	*10*	*25-Aug-2015 13:42*
Surr: Dibromofluoromethane	*98.7*		*74-125*	*%REC*	*1*	*24-Aug-2015 18:09*
Surr: Dibromofluoromethane	*99.0*		*74-125*	*%REC*	*10*	*25-Aug-2015 13:42*
Surr: Toluene-d8	*99.4*		*75-125*	*%REC*	*1*	*24-Aug-2015 18:09*
Surr: Toluene-d8	*99.8*		*75-125*	*%REC*	*10*	*25-Aug-2015 13:42*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: KMU
Alkalinity, Bicarbonate (As CaCO3)	**430**		**5.00**	**mg/L**	1	27-Aug-2015 13:17
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	27-Aug-2015 13:17
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	27-Aug-2015 13:17
Alkalinity, Total (As CaCO3)	**430**		**5.00**	**mg/L**	1	27-Aug-2015 13:17
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 26-Aug-2015		Analyst: JCJ
Iron	ND		0.200	mg/L	1	26-Aug-2015 21:01
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: NPI
Methane	**2.16**		**0.500**	**ug/L**	1	31-Aug-2015 12:24
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	04-Sep-2015 15:55
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	27-Aug-2015 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: DUP-1
Collection Date: 20-Aug-2015 00:00

WorkOrder:HS15080823
Lab ID:HS15080823-07
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 24-Aug-2015		Analyst: RPM
Potassium	**4.02**		**0.200**	**mg/L**	1	25-Aug-2015 14:19
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**5.0**		**0.050**	**mg/L**	1	21-Aug-2015 20:16
Surr: 4-Bromofluorobenzene	*102*		*70-130*	*%REC*	*1*	*21-Aug-2015 20:16*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.181**		**0.100**	**mg/L**	1	21-Aug-2015 17:11
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	21-Aug-2015 17:11
Sulfate	**14.0**		**0.500**	**mg/L**	1	21-Aug-2015 17:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15080823
Sample ID:	Trip Blank	Lab ID:HS15080823-08
Collection Date:	20-Aug-2015 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 15:30
1,2-Dichloroethane	ND		0.0010	mg/L	1	24-Aug-2015 15:30
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 15:30
2-Butanone	ND		0.0020	mg/L	1	24-Aug-2015 15:30
Benzene	ND		0.0010	mg/L	1	24-Aug-2015 15:30
Cyclohexane	ND		0.0010	mg/L	1	24-Aug-2015 15:30
Ethylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 15:30
Isopropylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 15:30
m,p-Xylene	ND		0.0020	mg/L	1	24-Aug-2015 15:30
Methylcyclohexane	ND		0.0010	mg/L	1	24-Aug-2015 15:30
Naphthalene	ND		0.0010	mg/L	1	24-Aug-2015 15:30
n-Butylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 15:30
n-Propylbenzene	ND		0.0010	mg/L	1	24-Aug-2015 15:30
o-Xylene	ND		0.0010	mg/L	1	24-Aug-2015 15:30
Toluene	ND		0.0010	mg/L	1	24-Aug-2015 15:30
Xylenes, Total	ND		0.0030	mg/L	1	24-Aug-2015 15:30
Surr: 1,2-Dichloroethane-d4	*118*		*71-125*	*%REC*	*1*	*24-Aug-2015 15:30*
Surr: 4-Bromofluorobenzene	*100*		*70-125*	*%REC*	*1*	*24-Aug-2015 15:30*
Surr: Dibromofluoromethane	*99.5*		*74-125*	*%REC*	*1*	*24-Aug-2015 15:30*
Surr: Toluene-d8	*102*		*75-125*	*%REC*	*1*	*24-Aug-2015 15:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

WEIGHT LOG

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

Batch ID: 96463 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS15080823-01	1	50	50 (mL)	1
HS15080823-02	1	50	50 (mL)	1
HS15080823-03	1	50	50 (mL)	1
HS15080823-04	1	50	50 (mL)	1
HS15080823-05	1	50	50 (mL)	1
HS15080823-06	1	50	50 (mL)	1
HS15080823-07	1	50	50 (mL)	1

Batch ID: 96558 **Method:** DISSOLVED METALS BY SW6020A **Prep:** 3010A DISS

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS15080823-01	1	50	50 (mL)	1
HS15080823-02	1	50	50 (mL)	1
HS15080823-03	1	50	50 (mL)	1
HS15080823-04	1	50	50 (mL)	1
HS15080823-05	1	50	50 (mL)	1
HS15080823-06	1	50	50 (mL)	1
HS15080823-07	1	50	50 (mL)	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 96463	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS15080823-01	MW-18	20 Aug 2015 13:15		24 Aug 2015 10:01	25 Aug 2015 13:58	1
HS15080823-02	MW-19	20 Aug 2015 14:12		24 Aug 2015 10:01	25 Aug 2015 14:00	1
HS15080823-03	MW-4	20 Aug 2015 14:48		24 Aug 2015 10:01	25 Aug 2015 14:03	1
HS15080823-04	MW-1	20 Aug 2015 15:34		24 Aug 2015 10:01	25 Aug 2015 14:06	1
HS15080823-05	MW-17	20 Aug 2015 16:14		24 Aug 2015 10:01	25 Aug 2015 14:08	1
HS15080823-06	MW-5	20 Aug 2015 16:50		24 Aug 2015 10:01	25 Aug 2015 14:16	1
HS15080823-07	DUP-1	20 Aug 2015 00:00		24 Aug 2015 10:01	25 Aug 2015 14:19	1
Batch ID 96558	**Test Name :** DISSOLVED METALS BY SW6020A			**Matrix:** Water		
HS15080823-01	MW-18	20 Aug 2015 13:15		26 Aug 2015 08:29	26 Aug 2015 20:04	1
HS15080823-02	MW-19	20 Aug 2015 14:12		26 Aug 2015 08:29	26 Aug 2015 20:08	1
HS15080823-03	MW-4	20 Aug 2015 14:48		26 Aug 2015 08:29	26 Aug 2015 20:13	1
HS15080823-04	MW-1	20 Aug 2015 15:34		26 Aug 2015 08:29	26 Aug 2015 20:17	1
HS15080823-05	MW-17	20 Aug 2015 16:14		26 Aug 2015 08:29	26 Aug 2015 20:22	1
HS15080823-06	MW-5	20 Aug 2015 16:50		26 Aug 2015 08:29	26 Aug 2015 20:35	1
HS15080823-07	DUP-1	20 Aug 2015 00:00		26 Aug 2015 08:29	26 Aug 2015 21:01	1
Batch ID R260009	**Test Name :** VPH - IOWA OA-1			**Matrix:** Water		
HS15080823-01	MW-18	20 Aug 2015 13:15			21 Aug 2015 17:49	1
HS15080823-02	MW-19	20 Aug 2015 14:12			21 Aug 2015 20:01	1
HS15080823-03	MW-4	20 Aug 2015 14:48			21 Aug 2015 18:05	1
HS15080823-04	MW-1	20 Aug 2015 15:34			21 Aug 2015 18:23	50
HS15080823-05	MW-17	20 Aug 2015 16:14			21 Aug 2015 18:42	50
HS15080823-06	MW-5	20 Aug 2015 16:50			21 Aug 2015 17:02	1
HS15080823-07	DUP-1	20 Aug 2015 00:00			21 Aug 2015 20:16	1
Batch ID R260028	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15080823-01	MW-18	20 Aug 2015 13:15			22 Aug 2015 09:58	10
HS15080823-01	MW-18	20 Aug 2015 13:15			22 Aug 2015 09:31	1
HS15080823-04	MW-1	20 Aug 2015 15:34			22 Aug 2015 10:54	100
HS15080823-04	MW-1	20 Aug 2015 15:34			22 Aug 2015 10:26	10
HS15080823-05	MW-17	20 Aug 2015 16:14			22 Aug 2015 11:50	100
HS15080823-05	MW-17	20 Aug 2015 16:14			22 Aug 2015 11:22	10
HS15080823-06	MW-5	20 Aug 2015 16:50			22 Aug 2015 09:05	1

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Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R260060	**Test Name :** ANIONS BY E300.0			**Matrix:** Water		
HS15080823-01	MW-18	20 Aug 2015 13:15			21 Aug 2015 14:46	1
HS15080823-02	MW-19	20 Aug 2015 14:12			21 Aug 2015 15:30	1
HS15080823-03	MW-4	20 Aug 2015 14:48			21 Aug 2015 19:51	20
HS15080823-03	MW-4	20 Aug 2015 14:48			21 Aug 2015 15:44	1
HS15080823-04	MW-1	20 Aug 2015 15:34			21 Aug 2015 15:59	1
HS15080823-05	MW-17	20 Aug 2015 16:14			21 Aug 2015 16:13	1
HS15080823-06	MW-5	20 Aug 2015 16:50			21 Aug 2015 20:35	20
HS15080823-06	MW-5	20 Aug 2015 16:50			21 Aug 2015 16:57	1
HS15080823-07	DUP-1	20 Aug 2015 00:00			21 Aug 2015 17:11	1
Batch ID R260086	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15080823-02	MW-19	20 Aug 2015 14:12			24 Aug 2015 17:16	1
HS15080823-03	MW-4	20 Aug 2015 14:48			24 Aug 2015 17:42	1
HS15080823-07	DUP-1	20 Aug 2015 00:00			24 Aug 2015 18:09	1
HS15080823-08	Trip Blank	20 Aug 2015 00:00			24 Aug 2015 15:30	1
Batch ID R260138	**Test Name :** ALKALINITY BY SM2320B			**Matrix:** Water		
HS15080823-01	MW-18	20 Aug 2015 13:15			25 Aug 2015 12:56	1
HS15080823-02	MW-19	20 Aug 2015 14:12			25 Aug 2015 13:02	1
HS15080823-03	MW-4	20 Aug 2015 14:48			25 Aug 2015 13:07	1
HS15080823-04	MW-1	20 Aug 2015 15:34			25 Aug 2015 13:13	1
HS15080823-05	MW-17	20 Aug 2015 16:14			25 Aug 2015 13:18	1
Batch ID R260152	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15080823-07	DUP-1	20 Aug 2015 00:00			25 Aug 2015 13:42	10
Batch ID R260276	**Test Name :** AMMONIA AS N BY SM4500 NH3-D (ISE)			**Matrix:** Water		
HS15080823-01	MW-18	20 Aug 2015 13:15			27 Aug 2015 14:15	1
HS15080823-02	MW-19	20 Aug 2015 14:12			27 Aug 2015 14:15	1
HS15080823-03	MW-4	20 Aug 2015 14:48			27 Aug 2015 14:15	1
HS15080823-04	MW-1	20 Aug 2015 15:34			27 Aug 2015 14:15	1
HS15080823-05	MW-17	20 Aug 2015 16:14			27 Aug 2015 14:15	1
HS15080823-06	MW-5	20 Aug 2015 16:50			27 Aug 2015 14:15	1
HS15080823-07	DUP-1	20 Aug 2015 00:00			27 Aug 2015 14:15	1
Batch ID R260301	**Test Name :** ALKALINITY BY SM2320B			**Matrix:** Water		
HS15080823-06	MW-5	20 Aug 2015 16:50			27 Aug 2015 13:06	1
HS15080823-07	DUP-1	20 Aug 2015 00:00			27 Aug 2015 13:17	1

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Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R260461	**Test Name :** DISSOLVED GASES BY RSK-175			**Matrix:** Water		
HS15080823-01	MW-18	20 Aug 2015 13:15			31 Aug 2015 11:10	1
HS15080823-02	MW-19	20 Aug 2015 14:12			31 Aug 2015 11:22	1
HS15080823-03	MW-4	20 Aug 2015 14:48			31 Aug 2015 11:32	1
HS15080823-04	MW-1	20 Aug 2015 15:34			31 Aug 2015 12:44	2
HS15080823-05	MW-17	20 Aug 2015 16:14			31 Aug 2015 12:01	1
HS15080823-06	MW-5	20 Aug 2015 16:50			31 Aug 2015 12:12	1
HS15080823-07	DUP-1	20 Aug 2015 00:00			31 Aug 2015 12:24	1
Batch ID R260759	**Test Name :** SUBCONTRACTED ANALYSIS			**Matrix:** Water		
HS15080823-01	MW-18	20 Aug 2015 13:15			04 Sep 2015 15:55	1
HS15080823-02	MW-19	20 Aug 2015 14:12			04 Sep 2015 15:55	1
HS15080823-03	MW-4	20 Aug 2015 14:48			04 Sep 2015 15:55	1
HS15080823-04	MW-1	20 Aug 2015 15:34			04 Sep 2015 15:55	1
HS15080823-05	MW-17	20 Aug 2015 16:14			04 Sep 2015 15:55	1
HS15080823-06	MW-5	20 Aug 2015 16:50			04 Sep 2015 15:55	1
HS15080823-07	DUP-1	20 Aug 2015 00:00			04 Sep 2015 15:55	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: R260461 **Instrument: FID-4** **Method: RSK-175**

MBLK Sample ID: **GBLKW1-150831** Units: **ug/L** Analysis Date: **31-Aug-2015 10:55**
Client ID: Run ID: **FID-4_260461** SeqNo: **3407912** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	ND	0.500								

LCS Sample ID: **GLCSW1-150831** Units: **ug/L** Analysis Date: **31-Aug-2015 10:21**
Client ID: Run ID: **FID-4_260461** SeqNo: **3407910** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	8.008	0.500	9.647	0	83.0	75 - 125				

LCSD Sample ID: **GLCSDW1-150831** Units: **ug/L** Analysis Date: **31-Aug-2015 10:35**
Client ID: Run ID: **FID-4_260461** SeqNo: **3407911** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	7.444	0.500	9.647	0	77.2	75 - 125	8.008	7.3	30	

The following samples were anayzed in this batch: HS15080823-01 HS15080823-02 HS15080823-03 HS15080823-04 HS15080823-05 HS15080823-06 HS15080823-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: R260009 **Instrument: FID-14** **Method: IA OA-1**

MBLK Sample ID: **GBLKW-150821** Units: **mg/L** Analysis Date: **21-Aug-2015 16:13**
Client ID: Run ID: **FID-14_260009** SeqNo: **3398272** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	*0.1024*	*0.0050*	*0.1*	*0*	*102*	*70 - 130*				

LCS Sample ID: **GLCS-150821** Units: **mg/L** Analysis Date: **21-Aug-2015 15:41**
Client ID: Run ID: **FID-14_260009** SeqNo: **3398270** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.07	0.050	1	0	107	70 - 130				
Surr: 4-Bromofluorobenzene	*0.09942*	*0.0050*	*0.1*	*0*	*99.4*	*70 - 130*				

MS Sample ID: **HS15080823-06MS** Units: **mg/L** Analysis Date: **21-Aug-2015 17:18**
Client ID: **MW-5** Run ID: **FID-14_260009** SeqNo: **3398274** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.233	0.050	1	0.2397	99.4	70 - 130				
Surr: 4-Bromofluorobenzene	*0.09861*	*0.0050*	*0.1*	*0*	*98.6*	*70 - 130*				

MSD Sample ID: **HS15080823-06MSD** Units: **mg/L** Analysis Date: **21-Aug-2015 17:33**
Client ID: **MW-5** Run ID: **FID-14_260009** SeqNo: **3398275** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.215	0.050	1	0.2397	97.5	70 - 130	1.233	1.49	30	
Surr: 4-Bromofluorobenzene	*0.09546*	*0.0050*	*0.1*	*0*	*95.5*	*70 - 130*	*0.09861*	*3.25*	*30*	

The following samples were anayzed in this batch: HS15080823-01 HS15080823-02 HS15080823-03 HS15080823-04 HS15080823-05 HS15080823-06 HS15080823-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: 96463 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-96463** Units: **mg/L** Analysis Date: **25-Aug-2015 10:58**
Client ID: Run ID: **ICPMS05_260076** SeqNo: **3400411** PrepDate: **24-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	ND	0.200								

LCS Sample ID: **MLCS-96463** Units: **mg/L** Analysis Date: **25-Aug-2015 11:01**
Client ID: Run ID: **ICPMS05_260076** SeqNo: **3400412** PrepDate: **24-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	4.763	0.200	5	0	95.3	80 - 120				

MS Sample ID: **HS15080843-02MS** Units: **mg/L** Analysis Date: **25-Aug-2015 11:22**
Client ID: Run ID: **ICPMS05_260076** SeqNo: **3400420** PrepDate: **24-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	9.184	0.200	5	5.302	77.6	80 - 120				S

MSD Sample ID: **HS15080843-02MSD** Units: **mg/L** Analysis Date: **25-Aug-2015 11:24**
Client ID: Run ID: **ICPMS05_260076** SeqNo: **3400421** PrepDate: **24-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	11.04	0.200	5	5.302	115	80 - 120	9.184	18.4	20	

DUP Sample ID: **HS15080843-02DUP** Units: **mg/L** Analysis Date: **25-Aug-2015 11:16**
Client ID: Run ID: **ICPMS05_260076** SeqNo: **3400418** PrepDate: **24-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	6.133	0.200					5.302	14.5	20	

PDS Sample ID: **HS15080843-02BS** Units: **mg/L** Analysis Date: **25-Aug-2015 11:27**
Client ID: Run ID: **ICPMS05_260076** SeqNo: **3400422** PrepDate: **24-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	14.4	0.200	10	5.302	91.0	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: 96463 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS15080843-02 DIL SX** Units: **mg/L** Analysis Date: **25-Aug-2015 11:19**
Client ID: Run ID: **ICPMS05_260076** SeqNo: **3400419** PrepDate: **24-Aug-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Potassium	5.512	1.00					5.302	3.96	10	

The following samples were anayzed in this batch: HS15080823-01 HS15080823-02 HS15080823-03 HS15080823-04 HS15080823-05 HS15080823-06 HS15080823-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: 96558 **Instrument: ICPMS04** **Method: SW6020 (DISSOLVED)**

MBLK Sample ID: **MBLKF1-96558** Units: **mg/L** Analysis Date: **26-Aug-2015 19:50**
Client ID: Run ID: **ICPMS04_260191** SeqNo: **3403323** PrepDate: **26-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

MBLK Sample ID: **MBLK-96558** Units: **mg/L** Analysis Date: **26-Aug-2015 19:55**
Client ID: Run ID: **ICPMS04_260191** SeqNo: **3403324** PrepDate: **26-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

LCS Sample ID: **MLCS-96558** Units: **mg/L** Analysis Date: **26-Aug-2015 19:59**
Client ID: Run ID: **ICPMS04_260191** SeqNo: **3403325** PrepDate: **26-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.044	0.200	5	0	101	80 - 120				

MS Sample ID: **HS15080823-06MS** Units: **mg/L** Analysis Date: **26-Aug-2015 20:48**
Client ID: **MW-5** Run ID: **ICPMS04_260191** SeqNo: **3403336** PrepDate: **26-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.932	0.200	5	0.006245	98.5	75 - 125				

MSD Sample ID: **HS15080823-06MSD** Units: **mg/L** Analysis Date: **26-Aug-2015 20:53**
Client ID: **MW-5** Run ID: **ICPMS04_260191** SeqNo: **3403337** PrepDate: **26-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.942	0.200	5	0.006245	98.7	75 - 125	4.932	0.208	20	

DUP Sample ID: **HS15080823-06DUP** Units: **mg/L** Analysis Date: **26-Aug-2015 20:39**
Client ID: **MW-5** Run ID: **ICPMS04_260191** SeqNo: **3403334** PrepDate: **26-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200					0.006245	0	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: 96558 **Instrument: ICPMS04** **Method: SW6020 (DISSOLVED)**

PDS Sample ID: **HS15080823-06BS** Units: **mg/L** Analysis Date: **26-Aug-2015 20:57**
Client ID: **MW-5** Run ID: **ICPMS04_260191** SeqNo: **3403338** PrepDate: **26-Aug-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.124	0.200	10	0.006245	91.2	75 - 125				

SD Sample ID: **HS15080823-06 DIL SX** Units: **mg/L** Analysis Date: **26-Aug-2015 20:44**
Client ID: **MW-5** Run ID: **ICPMS04_260191** SeqNo: **3403335** PrepDate: **26-Aug-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	ND	1.00					0.006245	0	10	

The following samples were anayzed in this batch: HS15080823-01 HS15080823-02 HS15080823-03 HS15080823-04 HS15080823-05 HS15080823-06 HS15080823-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: **R260028** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-150821** Units: **ug/L** Analysis Date: **22-Aug-2015 02:22**
Client ID: Run ID: **VOA2_260028** SeqNo: **3398585** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*59.23*	*1.0*	*50*	*0*	*118*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.51*	*1.0*	*50*	*0*	*103*	*70 - 125*				
Surr: Dibromofluoromethane	*47.55*	*1.0*	*50*	*0*	*95.1*	*74 - 125*				
Surr: Toluene-d8	*49.21*	*1.0*	*50*	*0*	*98.4*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: **R260028** **Instrument:** **VOA2** **Method:** **SW8260**

LCS Sample ID: **VLCSW-150821** Units: **ug/L** Analysis Date: **22-Aug-2015 01:31**
Client ID: Run ID: **VOA2_260028** SeqNo: **3398584** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	44.62	1.0	50	0	89.2	70 - 125				
1,2-Dichloroethane	59.55	1.0	50	0	119	76 - 120				
1,3,5-Trimethylbenzene	46.05	1.0	50	0	92.1	80 - 123				
2-Butanone	87.1	2.0	100	0	87.1	60 - 140				
Benzene	47.13	1.0	50	0	94.3	80 - 120				
Cyclohexane	42.98	1.0	50	0	86.0	70 - 130				
Ethylbenzene	46.45	1.0	50	0	92.9	80 - 120				
Isopropylbenzene	50.44	1.0	50	0	101	75 - 130				
m,p-Xylene	94.45	2.0	100	0	94.4	80 - 120				
Methylcyclohexane	50.69	1.0	50	0	101	70 - 126				
Naphthalene	46.12	1.0	50	0	92.2	65 - 135				
n-Butylbenzene	46.72	1.0	50	0	93.4	75 - 128				
n-Propylbenzene	44.62	1.0	50	0	89.2	75 - 130				
o-Xylene	46.8	1.0	50	0	93.6	80 - 120				
Toluene	44.5	1.0	50	0	89.0	75 - 121				
Xylenes, Total	141.3	3.0	150	0	94.2	79 - 124				
Surr: 1,2-Dichloroethane-d4	*58.49*	*1.0*	*50*	*0*	*117*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*52.86*	*1.0*	*50*	*0*	*106*	*70 - 125*				
Surr: Dibromofluoromethane	*48.15*	*1.0*	*50*	*0*	*96.3*	*74 - 125*				
Surr: Toluene-d8	*49.23*	*1.0*	*50*	*0*	*98.5*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: **R260028** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS15080795-01MS** Units: **ug/L** Analysis Date: **22-Aug-2015 03:12**
Client ID: Run ID: **VOA2_260028** SeqNo: **3398587** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	41.62	1.0	50	0.6101	82.0	70 - 125				
1,2-Dichloroethane	55.34	1.0	50	0	111	76 - 120				
1,3,5-Trimethylbenzene	43.47	1.0	50	0.7157	85.5	80 - 123				
2-Butanone	80.96	2.0	100	0	81.0	60 - 140				
Benzene	47.35	1.0	50	0	94.7	80 - 120				
Cyclohexane	45.5	1.0	50	1.044	88.9	70 - 130				
Ethylbenzene	46.53	1.0	50	0	93.1	80 - 120				
Isopropylbenzene	49.99	1.0	50	0	100.0	75 - 130				
m,p-Xylene	90.92	2.0	100	0	90.9	80 - 120				
Methylcyclohexane	50.89	1.0	50	0	102	70 - 126				
Naphthalene	40.6	1.0	50	1.31	78.6	65 - 135				
n-Butylbenzene	42.56	1.0	50	0.6148	83.9	75 - 128				
n-Propylbenzene	43.31	1.0	50	0.6481	85.3	75 - 130				
o-Xylene	44.61	1.0	50	0	89.2	80 - 120				
Toluene	44.9	1.0	50	0	89.8	75 - 121				
Xylenes, Total	135.5	3.0	150	0	90.4	80 - 124				
Surr: 1,2-Dichloroethane-d4	*60.77*	*1.0*	*50*	*0*	*122*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*54.41*	*1.0*	*50*	*0*	*109*	*70 - 125*				
Surr: Dibromofluoromethane	*49.34*	*1.0*	*50*	*0*	*98.7*	*74 - 125*				
Surr: Toluene-d8	*50.41*	*1.0*	*50*	*0*	*101*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: R260028 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS15080795-01MSD** Units: **ug/L** Analysis Date: **22-Aug-2015 03:37**
Client ID: Run ID: **VOA2_260028** SeqNo: **3398588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	41.49	1.0	50	0.6101	81.8	70 - 125	41.62	0.322	20	
1,2-Dichloroethane	57.07	1.0	50	0	114	76 - 120	55.34	3.09	20	
1,3,5-Trimethylbenzene	42.79	1.0	50	0.7157	84.2	80 - 123	43.47	1.58	20	
2-Butanone	84.66	2.0	100	0	84.7	60 - 140	80.96	4.46	20	
Benzene	45.8	1.0	50	0	91.6	80 - 120	47.35	3.32	20	
Cyclohexane	44.46	1.0	50	1.044	86.8	70 - 130	45.5	2.31	20	
Ethylbenzene	44.64	1.0	50	0	89.3	80 - 120	46.53	4.15	20	
Isopropylbenzene	48.53	1.0	50	0	97.1	75 - 130	49.99	2.98	20	
m,p-Xylene	89.84	2.0	100	0	89.8	80 - 120	90.92	1.19	20	
Methylcyclohexane	49.36	1.0	50	0	98.7	70 - 126	50.89	3.05	20	
Naphthalene	43.17	1.0	50	1.31	83.7	65 - 135	40.6	6.12	20	
n-Butylbenzene	42.78	1.0	50	0.6148	84.3	75 - 128	42.56	0.52	20	
n-Propylbenzene	41.54	1.0	50	0.6481	81.8	75 - 130	43.31	4.16	20	
o-Xylene	43.28	1.0	50	0	86.6	80 - 120	44.61	3.01	20	
Toluene	42.63	1.0	50	0	85.3	75 - 121	44.9	5.18	20	
Xylenes, Total	133.1	3.0	150	0	88.8	80 - 124	135.5	1.79	20	
Surr: 1,2-Dichloroethane-d4	*59.46*	*1.0*	*50*	*0*	*119*	*71 - 125*	*60.77*	*2.17*	*20*	
Surr: 4-Bromofluorobenzene	*52.47*	*1.0*	*50*	*0*	*105*	*70 - 125*	*54.41*	*3.62*	*20*	
Surr: Dibromofluoromethane	*50.2*	*1.0*	*50*	*0*	*100*	*74 - 125*	*49.34*	*1.74*	*20*	
Surr: Toluene-d8	*48.14*	*1.0*	*50*	*0*	*96.3*	*75 - 125*	*50.41*	*4.6*	*20*	

The following samples were anayzed in this batch: HS15080823-01 HS15080823-04 HS15080823-05 HS15080823-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: **R260086** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-150824** Units: **ug/L** Analysis Date: **24-Aug-2015 15:03**
Client ID: Run ID: **VOA2_260086** SeqNo: **3400101** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*59.77*	*1.0*	*50*	*0*	*120*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.97*	*1.0*	*50*	*0*	*99.9*	*70 - 125*				
Surr: Dibromofluoromethane	*50.91*	*1.0*	*50*	*0*	*102*	*74 - 125*				
Surr: Toluene-d8	*50.39*	*1.0*	*50*	*0*	*101*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: **R260086** **Instrument:** **VOA2** **Method:** **SW8260**

LCS Sample ID: **VLCSW-150824** Units: **ug/L** Analysis Date: **24-Aug-2015 14:10**
Client ID: Run ID: **VOA2_260086** SeqNo: **3400100** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	42.48	1.0	50	0	85.0	70 - 125				
1,2-Dichloroethane	55.84	1.0	50	0	112	76 - 120				
1,3,5-Trimethylbenzene	44.68	1.0	50	0	89.4	80 - 123				
2-Butanone	93.67	2.0	100	0	93.7	60 - 140				
Benzene	45.2	1.0	50	0	90.4	80 - 120				
Cyclohexane	40.94	1.0	50	0	81.9	70 - 130				
Ethylbenzene	45.68	1.0	50	0	91.4	80 - 120				
Isopropylbenzene	47.41	1.0	50	0	94.8	75 - 130				
m,p-Xylene	92.2	2.0	100	0	92.2	80 - 120				
Methylcyclohexane	50.11	1.0	50	0	100	70 - 126				
Naphthalene	48.26	1.0	50	0	96.5	65 - 135				
n-Butylbenzene	46.43	1.0	50	0	92.9	75 - 128				
n-Propylbenzene	42.03	1.0	50	0	84.1	75 - 130				
o-Xylene	45.16	1.0	50	0	90.3	80 - 120				
Toluene	42.39	1.0	50	0	84.8	75 - 121				
Xylenes, Total	137.4	3.0	150	0	91.6	79 - 124				
Surr: 1,2-Dichloroethane-d4	*59.89*	*1.0*	*50*	*0*	*120*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*53.09*	*1.0*	*50*	*0*	*106*	*70 - 125*				
Surr: Dibromofluoromethane	*49.73*	*1.0*	*50*	*0*	*99.5*	*74 - 125*				
Surr: Toluene-d8	*48.08*	*1.0*	*50*	*0*	*96.2*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: **R260086** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS15080887-01MS** Units: **ug/L** Analysis Date: **24-Aug-2015 15:56**
Client ID: Run ID: **VOA2_260086** SeqNo: **3400103** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	40.94	1.0	50	0.6999	80.5	70 - 125				
1,2-Dichloroethane	51.75	1.0	50	0	103	76 - 120				
1,3,5-Trimethylbenzene	42.4	1.0	50	0.7941	83.2	80 - 123				
2-Butanone	88.43	2.0	100	0	88.4	60 - 140				
Benzene	43.84	1.0	50	0	87.7	80 - 120				
Cyclohexane	41.91	1.0	50	0.5505	82.7	70 - 130				
Ethylbenzene	44.48	1.0	50	0	89.0	80 - 120				
Isopropylbenzene	45.33	1.0	50	0	90.7	75 - 130				
m,p-Xylene	89.44	2.0	100	0	89.4	80 - 120				
Methylcyclohexane	49.99	1.0	50	0	100.0	70 - 126				
Naphthalene	42.78	1.0	50	1.218	83.1	65 - 135				
n-Butylbenzene	44.63	1.0	50	0.6674	87.9	75 - 128				
n-Propylbenzene	42.46	1.0	50	0.7333	83.4	75 - 130				
o-Xylene	43.87	1.0	50	0	87.7	80 - 120				
Toluene	42.74	1.0	50	0	85.5	75 - 121				
Xylenes, Total	133.3	3.0	150	0	88.9	80 - 124				
Surr: 1,2-Dichloroethane-d4	*59.17*	*1.0*	*50*	*0*	*118*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.68*	*1.0*	*50*	*0*	*103*	*70 - 125*				
Surr: Dibromofluoromethane	*49.28*	*1.0*	*50*	*0*	*98.6*	*74 - 125*				
Surr: Toluene-d8	*50.71*	*1.0*	*50*	*0*	*101*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: R260086 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS15080887-01MSD** Units: **ug/L** Analysis Date: **24-Aug-2015 16:23**
Client ID: Run ID: **VOA2_260086** SeqNo: **3400104** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	40.52	1.0	50	0.6999	79.6	70 - 125	40.94	1.05	20	
1,2-Dichloroethane	53.21	1.0	50	0	106	76 - 120	51.75	2.78	20	
1,3,5-Trimethylbenzene	42.23	1.0	50	0.7941	82.9	80 - 123	42.4	0.394	20	
2-Butanone	87.17	2.0	100	0	87.2	60 - 140	88.43	1.44	20	
Benzene	43.27	1.0	50	0	86.5	80 - 120	43.84	1.31	20	
Cyclohexane	41.49	1.0	50	0.5505	81.9	70 - 130	41.91	1.02	20	
Ethylbenzene	41.66	1.0	50	0	83.3	80 - 120	44.48	6.53	20	
Isopropylbenzene	45.66	1.0	50	0	91.3	75 - 130	45.33	0.735	20	
m,p-Xylene	83.6	2.0	100	0	83.6	80 - 120	89.44	6.75	20	
Methylcyclohexane	49.25	1.0	50	0	98.5	70 - 126	49.99	1.48	20	
Naphthalene	41.9	1.0	50	1.218	81.4	65 - 135	42.78	2.07	20	
n-Butylbenzene	43.83	1.0	50	0.6674	86.3	75 - 128	44.63	1.81	20	
n-Propylbenzene	39.96	1.0	50	0.7333	78.4	75 - 130	42.46	6.07	20	
o-Xylene	41.67	1.0	50	0	83.3	80 - 120	43.87	5.12	20	
Toluene	43.22	1.0	50	0	86.4	75 - 121	42.74	1.13	20	
Xylenes, Total	125.3	3.0	150	0	83.5	80 - 124	133.3	6.21	20	
Surr: 1,2-Dichloroethane-d4	*59.24*	*1.0*	*50*	*0*	*118*	*71 - 125*	*59.17*	*0.13*	*20*	
Surr: 4-Bromofluorobenzene	*53.33*	*1.0*	*50*	*0*	*107*	*70 - 125*	*51.68*	*3.13*	*20*	
Surr: Dibromofluoromethane	*49.44*	*1.0*	*50*	*0*	*98.9*	*74 - 125*	*49.28*	*0.311*	*20*	
Surr: Toluene-d8	*50.67*	*1.0*	*50*	*0*	*101*	*75 - 125*	*50.71*	*0.0837*	*20*	

The following samples were anayzed in this batch: HS15080823-02 HS15080823-03 HS15080823-07 HS15080823-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: R260152 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-150825** Units: **ug/L** Analysis Date: **25-Aug-2015 12:49**
Client ID: Run ID: **VOA2_260152** SeqNo: **3401346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	*57.97*	*1.0*	*50*	*0*	*116*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*52.74*	*1.0*	*50*	*0*	*105*	*70 - 125*				
Surr: Dibromofluoromethane	*48.21*	*1.0*	*50*	*0*	*96.4*	*74 - 125*				
Surr: Toluene-d8	*51.01*	*1.0*	*50*	*0*	*102*	*75 - 125*				

LCS Sample ID: **VLCSW-150825** Units: **ug/L** Analysis Date: **25-Aug-2015 11:55**
Client ID: Run ID: **VOA2_260152** SeqNo: **3401345** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	43.32	1.0	50	0	86.6	80 - 120				
Ethylbenzene	44.66	1.0	50	0	89.3	80 - 120				
Surr: 1,2-Dichloroethane-d4	*60.06*	*1.0*	*50*	*0*	*120*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*53.18*	*1.0*	*50*	*0*	*106*	*70 - 125*				
Surr: Dibromofluoromethane	*49.99*	*1.0*	*50*	*0*	*100.0*	*74 - 125*				
Surr: Toluene-d8	*51.05*	*1.0*	*50*	*0*	*102*	*75 - 125*				

MS Sample ID: **HS15080823-07MS** Units: **ug/L** Analysis Date: **25-Aug-2015 14:07**
Client ID: **DUP-1** Run ID: **VOA2_260152** SeqNo: **3401349** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	855.2	10	500	395.9	91.9	80 - 120				
Ethylbenzene	651.1	10	500	217.1	86.8	80 - 120				
Surr: 1,2-Dichloroethane-d4	*587.8*	*10*	*500*	*0*	*118*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*526.8*	*10*	*500*	*0*	*105*	*70 - 125*				
Surr: Dibromofluoromethane	*478*	*10*	*500*	*0*	*95.6*	*74 - 125*				
Surr: Toluene-d8	*494.7*	*10*	*500*	*0*	*98.9*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: **R260152** **Instrument:** **VOA2** **Method:** **SW8260**

MSD Sample ID: **HS15080823-07MSD** Units: **ug/L** Analysis Date: **25-Aug-2015 14:32**
Client ID: **DUP-1** Run ID: **VOA2_260152** SeqNo: **3401350** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	843.1	10	500	395.9	89.5	80 - 120	855.2	1.42	20	
Ethylbenzene	605.8	10	500	217.1	77.7	80 - 120	651.1	7.21	20	S
Surr: 1,2-Dichloroethane-d4	*595.3*	*10*	*500*	*0*	*119*	*71 - 125*	*587.8*	*1.27*	*20*	
Surr: 4-Bromofluorobenzene	*521.6*	*10*	*500*	*0*	*104*	*70 - 125*	*526.8*	*0.981*	*20*	
Surr: Dibromofluoromethane	*496.3*	*10*	*500*	*0*	*99.3*	*74 - 125*	*478*	*3.76*	*20*	
Surr: Toluene-d8	*511.9*	*10*	*500*	*0*	*102*	*75 - 125*	*494.7*	*3.44*	*20*	

The following samples were anayzed in this batch: HS15080823-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: R260060 **Instrument: ICS2100** **Method: E300**

MBLK Sample ID: **WBLKW1-082115** Units: **mg/L** Analysis Date: **21-Aug-2015 11:30**
Client ID: Run ID: **ICS2100_260060** SeqNo: **3399365** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	ND	0.100								
Phosphorus, Orthophosphate (As P)	ND	0.100								
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW1-082115** Units: **mg/L** Analysis Date: **21-Aug-2015 11:45**
Client ID: Run ID: **ICS2100_260060** SeqNo: **3399366** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	4.042	0.100	4	0	101	90 - 110				
Phosphorus, Orthophosphate (As P)	3.636	0.100	4	0	90.9	90 - 110				
Sulfate	20.01	0.500	20	0	100	90 - 110				

LCSD Sample ID: **WLCSDW1-082115** Units: **mg/L** Analysis Date: **21-Aug-2015 11:59**
Client ID: Run ID: **ICS2100_260060** SeqNo: **3399367** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.978	0.100	4	0	99.4	90 - 110	4.042	1.6	20	
Phosphorus, Orthophosphate (As P)	3.654	0.100	4	0	91.4	90 - 110	3.636	0.494	20	
Sulfate	19.84	0.500	20	0	99.2	90 - 110	20.01	0.818	20	

MS Sample ID: **HS15080848-01MS** Units: **mg/L** Analysis Date: **21-Aug-2015 17:41**
Client ID: Run ID: **ICS2100_260060** SeqNo: **3399380** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.511	0.100	2	0.31	110	80 - 120				
Phosphorus, Orthophosphate (As P)	1.808	0.100	2	0	90.4	80 - 120				
Sulfate	14.47	0.500	10	2.552	119	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: R260060 **Instrument: ICS2100** **Method: E300**

MS Sample ID: **HS15080848-01MS** Units: **mg/L** Analysis Date: **24-Aug-2015 15:40**
Client ID: Run ID: **ICS2100_260060** SeqNo: **3399805** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.37	0.100	2	0.31	103	80 - 120				
Phosphorus, Orthophosphate (As P)	1.665	0.100	2	0	83.2	80 - 120				
Sulfate	12.72	0.500	10	2.552	102	80 - 120				

MS Sample ID: **HS15080823-01MS** Units: **mg/L** Analysis Date: **21-Aug-2015 15:01**
Client ID: **MW-18** Run ID: **ICS2100_260060** SeqNo: **3399369** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.137	0.100	2	0.168	98.4	80 - 120				
Phosphorus, Orthophosphate (As P)	1.502	0.100	2	0	75.1	80 - 120				S
Sulfate	23.88	0.500	10	13.07	108	80 - 120				

MSD Sample ID: **HS15080848-01MSD** Units: **mg/L** Analysis Date: **21-Aug-2015 17:55**
Client ID: Run ID: **ICS2100_260060** SeqNo: **3399381** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.306	0.100	2	0.31	99.8	80 - 120	2.37	2.74	20	
Phosphorus, Orthophosphate (As P)	1.787	0.100	2	0	89.4	80 - 120	1.665	7.07	20	
Sulfate	12.66	0.500	10	2.552	101	80 - 120	12.72	0.488	20	

MSD Sample ID: **HS15080823-01MSD** Units: **mg/L** Analysis Date: **21-Aug-2015 15:15**
Client ID: **MW-18** Run ID: **ICS2100_260060** SeqNo: **3399370** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.091	0.100	2	0.168	96.2	80 - 120	2.137	2.18	20	
Phosphorus, Orthophosphate (As P)	1.481	0.100	2	0	74.0	80 - 120	1.502	1.41	20	S
Sulfate	23.36	0.500	10	13.07	103	80 - 120	23.88	2.21	20	

The following samples were anayzed in this batch: HS15080823-01 HS15080823-02 HS15080823-03 HS15080823-04 HS15080823-05 HS15080823-06 HS15080823-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: R260138 **Instrument: ManTech01** **Method: SM2320B**

MBLK Sample ID: **WBLKW1-150825** Units: **mg/L** Analysis Date: **25-Aug-2015 10:57**
Client ID: Run ID: **ManTech01_260138** SeqNo: **3401088** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								
Alkalinity, Hydroxide (As CaCO3)	ND	5.00								
Alkalinity, Total (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS-ALK-150825** Units: **mg/L** Analysis Date: **25-Aug-2015 11:03**
Client ID: Run ID: **ManTech01_260138** SeqNo: **3401089** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1043	5.00	1000	0	104	80 - 120				

LCSD Sample ID: **LCSD-ALK-150825** Units: **mg/L** Analysis Date: **25-Aug-2015 11:09**
Client ID: Run ID: **ManTech01_260138** SeqNo: **3401090** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1038	5.00	1000	0	104	80 - 120	1043	0.501	20	

DUP Sample ID: **HS15080823-05DUP** Units: **mg/L** Analysis Date: **25-Aug-2015 13:23**
Client ID: **MW-17** Run ID: **ManTech01_260138** SeqNo: **3401116** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	491.2	5.00					490	0.245	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	491.2	5.00					490	0.245	20	

The following samples were anayzed in this batch: HS15080823-01 HS15080823-02 HS15080823-03 HS15080823-04 HS15080823-05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: R260276 **Instrument: WetChem_HS** **Method: SM4500 NH3-D**

MBLK Sample ID: **MBLK-260276** Units: **mg/L** Analysis Date: **27-Aug-2015 14:15**
Client ID: Run ID: **WetChem_HS_260276** SeqNo: **3404257** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	ND	0.20								

LCS Sample ID: **LCS-260276** Units: **mg/L** Analysis Date: **27-Aug-2015 14:15**
Client ID: Run ID: **WetChem_HS_260276** SeqNo: **3404258** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	10.6	0.20	10	0	106	80 - 120				

MS Sample ID: **HS15080823-01MS** Units: **mg/L** Analysis Date: **27-Aug-2015 14:15**
Client ID: **MW-18** Run ID: **WetChem_HS_260276** SeqNo: **3404261** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	10.8	0.20	10	0.0353	108	80 - 120				

MSD Sample ID: **HS15080823-01MSD** Units: **mg/L** Analysis Date: **27-Aug-2015 14:15**
Client ID: **MW-18** Run ID: **WetChem_HS_260276** SeqNo: **3404262** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	11.2	0.20	10	0.0353	112	80 - 120	10.8	3.64	20	

The following samples were anayzed in this batch: HS15080823-01 HS15080823-02 HS15080823-03 HS15080823-04 HS15080823-05 HS15080823-06 HS15080823-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15080823

QC BATCH REPORT

Batch ID: R260301 **Instrument: ManTech01** **Method: SM2320B**

MBLK Sample ID: **WBLKW1-150827** Units: **mg/L** Analysis Date: **27-Aug-2015 12:01**
Client ID: Run ID: **ManTech01_260301** SeqNo: **3404465** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								
Alkalinity, Hydroxide (As CaCO3)	ND	5.00								
Alkalinity, Total (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS-ALK-150827** Units: **mg/L** Analysis Date: **27-Aug-2015 12:07**
Client ID: Run ID: **ManTech01_260301** SeqNo: **3404466** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1050	5.00	1000	0	105	80 - 120				

LCSD Sample ID: **LCSD-ALK-150827** Units: **mg/L** Analysis Date: **27-Aug-2015 12:12**
Client ID: Run ID: **ManTech01_260301** SeqNo: **3404467** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1013	5.00	1000	0	101	80 - 120	1050	3.54	20	

DUP Sample ID: **HS15080823-06DUP** Units: **mg/L** Analysis Date: **27-Aug-2015 13:12**
Client ID: **MW-5** Run ID: **ManTech01_260301** SeqNo: **3404479** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	502.2	5.00					498.8	0.669	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	502.2	5.00					498.8	0.669	20	

The following samples were anayzed in this batch: HS15080823-06 HS15080823-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: **HS15080823**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	30-Sep-2015
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
Oklahoma	2015-047	31-Aug-2016
Texas	T104704231-15-15	30-Apr-2016

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15080823

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15080823-01	MW-18	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-01	MW-18	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-01	MW-18	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-01	MW-18	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-01	MW-18	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-01	MW-18	Login	8/21/2015 11:30:28 AM	CGG	VW-3
HS15080823-01	MW-18	Login	8/21/2015 11:30:28 AM	CGG	BTEX A1
HS15080823-01	MW-18	Login	8/21/2015 11:30:28 AM	CGG	TPH C2
HS15080823-01	MW-18	Login	8/21/2015 11:30:28 AM	CGG	Sub
HS15080823-02	MW-19	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-02	MW-19	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-02	MW-19	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-02	MW-19	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-02	MW-19	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-02	MW-19	Login	8/21/2015 11:30:28 AM	CGG	VW-3
HS15080823-02	MW-19	Login	8/21/2015 11:30:28 AM	CGG	BTEX A1
HS15080823-02	MW-19	Login	8/21/2015 11:30:28 AM	CGG	TPH C2
HS15080823-02	MW-19	Login	8/21/2015 11:30:28 AM	CGG	Sub
HS15080823-03	MW-4	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-03	MW-4	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-03	MW-4	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-03	MW-4	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-03	MW-4	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-03	MW-4	Login	8/21/2015 11:30:28 AM	CGG	VW-3
HS15080823-03	MW-4	Login	8/21/2015 11:30:28 AM	CGG	BTEX A1
HS15080823-03	MW-4	Login	8/21/2015 11:30:28 AM	CGG	TPH C2
HS15080823-03	MW-4	Login	8/21/2015 11:30:28 AM	CGG	Sub
HS15080823-04	MW-1	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-04	MW-1	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-04	MW-1	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-04	MW-1	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-04	MW-1	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-04	MW-1	Login	8/21/2015 11:30:28 AM	CGG	VW-3
HS15080823-04	MW-1	Login	8/21/2015 11:30:28 AM	CGG	BTEX A1
HS15080823-04	MW-1	Login	8/21/2015 11:30:28 AM	CGG	TPH C2
HS15080823-04	MW-1	Login	8/21/2015 11:30:28 AM	CGG	Sub
HS15080823-05	MW-17	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-05	MW-17	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-05	MW-17	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-05	MW-17	Login	8/21/2015 11:30:28 AM	CGG	14B

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Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15080823

SAMPLE TRACKING

HS15080823-05	MW-17	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-05	MW-17	Login	8/21/2015 11:30:28 AM	CGG	VW-3
HS15080823-05	MW-17	Login	8/21/2015 11:30:28 AM	CGG	BTEX A1
HS15080823-05	MW-17	Login	8/21/2015 11:30:28 AM	CGG	TPH C2
HS15080823-05	MW-17	Login	8/21/2015 11:30:28 AM	CGG	Sub
HS15080823-06	MW-5	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-06	MW-5	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-06	MW-5	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-06	MW-5	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-06	MW-5	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-06	MW-5	Login	8/21/2015 11:30:28 AM	CGG	VW-3
HS15080823-06	MW-5	Login	8/21/2015 11:30:28 AM	CGG	BTEX A1
HS15080823-06	MW-5	Login	8/21/2015 11:30:28 AM	CGG	TPH C2
HS15080823-06	MW-5	Login	8/21/2015 11:30:28 AM	CGG	Sub
HS15080823-07	DUP-1	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-07	DUP-1	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-07	DUP-1	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-07	DUP-1	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-07	DUP-1	Login	8/21/2015 11:30:28 AM	CGG	14B
HS15080823-07	DUP-1	Login	8/21/2015 11:30:28 AM	CGG	VW-3
HS15080823-07	DUP-1	Login	8/21/2015 11:30:28 AM	CGG	BTEX A1
HS15080823-07	DUP-1	Login	8/21/2015 11:30:28 AM	CGG	TPH C2
HS15080823-07	DUP-1	Login	8/21/2015 11:30:28 AM	CGG	Sub
HS15080823-08	Trip Blank	Login	8/21/2015 11:30:28 AM	CGG	VW-3
HS15080823-09	TB-081215-19	Login	8/21/2015 11:30:28 AM	CGG	VW-3
HS15080823-01	MW-18	Out	8/24/2015 10:06:39 AM	AAP	METPREP
HS15080823-02	MW-19	Out	8/24/2015 10:06:39 AM	AAP	METPREP
HS15080823-03	MW-4	Out	8/24/2015 10:06:39 AM	AAP	METPREP
HS15080823-04	MW-1	Out	8/24/2015 10:06:39 AM	AAP	METPREP
HS15080823-05	MW-17	Out	8/24/2015 10:06:39 AM	AAP	METPREP
HS15080823-06	MW-5	Out	8/24/2015 10:06:39 AM	AAP	METPREP
HS15080823-07	DUP-1	Out	8/24/2015 10:06:39 AM	AAP	METPREP
HS15080823-01	MW-18	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-01	MW-18	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-02	MW-19	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-02	MW-19	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-03	MW-4	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-03	MW-4	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-04	MW-1	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-04	MW-1	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-05	MW-17	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-05	MW-17	Return	8/24/2015 5:22:14 PM	AAP	14B

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Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15080823

SAMPLE TRACKING

HS15080823-06	MW-5	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-06	MW-5	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-07	DUP-1	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-07	DUP-1	Return	8/24/2015 5:22:14 PM	AAP	14B
HS15080823-01	MW-18	Out	8/25/2015 2:46:19 PM	AAP	METPREP
HS15080823-02	MW-19	Out	8/25/2015 2:46:19 PM	AAP	METPREP
HS15080823-03	MW-4	Out	8/25/2015 2:46:19 PM	AAP	METPREP
HS15080823-04	MW-1	Out	8/25/2015 2:46:19 PM	AAP	METPREP
HS15080823-05	MW-17	Out	8/25/2015 2:46:19 PM	AAP	METPREP
HS15080823-06	MW-5	Out	8/25/2015 2:46:19 PM	AAP	METPREP
HS15080823-07	DUP-1	Out	8/25/2015 2:46:19 PM	AAP	METPREP

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Sample Receipt Checklist

Client Name: APEX-PORTLAND
Work Order: HS15080823

Date/Time Received: **21-Aug-2015 09:10**
Received by: **PMG**

Checklist completed by: *Corey Grandits* (eSignature) 21-Aug-2015 (Date)

Reviewed by: *Erica Padilla* (eSignature) 25-Aug-2015 (Date)

Matrices: **Water**

Carrier name: **FedEx Priority Overnight**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	☐ Not Present
Custody seals intact on shipping container/cooler?	☑	☐	☐ Not Present
Custody seals intact on sample bottles?	☐	☐	☑ Not Present
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	☐ N/A
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Water - VOA vials have zero headspace?	☑	☐	☐ No VOA vials submitted
Water - pH acceptable upon receipt?	☑	☐	☐ N/A
pH adjusted?	☐	☑	☐ N/A

Temperature(s)/Thermometer(s): 0.5c/1.1c , 1.7c/2.3c uc/c | IR5

Cooler(s)/Kit(s): 3210 , 24475

Date/Time sample(s) sent to storage: 08/21/2015 12:00

pH adjusted by:

Login Notes: Extra trip blank received logged in on hold.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

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ALS Environmental

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 110855

HS15080823

WV

Apex Companies
Andover Release Site E3CE-0065

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	Andover Release Site
Work Order		Project Number	E3CE-0065
Company Name	Apex Companies	Bill To Company	Apex Companies
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson
Address	3015 SW First Avenue	Address	3015 SW First Avenue
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201
Phone	(503) 924-4704	Phone	(503) 924-4704
Fax		Fax	
e-Mail Address	sjackson@apexcos.com	e-Mail Address	sjackson@apexcos.com

A 300-Sulfate, ortho-phos, and Nitrate (short hold)
B RSK175-methane
C 6020-Potassium only
D Ammonia-4500
E 6020-Dissolved Iron-Lab filtered
F RSK175-CO2, Sub to ALS Kelso
G Alkalinity
H 8260-VOC
I OA-1 GRO
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-18	8/20/15	1315	GW	1,2,3,8	17	X	X	X	X	X	X	X	X	X		
2	MW-19		1412				X	X	X	X	X	X	X	X	X		
3	MW-4		1448				X	X	X	X	X	X	X	X	X		
4	MW-1		1534				X	X	X	X	X	X	X	X	X		
5	MW-17		1614				X	X	X	X	X	X	X	X	X		
6	MW-5		1650				X	X	X	X	X	X	X	X	X		
7	Dup-1		—				X	X	X	X	X	X	X	X	X		
8	Trip Blank	—	—	—	1	2								X			
9																	
10																	

Sampler(s) Please Print & Sign: Ted Alfred

Shipment Method:

Required Turnaround Time: (Check Box) [X] Std 10 WK days [ ] 5 WK Days [ ] 2 WK Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 8/20/15 Time: 1600 Received by:

Relinquished by: Date: Time: Received by (Laboratory): PC 8/21/15 0910

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: 2015 Groundwater Point Test T3

Cooler ID	Cooler Temp.
3210	0.5
24473	1.7
185	

QC Package: (Check One Box Below)
[X] Level 3 Std QC
[ ] Level 3 Std QC/Raw da
[ ] Level 4 SW846/CLP
[ ] Other/EDD
[ ] TRRP Chk List
[ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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1 of 2

TRK# 0215 8089 0424 4512

FRI – 21 AUG 10:30A
PRIORITY OVERNIGHT

MASTER

AB SGRA 3210

77099
TX-US IAH

0.5

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 8/20/15 Time: 1730
Name: J. Bimolnes
Company: Apex Companies
Seal Broken By: CG
Date: 8/21

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 8/20/15 Time: 1730
Name: J. Bimolnes
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Fax. +1 281 530 5887

CUSTODY SEAL
Date: 8/20/15 Time: 1730
Name: J. Bimolnes
Company: Apex Companies
Seal Broken By: CG
Date: 8/21

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2 of 2

MPS# 0881 781 9179 6131

Mstr# 80[illegible] 0424 4512 0215

FRI

PRIORITY OVERNIGHT

AB SGRA2447[illegible] x-US 77099 IAH

1,7

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

September 4, 2015

Jumoke Lawal
ALS Group USA, Corp.
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS15080823

Dear Jumoke:

Enclosed are the results of the samples submitted to our laboratory on August 22, 2015. For your reference, these analyses have been assigned our service request number P1503481.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 11:22 am, Sep 04, 2015

Kelly Horiuchi
Laboratory Director

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: ALS Group USA, Corp.
Project: HS15080823

Service Request No: P1503481

CASE NARRATIVE

The samples were received intact under chain of custody on August 22, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gas (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation, however it is not part of the AIHA-LAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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Simi Valley, CA 93065
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F: +1 805 526 7270
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	876241
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-15-6
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272015-5
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

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ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Group USA, Corp.
Project ID: HS15080823

Service Request: P1503481

Date Received: 8/22/2015
Time Received: 10:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2
HS15080823-01	P1503481-001	Water	8/20/2015	13:15	X
HS15080823-02	P1503481-002	Water	8/20/2015	14:12	X
HS15080823-03	P1503481-003	Water	8/20/2015	14:48	X
HS15080823-04	P1503481-004	Water	8/20/2015	15:34	X
HS15080823-05	P1503481-005	Water	8/20/2015	16:14	X
HS15080823-06	P1503481-006	Water	8/20/2015	16:50	X
HS15080823-07	P1503481-007	Water	8/20/2015	00:00	X

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P1503481

CHAIN OF CUSTODY RECORD

(ALS) Environmental

Date	21 Aug 2015
COC ID	3352
Due date	31 AUG 15

Subcontractor

ALS Environmental Kelso	**Phone**
1317 S. 13th Avenue	3605013312
Kelso, WA 98626	**Fax**

Customer Information		Project Information	
PO	HS15080823	**Project Name**	HS15080823

Company Name	ALS Houston	Company Name	ALS Houston
		Inv Attn	Accounts Payable
Address	10450 Stancliff Rd, Ste 210	**Address**	10450 Stancliff Rd, Ste 210
	Houston, TX 77099		Houston, TX 77099
Phone	281-530-5656	**Phone**	281-530-5656
Email1	erica.padilla@alsglobal.com	**Email2**	jumoke.lawal@alsglobal.com

Lab ID	Client Samp ID	Collection Date	Matrix	Analysis Requested
HS15080823-01	MW-18	20-Aug-15 01:15 pm	Water	XXX SUB
HS15080823-02	MW-19	20-Aug-15 02:12 pm	Water	XXX SUB
HS15080823-03	MW-4	20-Aug-15 02:48 pm	Water	XXX SUB
HS15080823-04	MW-1	20-Aug-15 03:34 pm	Water	XXX SUB
HS15080823-05	MW-17	20-Aug-15 04:14 pm	Water	XXX SUB
HS15080823-06	MW-5	20-Aug-15 04:50 pm	Water	XXX SUB
HS15080823-07	DUP-1	20-Aug-15 12:00 am	Water	XXX SUB

Comments Please analyze for the analysis listed above. Send report to the emails shown above.

Relinquished by:	Date/Time:	Received by:	Date/Time:	Cooler IDs:	Report/QC Level
[illegible]	8/21/15 1300	Kate Aguilera ALS	8/22/15 1000		STD

5°C wet ice

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Environmental
Sample Acceptance Check Form

Client: ALS Group USA, Corp. Work order: P1503481

Project: HS15080823

Sample(s) received on: 8/22/15 Date opened: 8/22/15 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by ALS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 5° C			
9	Was a **trip blank** received?	☐	☒	☐
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☐	☒
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1503481-001.01	40mL VOA NP				A	
P1503481-001.02	40mL VOA NP		7		A	MC 8/31/2015
P1503481-001.03	40mL VOA NP				A	
P1503481-002.01	40mL VOA NP				A	
P1503481-002.02	40mL VOA NP		7		A	MC 8/31/2015
P1503481-002.03	40mL VOA NP				A	
P1503481-003.01	40mL VOA NP				A	
P1503481-003.02	40mL VOA NP		7		A	MC 8/31/2015

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Environmental
Sample Acceptance Check Form

Client: ALS Group USA, Corp. Work order: P1503481

Project: HS15080823

Sample(s) received on: 8/22/15 Date opened: 8/22/15 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1503481-003.03	40mL VOA NP				A	
P1503481-004.01	40mL VOA NP				A	
P1503481-004.02	40mL VOA NP		7		A	MC 8/31/2015
P1503481-004.03	40mL VOA NP				A	
P1503481-005.01	40mL VOA NP				A	
P1503481-005.02	40mL VOA NP		7		A	MC 8/31/2015
P1503481-005.03	40mL VOA NP				A	
P1503481-006.01	40mL VOA NP				A	
P1503481-006.02	40mL VOA NP		7		A	MC 8/31/2015
P1503481-006.03	40mL VOA NP				A	
P1503481-007.01	40mL VOA NP				A	
P1503481-007.02	40mL VOA NP		7		A	MC 8/31/2015
P1503481-007.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

RIGHT SOLUTIONS | RIGHT PARTNER

Client: **ALS Group USA, Corp.**

Client Project ID: **HS15080823** ALS Project ID: P1503481

Carbon Dioxide

Test Code: RSK 175

Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 8/20/15

Analyst: Mike Conejo Date Received: 8/22/15

Matrix: Water Date Analyzed: 8/31/15

Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
HS15080823-01	P1503481-001	0.10	**41,000**	1,000	
HS15080823-02	P1503481-002	0.10	**28,000**	1,000	
HS15080823-03	P1503481-003	0.10	**39,000**	1,000	
HS15080823-04	P1503481-004	0.10	**85,000**	1,000	
HS15080823-05	P1503481-005	0.10	**66,000**	1,000	
HS15080823-06	P1503481-006	0.10	**54,000**	1,000	
HS15080823-07	P1503481-007	0.10	**37,000**	1,000	
Method Control Sample	P150831-MB	0.10	ND	1,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Group USA, Corp.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS15080823**

ALS Project ID: P1503481
ALS Sample ID: P150831-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 8/31/15
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	23,100	21,700	**101**	**95**	62-139	6	24	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

November 13, 2015

Samuel Jackson
Apex Companies
3015 SW First Avenue
Portland, OR 97201

Work Order: **HS15110261**

Laboratory Results for: **Andover Release Site E3CE-0065**

Dear Samuel,

ALS Environmental received 9 sample(s) on Nov 06, 2015 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Erica H Padilla

Generated By: Jumoke.Lawal

Erica Padilla
PM

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15110261

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15110261-01	MW-1	Water		05-Nov-2015 08:46	06-Nov-2015 09:30	☐
HS15110261-02	MW-17	Water		05-Nov-2015 09:50	06-Nov-2015 09:30	☐
HS15110261-03	MW-19	Water		05-Nov-2015 10:45	06-Nov-2015 09:30	☐
HS15110261-04	MW-18	Water		05-Nov-2015 11:22	06-Nov-2015 09:30	☐
HS15110261-05	MW-4	Water		05-Nov-2015 13:16	06-Nov-2015 09:30	☐
HS15110261-06	MW-5	Water		05-Nov-2015 14:07	06-Nov-2015 09:30	☐
HS15110261-07	DUP-1	Water		05-Nov-2015 00:00	06-Nov-2015 09:30	☐
HS15110261-08	TB-102115-95	Water		05-Nov-2015 00:00	06-Nov-2015 09:30	☐
HS15110261-09	TB-102115-96	Water		05-Nov-2015 00:00	06-Nov-2015 09:30	☐

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15110261

CASE NARRATIVE

Work Order Comments

- The analyses for Carbon Dioxide was subcontracted to ALS Environmental in Simi Valley, CA.

GC Semivolatiles by Method RSK-175

Batch ID: R264548,R264549

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Volatiles by Method IA OA-1

Batch ID: R264522,R264524

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R264447

Sample ID: **MW-1 (HS15110261-01)**
Sample ID: **MW-17 (HS15110261-02)**
- Lowest practical dilution due to matrix.

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 98800

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 98832

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500 NH3-D

Batch ID: R264693

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R264593

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R264476

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	MW-1	Lab ID:HS15110261-01
Collection Date:	05-Nov-2015 08:46	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.11**		**0.010**	**mg/L**	10	07-Nov-2015 21:58
1,2-Dichloroethane	ND		0.010	mg/L	10	07-Nov-2015 21:58
1,3,5-Trimethylbenzene	**0.14**		**0.010**	**mg/L**	10	07-Nov-2015 21:58
2-Butanone	ND		0.020	mg/L	10	07-Nov-2015 21:58
Benzene	**0.37**		**0.010**	**mg/L**	10	07-Nov-2015 21:58
Cyclohexane	ND		0.010	mg/L	10	07-Nov-2015 21:58
Ethylbenzene	**0.12**		**0.010**	**mg/L**	10	07-Nov-2015 21:58
Isopropylbenzene	ND		0.010	mg/L	10	07-Nov-2015 21:58
m,p-Xylene	**0.60**		**0.020**	**mg/L**	10	07-Nov-2015 21:58
Methylcyclohexane	**0.014**		**0.010**	**mg/L**	10	07-Nov-2015 21:58
Naphthalene	**0.026**		**0.010**	**mg/L**	10	07-Nov-2015 21:58
n-Butylbenzene	ND		0.010	mg/L	10	07-Nov-2015 21:58
n-Propylbenzene	**0.020**		**0.010**	**mg/L**	10	07-Nov-2015 21:58
o-Xylene	**0.37**		**0.010**	**mg/L**	10	07-Nov-2015 21:58
Toluene	**0.49**		**0.010**	**mg/L**	10	07-Nov-2015 21:58
Xylenes, Total	**0.97**		**0.030**	**mg/L**	10	07-Nov-2015 21:58
Surr: 1,2-Dichloroethane-d4	*79.7*		*71-125*	*%REC*	*10*	*07-Nov-2015 21:58*
Surr: 4-Bromofluorobenzene	*96.2*		*70-125*	*%REC*	*10*	*07-Nov-2015 21:58*
Surr: Dibromofluoromethane	*96.8*		*74-125*	*%REC*	*10*	*07-Nov-2015 21:58*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*10*	*07-Nov-2015 21:58*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: KMU
Alkalinity, Bicarbonate (As CaCO3)	**553**		**5.00**	**mg/L**	1	10-Nov-2015 14:12
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:12
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:12
Alkalinity, Total (As CaCO3)	**553**		**5.00**	**mg/L**	1	10-Nov-2015 14:12
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 10-Nov-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	11-Nov-2015 14:48
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: ACN
Methane	**408**		**10.0**	**ug/L**	20	10-Nov-2015 10:52
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	13-Nov-2015 17:19
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	**0.27**		**0.20**	**mg/L**	1	12-Nov-2015 13:34
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 09-Nov-2015		Analyst: RPM
Potassium	**2.21**		**0.200**	**mg/L**	1	10-Nov-2015 12:57
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**7.9**		**0.25**	**mg/L**	5	09-Nov-2015 19:29
Surr: 4-Bromofluorobenzene	*109*		*70-130*	*%REC*	*5*	*09-Nov-2015 19:29*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	MW-1	Lab ID:HS15110261-01
Collection Date:	05-Nov-2015 08:46	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	ND		0.100	mg/L	1	06-Nov-2015 14:13
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	06-Nov-2015 14:13
Sulfate	**2.36**		**0.500**	**mg/L**	1	06-Nov-2015 14:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	MW-17	Lab ID:HS15110261-02
Collection Date:	05-Nov-2015 09:50	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.010	mg/L	10	07-Nov-2015 18:50
1,2-Dichloroethane	ND		0.010	mg/L	10	07-Nov-2015 18:50
1,3,5-Trimethylbenzene	ND		0.010	mg/L	10	07-Nov-2015 18:50
2-Butanone	ND		0.020	mg/L	10	07-Nov-2015 18:50
Benzene	**0.30**		**0.010**	**mg/L**	10	07-Nov-2015 18:50
Cyclohexane	**0.14**		**0.010**	**mg/L**	10	07-Nov-2015 18:50
Ethylbenzene	**0.18**		**0.010**	**mg/L**	10	07-Nov-2015 18:50
Isopropylbenzene	**0.014**		**0.010**	**mg/L**	10	07-Nov-2015 18:50
m,p-Xylene	**0.021**		**0.020**	**mg/L**	10	07-Nov-2015 18:50
Methylcyclohexane	**0.013**		**0.010**	**mg/L**	10	07-Nov-2015 18:50
Naphthalene	**0.024**		**0.010**	**mg/L**	10	07-Nov-2015 18:50
n-Butylbenzene	ND		0.010	mg/L	10	07-Nov-2015 18:50
n-Propylbenzene	**0.024**		**0.010**	**mg/L**	10	07-Nov-2015 18:50
o-Xylene	ND		0.010	mg/L	10	07-Nov-2015 18:50
Toluene	**0.017**		**0.010**	**mg/L**	10	07-Nov-2015 18:50
Xylenes, Total	ND		0.030	mg/L	10	07-Nov-2015 18:50
Surr: 1,2-Dichloroethane-d4	*82.6*		*71-125*	*%REC*	*10*	*07-Nov-2015 18:50*
Surr: 4-Bromofluorobenzene	*95.5*		*70-125*	*%REC*	*10*	*07-Nov-2015 18:50*
Surr: Dibromofluoromethane	*98.0*		*74-125*	*%REC*	*10*	*07-Nov-2015 18:50*
Surr: Toluene-d8	*103*		*75-125*	*%REC*	*10*	*07-Nov-2015 18:50*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: KMU
Alkalinity, Bicarbonate (As CaCO3)	**482**		**5.00**	**mg/L**	1	10-Nov-2015 14:17
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:17
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:17
Alkalinity, Total (As CaCO3)	**482**		**5.00**	**mg/L**	1	10-Nov-2015 14:17
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 10-Nov-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	11-Nov-2015 14:50
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: ACN
Methane	**16.6**		**0.500**	**ug/L**	1	09-Nov-2015 16:39
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	13-Nov-2015 17:19
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	12-Nov-2015 13:34
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 09-Nov-2015		Analyst: RPM
Potassium	**3.47**		**0.200**	**mg/L**	1	10-Nov-2015 13:00
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**2.9**		**0.050**	**mg/L**	1	09-Nov-2015 18:39
Surr: 4-Bromofluorobenzene	*105*		*70-130*	*%REC*	*1*	*09-Nov-2015 18:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-17
Collection Date: 05-Nov-2015 09:50

WorkOrder:HS15110261
Lab ID:HS15110261-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	ND		0.100	mg/L	1	06-Nov-2015 14:42
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	06-Nov-2015 14:42
Sulfate	**17.6**		**0.500**	**mg/L**	1	06-Nov-2015 14:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-19
Collection Date: 05-Nov-2015 10:45

WorkOrder:HS15110261
Lab ID:HS15110261-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 16:16
1,2-Dichloroethane	ND		0.0010	mg/L	1	07-Nov-2015 16:16
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 16:16
2-Butanone	ND		0.0020	mg/L	1	07-Nov-2015 16:16
Benzene	**0.010**		**0.0010**	**mg/L**	1	07-Nov-2015 16:16
Cyclohexane	ND		0.0010	mg/L	1	07-Nov-2015 16:16
Ethylbenzene	**0.0057**		**0.0010**	**mg/L**	1	07-Nov-2015 16:16
Isopropylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 16:16
m,p-Xylene	**0.0043**		**0.0020**	**mg/L**	1	07-Nov-2015 16:16
Methylcyclohexane	ND		0.0010	mg/L	1	07-Nov-2015 16:16
Naphthalene	ND		0.0010	mg/L	1	07-Nov-2015 16:16
n-Butylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 16:16
n-Propylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 16:16
o-Xylene	**0.0023**		**0.0010**	**mg/L**	1	07-Nov-2015 16:16
Toluene	**0.0027**		**0.0010**	**mg/L**	1	07-Nov-2015 16:16
Xylenes, Total	**0.0066**		**0.0030**	**mg/L**	1	07-Nov-2015 16:16
Surr: 1,2-Dichloroethane-d4	*80.8*		*71-125*	*%REC*	*1*	*07-Nov-2015 16:16*
Surr: 4-Bromofluorobenzene	*97.2*		*70-125*	*%REC*	*1*	*07-Nov-2015 16:16*
Surr: Dibromofluoromethane	*98.7*		*74-125*	*%REC*	*1*	*07-Nov-2015 16:16*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*07-Nov-2015 16:16*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: KMU
Alkalinity, Bicarbonate (As CaCO3)	**393**		**5.00**	**mg/L**	1	10-Nov-2015 14:22
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:22
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:22
Alkalinity, Total (As CaCO3)	**393**		**5.00**	**mg/L**	1	10-Nov-2015 14:22
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 10-Nov-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	11-Nov-2015 14:53
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: ACN
Methane	**0.797**		**0.500**	**ug/L**	1	09-Nov-2015 16:47
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	13-Nov-2015 17:19
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	12-Nov-2015 13:34
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 09-Nov-2015		Analyst: RPM
Potassium	**4.59**		**0.200**	**mg/L**	1	10-Nov-2015 13:03
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**0.089**		**0.050**	**mg/L**	1	07-Nov-2015 01:38
Surr: 4-Bromofluorobenzene	*98.9*		*70-130*	*%REC*	*1*	*07-Nov-2015 01:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	MW-19	Lab ID:HS15110261-03
Collection Date:	05-Nov-2015 10:45	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**0.323**		**0.100**	**mg/L**	1	06-Nov-2015 15:11
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	06-Nov-2015 15:11
Sulfate	**28.0**		**0.500**	**mg/L**	1	06-Nov-2015 15:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	MW-18	Lab ID:HS15110261-04
Collection Date:	05-Nov-2015 11:22	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.0095**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
1,2-Dichloroethane	ND		0.0010	mg/L	1	07-Nov-2015 19:15
1,3,5-Trimethylbenzene	**0.0067**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
2-Butanone	ND		0.0020	mg/L	1	07-Nov-2015 19:15
Benzene	**0.14**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
Cyclohexane	**0.043**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
Ethylbenzene	**0.048**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
Isopropylbenzene	**0.0031**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
m,p-Xylene	**0.032**		**0.0020**	**mg/L**	1	07-Nov-2015 19:15
Methylcyclohexane	**0.0054**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
Naphthalene	**0.0073**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
n-Butylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 19:15
n-Propylbenzene	**0.0051**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
o-Xylene	**0.040**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
Toluene	**0.012**		**0.0010**	**mg/L**	1	07-Nov-2015 19:15
Xylenes, Total	**0.073**		**0.0030**	**mg/L**	1	07-Nov-2015 19:15
Surr: 1,2-Dichloroethane-d4	*78.6*		*71-125*	*%REC*	*1*	*07-Nov-2015 19:15*
Surr: 4-Bromofluorobenzene	*96.2*		*70-125*	*%REC*	*1*	*07-Nov-2015 19:15*
Surr: Dibromofluoromethane	*94.9*		*74-125*	*%REC*	*1*	*07-Nov-2015 19:15*
Surr: Toluene-d8	*99.0*		*75-125*	*%REC*	*1*	*07-Nov-2015 19:15*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: KMU
Alkalinity, Bicarbonate (As CaCO3)	**420**		**5.00**	**mg/L**	1	10-Nov-2015 14:28
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:28
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:28
Alkalinity, Total (As CaCO3)	**420**		**5.00**	**mg/L**	1	10-Nov-2015 14:28
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 10-Nov-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	11-Nov-2015 15:12
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: ACN
Methane	**1.61**		**0.500**	**ug/L**	1	09-Nov-2015 16:56
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	13-Nov-2015 17:19
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 09-Nov-2015		Analyst: RPM
Potassium	**1.69**		**0.200**	**mg/L**	1	10-Nov-2015 13:05
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**1.4**		**0.050**	**mg/L**	1	07-Nov-2015 01:54
Surr: 4-Bromofluorobenzene	*103*		*70-130*	*%REC*	*1*	*07-Nov-2015 01:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	MW-18	Lab ID:HS15110261-04
Collection Date:	05-Nov-2015 11:22	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	ND		0.100	mg/L	1	06-Nov-2015 15:41
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	06-Nov-2015 15:41
Sulfate	**18.7**		**0.500**	**mg/L**	1	06-Nov-2015 15:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	MW-4	Lab ID:HS15110261-05
Collection Date:	05-Nov-2015 13:16	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 17:57
1,2-Dichloroethane	ND		0.0010	mg/L	1	07-Nov-2015 17:57
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 17:57
2-Butanone	ND		0.0020	mg/L	1	07-Nov-2015 17:57
Benzene	**0.0023**		**0.0010**	**mg/L**	1	07-Nov-2015 17:57
Cyclohexane	ND		0.0010	mg/L	1	07-Nov-2015 17:57
Ethylbenzene	**0.0023**		**0.0010**	**mg/L**	1	07-Nov-2015 17:57
Isopropylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 17:57
m,p-Xylene	ND		0.0020	mg/L	1	07-Nov-2015 17:57
Methylcyclohexane	ND		0.0010	mg/L	1	07-Nov-2015 17:57
Naphthalene	ND		0.0010	mg/L	1	07-Nov-2015 17:57
n-Butylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 17:57
n-Propylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 17:57
o-Xylene	ND		0.0010	mg/L	1	07-Nov-2015 17:57
Toluene	ND		0.0010	mg/L	1	07-Nov-2015 17:57
Xylenes, Total	ND		0.0030	mg/L	1	07-Nov-2015 17:57
Surr: 1,2-Dichloroethane-d4	*81.2*		*71-125*	*%REC*	*1*	*07-Nov-2015 17:57*
Surr: 4-Bromofluorobenzene	*97.4*		*70-125*	*%REC*	*1*	*07-Nov-2015 17:57*
Surr: Dibromofluoromethane	*97.0*		*74-125*	*%REC*	*1*	*07-Nov-2015 17:57*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*07-Nov-2015 17:57*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: KMU
Alkalinity, Bicarbonate (As CaCO3)	**438**		**5.00**	**mg/L**	1	10-Nov-2015 14:33
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:33
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:33
Alkalinity, Total (As CaCO3)	**438**		**5.00**	**mg/L**	1	10-Nov-2015 14:33
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 10-Nov-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	11-Nov-2015 15:15
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: ACN
Methane	**1.12**		**0.500**	**ug/L**	1	09-Nov-2015 17:04
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	13-Nov-2015 17:19
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	12-Nov-2015 13:34
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 09-Nov-2015		Analyst: RPM
Potassium	**1.62**		**0.200**	**mg/L**	1	10-Nov-2015 13:08
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**0.057**		**0.050**	**mg/L**	1	07-Nov-2015 02:10
Surr: 4-Bromofluorobenzene	*99.7*		*70-130*	*%REC*	*1*	*07-Nov-2015 02:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	MW-4	Lab ID:HS15110261-05
Collection Date:	05-Nov-2015 13:16	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**1.17**		**0.100**	**mg/L**	1	06-Nov-2015 16:39
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	06-Nov-2015 16:39
Sulfate	**111**		**10.0**	**mg/L**	20	06-Nov-2015 16:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	MW-5	Lab ID:HS15110261-06
Collection Date:	05-Nov-2015 14:07	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 18:22
1,2-Dichloroethane	ND		0.0010	mg/L	1	07-Nov-2015 18:22
1,3,5-Trimethylbenzene	**0.0013**		**0.0010**	**mg/L**	1	07-Nov-2015 18:22
2-Butanone	ND		0.0020	mg/L	1	07-Nov-2015 18:22
Benzene	**0.013**		**0.0010**	**mg/L**	1	07-Nov-2015 18:22
Cyclohexane	ND		0.0010	mg/L	1	07-Nov-2015 18:22
Ethylbenzene	**0.0028**		**0.0010**	**mg/L**	1	07-Nov-2015 18:22
Isopropylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 18:22
m,p-Xylene	**0.0021**		**0.0020**	**mg/L**	1	07-Nov-2015 18:22
Methylcyclohexane	ND		0.0010	mg/L	1	07-Nov-2015 18:22
Naphthalene	**0.0025**		**0.0010**	**mg/L**	1	07-Nov-2015 18:22
n-Butylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 18:22
n-Propylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 18:22
o-Xylene	**0.0013**		**0.0010**	**mg/L**	1	07-Nov-2015 18:22
Toluene	**0.0013**		**0.0010**	**mg/L**	1	07-Nov-2015 18:22
Xylenes, Total	**0.0034**		**0.0030**	**mg/L**	1	07-Nov-2015 18:22
Surr: 1,2-Dichloroethane-d4	*79.2*		*71-125*	*%REC*	*1*	*07-Nov-2015 18:22*
Surr: 4-Bromofluorobenzene	*95.0*		*70-125*	*%REC*	*1*	*07-Nov-2015 18:22*
Surr: Dibromofluoromethane	*102*		*74-125*	*%REC*	*1*	*07-Nov-2015 18:22*
Surr: Toluene-d8	*99.3*		*75-125*	*%REC*	*1*	*07-Nov-2015 18:22*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: KMU
Alkalinity, Bicarbonate (As CaCO3)	**446**		**5.00**	**mg/L**	1	10-Nov-2015 14:38
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:38
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:38
Alkalinity, Total (As CaCO3)	**446**		**5.00**	**mg/L**	1	10-Nov-2015 14:38
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 10-Nov-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	11-Nov-2015 15:17
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: ACN
Methane	ND		0.500	ug/L	1	09-Nov-2015 17:13
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	13-Nov-2015 17:19
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	ND		0.20	mg/L	1	12-Nov-2015 13:34
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 09-Nov-2015		Analyst: RPM
Potassium	**0.756**		**0.200**	**mg/L**	1	10-Nov-2015 13:11
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**0.092**		**0.050**	**mg/L**	1	07-Nov-2015 02:25
Surr: 4-Bromofluorobenzene	*101*		*70-130*	*%REC*	*1*	*07-Nov-2015 02:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: MW-5
Collection Date: 05-Nov-2015 14:07

WorkOrder:HS15110261
Lab ID:HS15110261-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	**6.18**		**0.100**	**mg/L**	1	06-Nov-2015 17:08
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	06-Nov-2015 17:08
Sulfate	**157**		**10.0**	**mg/L**	20	06-Nov-2015 17:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	DUP-1	Lab ID:HS15110261-07
Collection Date:	05-Nov-2015 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	**0.085**		**0.0010**	**mg/L**	1	07-Nov-2015 20:07
1,2-Dichloroethane	ND		0.0010	mg/L	1	07-Nov-2015 20:07
1,3,5-Trimethylbenzene	**0.10**		**0.0010**	**mg/L**	1	07-Nov-2015 20:07
2-Butanone	ND		0.0020	mg/L	1	07-Nov-2015 20:07
Benzene	**0.37**		**0.010**	**mg/L**	10	07-Nov-2015 20:35
Cyclohexane	**0.067**		**0.0010**	**mg/L**	1	07-Nov-2015 20:07
Ethylbenzene	**0.10**		**0.0010**	**mg/L**	1	07-Nov-2015 20:07
Isopropylbenzene	**0.0055**		**0.0010**	**mg/L**	1	07-Nov-2015 20:07
m,p-Xylene	**0.61**		**0.020**	**mg/L**	10	07-Nov-2015 20:35
Methylcyclohexane	**0.017**		**0.0010**	**mg/L**	1	07-Nov-2015 20:07
Naphthalene	**0.021**		**0.0010**	**mg/L**	1	07-Nov-2015 20:07
n-Butylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 20:07
n-Propylbenzene	**0.015**		**0.0010**	**mg/L**	1	07-Nov-2015 20:07
o-Xylene	**0.37**		**0.010**	**mg/L**	10	07-Nov-2015 20:35
Toluene	**0.49**		**0.010**	**mg/L**	10	07-Nov-2015 20:35
Xylenes, Total	**0.98**		**0.030**	**mg/L**	10	07-Nov-2015 20:35
Surr: 1,2-Dichloroethane-d4	*76.1*		*71-125*	*%REC*	*1*	*07-Nov-2015 20:07*
Surr: 1,2-Dichloroethane-d4	*81.5*		*71-125*	*%REC*	*10*	*07-Nov-2015 20:35*
Surr: 4-Bromofluorobenzene	*98.7*		*70-125*	*%REC*	*1*	*07-Nov-2015 20:07*
Surr: 4-Bromofluorobenzene	*94.8*		*70-125*	*%REC*	*10*	*07-Nov-2015 20:35*
Surr: Dibromofluoromethane	*96.9*		*74-125*	*%REC*	*1*	*07-Nov-2015 20:07*
Surr: Dibromofluoromethane	*99.6*		*74-125*	*%REC*	*10*	*07-Nov-2015 20:35*
Surr: Toluene-d8	*102*		*75-125*	*%REC*	*10*	*07-Nov-2015 20:35*
Surr: Toluene-d8	*97.2*		*75-125*	*%REC*	*1*	*07-Nov-2015 20:07*
ALKALINITY BY SM2320B		**Method:SM2320B**				Analyst: KMU
Alkalinity, Bicarbonate (As CaCO3)	**559**		**5.00**	**mg/L**	1	10-Nov-2015 14:44
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:44
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	10-Nov-2015 14:44
Alkalinity, Total (As CaCO3)	**559**		**5.00**	**mg/L**	1	10-Nov-2015 14:44
DISSOLVED METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 10-Nov-2015		Analyst: RPM
Iron	ND		0.200	mg/L	1	11-Nov-2015 15:20
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: ACN
Methane	**441**		**10.0**	**ug/L**	20	10-Nov-2015 11:02
SUBCONTRACTED ANALYSIS		**Method:NA**				Analyst: SUB
Miscellaneous Analysis	See Attached				1	13-Nov-2015 17:19
AMMONIA AS N BY SM4500 NH3-D (ISE)		**Method:SM4500 NH3-D**				Analyst: AP
Nitrogen, Ammonia (as N)	**0.26**		**0.20**	**mg/L**	1	12-Nov-2015 13:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ANALYTICAL REPORT

Client: Apex Companies
Project: Andover Release Site E3CE-0065
Sample ID: DUP-1
Collection Date: 05-Nov-2015 00:00

WorkOrder:HS15110261
Lab ID:HS15110261-07
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**		Prep:SW3010A / 09-Nov-2015		Analyst: RPM
Potassium	**2.21**		**0.200**	**mg/L**	1	10-Nov-2015 13:13
VPH - IOWA OA-1		**Method:IA OA-1**				Analyst: SFE
VPH - Gasoline Range Organics	**8.2**		**0.050**	**mg/L**	1	07-Nov-2015 02:41
Surr: 4-Bromofluorobenzene	*104*		*70-130*	*%REC*	*1*	*07-Nov-2015 02:41*
ANIONS BY E300.0		**Method:E300**				Analyst: JBA
Nitrogen, Nitrate (As N)	ND		0.100	mg/L	1	06-Nov-2015 17:37
Phosphorus, Orthophosphate (As P)	ND		0.100	mg/L	1	06-Nov-2015 17:37
Sulfate	**2.66**		**0.500**	**mg/L**	1	06-Nov-2015 17:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	TB-102115-95	Lab ID:HS15110261-08
Collection Date:	05-Nov-2015 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:01
1,2-Dichloroethane	ND		0.0010	mg/L	1	07-Nov-2015 15:01
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:01
2-Butanone	ND		0.0020	mg/L	1	07-Nov-2015 15:01
Benzene	ND		0.0010	mg/L	1	07-Nov-2015 15:01
Cyclohexane	ND		0.0010	mg/L	1	07-Nov-2015 15:01
Ethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:01
Isopropylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:01
m,p-Xylene	ND		0.0020	mg/L	1	07-Nov-2015 15:01
Methylcyclohexane	ND		0.0010	mg/L	1	07-Nov-2015 15:01
Naphthalene	ND		0.0010	mg/L	1	07-Nov-2015 15:01
n-Butylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:01
n-Propylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:01
o-Xylene	ND		0.0010	mg/L	1	07-Nov-2015 15:01
Toluene	ND		0.0010	mg/L	1	07-Nov-2015 15:01
Xylenes, Total	ND		0.0030	mg/L	1	07-Nov-2015 15:01
Surr: 1,2-Dichloroethane-d4	*78.6*		*71-125*	*%REC*	*1*	*07-Nov-2015 15:01*
Surr: 4-Bromofluorobenzene	*97.3*		*70-125*	*%REC*	*1*	*07-Nov-2015 15:01*
Surr: Dibromofluoromethane	*96.0*		*74-125*	*%REC*	*1*	*07-Nov-2015 15:01*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*07-Nov-2015 15:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Apex Companies	**ANALYTICAL REPORT**
Project:	Andover Release Site E3CE-0065	WorkOrder:HS15110261
Sample ID:	TB-102115-96	Lab ID:HS15110261-09
Collection Date:	05-Nov-2015 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
1,2,4-Trimethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:26
1,2-Dichloroethane	ND		0.0010	mg/L	1	07-Nov-2015 15:26
1,3,5-Trimethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:26
2-Butanone	ND		0.0020	mg/L	1	07-Nov-2015 15:26
Benzene	ND		0.0010	mg/L	1	07-Nov-2015 15:26
Cyclohexane	ND		0.0010	mg/L	1	07-Nov-2015 15:26
Ethylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:26
Isopropylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:26
m,p-Xylene	ND		0.0020	mg/L	1	07-Nov-2015 15:26
Methylcyclohexane	ND		0.0010	mg/L	1	07-Nov-2015 15:26
Naphthalene	ND		0.0010	mg/L	1	07-Nov-2015 15:26
n-Butylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:26
n-Propylbenzene	ND		0.0010	mg/L	1	07-Nov-2015 15:26
o-Xylene	ND		0.0010	mg/L	1	07-Nov-2015 15:26
Toluene	ND		0.0010	mg/L	1	07-Nov-2015 15:26
Xylenes, Total	ND		0.0030	mg/L	1	07-Nov-2015 15:26
Surr: 1,2-Dichloroethane-d4	*81.2*		*71-125*	*%REC*	*1*	*07-Nov-2015 15:26*
Surr: 4-Bromofluorobenzene	*95.9*		*70-125*	*%REC*	*1*	*07-Nov-2015 15:26*
Surr: Dibromofluoromethane	*97.3*		*74-125*	*%REC*	*1*	*07-Nov-2015 15:26*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*07-Nov-2015 15:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

WEIGHT LOG

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

Batch ID: 98800 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS15110261-01	1	50	50 (mL)	1
HS15110261-02	1	50	50 (mL)	1
HS15110261-03	1	50	50 (mL)	1
HS15110261-04	1	50	50 (mL)	1
HS15110261-05	1	50	50 (mL)	1
HS15110261-06	1	50	50 (mL)	1
HS15110261-07	1	50	50 (mL)	1

Batch ID: 98832 **Method:** DISSOLVED METALS BY SW6020A **Prep:** 3010A DISS

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS15110261-01	1	50	50 (mL)	1
HS15110261-02	1	50	50 (mL)	1
HS15110261-03	1	50	50 (mL)	1
HS15110261-04	1	50	50 (mL)	1
HS15110261-05	1	50	50 (mL)	1
HS15110261-06	1	50	50 (mL)	1
HS15110261-07	1	50	50 (mL)	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 98800	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS15110261-01	MW-1	05 Nov 2015 08:46		09 Nov 2015 08:59	10 Nov 2015 12:57	1
HS15110261-02	MW-17	05 Nov 2015 09:50		09 Nov 2015 08:59	10 Nov 2015 13:00	1
HS15110261-03	MW-19	05 Nov 2015 10:45		09 Nov 2015 08:59	10 Nov 2015 13:03	1
HS15110261-04	MW-18	05 Nov 2015 11:22		09 Nov 2015 08:59	10 Nov 2015 13:05	1
HS15110261-05	MW-4	05 Nov 2015 13:16		09 Nov 2015 08:59	10 Nov 2015 13:08	1
HS15110261-06	MW-5	05 Nov 2015 14:07		09 Nov 2015 08:59	10 Nov 2015 13:11	1
HS15110261-07	DUP-1	05 Nov 2015 00:00		09 Nov 2015 08:59	10 Nov 2015 13:13	1
Batch ID 98832	**Test Name :** DISSOLVED METALS BY SW6020A			**Matrix:** Water		
HS15110261-01	MW-1	05 Nov 2015 08:46		10 Nov 2015 08:03	11 Nov 2015 14:48	1
HS15110261-02	MW-17	05 Nov 2015 09:50		10 Nov 2015 08:03	11 Nov 2015 14:50	1
HS15110261-03	MW-19	05 Nov 2015 10:45		10 Nov 2015 08:03	11 Nov 2015 14:53	1
HS15110261-04	MW-18	05 Nov 2015 11:22		10 Nov 2015 08:03	11 Nov 2015 15:12	1
HS15110261-05	MW-4	05 Nov 2015 13:16		10 Nov 2015 08:03	11 Nov 2015 15:15	1
HS15110261-06	MW-5	05 Nov 2015 14:07		10 Nov 2015 08:03	11 Nov 2015 15:17	1
HS15110261-07	DUP-1	05 Nov 2015 00:00		10 Nov 2015 08:03	11 Nov 2015 15:20	1
Batch ID R264447	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15110261-01	MW-1	05 Nov 2015 08:46			07 Nov 2015 21:58	10
HS15110261-02	MW-17	05 Nov 2015 09:50			07 Nov 2015 18:50	10
HS15110261-03	MW-19	05 Nov 2015 10:45			07 Nov 2015 16:16	1
HS15110261-04	MW-18	05 Nov 2015 11:22			07 Nov 2015 19:15	1
HS15110261-05	MW-4	05 Nov 2015 13:16			07 Nov 2015 17:57	1
HS15110261-06	MW-5	05 Nov 2015 14:07			07 Nov 2015 18:22	1
HS15110261-07	DUP-1	05 Nov 2015 00:00			07 Nov 2015 20:35	10
HS15110261-07	DUP-1	05 Nov 2015 00:00			07 Nov 2015 20:07	1
HS15110261-08	TB-102115-95	05 Nov 2015 00:00			07 Nov 2015 15:01	1
HS15110261-09	TB-102115-96	05 Nov 2015 00:00			07 Nov 2015 15:26	1
Batch ID R264476	**Test Name :** ANIONS BY E300.0			**Matrix:** Water		
HS15110261-01	MW-1	05 Nov 2015 08:46			06 Nov 2015 14:13	1
HS15110261-02	MW-17	05 Nov 2015 09:50			06 Nov 2015 14:42	1
HS15110261-03	MW-19	05 Nov 2015 10:45			06 Nov 2015 15:11	1
HS15110261-04	MW-18	05 Nov 2015 11:22			06 Nov 2015 15:41	1
HS15110261-05	MW-4	05 Nov 2015 13:16			06 Nov 2015 16:53	20
HS15110261-05	MW-4	05 Nov 2015 13:16			06 Nov 2015 16:39	1
HS15110261-06	MW-5	05 Nov 2015 14:07			06 Nov 2015 17:22	20
HS15110261-06	MW-5	05 Nov 2015 14:07			06 Nov 2015 17:08	1
HS15110261-07	DUP-1	05 Nov 2015 00:00			06 Nov 2015 17:37	1
Batch ID R264522	**Test Name :** VPH - IOWA OA-1			**Matrix:** Water		
HS15110261-01	MW-1	05 Nov 2015 08:46			09 Nov 2015 19:29	5
HS15110261-02	MW-17	05 Nov 2015 09:50			09 Nov 2015 18:39	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R264524	**Test Name :** VPH - IOWA OA-1			**Matrix:** Water		
HS15110261-03	MW-19	05 Nov 2015 10:45			07 Nov 2015 01:38	1
HS15110261-04	MW-18	05 Nov 2015 11:22			07 Nov 2015 01:54	1
HS15110261-05	MW-4	05 Nov 2015 13:16			07 Nov 2015 02:10	1
HS15110261-06	MW-5	05 Nov 2015 14:07			07 Nov 2015 02:25	1
HS15110261-07	DUP-1	05 Nov 2015 00:00			07 Nov 2015 02:41	1
Batch ID R264548	**Test Name :** DISSOLVED GASES BY RSK-175			**Matrix:** Water		
HS15110261-02	MW-17	05 Nov 2015 09:50			09 Nov 2015 16:39	1
HS15110261-03	MW-19	05 Nov 2015 10:45			09 Nov 2015 16:47	1
HS15110261-04	MW-18	05 Nov 2015 11:22			09 Nov 2015 16:56	1
HS15110261-05	MW-4	05 Nov 2015 13:16			09 Nov 2015 17:04	1
HS15110261-06	MW-5	05 Nov 2015 14:07			09 Nov 2015 17:13	1
Batch ID R264549	**Test Name :** DISSOLVED GASES BY RSK-175			**Matrix:** Water		
HS15110261-01	MW-1	05 Nov 2015 08:46			10 Nov 2015 10:52	20
HS15110261-07	DUP-1	05 Nov 2015 00:00			10 Nov 2015 11:02	20
Batch ID R264593	**Test Name :** ALKALINITY BY SM2320B			**Matrix:** Water		
HS15110261-01	MW-1	05 Nov 2015 08:46			10 Nov 2015 14:12	1
HS15110261-02	MW-17	05 Nov 2015 09:50			10 Nov 2015 14:17	1
HS15110261-03	MW-19	05 Nov 2015 10:45			10 Nov 2015 14:22	1
HS15110261-04	MW-18	05 Nov 2015 11:22			10 Nov 2015 14:28	1
HS15110261-05	MW-4	05 Nov 2015 13:16			10 Nov 2015 14:33	1
HS15110261-06	MW-5	05 Nov 2015 14:07			10 Nov 2015 14:38	1
HS15110261-07	DUP-1	05 Nov 2015 00:00			10 Nov 2015 14:44	1
Batch ID R264693	**Test Name :** AMMONIA AS N BY SM4500 NH3-D (ISE)			**Matrix:** Water		
HS15110261-01	MW-1	05 Nov 2015 08:46			12 Nov 2015 13:34	1
HS15110261-02	MW-17	05 Nov 2015 09:50			12 Nov 2015 13:34	1
HS15110261-03	MW-19	05 Nov 2015 10:45			12 Nov 2015 13:34	1
HS15110261-05	MW-4	05 Nov 2015 13:16			12 Nov 2015 13:34	1
HS15110261-06	MW-5	05 Nov 2015 14:07			12 Nov 2015 13:34	1
HS15110261-07	DUP-1	05 Nov 2015 00:00			12 Nov 2015 13:34	1
Batch ID R264801	**Test Name :** SUBCONTRACTED ANALYSIS			**Matrix:** Water		
HS15110261-01	MW-1	05 Nov 2015 08:46			13 Nov 2015 17:19	1
HS15110261-02	MW-17	05 Nov 2015 09:50			13 Nov 2015 17:19	1
HS15110261-03	MW-19	05 Nov 2015 10:45			13 Nov 2015 17:19	1
HS15110261-04	MW-18	05 Nov 2015 11:22			13 Nov 2015 17:19	1
HS15110261-05	MW-4	05 Nov 2015 13:16			13 Nov 2015 17:19	1
HS15110261-06	MW-5	05 Nov 2015 14:07			13 Nov 2015 17:19	1
HS15110261-07	DUP-1	05 Nov 2015 00:00			13 Nov 2015 17:19	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: **R264548** **Instrument:** **FID-4** **Method:** **RSK-175**

MBLK Sample ID: **GBLKW2-151109** Units: **ug/L** Analysis Date: **09-Nov-2015 15:09**
Client ID: Run ID: **FID-4_264548** SeqNo: **3489777** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	ND	0.500								

LCS Sample ID: **GLCSW2-151109** Units: **ug/L** Analysis Date: **09-Nov-2015 14:52**
Client ID: Run ID: **FID-4_264548** SeqNo: **3489775** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	9.63	0.500	9.647	0	99.8	75 - 125				

LCSD Sample ID: **GLCSDW2-151109** Units: **ug/L** Analysis Date: **09-Nov-2015 15:01**
Client ID: Run ID: **FID-4_264548** SeqNo: **3489776** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	8.502	0.500	9.647	0	88.1	75 - 125	9.63	12.4	30	

DUP Sample ID: **HS15110261-07DUP** Units: **ug/L** Analysis Date: **09-Nov-2015 17:33**
Client ID: **DUP-1** Run ID: **FID-4_264548** SeqNo: **3489793** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	489.9	0.500					494.8	1.01	30	E

The following samples were anayzed in this batch: HS15110261-02 HS15110261-03 HS15110261-04 HS15110261-05 HS15110261-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: **R264549** **Instrument:** **FID-4** **Method:** **RSK-175**

MBLK Sample ID: **GBLKW1-151110** Units: **ug/L** Analysis Date: **10-Nov-2015 10:42**
Client ID: Run ID: **FID-4_264549** SeqNo: **3489797** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	ND	0.500								

LCS Sample ID: **GLCSW1-151110** Units: **ug/L** Analysis Date: **10-Nov-2015 10:19**
Client ID: Run ID: **FID-4_264549** SeqNo: **3489795** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	7.526	0.500	9.647	0	78.0	75 - 125				

LCSD Sample ID: **GLCSDW1-151110** Units: **ug/L** Analysis Date: **10-Nov-2015 10:32**
Client ID: Run ID: **FID-4_264549** SeqNo: **3489796** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	8.769	0.500	9.647	0	90.9	75 - 125	7.526	15.3	30	

DUP Sample ID: **HS15110261-07DUP** Units: **ug/L** Analysis Date: **10-Nov-2015 11:11**
Client ID: **DUP-1** Run ID: **FID-4_264549** SeqNo: **3489800** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	417.2	10.0					440.7	5.47	30	

The following samples were anayzed in this batch: HS15110261-01 HS15110261-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: R264522 **Instrument:** FID-14 **Method:** IA OA-1

MBLK Sample ID: **GBLKW-151109** Units: **mg/L** Analysis Date: **09-Nov-2015 18:08**
Client ID: Run ID: **FID-14_264522** SeqNo: **3489339** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	*0.1038*	*0.0050*	*0.1*	*0*	*104*	*70 - 130*				

LCS Sample ID: **GLCS-151109** Units: **mg/L** Analysis Date: **09-Nov-2015 17:36**
Client ID: Run ID: **FID-14_264522** SeqNo: **3489338** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.079	0.050	1	0	108	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1048*	*0.0050*	*0.1*	*0*	*105*	*70 - 130*				

MS Sample ID: **HS15110261-02MS** Units: **mg/L** Analysis Date: **09-Nov-2015 18:55**
Client ID: **MW-17** Run ID: **FID-14_264522** SeqNo: **3489341** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	4.049	0.050	1	2.872	118	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1102*	*0.0050*	*0.1*	*0*	*110*	*70 - 130*				

MSD Sample ID: **HS15110261-02MSD** Units: **mg/L** Analysis Date: **09-Nov-2015 19:10**
Client ID: **MW-17** Run ID: **FID-14_264522** SeqNo: **3489342** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	4.003	0.050	1	2.872	113	70 - 130	4.049	1.15	30	
Surr: 4-Bromofluorobenzene	*0.1084*	*0.0050*	*0.1*	*0*	*108*	*70 - 130*	*0.1102*	*1.65*	*30*	

The following samples were anayzed in this batch: HS15110261-01 HS15110261-02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: R264524 **Instrument: FID-14** **Method: IA OA-1**

MBLK Sample ID: **GBLKW-151106** Units: **mg/L** Analysis Date: **06-Nov-2015 22:39**
Client ID: Run ID: **FID-14_264524** SeqNo: **3489356** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	*0.1007*	*0.0050*	*0.1*	*0*	*101*	*70 - 130*				

LCS Sample ID: **GLCS-151106** Units: **mg/L** Analysis Date: **06-Nov-2015 22:07**
Client ID: Run ID: **FID-14_264524** SeqNo: **3489355** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.041	0.050	1	0	104	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1038*	*0.0050*	*0.1*	*0*	*104*	*70 - 130*				

MS Sample ID: **HS15110262-05MS** Units: **mg/L** Analysis Date: **06-Nov-2015 23:11**
Client ID: Run ID: **FID-14_264524** SeqNo: **3489358** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.031	0.050	1	0	103	70 - 130				
Surr: 4-Bromofluorobenzene	*0.1093*	*0.0050*	*0.1*	*0*	*109*	*70 - 130*				

MSD Sample ID: **HS15110262-05MSD** Units: **mg/L** Analysis Date: **06-Nov-2015 23:27**
Client ID: Run ID: **FID-14_264524** SeqNo: **3489359** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
VPH - Gasoline Range Organics	1.028	0.050	1	0	103	70 - 130	1.031	0.254	30	
Surr: 4-Bromofluorobenzene	*0.1057*	*0.0050*	*0.1*	*0*	*106*	*70 - 130*	*0.1093*	*3.31*	*30*	

The following samples were anayzed in this batch: HS15110261-03 HS15110261-04 HS15110261-05 HS15110261-06 HS15110261-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: 98800 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-98800** Units: **mg/L** Analysis Date: **10-Nov-2015 12:22**
Client ID: Run ID: **ICPMS05_264520** SeqNo: **3489847** PrepDate: **09-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	ND	0.200								

LCS Sample ID: **MLCS-98800** Units: **mg/L** Analysis Date: **10-Nov-2015 12:25**
Client ID: Run ID: **ICPMS05_264520** SeqNo: **3489848** PrepDate: **09-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	4.769	0.200	5	0	95.4	80 - 120				

MS Sample ID: **HS15110207-01MS** Units: **mg/L** Analysis Date: **10-Nov-2015 12:36**
Client ID: Run ID: **ICPMS05_264520** SeqNo: **3489852** PrepDate: **09-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	6.142	0.200	5	1.62	90.4	80 - 120				

MSD Sample ID: **HS15110207-01MSD** Units: **mg/L** Analysis Date: **10-Nov-2015 12:38**
Client ID: Run ID: **ICPMS05_264520** SeqNo: **3489853** PrepDate: **09-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	6.246	0.200	5	1.62	92.5	80 - 120	6.142	1.68	20	

PDS Sample ID: **HS15110207-01BS** Units: **mg/L** Analysis Date: **10-Nov-2015 12:41**
Client ID: Run ID: **ICPMS05_264520** SeqNo: **3489854** PrepDate: **09-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	10.27	0.200	10	1.62	86.5	75 - 125				

SD Sample ID: **HS15110207-01 DIL SX** Units: **mg/L** Analysis Date: **10-Nov-2015 12:33**
Client ID: Run ID: **ICPMS05_264520** SeqNo: **3489851** PrepDate: **09-Nov-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Potassium	1.493	1.00					1.62	7.83	10	

The following samples were anayzed in this batch: HS15110261-01 HS15110261-02 HS15110261-03 HS15110261-04 HS15110261-05 HS15110261-06 HS15110261-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: 98832 **Instrument: ICPMS05** **Method: SW6020 (DISSOLVED)**

MBLK Sample ID: **MBLKF1-98832** Units: **mg/L** Analysis Date: **11-Nov-2015 14:40**
Client ID: Run ID: **ICPMS05_264609** SeqNo: **3491393** PrepDate: **10-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

MBLK Sample ID: **MBLK-98832** Units: **mg/L** Analysis Date: **11-Nov-2015 14:42**
Client ID: Run ID: **ICPMS05_264609** SeqNo: **3491394** PrepDate: **10-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.200								

LCS Sample ID: **MLCS-98832** Units: **mg/L** Analysis Date: **11-Nov-2015 14:45**
Client ID: Run ID: **ICPMS05_264609** SeqNo: **3491395** PrepDate: **10-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.983	0.200	5	0	99.7	80 - 120				

MS Sample ID: **HS15110261-03MS** Units: **mg/L** Analysis Date: **11-Nov-2015 15:04**
Client ID: **MW-19** Run ID: **ICPMS05_264609** SeqNo: **3491402** PrepDate: **10-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.743	0.200	5	0.04912	93.9	75 - 125				

MSD Sample ID: **HS15110261-03MSD** Units: **mg/L** Analysis Date: **11-Nov-2015 15:06**
Client ID: **MW-19** Run ID: **ICPMS05_264609** SeqNo: **3491403** PrepDate: **10-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.637	0.200	5	0.04912	91.7	75 - 125	4.743	2.27	20	

PDS Sample ID: **HS15110261-03BS** Units: **mg/L** Analysis Date: **11-Nov-2015 15:09**
Client ID: **MW-19** Run ID: **ICPMS05_264609** SeqNo: **3491404** PrepDate: **10-Nov-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.169	0.200	10	0.04912	91.2	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: **98832** **Instrument:** **ICPMS05** **Method:** **SW6020 (DISSOLVED)**

SD Sample ID: **HS15110261-03 DIL SX** Units: **mg/L** Analysis Date: **11-Nov-2015 14:56**
Client ID: **MW-19** Run ID: **ICPMS05_264609** SeqNo: **3491399** PrepDate: **10-Nov-2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	ND	1.00					0.04912	0	10	

The following samples were anayzed in this batch: HS15110261-01 HS15110261-02 HS15110261-03 HS15110261-04 HS15110261-05 HS15110261-06 HS15110261-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: **R264447** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-151107** Units: **ug/L** Analysis Date: **07-Nov-2015 14:36**
Client ID: Run ID: **VOA2_264447** SeqNo: **3487717** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
2-Butanone	ND	2.0								
Benzene	ND	1.0								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
Methylcyclohexane	ND	1.0								
Naphthalene	ND	1.0								
n-Butylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*39.85*	*1.0*	*50*	*0*	*79.7*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*48.15*	*1.0*	*50*	*0*	*96.3*	*70 - 125*				
Surr: Dibromofluoromethane	*49.99*	*1.0*	*50*	*0*	*100.0*	*74 - 125*				
Surr: Toluene-d8	*50.05*	*1.0*	*50*	*0*	*100*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: **R264447** **Instrument:** **VOA2** **Method:** **SW8260**

LCS Sample ID: **VLCSW-151107** Units: **ug/L** Analysis Date: **07-Nov-2015 13:46**
Client ID: Run ID: **VOA2_264447** SeqNo: **3487716** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	41.39	1.0	50	0	82.8	70 - 125				
1,2-Dichloroethane	43.42	1.0	50	0	86.8	76 - 120				
1,3,5-Trimethylbenzene	43.52	1.0	50	0	87.0	80 - 123				
2-Butanone	87.74	2.0	100	0	87.7	60 - 140				
Benzene	43.44	1.0	50	0	86.9	80 - 120				
Cyclohexane	41.15	1.0	50	0	82.3	70 - 130				
Ethylbenzene	44.54	1.0	50	0	89.1	80 - 120				
Isopropylbenzene	45.58	1.0	50	0	91.2	75 - 130				
m,p-Xylene	87.28	2.0	100	0	87.3	80 - 120				
Methylcyclohexane	41.24	1.0	50	0	82.5	70 - 126				
Naphthalene	44.03	1.0	50	0	88.1	65 - 135				
n-Butylbenzene	45.26	1.0	50	0	90.5	75 - 128				
n-Propylbenzene	43.81	1.0	50	0	87.6	75 - 130				
o-Xylene	44.23	1.0	50	0	88.5	80 - 120				
Toluene	43.12	1.0	50	0	86.2	75 - 121				
Xylenes, Total	131.5	3.0	150	0	87.7	79 - 124				
Surr: 1,2-Dichloroethane-d4	*40.96*	*1.0*	*50*	*0*	*81.9*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*48.76*	*1.0*	*50*	*0*	*97.5*	*70 - 125*				
Surr: Dibromofluoromethane	*48.45*	*1.0*	*50*	*0*	*96.9*	*74 - 125*				
Surr: Toluene-d8	*49.03*	*1.0*	*50*	*0*	*98.1*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: **R264447** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS15110261-03MS** Units: **ug/L** Analysis Date: **07-Nov-2015 16:41**
Client ID: **MW-19** Run ID: **VOA2_264447** SeqNo: **3487722** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	43.4	1.0	50	0.7881	85.2	70 - 125				
1,2-Dichloroethane	46.21	1.0	50	0	92.4	76 - 120				
1,3,5-Trimethylbenzene	46.52	1.0	50	0.7858	91.5	80 - 123				
2-Butanone	82.4	2.0	100	0	82.4	60 - 140				
Benzene	57.68	1.0	50	10.11	95.1	80 - 120				
Cyclohexane	50.45	1.0	50	0	101	70 - 130				
Ethylbenzene	53.07	1.0	50	5.656	94.8	80 - 120				
Isopropylbenzene	48.8	1.0	50	0.3966	96.8	75 - 130				
m,p-Xylene	93.67	2.0	100	4.294	89.4	80 - 120				
Methylcyclohexane	45.21	1.0	50	0	90.4	70 - 126				
Naphthalene	42.54	1.0	50	0	85.1	65 - 135				
n-Butylbenzene	46.71	1.0	50	0	93.4	75 - 128				
n-Propylbenzene	47.69	1.0	50	0.7121	93.9	75 - 130				
o-Xylene	48	1.0	50	2.327	91.3	80 - 120				
Toluene	47.58	1.0	50	2.704	89.8	75 - 121				
Xylenes, Total	141.7	3.0	150	6.621	90.0	80 - 124				
Surr: 1,2-Dichloroethane-d4	*39.93*	*1.0*	*50*	*0*	*79.9*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*48.25*	*1.0*	*50*	*0*	*96.5*	*70 - 125*				
Surr: Dibromofluoromethane	*45.7*	*1.0*	*50*	*0*	*91.4*	*74 - 125*				
Surr: Toluene-d8	*48.48*	*1.0*	*50*	*0*	*97.0*	*75 - 125*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: **R264447** **Instrument:** **VOA2** **Method:** **SW8260**

MSD Sample ID: **HS15110261-03MSD** Units: **ug/L** Analysis Date: **07-Nov-2015 17:07**
Client ID: **MW-19** Run ID: **VOA2_264447** SeqNo: **3487723** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	42.51	1.0	50	0.7881	83.5	70 - 125	43.4	2.06	20	
1,2-Dichloroethane	44.42	1.0	50	0	88.8	76 - 120	46.21	3.95	20	
1,3,5-Trimethylbenzene	44.71	1.0	50	0.7858	87.8	80 - 123	46.52	3.97	20	
2-Butanone	81.09	2.0	100	0	81.1	60 - 140	82.4	1.6	20	
Benzene	54.93	1.0	50	10.11	89.6	80 - 120	57.68	4.88	20	
Cyclohexane	49	1.0	50	0	98.0	70 - 130	50.45	2.93	20	
Ethylbenzene	50.8	1.0	50	5.656	90.3	80 - 120	53.07	4.39	20	
Isopropylbenzene	47.27	1.0	50	0.3966	93.7	75 - 130	48.8	3.2	20	
m,p-Xylene	91.11	2.0	100	4.294	86.8	80 - 120	93.67	2.77	20	
Methylcyclohexane	44.3	1.0	50	0	88.6	70 - 126	45.21	2.04	20	
Naphthalene	42.04	1.0	50	0	84.1	65 - 135	42.54	1.18	20	
n-Butylbenzene	46.16	1.0	50	0	92.3	75 - 128	46.71	1.18	20	
n-Propylbenzene	46.3	1.0	50	0.7121	91.2	75 - 130	47.69	2.96	20	
o-Xylene	46.73	1.0	50	2.327	88.8	80 - 120	48	2.69	20	
Toluene	46.76	1.0	50	2.704	88.1	75 - 121	47.58	1.74	20	
Xylenes, Total	137.8	3.0	150	6.621	87.5	80 - 124	141.7	2.74	20	
Surr: 1,2-Dichloroethane-d4	*41.15*	*1.0*	*50*	*0*	*82.3*	*71 - 125*	*39.93*	*3.01*	*20*	
Surr: 4-Bromofluorobenzene	*48.34*	*1.0*	*50*	*0*	*96.7*	*70 - 125*	*48.25*	*0.189*	*20*	
Surr: Dibromofluoromethane	*47.59*	*1.0*	*50*	*0*	*95.2*	*74 - 125*	*45.7*	*4.03*	*20*	
Surr: Toluene-d8	*49.49*	*1.0*	*50*	*0*	*99.0*	*75 - 125*	*48.48*	*2.06*	*20*	

The following samples were anayzed in this batch:

HS15110261-01	HS15110261-02	HS15110261-03	HS15110261-04
HS15110261-05	HS15110261-06	HS15110261-07	HS15110261-08
HS15110261-09			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: R264476 **Instrument: ICS2100** **Method: E300**

MBLK Sample ID: **WBLKW1-110615** Units: **mg/L** Analysis Date: **06-Nov-2015 13:30**
Client ID: Run ID: **ICS2100_264476** SeqNo: **3488379** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	ND	0.100								
Phosphorus, Orthophosphate (As P)	ND	0.100								
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW1-110615** Units: **mg/L** Analysis Date: **06-Nov-2015 13:44**
Client ID: Run ID: **ICS2100_264476** SeqNo: **3488380** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	4.189	0.100	4	0	105	90 - 110				
Phosphorus, Orthophosphate (As P)	3.827	0.100	4	0	95.7	90 - 110				
Sulfate	20.84	0.500	20	0	104	90 - 110				

LCSD Sample ID: **WLCSDW2-110615** Units: **mg/L** Analysis Date: **06-Nov-2015 13:59**
Client ID: Run ID: **ICS2100_264476** SeqNo: **3488381** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	4.256	0.100	4	0	106	90 - 110	4.189	1.59	20	
Phosphorus, Orthophosphate (As P)	3.823	0.100	4	0	95.6	90 - 110	3.827	0.105	20	
Sulfate	20.91	0.500	20	0	105	90 - 110	20.84	0.335	20	

MS Sample ID: **HS15110261-07MS** Units: **mg/L** Analysis Date: **06-Nov-2015 17:51**
Client ID: **DUP-1** Run ID: **ICS2100_264476** SeqNo: **3488397** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	1.953	0.100	2	0	97.6	80 - 120				
Phosphorus, Orthophosphate (As P)	1.927	0.100	2	0	96.4	80 - 120				
Sulfate	12.87	0.500	10	2.655	102	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: **R264476** **Instrument:** **ICS2100** **Method:** **E300**

MSD Sample ID: **HS15110261-07MSD** Units: **mg/L** Analysis Date: **06-Nov-2015 18:06**
Client ID: **DUP-1** Run ID: **ICS2100_264476** SeqNo: **3488398** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	1.931	0.100	2	0	96.6	80 - 120	1.953	1.13	20	
Phosphorus, Orthophosphate (As P)	1.889	0.100	2	0	94.4	80 - 120	1.927	1.99	20	
Sulfate	12.71	0.500	10	2.655	101	80 - 120	12.87	1.24	20	

The following samples were anayzed in this batch: HS15110261-01 HS15110261-02 HS15110261-03 HS15110261-04 HS15110261-05 HS15110261-06 HS15110261-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: R264593 **Instrument: ManTech01** **Method: SM2320B**

MBLK Sample ID: **WBLKW1-151110** Units: **mg/L** Analysis Date: **10-Nov-2015 13:13**
Client ID: Run ID: **ManTech01_264593** SeqNo: **3490659** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								
Alkalinity, Hydroxide (As CaCO3)	ND	5.00								
Alkalinity, Total (As CaCO3)	ND	5.00								

LCS Sample ID: **LCS-ALK1-151110** Units: **mg/L** Analysis Date: **10-Nov-2015 13:19**
Client ID: Run ID: **ManTech01_264593** SeqNo: **3490660** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1040	5.00	1000	0	104	80 - 120				

LCSD Sample ID: **LCSD-ALK1-151110** Units: **mg/L** Analysis Date: **10-Nov-2015 13:25**
Client ID: Run ID: **ManTech01_264593** SeqNo: **3490661** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1030	5.00	1000	0	103	80 - 120	1040	0.971	20	

DUP Sample ID: **HS15101284-01DUP** Units: **mg/L** Analysis Date: **10-Nov-2015 13:36**
Client ID: Run ID: **ManTech01_264593** SeqNo: **3490664** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	8.61	5.00					9	4.43	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	8.61	5.00					9	4.43	20	

The following samples were anayzed in this batch: HS15110261-01 HS15110261-02 HS15110261-03 HS15110261-04 HS15110261-05 HS15110261-06 HS15110261-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: HS15110261

QC BATCH REPORT

Batch ID: R264693 **Instrument: WetChem_HS** **Method: SM4500 NH3-D**

MBLK Sample ID: **MBLK-264693** Units: **mg/L** Analysis Date: **12-Nov-2015 13:34**
Client ID: Run ID: **WetChem_HS_264693** SeqNo: **3492408** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	ND	0.20								

LCS Sample ID: **LCS-264693** Units: **mg/L** Analysis Date: **12-Nov-2015 13:34**
Client ID: Run ID: **WetChem_HS_264693** SeqNo: **3492409** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	10.2	0.20	10	0	102	80 - 120				

MS Sample ID: **HS15110261-07MS** Units: **mg/L** Analysis Date: **12-Nov-2015 13:34**
Client ID: **DUP-1** Run ID: **WetChem_HS_264693** SeqNo: **3492412** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	10.2	0.20	10	0.257	99.4	80 - 120				

MSD Sample ID: **HS15110261-07MSD** Units: **mg/L** Analysis Date: **12-Nov-2015 13:34**
Client ID: **DUP-1** Run ID: **WetChem_HS_264693** SeqNo: **3492413** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	10.6	0.20	10	0.257	103	80 - 120	10.2	3.85	20	

The following samples were anayzed in this batch: HS15110261-01 HS15110261-02 HS15110261-03 HS15110261-05 HS15110261-06 HS15110261-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Companies
Project: Andover Release Site E3CE-0065
WorkOrder: **HS15110261**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	30-Nov-2015
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
North Dakota	R-193 2015-2016	30-Apr-2016
Oklahoma	2015-047	31-Aug-2016
Texas	T104704231-15-15	30-Apr-2016

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Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15110261

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15110261-01	MW-1	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-01	MW-1	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-01	MW-1	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-01	MW-1	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-01	MW-1	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-01	MW-1	Login	11/6/2015 11:33:13 AM	CGG	VW-3
HS15110261-01	MW-1	Login	11/6/2015 11:33:13 AM	CGG	BTEX A1
HS15110261-01	MW-1	Login	11/6/2015 11:33:13 AM	CGG	TPH C2
HS15110261-01	MW-1	Login	11/6/2015 11:33:13 AM	CGG	Sub
HS15110261-02	MW-17	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-02	MW-17	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-02	MW-17	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-02	MW-17	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-02	MW-17	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-02	MW-17	Login	11/6/2015 11:33:13 AM	CGG	VW-3
HS15110261-02	MW-17	Login	11/6/2015 11:33:13 AM	CGG	BTEX A1
HS15110261-02	MW-17	Login	11/6/2015 11:33:13 AM	CGG	TPH C2
HS15110261-02	MW-17	Login	11/6/2015 11:33:13 AM	CGG	Sub
HS15110261-03	MW-19	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-03	MW-19	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-03	MW-19	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-03	MW-19	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-03	MW-19	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-03	MW-19	Login	11/6/2015 11:33:13 AM	CGG	VW-3
HS15110261-03	MW-19	Login	11/6/2015 11:33:13 AM	CGG	BTEX A1
HS15110261-03	MW-19	Login	11/6/2015 11:33:13 AM	CGG	TPH C2
HS15110261-03	MW-19	Login	11/6/2015 11:33:13 AM	CGG	Sub
HS15110261-04	MW-18	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-04	MW-18	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-04	MW-18	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-04	MW-18	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-04	MW-18	Login	11/6/2015 11:33:13 AM	CGG	VW-3
HS15110261-04	MW-18	Login	11/6/2015 11:33:13 AM	CGG	BTEX A1
HS15110261-04	MW-18	Login	11/6/2015 11:33:13 AM	CGG	TPH C2
HS15110261-04	MW-18	Login	11/6/2015 11:33:13 AM	CGG	Sub
HS15110261-05	MW-4	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-05	MW-4	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-05	MW-4	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-05	MW-4	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-05	MW-4	Login	11/6/2015 11:33:13 AM	CGG	4A

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Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15110261

SAMPLE TRACKING

HS15110261-05	MW-4	Login	11/6/2015 11:33:13 AM	CGG	VW-3
HS15110261-05	MW-4	Login	11/6/2015 11:33:13 AM	CGG	BTEX A1
HS15110261-05	MW-4	Login	11/6/2015 11:33:13 AM	CGG	TPH C2
HS15110261-05	MW-4	Login	11/6/2015 11:33:13 AM	CGG	Sub
HS15110261-06	MW-5	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-06	MW-5	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-06	MW-5	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-06	MW-5	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-06	MW-5	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-06	MW-5	Login	11/6/2015 11:33:13 AM	CGG	VW-3
HS15110261-06	MW-5	Login	11/6/2015 11:33:13 AM	CGG	BTEX A1
HS15110261-06	MW-5	Login	11/6/2015 11:33:13 AM	CGG	TPH C2
HS15110261-06	MW-5	Login	11/6/2015 11:33:13 AM	CGG	Sub
HS15110261-07	DUP-1	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-07	DUP-1	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-07	DUP-1	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-07	DUP-1	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-07	DUP-1	Login	11/6/2015 11:33:13 AM	CGG	4A
HS15110261-07	DUP-1	Login	11/6/2015 11:33:13 AM	CGG	VW-3
HS15110261-07	DUP-1	Login	11/6/2015 11:33:13 AM	CGG	BTEX A1
HS15110261-07	DUP-1	Login	11/6/2015 11:33:13 AM	CGG	TPH C2
HS15110261-07	DUP-1	Login	11/6/2015 11:33:13 AM	CGG	Sub
HS15110261-08	TB-102115-95	Login	11/6/2015 11:33:13 AM	CGG	VW-3
HS15110261-09	TB-102115-96	Login	11/6/2015 11:33:13 AM	CGG	VW-3
HS15110261-01	MW-1	Out	11/6/2015 3:33:31 PM	JCJ	METPREP
HS15110261-02	MW-17	Out	11/6/2015 3:33:31 PM	JCJ	METPREP
HS15110261-03	MW-19	Out	11/6/2015 3:33:31 PM	JCJ	METPREP
HS15110261-04	MW-18	Out	11/6/2015 3:33:31 PM	JCJ	METPREP
HS15110261-05	MW-4	Out	11/6/2015 3:33:31 PM	JCJ	METPREP
HS15110261-06	MW-5	Out	11/6/2015 3:33:31 PM	JCJ	METPREP
HS15110261-07	DUP-1	Out	11/6/2015 3:33:31 PM	JCJ	METPREP
HS15110261-01	MW-1	Return	11/6/2015 3:33:46 PM	JCJ	4A
HS15110261-02	MW-17	Return	11/6/2015 3:33:46 PM	JCJ	4A
HS15110261-03	MW-19	Return	11/6/2015 3:33:46 PM	JCJ	4A
HS15110261-04	MW-18	Return	11/6/2015 3:33:46 PM	JCJ	4A
HS15110261-05	MW-4	Return	11/6/2015 3:33:46 PM	JCJ	4A
HS15110261-06	MW-5	Return	11/6/2015 3:33:46 PM	JCJ	4A
HS15110261-07	DUP-1	Return	11/6/2015 3:33:46 PM	JCJ	4A
HS15110261-01	MW-1	Out	11/9/2015 11:32:36 AM	AAP	METPREP
HS15110261-02	MW-17	Out	11/9/2015 11:32:36 AM	AAP	METPREP
HS15110261-03	MW-19	Out	11/9/2015 11:32:36 AM	AAP	METPREP
HS15110261-04	MW-18	Out	11/9/2015 11:32:36 AM	AAP	METPREP

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Client: Apex Companies
Project: Andover Release Site E3CE-0065
Work Order: HS15110261

SAMPLE TRACKING

HS15110261-05	MW-4	Out	11/9/2015 11:32:36 AM	AAP	METPREP
HS15110261-06	MW-5	Out	11/9/2015 11:32:36 AM	AAP	METPREP
HS15110261-07	DUP-1	Out	11/9/2015 11:32:36 AM	AAP	METPREP
HS15110261-01	MW-1	Return	11/9/2015 12:58:15 PM	AAP	4A
HS15110261-02	MW-17	Return	11/9/2015 12:58:15 PM	AAP	4A
HS15110261-03	MW-19	Return	11/9/2015 12:58:15 PM	AAP	4A
HS15110261-04	MW-18	Return	11/9/2015 12:58:15 PM	AAP	4A
HS15110261-05	MW-4	Return	11/9/2015 12:58:15 PM	AAP	4A
HS15110261-06	MW-5	Return	11/9/2015 12:58:15 PM	AAP	4A
HS15110261-07	DUP-1	Return	11/9/2015 12:58:15 PM	AAP	4A

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Sample Receipt Checklist

Client Name: APEX-PORTLAND
Work Order: HS15110261

Date/Time Received: **06-Nov-2015 09:30**
Received by: **BHH**

Checklist completed by: *Corey Grandits* (eSignature) 6-Nov-2015 (Date)

Reviewed by: *Erica Padilla* (eSignature) 11-Nov-2015 (Date)

Matrices: **Water**

Carrier name: **FedEx Priority Overnight**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	1.8c/2.1c , 3.2c/3.5c uc/c		IR4
Cooler(s)/Kit(s):	23842 , 24885		
Date/Time sample(s) sent to storage:	11/06/2015 11:59		
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

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ALS Environmental

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 130232

HS15110261

WV

Apex Companies
Andover Release Site E3CE-0065

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Andover Release Site	A	300-Sulfate, ortho-phos, and Nitrate (short hold)
Work Order		Project Number	E3CE-0065	B	RSK175-methane
Company Name	Apex Companies	Bill To Company	Apex Companies	C	6020-Potassium only
Send Report To	Samuel Jackson	Invoice Attn	Samuel Jackson	D	Ammonia-4500
Address	3015 SW First Avenue	Address	3015 SW First Avenue	E	6020-Dissolved Iron-Lab filtered
				F	RSK175-CO2, Sub to ALS Kelso
City/State/Zip	Portland, OR 97201	City/State/Zip	Portland, OR 97201	G	Alkalinity
Phone	(503) 924-4704	Phone	(503) 924-4704	H	8260-VOC
Fax		Fax		I	OA-1 GRO
e-Mail Address	sjackson@apexcos.com	e-Mail Address	sjackson@apexcos.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-1	11-5-15	0846	GW	1,2,3 Vent	17	X	X	X	X	X	X	X	X	X		
2	MW-17	↓	0950	↓	↓	17	↓	↓	↓	X	↓	↓	↓	↓	↓		
3	MW-19		1045			17				X							
4	MW-18		1122			16											
5	MW-4		1316			17				X							
6	MW-5		1407			17				X							
7	DUP-1		—			17				X							
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ted Alfred

Shipment Method:

Required Turnaround Time: (Check Box) [X] Std 10 WK days [ ] 5 WK Days [ ] 2 WK Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 11-5-15 Time: 1715 Received by:

Relinquished by: Date: Time: Received by (Laboratory): R Cigan 11/06/15 09:30

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: 2015 Groundwater Pilot Test T3

Cooler ID	Cooler Temp.
24555	UIC
23542	1.8
IR #4	3.2
CF 0.3	

QC Package: (Check One Box Below)
[X] Level 2 Std QC
[ ] Level 3 Std QC/Raw da
[ ] Level 4 SW846/CLP
[ ] Other/EDD
[ ] TRRP ChkList
[ ] TRRP Level 4

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 1-5-15 Time: 1715
Name: Ted Alford
Compa: APEX

2 of 2
MPS# 7816 6042 8237
Mstr# 8079 4509 1300
0215
FRI - 06 NOV 10:30A
PRIORITY OVERNIGHT
AB SGRA
2.85S
77099
TX-US IAH

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ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 11-5-15 Time: 1715
Name: Ted Alfred
Company: APEX

Signature Seal Broken By: RC
Date: 11/5/15

1 of 2
TRK# 8079 4509 1300
MASTER
AB SGRA

FR: – 06 NOV 10:30A
PRIORITY OVERNIGHT

77099
TX – US IAH

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F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

November 13, 2015

Erica Padilla
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS15110261

Dear Erica:

Enclosed are the results of the samples submitted to our laboratory on November 10, 2015. For your reference, these analyses have been assigned our service request number P1504835.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 2:09 pm, Nov 13, 2015

Kelly Horiuchi
Laboratory Director

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: ALS Laboratory Group
Project: HS15110261

Service Request No: P1504835

CASE NARRATIVE

The samples were received intact under chain of custody on November 10, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gas (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation, however it is not part of the AIHA-LAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2-R1
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	977273
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-15-6
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272015-5
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

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ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS15110261

Service Request: P1504835

Date Received: 11/10/2015
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2
HS15110261-01	P1504835-001	Water	11/5/2015	08:46	X
HS15110261-02	P1504835-002	Water	11/5/2015	09:50	X
HS15110261-03	P1504835-003	Water	11/5/2015	10:45	X
HS15110261-04	P1504835-004	Water	11/5/2015	11:22	X
HS15110261-05	P1504835-005	Water	11/5/2015	13:16	X
HS15110261-06	P1504835-006	Water	11/5/2015	14:07	X
HS15110261-07	P1504835-007	Water	11/5/2015	00:00	X

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CHAIN OF CUSTODY RECORD

ALS Environmental

Page 1 of 1

Date 6 Nov 2015

COC ID 3793

Due date 16 NOV 15

WAIT UNTIL MONDAY

Subcontractor

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone 8055267161

Fax

Customer Information		Project Information	
PO	HS15110261	Project Name	HS15110261

Company Name	ALS Houston	Company Name	ALS Houston
		Inv Attn	Accounts Payable
Address	10450 Stancliff Rd, Ste 210	Address	10450 Stancliff Rd, Ste 210
	Houston, TX 77099		Houston, TX 77099
Phone	281-530-5656	Phone	281-530-5656
Email1	erica.padilla@alsglobal.com	Email2	jumoke.lawal@alsglobal.com

P15#4835

	Lab ID	Client Samp ID	Collection Date	Matrix	Analysis Requested
1	HS15110261-01	MW-1	05-Nov-15 08:46 am	Water	XXX SUB - SUB CO2
2	HS15110261-02	MW-17	05-Nov-15 09:50 am	Water	XXX SUB - SUB CO2
3	HS15110261-03	MW-19	05-Nov-15 10:45 am	Water	XXX SUB - SUB CO2
4	HS15110261-04	MW-18	05-Nov-15 11:22 am	Water	XXX SUB - SUB CO2
5	HS15110261-05	MW-4	05-Nov-15 01:16 pm	Water	XXX SUB - SUB CO2
6	HS15110261-06	MW-5	05-Nov-15 02:07 pm	Water	XXX SUB - SUB CO2
7	HS15110261-07	DUP-1	05-Nov-15 12:00 am	Water	XXX SUB - SUB CO2

Comments Please analyze for the analysis listed above. Send report to the emails shown above.

Relinquished by:	Date/Time:	Received by:	Date/Time:	Cooler IDs:	Report/QC Level
CG	11/6/15 1800	[illegible]	11/10/15 0930	0° wet ice	STD

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Environmental
Sample Acceptance Check Form

Client: ALS Group USA, Corp. Work order: P1504835

Project: HS15110261

Sample(s) received on: 11/10/15 Date opened: 11/10/15 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 0° C Blank Temperature: ° C **Wet Ice**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? SEALING COOLER Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1504835-001.01	40mL VOA NP		7		A	MC 11/12/2015
P1504835-001.02	40mL VOA NP				A	
P1504835-001.03	40mL VOA NP				A	
P1504835-002.01	40mL VOA NP		7		A	MC 11/12/2015
P1504835-002.02	40mL VOA NP				A	
P1504835-002.03	40mL VOA NP				A	
P1504835-003.01	40mL VOA NP		7		A	MC 11/12/2015
P1504835-003.02	40mL VOA NP				A	
P1504835-003.03	40mL VOA NP				A	
P1504835-004.01	40mL VOA NP		7		A	MC 11/12/2015
P1504835-004.02	40mL VOA NP				A	
P1504835-004.03	40mL VOA NP				A	
P1504835-005.01	40mL VOA NP		7		A	MC 11/12/2015
P1504835-005.02	40mL VOA NP				A	
P1504835-005.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Environmental
Sample Acceptance Check Form

Client: ALS Group USA, Corp. Work order: P1504835

Project: HS15110261

Sample(s) received on: 11/10/15 Date opened: 11/10/15 by: KKELPE

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1504835-006.01	40mL VOA NP		7		A	MC 11/12/2015
P1504835-006.02	40mL VOA NP				A	
P1504835-006.03	40mL VOA NP				A	
P1504835-007.01	40mL VOA NP		7		A	MC 11/12/2015
P1504835-007.02	40mL VOA NP				A	
P1504835-007.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS15110261** ALS Project ID: P1504835

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 11/5/15
Analyst: Mike Conejo Date Received: 11/10/15
Matrix: Water Date Analyzed: 11/12/15
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
HS15110261-01	P1504835-001	0.10	**93,000**	1,000	
HS15110261-02	P1504835-002	0.10	**55,000**	1,000	
HS15110261-03	P1504835-003	0.10	**29,000**	1,000	
HS15110261-04	P1504835-004	0.10	**41,000**	1,000	
HS15110261-05	P1504835-005	0.10	**37,000**	1,000	
HS15110261-06	P1504835-006	0.10	**41,000**	1,000	
HS15110261-07	P1504835-007	0.10	**97,000**	1,000	
Method Control Sample	P151112-MB	0.10	ND	1,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS15110261**

ALS Project ID: P1504835
ALS Sample ID: P151112-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 11/12/15
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	20,600	19,100	**90**	**83**	62-139	8	24	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

RIGHT SOLUTIONS | RIGHT PARTNER

ANALYTICAL REPORT

December 28, 2015

Apex Companies, LLC- Portland, OR

Sample Delivery Group:	L807411
Samples Received:	12/17/2015
Project Number:	E3CE-0065
Description:	Andover Release Site - 4Q2015 Quail Crossing
Site:	ANDOVER QUAIL CROSSING
Report To:	Samuel Jackson 3015 SW First Avenue Portland, OR 97201-4707

Entire Report Reviewed By:

Jarred Willis
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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MW-1 33 FT L807411-01 GW

Collected by: Ted Alfred | Collected date/time: 12/16/15 11:24 | Received date/time: 12/17/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG836676	1	12/19/15 08:00	12/20/15 01:51	WBD
Metals (ICP) by Method 6010B	WG836931	1	12/19/15 09:43	12/20/15 04:10	WBD
Volatile Organic Compounds (GC) by Method RSK175	WG837244	1	12/21/15 12:22	12/21/15 12:22	JC
Wet Chemistry by Method 2320 B-2011	WG836361	5	12/18/15 15:43	12/18/15 15:43	MCG
Wet Chemistry by Method 350.1	WG837768	1	12/22/15 16:53	12/22/15 16:53	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG837712	5	12/22/15 10:50	12/22/15 10:51	MCG
Wet Chemistry by Method 4500P E-2011	WG836328	1	12/17/15 13:03	12/17/15 13:03	AMC
Wet Chemistry by Method 9056A	WG836036	1	12/17/15 14:44	12/17/15 14:44	NJM

MW-4 31 FT L807411-02 GW

Collected by: Ted Alfred | Collected date/time: 12/15/15 12:35 | Received date/time: 12/17/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG836676	1	12/19/15 08:00	12/20/15 01:54	WBD
Metals (ICP) by Method 6010B	WG836931	1	12/19/15 09:43	12/20/15 04:13	WBD
Volatile Organic Compounds (GC) by Method RSK175	WG837244	1	12/21/15 12:24	12/21/15 12:24	JC
Wet Chemistry by Method 2320 B-2011	WG836361	1	12/18/15 15:43	12/18/15 15:43	MCG
Wet Chemistry by Method 350.1	WG837768	1	12/22/15 16:55	12/22/15 16:55	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG837712	1	12/22/15 10:50	12/22/15 10:51	MCG
Wet Chemistry by Method 4500P E-2011	WG836328	1	12/17/15 13:04	12/17/15 13:04	AMC
Wet Chemistry by Method 9056A	WG836036	1	12/17/15 14:16	12/17/15 14:16	NJM
Wet Chemistry by Method 9056A	WG836798	2	12/19/15 15:30	12/19/15 15:30	CM

MW-5 21 FT L807411-03 GW

Collected by: Ted Alfred | Collected date/time: 12/15/15 08:03 | Received date/time: 12/17/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG836676	1	12/19/15 08:00	12/20/15 01:57	WBD
Metals (ICP) by Method 6010B	WG836931	1	12/19/15 09:43	12/20/15 04:16	WBD
Volatile Organic Compounds (GC) by Method RSK175	WG837244	1	12/21/15 12:27	12/21/15 12:27	JC
Wet Chemistry by Method 2320 B-2011	WG836361	5	12/18/15 15:43	12/18/15 15:43	MCG
Wet Chemistry by Method 350.1	WG837768	1	12/22/15 16:58	12/22/15 16:58	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG837712	5	12/22/15 10:50	12/22/15 10:51	MCG
Wet Chemistry by Method 4500P E-2011	WG836328	1	12/17/15 13:05	12/17/15 13:05	AMC
Wet Chemistry by Method 9056A	WG836036	10	12/17/15 14:30	12/17/15 14:30	NJM

MW-17 35 FT L807411-04 GW

Collected by: Ted Alfred | Collected date/time: 12/16/15 12:50 | Received date/time: 12/17/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG836676	1	12/19/15 08:00	12/20/15 02:00	WBD
Metals (ICP) by Method 6010B	WG836931	1	12/19/15 09:43	12/20/15 04:25	WBD
Volatile Organic Compounds (GC) by Method RSK175	WG837244	1	12/21/15 12:29	12/21/15 12:29	JC
Wet Chemistry by Method 2320 B-2011	WG836361	5	12/18/15 15:43	12/18/15 15:43	MCG
Wet Chemistry by Method 350.1	WG837768	1	12/22/15 17:00	12/22/15 17:00	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG837712	5	12/22/15 10:50	12/22/15 10:51	MCG
Wet Chemistry by Method 4500P E-2011	WG836328	1	12/17/15 13:06	12/17/15 13:06	AMC
Wet Chemistry by Method 9056A	WG836036	1	12/17/15 14:59	12/17/15 14:59	NJM

MW-18 33 FT L807411-05 GW

Collected by: Ted Alfred
Collected date/time: 12/15/15 13:10
Received date/time: 12/17/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG836676	1	12/19/15 08:00	12/20/15 02:09	WBD
Metals (ICP) by Method 6010B	WG836931	1	12/19/15 09:43	12/20/15 04:29	WBD
Volatile Organic Compounds (GC) by Method RSK175	WG837244	1	12/21/15 12:32	12/21/15 12:32	JC
Wet Chemistry by Method 2320 B-2011	WG836361	5	12/18/15 15:43	12/18/15 15:43	MCG
Wet Chemistry by Method 350.1	WG837768	1	12/22/15 17:03	12/22/15 17:03	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG837712	5	12/22/15 10:50	12/22/15 10:51	MCG
Wet Chemistry by Method 4500P E-2011	WG836328	1	12/17/15 13:07	12/17/15 13:07	AMC
Wet Chemistry by Method 9056A	WG835992	1	12/17/15 13:09	12/17/15 13:09	NJM

MW-19 33 FT L807411-06 GW

Collected by: Ted Alfred
Collected date/time: 12/15/15 14:03
Received date/time: 12/17/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG836676	1	12/19/15 08:00	12/20/15 02:12	WBD
Metals (ICP) by Method 6010B	WG836931	1	12/19/15 09:43	12/20/15 04:32	WBD
Volatile Organic Compounds (GC) by Method RSK175	WG837244	1	12/21/15 12:36	12/21/15 12:36	JC
Wet Chemistry by Method 2320 B-2011	WG836360	1	12/18/15 11:30	12/18/15 11:30	MCG
Wet Chemistry by Method 350.1	WG837768	1	12/22/15 17:13	12/22/15 17:13	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG836910	1	12/18/15 19:19	12/18/15 19:20	MCG
Wet Chemistry by Method 4500P E-2011	WG836328	1	12/17/15 13:07	12/17/15 13:07	AMC
Wet Chemistry by Method 9056A	WG836336	1	12/17/15 13:22	12/17/15 13:22	DJD

DUP-2 L807411-07 GW

Collected by: Ted Alfred
Collected date/time: 12/15/15 00:00
Received date/time: 12/17/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG836676	1	12/19/15 08:00	12/20/15 02:15	WBD
Metals (ICP) by Method 6010B	WG836931	1	12/19/15 09:43	12/20/15 04:35	WBD
Volatile Organic Compounds (GC) by Method RSK175	WG837244	1	12/21/15 12:39	12/21/15 12:39	JC
Wet Chemistry by Method 2320 B-2011	WG836360	1	12/18/15 11:30	12/18/15 11:30	MCG
Wet Chemistry by Method 350.1	WG837768	1	12/22/15 17:18	12/22/15 17:18	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG836910	1	12/18/15 19:19	12/18/15 19:20	MCG
Wet Chemistry by Method 4500P E-2011	WG836328	1	12/17/15 13:08	12/17/15 13:08	AMC
Wet Chemistry by Method 9056A	WG836336	1	12/17/15 14:01	12/17/15 14:01	DJD

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jarred Willis
Technical Service Representative

Sample Handling and Receiving

The following samples were prepared and/or analyzed past recommended holding time. Concentrations should be considered minimum values.

ESC Sample ID	Project Sample ID	Method
L807411-01	MW-1 33 FT	4500CO2 D-2011
L807411-02	MW-4 31 FT	4500CO2 D-2011, 9056A
L807411-03	MW-5 21 FT	4500CO2 D-2011, 9056A
L807411-04	MW-17 35 FT	4500CO2 D-2011
L807411-05	MW-18 33 FT	4500CO2 D-2011
L807411-06	MW-19 33 FT	4500CO2 D-2011
L807411-07	DUP-2	4500CO2 D-2011, 9056A

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	366		100	5	12/18/2015 15:43	WG836361

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	0.973		0.250	1	12/22/2015 16:53	WG837768

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		100	5	12/22/2015 10:51	WG837712

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.475		0.0250	1	12/17/2015 13:03	WG836328

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	ND		0.100	1	12/17/2015 14:44	WG836036
Sulfate	89.6		5.00	1	12/17/2015 14:44	WG836036

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	0.854		0.100	1	12/20/2015 01:51	WG836676
Potassium	4.98		1.00	1	12/20/2015 04:10	WG836931

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	0.510		0.0100	1	12/21/2015 12:22	WG837244
Ethane	ND		0.0130	1	12/21/2015 12:22	WG837244
Ethene	ND		0.0130	1	12/21/2015 12:22	WG837244

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	387		20.0	1	12/18/2015 15:43	WG836361

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/22/2015 16:55	WG837768

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	24.5		20.0	1	12/22/2015 10:51	WG837712

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.0450		0.0250	1	12/17/2015 13:04	WG836328

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	0.892		0.100	1	12/17/2015 14:16	WG836036
Sulfate	108		10.0	2	12/19/2015 15:30	WG836798

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	12/20/2015 01:54	WG836676
Potassium	1.70		1.00	1	12/20/2015 04:13	WG836931

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	12/21/2015 12:24	WG837244
Ethane	ND		0.0130	1	12/21/2015 12:24	WG837244
Ethene	ND		0.0130	1	12/21/2015 12:24	WG837244

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	492		100	5	12/18/2015 15:43	WG836361

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/22/2015 16:58	WG837768

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		100	5	12/22/2015 10:51	WG837712

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND		0.0250	1	12/17/2015 13:05	WG836328

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	6.49		1.00	10	12/17/2015 14:30	WG836036
Sulfate	168		50.0	10	12/17/2015 14:30	WG836036

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	12/20/2015 01:57	WG836676
Potassium	ND		1.00	1	12/20/2015 04:16	WG836931

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	12/21/2015 12:27	WG837244
Ethane	ND		0.0130	1	12/21/2015 12:27	WG837244
Ethene	ND		0.0130	1	12/21/2015 12:27	WG837244

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	470		100	5	12/18/2015 15:43	WG836361

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/22/2015 17:00	WG837768

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		100	5	12/22/2015 10:51	WG837712

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND		0.0250	1	12/17/2015 13:06	WG836328

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	ND		0.100	1	12/17/2015 14:59	WG836036
Sulfate	9.46		5.00	1	12/17/2015 14:59	WG836036

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	12/20/2015 02:00	WG836676
Potassium	2.06		1.00	1	12/20/2015 04:25	WG836931

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	0.0342		0.0100	1	12/21/2015 12:29	WG837244
Ethane	ND		0.0130	1	12/21/2015 12:29	WG837244
Ethene	ND		0.0130	1	12/21/2015 12:29	WG837244

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	418		100	5	12/18/2015 15:43	WG836361

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/22/2015 17:03	WG837768

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		100	5	12/22/2015 10:51	WG837712

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.229		0.0250	1	12/17/2015 13:07	WG836328

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	ND		0.100	1	12/17/2015 13:09	WG835992
Sulfate	18.1		5.00	1	12/17/2015 13:09	WG835992

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	12/20/2015 02:09	WG836676
Potassium	1.55		1.00	1	12/20/2015 04:29	WG836931

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	12/21/2015 12:32	WG837244
Ethane	ND		0.0130	1	12/21/2015 12:32	WG837244
Ethene	ND		0.0130	1	12/21/2015 12:32	WG837244

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	378		20.0	1	12/18/2015 11:30	WG836360

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/22/2015 17:13	WG837768

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		20.0	1	12/18/2015 19:20	WG836910

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.0840		0.0250	1	12/17/2015 13:07	WG836328

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	0.602		0.100	1	12/17/2015 13:22	WG836336
Sulfate	26.8		5.00	1	12/17/2015 13:22	WG836336

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	12/20/2015 02:12	WG836676
Potassium	2.18		1.00	1	12/20/2015 04:32	WG836931

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	0.0108		0.0100	1	12/21/2015 12:36	WG837244
Ethane	ND		0.0130	1	12/21/2015 12:36	WG837244
Ethene	ND		0.0130	1	12/21/2015 12:36	WG837244

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	397		20.0	1	12/18/2015 11:30	WG836360

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	12/22/2015 17:18	WG837768

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	25.1		20.0	1	12/18/2015 19:20	WG836910

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.0540		0.0250	1	12/17/2015 13:08	WG836328

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	ND		0.100	1	12/17/2015 14:01	WG836336
Sulfate	17.1		5.00	1	12/17/2015 14:01	WG836336

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	12/20/2015 02:15	WG836676
Potassium	1.48		1.00	1	12/20/2015 04:35	WG836931

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	12/21/2015 12:39	WG837244
Ethane	ND		0.0130	1	12/21/2015 12:39	WG837244
Ethene	ND		0.0130	1	12/21/2015 12:39	WG837244

Method Blank (MB)

(MB) 12/18/15 11:30

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Alkalinity	ND		20.0

L807303-01 Original Sample (OS) • Duplicate (DUP)

(OS) 12/18/15 11:30 • (DUP) 12/18/15 11:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	385	391	1	1.55		20

L807303-02 Original Sample (OS) • Duplicate (DUP)

(OS) 12/18/15 11:30 • (DUP) 12/18/15 11:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	384	388	1	1.04		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/18/15 11:30 • (LCSD) 12/18/15 11:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Alkalinity	100	111	94.7	111	94.7	85.0-115			15.8	20

L807303-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/18/15 11:30 • (MS) 12/18/15 11:30 • (MSD) 12/18/15 11:30

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Alkalinity	100	396	908	884	102	97.6	5	80.0-120			2.68	20

Method Blank (MB)

(MB) 12/18/15 15:43

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Alkalinity	ND		20.0

L807409-01 Original Sample (OS) • Duplicate (DUP)

(OS) 12/18/15 15:43 • (DUP) 12/18/15 15:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	522	514	5	1.54		20

L807421-03 Original Sample (OS) • Duplicate (DUP)

(OS) 12/18/15 15:43 • (DUP) 12/18/15 15:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	2460	2430	10	1.23		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/18/15 15:43 • (LCSD) 12/18/15 15:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Alkalinity	100	97.8	101	97.8	101	85.0-115			3.22	20

L807421-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/18/15 15:43 • (MS) 12/18/15 15:43 • (MSD) 12/18/15 15:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Alkalinity	100	2860	3820	3880	96.0	102	10	80.0-120			1.56	20

Method Blank (MB)

(MB) 12/22/15 16:23

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Ammonia Nitrogen	ND		0.250

L807390-03 Original Sample (OS) • Duplicate (DUP)

(OS) 12/22/15 16:43 • (DUP) 12/22/15 16:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	ND	-0.0140	1	0		20

L807411-06 Original Sample (OS) • Duplicate (DUP)

(OS) 12/22/15 17:13 • (DUP) 12/22/15 17:15

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	ND	-0.0510	1	0		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/22/15 16:28 • (LCSD) 12/22/15 16:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	7.50	7.43	7.38	99	98	90-110			1	20

L807390-02 Original Sample (OS) • Matrix Spike (MS)

(OS) 12/22/15 16:38 • (MS) 12/22/15 16:40

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ammonia Nitrogen	10.0	0.110	9.78	97	1	90-110	

L807411-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/22/15 17:18 • (MS) 12/22/15 17:20 • (MSD) 12/22/15 17:23

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	10.0	ND	9.71	9.91	97	99	1	90-110			2	20

Method Blank (MB)

(MB) 12/17/15 12:03

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Phosphate,Ortho	ND		0.0250

L807357-01 Original Sample (OS) • Duplicate (DUP)

(OS) 12/17/15 12:17 • (DUP) 12/17/15 12:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.0290	0.0290	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/17/15 12:12 • (LCSD) 12/17/15 12:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.750	0.689	0.690	91.9	92.0	85.0-115			0.145	20

L807357-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/17/15 12:17 • (MS) 12/17/15 12:18 • (MSD) 12/17/15 12:18

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	0.0290	0.372	0.371	68.6	68.4	1	80.0-120	J6	J6	0.269	20

Method Blank (MB)

(MB) 12/17/15 07:18

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Nitrate	ND		0.100
Sulfate	ND		5.00

L806545-04 Original Sample (OS) • Duplicate (DUP)

(OS) 12/17/15 18:33 • (DUP) 12/17/15 18:48

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	ND	0.000	10	0		15
Sulfate	132	132	10	1		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/17/15 07:34 • (LCSD) 12/17/15 07:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Nitrate	8.00	7.70	7.66	96	96	80-120			1	15
Sulfate	40.0	41.6	40.4	104	101	80-120			3	15

L806414-14 Original Sample (OS) • Matrix Spike (MS)

(OS) 12/17/15 11:37 • (MS) 12/17/15 11:52

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate	5.00	ND	4.64	93	1	80-120	
Sulfate	50.0	2.85	53.4	101	1	80-120	

L806545-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/17/15 17:47 • (MS) 12/17/15 18:02 • (MSD) 12/17/15 18:18

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate	5.00	0.0151	4.66	4.67	93	93	1	80-120			0	15

L806545-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/18/15 07:17 • (MS) 12/18/15 07:32 • (MSD) 12/18/15 07:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Sulfate	50.0	103	196	197	93	94	2	80-120			0	15

Method Blank (MB)

(MB) 12/16/15 19:44

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Nitrate	ND		0.100
Sulfate	ND		5.00

L807225-11 Original Sample (OS) • Duplicate (DUP)

(OS) 12/17/15 09:21 • (DUP) 12/17/15 09:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	0.0642	0.0676	1	0		15
Sulfate	50.1	50.1	1	0		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/16/15 19:58 • (LCSD) 12/16/15 20:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Nitrate	8.00	8.04	8.02	101	100	80-120			0	15
Sulfate	40.0	39.9	39.7	100	99	80-120			0	15

Method Blank (MB)

(MB) 12/17/15 06:58

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Nitrate	ND		0.100
Sulfate	ND		5.00

L807383-07 Original Sample (OS) • Duplicate (DUP)

(OS) 12/17/15 15:25 • (DUP) 12/17/15 15:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	0.186	0.183	1	2		15
Sulfate	21.5	21.5	1	0		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/17/15 07:11 • (LCSD) 12/17/15 07:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Nitrate	8.00	8.05	8.06	101	101	80-120			0	15
Sulfate	40.0	39.5	39.5	99	99	80-120			0	15

Method Blank (MB)

(MB) 12/19/15 07:40

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Sulfate	ND		5.00

L807481-01 Original Sample (OS) • Duplicate (DUP)

(OS) 12/19/15 11:23 • (DUP) 12/19/15 11:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	0.0732	0.0684	1	0		15

L807481-06 Original Sample (OS) • Duplicate (DUP)

(OS) 12/19/15 17:33 • (DUP) 12/19/15 17:48

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	0.668	0.667	1	0		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/19/15 07:55 • (LCSD) 12/19/15 08:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Sulfate	40.0	40.3	40.3	101	101	80-120			0	15

L807481-02 Original Sample (OS) • Matrix Spike (MS)

(OS) 12/19/15 11:54 • (MS) 12/19/15 12:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Sulfate	50.0	88.6	129	81	1	80-120	

L807481-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/19/15 16:47 • (MS) 12/19/15 17:02 • (MSD) 12/19/15 17:18

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Sulfate	50.0	12.1	61.4	61.8	99	99	1	80-120			1	15

Method Blank (MB)

(MB) 12/20/15 00:58

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Iron,Dissolved	ND		0.100

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/20/15 01:01 • (LCSD) 12/20/15 01:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Iron,Dissolved	1.00	1.02	1.03	102	103	80-120			1	20

L807465-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/20/15 01:07 • (MS) 12/20/15 01:12 • (MSD) 12/20/15 01:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Iron,Dissolved	1.00	7.42	8.39	8.46	98	105	1	75-125			1	20

Method Blank (MB)

(MB) 12/20/15 03:49

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Potassium	ND		1.00

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/20/15 03:52 • (LCSD) 12/20/15 03:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Potassium	10.0	9.94	9.92	99	99	80-120			0	20

L807413-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/20/15 03:58 • (MS) 12/20/15 04:04 • (MSD) 12/20/15 04:07

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Potassium	10.0	0.678	10.5	10.3	98	96	1	75-125			2	20

Method Blank (MB)

(MB) 12/21/15 11:44

Analyte	MB Result ppm	MB Qualifier	MB RDL ppm
Methane	ND		0.0100
Ethane	ND		0.0130
Ethene	ND		0.0130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 12/21/15 12:57 • (LCSD) 12/21/15 13:00

Analyte	Spike Amount ppm	LCS Result ppm	LCSD Result ppm	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Methane	0.0678	0.0763	0.0731	113	108	85.0-115			4.32	20
Ethane	0.129	0.126	0.122	97.3	94.8	85.0-115			2.60	20
Ethene	0.127	0.124	0.120	97.4	94.5	85.0-115			3.04	20

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660
Alaska	UST-080
Arizona	AZ0612
Arkansas	88-0469
California	01157CA
Colorado	TN00003
Conneticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1]	90010
Kentucky [2]	16
Louisiana	AI30792
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086
Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico	TN00003
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [2]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	221
South Carolina	84004
South Dakota	n/a
Tennessee [1 4]	2006
Texas	T 104704245-07-TX
Texas [5]	LAB0152
Utah	6157585858
Vermont	VT2006
Virginia	109
Washington	C1915
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

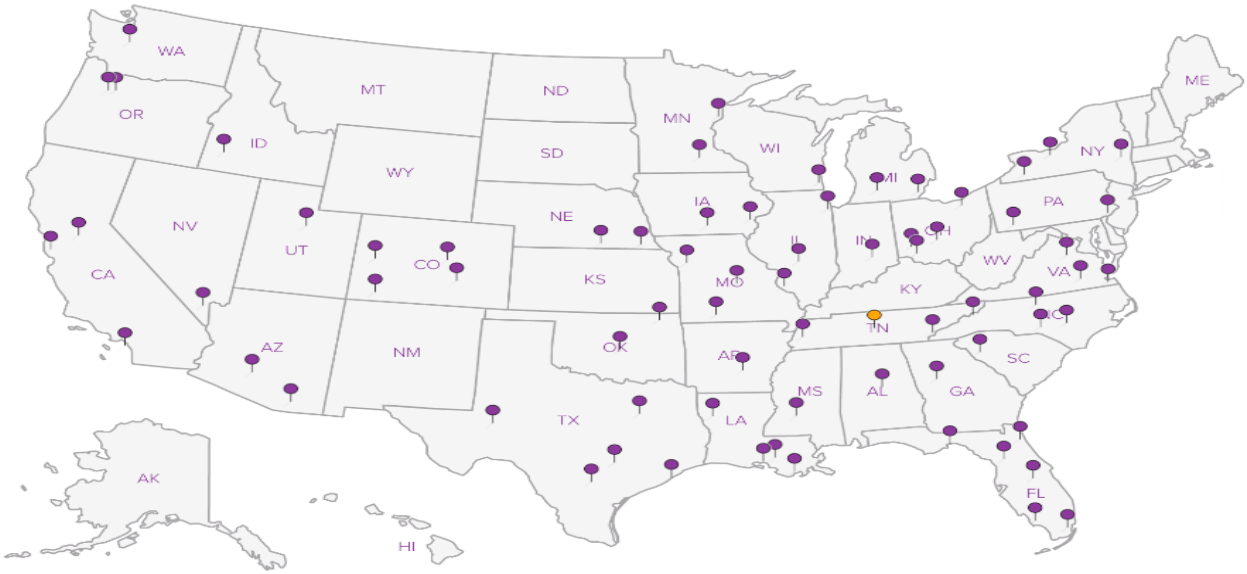
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 [5]	1461.02
Canada	1461.01
EPA–Crypto	TN00003
AIHA	100789
DOD	1461.01
USDA	S-67674

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Apex Companies, LLC- Portland, OR

3015 SW First Avenue
Portland, OR 97201-4707

Billing Information:
Accounts Payable- Cindi Joy Staller
3015 SW First Avenue
Portland, OR 97201-4707

Report to: Samuel Jackson

Email To: SJackson@apexcos.com; TAlfred@apexcos.com; TCochran@apexcos.com

Project Description: Andover Release Site - 4Q2015 Quail Cros

City/State Collected:

Phone: 503-924-4704
Fax: 503-943-6357

Client Project # E3CE-0065

Lab Project # ASHCREPOR-NUANDQUAIL

Collected by (print): Ted Alfred

Site/Facility ID # ANDOVER QUAIL CROSSING

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X__Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LAB SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 867411
D120

Acctnum: ASHCREPOR
Template: T107890
Prelogin: P534322
TSR: 358 - Jarred Willis
PB: 12-4-15G
Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Diss Metals- Fe 500mlHDPE-NoPres	Methane RSK175 40mlAmb HCl	NH3 125mlHDPE-H2SO4 ≤2	NITRATE* / ALK / CO2 250mlHDPE-NoPres	Sulfate / Ortho Phos 250mlHDPE-NoPres	Total Metals- K 500mlHDPE-HNO3 ≤2					Rem./Contaminant	Sample # (lab only)
MW-1	Grab	GW	33.0	12/16/15	1124	7	X	X	X	X	X	X						01
MW-4		GW	31.0	12/15/15	1235	7	X	X	X	X	X	X						02
MW-5		GW	21.0	12/15/15	0803	7	X	X	X	X	X	X						03
MW-17		GW	35.0	12/16/15	1250	7	X	X	X	X	X	X						04
MW-18		GW	33.0	12/15/15	1310	7	X	X	X	X	X	X						05
MW-19		GW	33.0	12/15/15	1403	7	X	X	X	X	X	X						06
DUP-2		GW	—	12/15/15	—	7	X	X	X	X	X	X						07
		~~GW~~				~~7~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~						

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:NITRATE HAS 48HR HOLD TIME

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	12-16-15	1030	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ ____

Temp: 3.2 °C Bottles Received: 49

Date: 12/17/15 Time: 900

Condition: (lab use only) Good

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: ≤2 NCF:

6525196 01753

ANALYTICAL REPORT

February 29, 2016

Apex Companies, LLC- Portland, OR

Sample Delivery Group:	L818452
Samples Received:	02/18/2016
Project Number:	E3CE-0065
Description:	Andover Release Site - 4Q2015 Quail Crossing
Site:	ANDOVER QUAIL CROSSING
Report To:	Samuel Jackson 3015 SW First Avenue Portland, OR 97201-4707

Entire Report Reviewed By:

Jarred Willis
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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MW-1 L818452-01 GW

Collected by: Ted Alfred | Collected date/time: 02/17/16 13:37 | Received date/time: 02/18/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG850775	1	02/20/16 07:19	02/20/16 16:16	WBD
Metals (ICP) by Method 6010B	WG850778	1	02/23/16 12:02	02/23/16 19:11	LTB
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG851352	10	02/25/16 07:58	02/25/16 07:58	DWR
Volatile Organic Compounds (GC) by Method RSK175	WG851686	1	02/24/16 14:32	02/24/16 14:32	MBF
Volatile Organic Compounds (GC) by Method RSK175	WG851893	5	02/25/16 08:28	02/25/16 08:28	MBF
Volatile Organic Compounds (GC/MS) by Method 8260B	WG851943	10	02/25/16 17:44	02/25/16 17:44	ACG
Wet Chemistry by Method 2320 B-2011	WG851553	5	02/24/16 14:09	02/24/16 14:09	MCG
Wet Chemistry by Method 350.1	WG851714	1	02/24/16 12:53	02/24/16 12:53	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG851553	5	02/24/16 09:24	02/24/16 14:09	MCG
Wet Chemistry by Method 4500P E-2011	WG849893	1	02/18/16 14:37	02/18/16 14:37	MAJ
Wet Chemistry by Method 9056A	WG850391	1	02/18/16 18:26	02/18/16 18:26	CM

MW-4 L818452-02 GW

Collected by: Ted Alfred | Collected date/time: 02/17/16 15:20 | Received date/time: 02/18/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG850775	1	02/20/16 07:19	02/20/16 16:25	WBD
Metals (ICP) by Method 6010B	WG850778	1	02/23/16 12:02	02/23/16 19:14	LTB
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG851352	1	02/25/16 02:47	02/25/16 02:47	DWR
Volatile Organic Compounds (GC) by Method RSK175	WG851686	1	02/24/16 14:40	02/24/16 14:40	MBF
Volatile Organic Compounds (GC/MS) by Method 8260B	WG851943	1	02/25/16 18:03	02/25/16 18:03	ACG
Wet Chemistry by Method 2320 B-2011	WG851553	5	02/24/16 14:22	02/24/16 14:22	MCG
Wet Chemistry by Method 350.1	WG851714	1	02/24/16 12:55	02/24/16 12:55	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG851553	5	02/24/16 09:24	02/24/16 14:22	MCG
Wet Chemistry by Method 4500P E-2011	WG849893	1	02/18/16 14:38	02/18/16 14:38	MAJ
Wet Chemistry by Method 9056A	WG850391	1	02/18/16 18:42	02/18/16 18:42	CM
Wet Chemistry by Method 9056A	WG850391	10	02/19/16 00:43	02/19/16 00:43	CM

MW-5 L818452-03 GW

Collected by: Ted Alfred | Collected date/time: 02/17/16 17:28 | Received date/time: 02/18/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG850775	1	02/20/16 07:19	02/20/16 16:28	WBD
Metals (ICP) by Method 6010B	WG850778	1	02/23/16 12:02	02/23/16 19:22	LTB
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG851352	1	02/25/16 03:18	02/25/16 03:18	DWR
Volatile Organic Compounds (GC) by Method RSK175	WG851686	1	02/24/16 14:46	02/24/16 14:46	MBF
Volatile Organic Compounds (GC/MS) by Method 8260B	WG851943	1	02/25/16 18:22	02/25/16 18:22	ACG
Wet Chemistry by Method 2320 B-2011	WG851553	5	02/24/16 12:30	02/24/16 12:30	MCG
Wet Chemistry by Method 350.1	WG851714	1	02/24/16 12:58	02/24/16 12:58	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG851553	5	02/24/16 09:24	02/24/16 12:30	MCG
Wet Chemistry by Method 4500P E-2011	WG849893	1	02/18/16 14:40	02/18/16 14:40	MAJ
Wet Chemistry by Method 9056A	WG850391	10	02/18/16 18:57	02/18/16 18:57	CM

MW-17 L818452-04 GW

Collected by: Ted Alfred | Collected date/time: 02/17/16 14:22 | Received date/time: 02/18/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG850775	1	02/20/16 07:19	02/20/16 16:31	WBD
Metals (ICP) by Method 6010B	WG850778	1	02/23/16 12:02	02/23/16 19:25	LTB
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG851352	1	02/25/16 03:40	02/25/16 03:40	DWR
Volatile Organic Compounds (GC) by Method RSK175	WG851686	1	02/24/16 14:49	02/24/16 14:49	MBF
Volatile Organic Compounds (GC/MS) by Method 8260B	WG851943	1	02/25/16 18:42	02/25/16 18:42	ACG

MW-17 L818452-04 GW

Collected by: Ted Alfred | Collected date/time: 02/17/16 14:22 | Received date/time: 02/18/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG852837	20	02/29/16 13:56	02/29/16 13:56	JAH
Wet Chemistry by Method 2320 B-2011	WG851553	5	02/24/16 12:36	02/24/16 12:36	MCG
Wet Chemistry by Method 350.1	WG851717	1	02/24/16 23:23	02/24/16 23:23	ASK
Wet Chemistry by Method 4500CO2 D-2011	WG851553	5	02/24/16 09:24	02/24/16 12:36	MCG
Wet Chemistry by Method 4500P E-2011	WG849893	1	02/18/16 14:40	02/18/16 14:40	MAJ
Wet Chemistry by Method 9056A	WG850391	1	02/18/16 19:13	02/18/16 19:13	CM

MW-18 L818452-05 GW

Collected by: Ted Alfred | Collected date/time: 02/17/16 11:33 | Received date/time: 02/18/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG850775	1	02/20/16 07:19	02/20/16 16:34	WBD
Metals (ICP) by Method 6010B	WG850778	1	02/23/16 12:02	02/23/16 19:28	LTB
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG851352	1	02/25/16 04:01	02/25/16 04:01	DWR
Volatile Organic Compounds (GC) by Method RSK175	WG851686	1	02/24/16 14:51	02/24/16 14:51	MBF
Volatile Organic Compounds (GC/MS) by Method 8260B	WG851943	1	02/25/16 19:01	02/25/16 19:01	ACG
Wet Chemistry by Method 2320 B-2011	WG851553	5	02/24/16 12:43	02/24/16 12:43	MCG
Wet Chemistry by Method 350.1	WG851714	1	02/24/16 13:00	02/24/16 13:00	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG851553	5	02/24/16 09:24	02/24/16 12:43	MCG
Wet Chemistry by Method 4500P E-2011	WG849893	1	02/18/16 14:45	02/18/16 14:45	MAJ
Wet Chemistry by Method 9056A	WG850391	1	02/18/16 19:28	02/18/16 19:28	CM

MW-19 L818452-06 GW

Collected by: Ted Alfred | Collected date/time: 02/17/16 12:17 | Received date/time: 02/18/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG850775	1	02/20/16 07:19	02/20/16 16:37	WBD
Metals (ICP) by Method 6010B	WG850778	1	02/23/16 12:02	02/23/16 19:31	LTB
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG851352	1	02/25/16 04:23	02/25/16 04:23	DWR
Volatile Organic Compounds (GC) by Method RSK175	WG851686	1	02/24/16 14:58	02/24/16 14:58	MBF
Volatile Organic Compounds (GC/MS) by Method 8260B	WG851943	1	02/25/16 19:20	02/25/16 19:20	ACG
Wet Chemistry by Method 2320 B-2011	WG851553	1	02/24/16 12:49	02/24/16 12:49	MCG
Wet Chemistry by Method 350.1	WG851714	1	02/24/16 13:03	02/24/16 13:03	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG851553	1	02/24/16 09:24	02/24/16 12:49	MCG
Wet Chemistry by Method 4500P E-2011	WG849893	1	02/18/16 14:46	02/18/16 14:46	MAJ
Wet Chemistry by Method 9056A	WG850391	1	02/18/16 20:14	02/18/16 20:14	CM

DUP L818452-07 GW

Collected by: Ted Alfred | Collected date/time: 02/17/16 00:00 | Received date/time: 02/18/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG850775	1	02/20/16 07:19	02/20/16 16:40	WBD
Metals (ICP) by Method 6010B	WG850778	1	02/23/16 12:02	02/23/16 19:34	LTB
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG851352	1	02/25/16 04:44	02/25/16 04:44	DWR
Volatile Organic Compounds (GC) by Method RSK175	WG851686	1	02/24/16 15:02	02/24/16 15:02	MBF
Volatile Organic Compounds (GC/MS) by Method 8260B	WG851943	1	02/25/16 19:40	02/25/16 19:40	ACG
Wet Chemistry by Method 2320 B-2011	WG851553	1	02/24/16 12:57	02/24/16 12:57	MCG
Wet Chemistry by Method 350.1	WG851714	1	02/24/16 13:13	02/24/16 13:13	JAL
Wet Chemistry by Method 4500CO2 D-2011	WG851553	1	02/24/16 09:24	02/24/16 12:57	MCG
Wet Chemistry by Method 4500P E-2011	WG849893	1	02/18/16 14:47	02/18/16 14:47	MAJ
Wet Chemistry by Method 9056A	WG850391	1	02/18/16 21:00	02/18/16 21:00	CM

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jarred Willis
Technical Service Representative

Sample Handling and Receiving

The following samples were prepared and/or analyzed past recommended holding time. Concentrations should be considered minimum values.

ESC Sample ID	Project Sample ID	Method
L818452-01	MW-1	4500CO2 D-2011
L818452-02	MW-4	4500CO2 D-2011
L818452-03	MW-5	4500CO2 D-2011
L818452-04	MW-17	4500CO2 D-2011
L818452-05	MW-18	4500CO2 D-2011
L818452-06	MW-19	4500CO2 D-2011
L818452-07	DUP	4500CO2 D-2011

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	483		100	5	02/24/2016 14:09	WG851553

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	0.496		0.250	1	02/24/2016 12:53	WG851714

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		100	5	02/24/2016 14:09	WG851553

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.0330		0.0250	1	02/18/2016 14:37	WG849893

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	ND		0.100	1	02/18/2016 18:26	WG850391
Sulfate	66.9		5.00	1	02/18/2016 18:26	WG850391

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	02/23/2016 19:11	WG850778
Potassium	1.32		1.00	1	02/20/2016 16:16	WG850775

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	18.4		1.00	10	02/25/2016 07:58	WG851352
(S) a,a,a-Trifluorotoluene(FID)	*98.9*		*62.0-128*		*02/25/2016 07:58*	WG851352

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	1.01		0.0500	5	02/25/2016 08:28	WG851893
Ethane	ND		0.0130	1	02/24/2016 14:32	WG851686
Ethene	ND		0.0130	1	02/24/2016 14:32	WG851686

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	1.41		0.0100	10	02/25/2016 17:44	WG851943
Cyclohexane	0.0679		0.0100	10	02/25/2016 17:44	WG851943
Ethylbenzene	0.377		0.0100	10	02/25/2016 17:44	WG851943
Isopropylbenzene	0.0103		0.0100	10	02/25/2016 17:44	WG851943
Methyl Cyclohexane	ND		0.0100	10	02/25/2016 17:44	WG851943
Toluene	1.03		0.0500	10	02/25/2016 17:44	WG851943
Xylenes, Total	4.61		0.0300	10	02/25/2016 17:44	WG851943

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Naphthalene	0.107		0.0500	10	02/25/2016 17:44	WG851943
n-Butylbenzene	ND		0.0100	10	02/25/2016 17:44	WG851943
1,2-Dichloroethane	ND		0.0100	10	02/25/2016 17:44	WG851943
1,3,5-Trimethylbenzene	0.225		0.0100	10	02/25/2016 17:44	WG851943
1,2,4-Trimethylbenzene	0.656		0.0100	10	02/25/2016 17:44	WG851943
2-Butanone (MEK)	ND		0.100	10	02/25/2016 17:44	WG851943
n-Propylbenzene	0.0257		0.0100	10	02/25/2016 17:44	WG851943
(S) Toluene-d8	*102*		*90.0-115*		*02/25/2016 17:44*	WG851943
(S) Dibromofluoromethane	*111*		*79.0-121*		*02/25/2016 17:44*	WG851943
(S) 4-Bromofluorobenzene	*102*		*80.1-120*		*02/25/2016 17:44*	WG851943

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	447		100	5	02/24/2016 14:22	WG851553

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND	B	0.250	1	02/24/2016 12:55	WG851714

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		100	5	02/24/2016 14:22	WG851553

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND		0.0250	1	02/18/2016 14:38	WG849893

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	1.52		0.100	1	02/18/2016 18:42	WG850391
Sulfate	122		50.0	10	02/19/2016 00:43	WG850391

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	02/23/2016 19:14	WG850778
Potassium	1.06		1.00	1	02/20/2016 16:25	WG850775

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	02/25/2016 02:47	WG851352
(S) a,a,a-Trifluorotoluene(FID)	*100*		*62.0-128*		*02/25/2016 02:47*	WG851352

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	02/24/2016 14:40	WG851686
Ethane	ND		0.0130	1	02/24/2016 14:40	WG851686
Ethene	ND		0.0130	1	02/24/2016 14:40	WG851686

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00177		0.00100	1	02/25/2016 18:03	WG851943
Cyclohexane	ND		0.00100	1	02/25/2016 18:03	WG851943
Ethylbenzene	0.00199		0.00100	1	02/25/2016 18:03	WG851943
Isopropylbenzene	ND		0.00100	1	02/25/2016 18:03	WG851943
Methyl Cyclohexane	ND		0.00100	1	02/25/2016 18:03	WG851943
Toluene	ND		0.00500	1	02/25/2016 18:03	WG851943
Xylenes, Total	0.0105		0.00300	1	02/25/2016 18:03	WG851943

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Naphthalene	ND		0.00500	1	02/25/2016 18:03	WG851943
n-Butylbenzene	ND		0.00100	1	02/25/2016 18:03	WG851943
1,2-Dichloroethane	ND		0.00100	1	02/25/2016 18:03	WG851943
1,3,5-Trimethylbenzene	ND		0.00100	1	02/25/2016 18:03	WG851943
1,2,4-Trimethylbenzene	0.00179		0.00100	1	02/25/2016 18:03	WG851943
2-Butanone (MEK)	ND		0.0100	1	02/25/2016 18:03	WG851943
n-Propylbenzene	ND		0.00100	1	02/25/2016 18:03	WG851943
(S) Toluene-d8	*107*		*90.0-115*		*02/25/2016 18:03*	WG851943
(S) Dibromofluoromethane	*112*		*79.0-121*		*02/25/2016 18:03*	WG851943
(S) 4-Bromofluorobenzene	*96.8*		*80.1-120*		*02/25/2016 18:03*	WG851943

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	484		100	5	02/24/2016 12:30	WG851553

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND	B	0.250	1	02/24/2016 12:58	WG851714

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		100	5	02/24/2016 12:30	WG851553

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND		0.0250	1	02/18/2016 14:40	WG849893

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	6.16		1.00	10	02/18/2016 18:57	WG850391
Sulfate	153		50.0	10	02/18/2016 18:57	WG850391

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	02/23/2016 19:22	WG850778
Potassium	ND		1.00	1	02/20/2016 16:28	WG850775

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	02/25/2016 03:18	WG851352
(S) a,a,a-Trifluorotoluene(FID)	*100*		*62.0-128*		*02/25/2016 03:18*	WG851352

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	02/24/2016 14:46	WG851686
Ethane	ND		0.0130	1	02/24/2016 14:46	WG851686
Ethene	ND		0.0130	1	02/24/2016 14:46	WG851686

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00131		0.00100	1	02/25/2016 18:22	WG851943
Cyclohexane	ND		0.00100	1	02/25/2016 18:22	WG851943
Ethylbenzene	0.00110		0.00100	1	02/25/2016 18:22	WG851943
Isopropylbenzene	ND		0.00100	1	02/25/2016 18:22	WG851943
Methyl Cyclohexane	ND		0.00100	1	02/25/2016 18:22	WG851943
Toluene	ND		0.00500	1	02/25/2016 18:22	WG851943
Xylenes, Total	0.00615		0.00300	1	02/25/2016 18:22	WG851943

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Naphthalene	ND		0.00500	1	02/25/2016 18:22	WG851943
n-Butylbenzene	ND		0.00100	1	02/25/2016 18:22	WG851943
1,2-Dichloroethane	ND		0.00100	1	02/25/2016 18:22	WG851943
1,3,5-Trimethylbenzene	ND		0.00100	1	02/25/2016 18:22	WG851943
1,2,4-Trimethylbenzene	ND		0.00100	1	02/25/2016 18:22	WG851943
2-Butanone (MEK)	ND		0.0100	1	02/25/2016 18:22	WG851943
n-Propylbenzene	ND		0.00100	1	02/25/2016 18:22	WG851943
(S) Toluene-d8	*105*		*90.0-115*		*02/25/2016 18:22*	WG851943
(S) Dibromofluoromethane	*110*		*79.0-121*		*02/25/2016 18:22*	WG851943
(S) 4-Bromofluorobenzene	*96.5*		*80.1-120*		*02/25/2016 18:22*	WG851943

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	475		100	5	02/24/2016 12:36	WG851553

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	02/24/2016 23:23	WG851717

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		100	5	02/24/2016 12:36	WG851553

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND		0.0250	1	02/18/2016 14:40	WG849893

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	ND		0.100	1	02/18/2016 19:13	WG850391
Sulfate	ND		5.00	1	02/18/2016 19:13	WG850391

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	02/23/2016 19:25	WG850778
Potassium	1.97		1.00	1	02/20/2016 16:31	WG850775

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	3.09		0.100	1	02/25/2016 03:40	WG851352
(S) a,a,a-Trifluorotoluene(FID)	*96.1*		*62.0-128*		*02/25/2016 03:40*	WG851352

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	0.0215		0.0100	1	02/24/2016 14:49	WG851686
Ethane	ND		0.0130	1	02/24/2016 14:49	WG851686
Ethene	ND		0.0130	1	02/24/2016 14:49	WG851686

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.446		0.0200	20	02/29/2016 13:56	WG852837
Cyclohexane	ND		0.0200	20	02/29/2016 13:56	WG852837
Ethylbenzene	0.222		0.0200	20	02/29/2016 13:56	WG852837
Isopropylbenzene	0.0102		0.00100	1	02/25/2016 18:42	WG851943
Methyl Cyclohexane	0.00440		0.00100	1	02/25/2016 18:42	WG851943
Toluene	0.131		0.00500	1	02/25/2016 18:42	WG851943
Xylenes, Total	0.155		0.00300	1	02/25/2016 18:42	WG851943

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Naphthalene	0.0134		0.00500	1	02/25/2016 18:42	WG851943
n-Butylbenzene	ND		0.00100	1	02/25/2016 18:42	WG851943
1,2-Dichloroethane	ND		0.00100	1	02/25/2016 18:42	WG851943
1,3,5-Trimethylbenzene	0.00545		0.00100	1	02/25/2016 18:42	WG851943
1,2,4-Trimethylbenzene	0.0812		0.00100	1	02/25/2016 18:42	WG851943
2-Butanone (MEK)	ND		0.0100	1	02/25/2016 18:42	WG851943
n-Propylbenzene	0.0204		0.00100	1	02/25/2016 18:42	WG851943
(S) Toluene-d8	*105*		*90.0-115*		*02/25/2016 18:42*	WG851943
(S) Dibromofluoromethane	*104*		*79.0-121*		*02/25/2016 18:42*	WG851943
(S) 4-Bromofluorobenzene	*98.7*		*80.1-120*		*02/25/2016 18:42*	WG851943

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	434		100	5	02/24/2016 12:43	WG851553

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND	B	0.250	1	02/24/2016 13:00	WG851714

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		100	5	02/24/2016 12:43	WG851553

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND		0.0250	1	02/18/2016 14:45	WG849893

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	ND		0.100	1	02/18/2016 19:28	WG850391
Sulfate	13.6		5.00	1	02/18/2016 19:28	WG850391

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	02/23/2016 19:28	WG850778
Potassium	1.80		1.00	1	02/20/2016 16:34	WG850775

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.845		0.100	1	02/25/2016 04:01	WG851352
(S) a,a,a-Trifluorotoluene(FID)	*96.8*		*62.0-128*		*02/25/2016 04:01*	WG851352

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	02/24/2016 14:51	WG851686
Ethane	ND		0.0130	1	02/24/2016 14:51	WG851686
Ethene	ND		0.0130	1	02/24/2016 14:51	WG851686

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.193		0.00100	1	02/25/2016 19:01	WG851943
Cyclohexane	0.0183		0.00100	1	02/25/2016 19:01	WG851943
Ethylbenzene	0.0591		0.00100	1	02/25/2016 19:01	WG851943
Isopropylbenzene	0.00335		0.00100	1	02/25/2016 19:01	WG851943
Methyl Cyclohexane	0.00166		0.00100	1	02/25/2016 19:01	WG851943
Toluene	0.00528		0.00500	1	02/25/2016 19:01	WG851943
Xylenes, Total	0.00605		0.00300	1	02/25/2016 19:01	WG851943

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Naphthalene	0.00785		0.00500	1	02/25/2016 19:01	WG851943
n-Butylbenzene	ND		0.00100	1	02/25/2016 19:01	WG851943
1,2-Dichloroethane	ND		0.00100	1	02/25/2016 19:01	WG851943
1,3,5-Trimethylbenzene	0.00163		0.00100	1	02/25/2016 19:01	WG851943
1,2,4-Trimethylbenzene	0.0121		0.00100	1	02/25/2016 19:01	WG851943
2-Butanone (MEK)	ND		0.0100	1	02/25/2016 19:01	WG851943
n-Propylbenzene	0.00608		0.00100	1	02/25/2016 19:01	WG851943
(S) Toluene-d8	*104*		*90.0-115*		*02/25/2016 19:01*	WG851943
(S) Dibromofluoromethane	*109*		*79.0-121*		*02/25/2016 19:01*	WG851943
(S) 4-Bromofluorobenzene	*101*		*80.1-120*		*02/25/2016 19:01*	WG851943

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	368		20.0	1	02/24/2016 12:49	WG851553

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND	B	0.250	1	02/24/2016 13:03	WG851714

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND		20.0	1	02/24/2016 12:49	WG851553

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND		0.0250	1	02/18/2016 14:46	WG849893

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	0.196		0.100	1	02/18/2016 20:14	WG850391
Sulfate	25.5		5.00	1	02/18/2016 20:14	WG850391

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	02/23/2016 19:31	WG850778
Potassium	2.12		1.00	1	02/20/2016 16:37	WG850775

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	02/25/2016 04:23	WG851352
(S) a,a,a-Trifluorotoluene(FID)	*99.3*		*62.0-128*		*02/25/2016 04:23*	WG851352

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	02/24/2016 14:58	WG851686
Ethane	ND		0.0130	1	02/24/2016 14:58	WG851686
Ethene	ND		0.0130	1	02/24/2016 14:58	WG851686

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00710		0.00100	1	02/25/2016 19:20	WG851943
Cyclohexane	0.00176		0.00100	1	02/25/2016 19:20	WG851943
Ethylbenzene	0.00452		0.00100	1	02/25/2016 19:20	WG851943
Isopropylbenzene	ND		0.00100	1	02/25/2016 19:20	WG851943
Methyl Cyclohexane	ND		0.00100	1	02/25/2016 19:20	WG851943
Toluene	ND		0.00500	1	02/25/2016 19:20	WG851943
Xylenes, Total	ND		0.00300	1	02/25/2016 19:20	WG851943

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Naphthalene	ND		0.00500	1	02/25/2016 19:20	WG851943
n-Butylbenzene	ND		0.00100	1	02/25/2016 19:20	WG851943
1,2-Dichloroethane	ND		0.00100	1	02/25/2016 19:20	WG851943
1,3,5-Trimethylbenzene	ND		0.00100	1	02/25/2016 19:20	WG851943
1,2,4-Trimethylbenzene	ND		0.00100	1	02/25/2016 19:20	WG851943
2-Butanone (MEK)	ND		0.0100	1	02/25/2016 19:20	WG851943
n-Propylbenzene	ND		0.00100	1	02/25/2016 19:20	WG851943
(S) Toluene-d8	*105*		*90.0-115*		*02/25/2016 19:20*	WG851943
(S) Dibromofluoromethane	*110*		*79.0-121*		*02/25/2016 19:20*	WG851943
(S) 4-Bromofluorobenzene	*97.1*		*80.1-120*		*02/25/2016 19:20*	WG851943

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	376		20.0	1	02/24/2016 12:57	WG851553

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND	B	0.250	1	02/24/2016 13:13	WG851714

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	23.3		20.0	1	02/24/2016 12:57	WG851553

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate,Ortho	ND		0.0250	1	02/18/2016 14:47	WG849893

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate	0.275		0.100	1	02/18/2016 21:00	WG850391
Sulfate	24.7		5.00	1	02/18/2016 21:00	WG850391

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	02/23/2016 19:34	WG850778
Potassium	1.91		1.00	1	02/20/2016 16:40	WG850775

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	02/25/2016 04:44	WG851352
(S) a,a,a-Trifluorotoluene(FID)	*99.7*		*62.0-128*		*02/25/2016 04:44*	WG851352

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	02/24/2016 15:02	WG851686
Ethane	ND		0.0130	1	02/24/2016 15:02	WG851686
Ethene	ND		0.0130	1	02/24/2016 15:02	WG851686

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00672		0.00100	1	02/25/2016 19:40	WG851943
Cyclohexane	0.00148		0.00100	1	02/25/2016 19:40	WG851943
Ethylbenzene	0.00371		0.00100	1	02/25/2016 19:40	WG851943
Isopropylbenzene	ND		0.00100	1	02/25/2016 19:40	WG851943
Methyl Cyclohexane	ND		0.00100	1	02/25/2016 19:40	WG851943
Toluene	ND		0.00500	1	02/25/2016 19:40	WG851943
Xylenes, Total	ND		0.00300	1	02/25/2016 19:40	WG851943

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Naphthalene	ND		0.00500	1	02/25/2016 19:40	WG851943
n-Butylbenzene	ND		0.00100	1	02/25/2016 19:40	WG851943
1,2-Dichloroethane	ND		0.00100	1	02/25/2016 19:40	WG851943
1,3,5-Trimethylbenzene	ND		0.00100	1	02/25/2016 19:40	WG851943
1,2,4-Trimethylbenzene	ND		0.00100	1	02/25/2016 19:40	WG851943
2-Butanone (MEK)	ND		0.0100	1	02/25/2016 19:40	WG851943
n-Propylbenzene	ND		0.00100	1	02/25/2016 19:40	WG851943
(S) Toluene-d8	*105*		*90.0-115*		*02/25/2016 19:40*	WG851943
(S) Dibromofluoromethane	*109*		*79.0-121*		*02/25/2016 19:40*	WG851943
(S) 4-Bromofluorobenzene	*98.2*		*80.1-120*		*02/25/2016 19:40*	WG851943

Method Blank (MB)

(MB) 02/24/16 09:46

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Alkalinity	ND		20.0

L818443-02 Original Sample (OS) • Duplicate (DUP)

(OS) 02/24/16 10:21 • (DUP) 02/24/16 10:28

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	397	381	10	4.11		20

L818452-01 Original Sample (OS) • Duplicate (DUP)

(OS) 02/24/16 14:09 • (DUP) 02/24/16 14:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	483	473	5	2.09		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/24/16 11:35 • (LCSD) 02/24/16 13:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Alkalinity	100	102	99.4	102	99.4	85.0-115			2.25	20

L818443-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/24/16 09:56 • (MS) 02/24/16 10:04 • (MSD) 02/24/16 10:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Alkalinity	100	411	1330	1360	91.8	95.1	10	80.0-120			2.41	20

Method Blank (MB)

(MB) 02/24/16 12:25

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Ammonia Nitrogen	ND	B	0.250

L818397-02 Original Sample (OS) • Duplicate (DUP)

(OS) 02/24/16 12:35 • (DUP) 02/24/16 12:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	1.11	1.13	1	2		20

L818452-07 Original Sample (OS) • Duplicate (DUP)

(OS) 02/24/16 13:13 • (DUP) 02/24/16 13:15

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	0.0420	0.0380	1	10	B	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/24/16 12:28 • (LCSD) 02/24/16 12:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	7.50	7.92	6.99	106	93	90-110			13	20

L818400-01 Original Sample (OS) • Matrix Spike (MS)

(OS) 02/24/16 12:40 • (MS) 02/24/16 12:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ammonia Nitrogen	10.0	0.444	10.6	101	1	90-110	

L818453-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/24/16 13:18 • (MS) 02/24/16 13:20 • (MSD) 02/24/16 13:23

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	10.0	0.555	10.8	9.69	102	91	1	90-110			11	20

Method Blank (MB)

(MB) 02/24/16 22:40

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Ammonia Nitrogen	ND		0.250

L818405-02 Original Sample (OS) • Duplicate (DUP)

(OS) 02/24/16 22:53 • (DUP) 02/24/16 22:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	0.758	0.877	1	15		20

L818515-01 Original Sample (OS) • Duplicate (DUP)

(OS) 02/24/16 23:40 • (DUP) 02/24/16 23:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	0.190	0.193	1	0		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/24/16 22:43 • (LCSD) 02/24/16 22:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	7.50	8.00	7.81	107	104	90-110			2	20

L818407-01 Original Sample (OS) • Matrix Spike (MS)

(OS) 02/24/16 22:58 • (MS) 02/24/16 23:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ammonia Nitrogen	10.0	2.19	13.0	108	1	90-110	

L818515-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/24/16 23:45 • (MS) 02/24/16 23:48 • (MSD) 02/24/16 23:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	10.0	0.458	11.7	12.4	113	119	1	90-110	J5	J5	5	20

Method Blank (MB)

(MB) 02/24/16 09:46

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Free Carbon Dioxide	ND		20.0

L818452-01 Original Sample (OS) • Duplicate (DUP)

(OS) 02/24/16 14:09 • (DUP) 02/24/16 14:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Free Carbon Dioxide	ND	ND	5	200		20

Method Blank (MB)

(MB) 02/18/16 14:28

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Phosphate,Ortho	ND		0.0250

L818011-05 Original Sample (OS) • Duplicate (DUP)

(OS) 02/18/16 14:29 • (DUP) 02/18/16 14:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Phosphate,Ortho	0.0270	0.0270	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/18/16 14:28 • (LCSD) 02/18/16 14:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.750	0.775	0.774	103	103	85.0-115			0.000	20

L818011-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/18/16 14:29 • (MS) 02/18/16 14:31 • (MSD) 02/18/16 14:31

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Phosphate,Ortho	0.500	0.0270	0.547	0.546	104	104	1	80.0-120			0.000	20

Method Blank (MB)

(MB) 02/18/16 07:24

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Nitrate	ND		0.100
Sulfate	ND		5.00

L818443-04 Original Sample (OS) • Duplicate (DUP)

(OS) 02/18/16 14:50 • (DUP) 02/18/16 16:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	6.54	6.56	1	0		15

L818452-07 Original Sample (OS) • Duplicate (DUP)

(OS) 02/18/16 21:00 • (DUP) 02/18/16 21:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	0.275	0.275	1	0		15
Sulfate	24.7	24.6	1	0		15

L818443-04 Original Sample (OS) • Duplicate (DUP)

(OS) 02/18/16 23:41 • (DUP) 02/18/16 23:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	141	142	10	0		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/18/16 07:40 • (LCSD) 02/18/16 07:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Nitrate	8.00	8.12	8.13	101	102	80-120			0	15
Sulfate	40.0	38.9	39.1	97	98	80-120			0	15

L818443-07 Original Sample (OS) • Matrix Spike (MS)

(OS) 02/18/16 15:37 • (MS) 02/18/16 15:52

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate	5.00	10.6	60.1	99	10	80-120	
Sulfate	50.0	168	674	101	10	80-120	

L818452-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/18/16 20:14 • (MS) 02/18/16 20:30 • (MSD) 02/18/16 20:45

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate	5.00	0.196	5.10	5.15	98	99	1	80-120			1	15
Sulfate	50.0	25.5	73.2	73.7	95	96	1	80-120			1	15

Method Blank (MB)

(MB) 02/20/16 15:03

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Potassium	ND		1.00

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/20/16 15:06 • (LCSD) 02/20/16 15:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Potassium	10.0	10.3	10.2	103	102	80-120			1	20

L818259-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/20/16 15:12 • (MS) 02/20/16 15:18 • (MSD) 02/20/16 15:21

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Potassium	10.0	0.0317	10.5	10.3	104	103	1	75-125			2	20

Method Blank (MB)

(MB) 02/23/16 18:48

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Iron,Dissolved	ND		0.100

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/23/16 18:50 • (LCSD) 02/23/16 18:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Iron,Dissolved	1.00	1.04	1.04	104	104	80-120			0	20

L818394-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/23/16 18:56 • (MS) 02/23/16 19:02 • (MSD) 02/23/16 19:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Iron,Dissolved	1.00	0.0170	1.03	1.02	102	100	1	75-125			1	20

Method Blank (MB)

(MB) 02/25/16 00:10

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
TPH (GC/FID) Low Fraction	ND		0.100
(S) a,a,a-Trifluorotoluene(FID)	*101*		*62.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/24/16 23:06 • (LCSD) 02/24/16 23:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.57	5.60	101	102	67.0-132			0.540	20
(S) a,a,a-Trifluorotoluene(FID)				*102*	*103*	*62.0-128*				

L818852-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/25/16 02:04 • (MS) 02/25/16 01:00 • (MSD) 02/25/16 01:21

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	0.542	2.87	2.69	42.4	39.1	1	50.0-143	J6	J6	6.53	20
(S) a,a,a-Trifluorotoluene(FID)					*98.0*	*98.3*		*62.0-128*				

Method Blank (MB)

(MB) 02/24/16 14:27

Analyte	MB Result ppm	MB Qualifier	MB RDL ppm
Methane	ND		0.0100
Ethane	ND		0.0130
Ethene	ND		0.0130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/24/16 16:41 • (LCSD) 02/24/16 16:45

Analyte	Spike Amount ppm	LCS Result ppm	LCSD Result ppm	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Methane	0.0678	0.0628	0.0622	92.6	91.8	85.0-115			0.890	20
Ethane	0.129	0.115	0.115	88.8	89.1	85.0-115			0.240	20
Ethene	0.127	0.112	0.112	88.5	88.1	85.0-115			0.450	20

Method Blank (MB)

(MB) 02/25/16 08:23

Analyte	MB Result ppm	MB Qualifier	MB RDL ppm
Methane	ND		0.0100

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/25/16 09:00 • (LCSD) 02/25/16 09:04

Analyte	Spike Amount ppm	LCS Result ppm	LCSD Result ppm	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Methane	0.0678	0.0637	0.0602	94.0	88.7	85.0-115			5.74	20

Method Blank (MB)

(MB) 02/25/16 14:17

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Benzene	ND		0.00100
n-Butylbenzene	ND		0.00100
Cyclohexane	ND		0.00100
1,2-Dichloroethane	ND		0.00100
Ethylbenzene	ND		0.00100
Isopropylbenzene	ND		0.00100
2-Butanone (MEK)	ND		0.0100
Methyl Cyclohexane	ND		0.00100
Naphthalene	ND		0.00500
n-Propylbenzene	ND		0.00100
Toluene	ND		0.00500
1,2,4-Trimethylbenzene	ND		0.00100
1,3,5-Trimethylbenzene	ND		0.00100
Xylenes, Total	ND		0.00300
(S) Toluene-d8	*107*		*90.0-115*
(S) Dibromofluoromethane	*110*		*79.0-121*
(S) 4-Bromofluorobenzene	*102*		*80.1-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/25/16 12:40 • (LCSD) 02/25/16 12:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0277	0.0265	111	106	73.0-122			4.39	20
n-Butylbenzene	0.0250	0.0259	0.0264	104	106	75.9-134			1.79	20
1,2-Dichloroethane	0.0250	0.0285	0.0275	114	110	65.3-126			3.43	20
Ethylbenzene	0.0250	0.0240	0.0235	95.9	94.0	80.9-121			2.00	20
Isopropylbenzene	0.0250	0.0237	0.0236	94.9	94.5	81.6-124			0.440	20
2-Butanone (MEK)	0.125	0.0914	0.0845	73.2	67.6	46.4-155			7.87	20
Naphthalene	0.0250	0.0225	0.0233	90.0	93.1	69.7-134			3.32	20
n-Propylbenzene	0.0250	0.0243	0.0244	97.2	97.6	81.9-122			0.440	20
Toluene	0.0250	0.0242	0.0242	96.9	96.7	77.9-116			0.150	20
1,2,4-Trimethylbenzene	0.0250	0.0232	0.0231	92.8	92.6	79.0-122			0.190	20
1,3,5-Trimethylbenzene	0.0250	0.0234	0.0231	93.6	92.4	81.0-123			1.23	20
Xylenes, Total	0.0750	0.0711	0.0710	94.8	94.6	79.2-122			0.120	20
(S) Toluene-d8				*105*	*105*	*90.0-115*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/25/16 12:40 • (LCSD) 02/25/16 12:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
(S) Dibromofluoromethane				*111*	*109*	*79.0-121*				
(S) 4-Bromofluorobenzene				*99.0*	*98.6*	*80.1-120*				

L818447-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 02/25/16 17:24 • (MS) 02/25/16 19:59 • (MSD) 02/25/16 20:18

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.00169	0.0260	0.0260	97.3	97.2	1	58.6-133			0.150	20
n-Butylbenzene	0.0250	ND	0.0258	0.0261	103	105	1	64.8-145			1.19	20
1,2-Dichloroethane	0.0250	ND	0.0248	0.0247	99.1	98.8	1	60.7-132			0.330	20
Ethylbenzene	0.0250	0.00286	0.0253	0.0251	89.9	88.8	1	62.7-136			1.09	20
Isopropylbenzene	0.0250	0.00137	0.0248	0.0243	93.5	91.7	1	67.4-136			1.84	20
2-Butanone (MEK)	0.125	ND	0.0960	0.0977	76.8	78.1	1	45.0-156			1.75	20.8
Naphthalene	0.0250	0.000241	0.0215	0.0230	85.1	90.8	1	61.8-143			6.51	20
n-Propylbenzene	0.0250	0.000242	0.0241	0.0239	95.4	94.5	1	63.2-139			1.00	20
Toluene	0.0250	0.000352	0.0225	0.0224	88.7	88.2	1	67.8-124			0.520	20
1,2,4-Trimethylbenzene	0.0250	0.00115	0.0231	0.0231	87.9	88.0	1	60.5-137			0.0600	20
1,3,5-Trimethylbenzene	0.0250	ND	0.0220	0.0221	88.1	88.4	1	67.9-134			0.330	20
Xylenes, Total	0.0750	0.00166	0.0682	0.0678	88.7	88.2	1	65.6-133			0.610	20
(S) Toluene-d8					*104*	*104*		*90.0-115*				
(S) Dibromofluoromethane					*113*	*113*		*79.0-121*				
(S) 4-Bromofluorobenzene					*97.1*	*97.7*		*80.1-120*				

Method Blank (MB)

(MB) 02/29/16 07:09

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Benzene	ND		0.00100
Cyclohexane	ND		0.00100
Ethylbenzene	ND		0.00100

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 02/29/16 05:28 • (LCSD) 02/29/16 05:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0261	0.0257	104	103	73.0-122			1.56	20
Ethylbenzene	0.0250	0.0260	0.0250	104	100	80.9-121			3.80	20

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
B	The same analyte is found in the associated blank.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660
Alaska	UST-080
Arizona	AZ0612
Arkansas	88-0469
California	01157CA
Colorado	TN00003
Conneticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1]	90010
Kentucky [2]	16
Louisiana	AI30792
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086
Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico	TN00003
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [2]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	221
South Carolina	84004
South Dakota	n/a
Tennessee [1 4]	2006
Texas	T 104704245-07-TX
Texas [5]	LAB0152
Utah	6157585858
Vermont	VT2006
Virginia	109
Washington	C1915
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

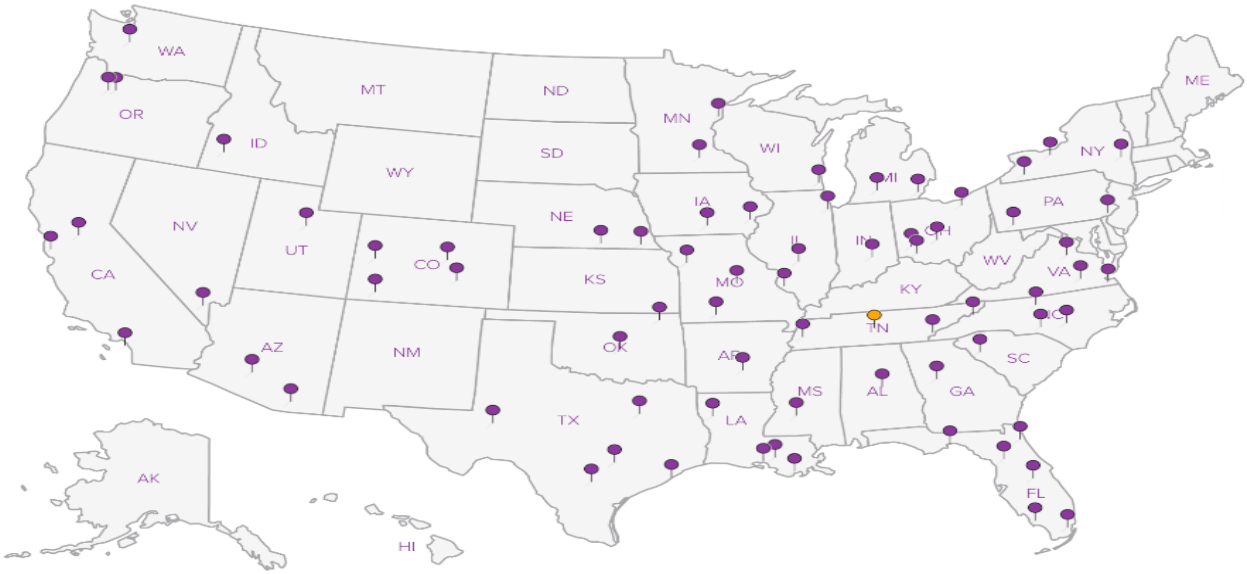
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 [5]	1461.02
Canada	1461.01
EPA–Crypto	TN00003
AIHA	100789
DOD	1461.01
USDA	S-67674

[1.] Drinking Water [2.] Underground Storage Tanks [3.] Aquatic Toxicity [4.] Chemical/Microbiological [5.] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Apex Companies, LLC- Portland, OR

3015 SW First Avenue
Portland, OR 97201-4707

Billing Information:
Accounts Payable- Cindi Joy Staller
3015 SW First Avenue
Portland, OR 97201-4707

Report to: Samuel Jackson

Email To: SJackson@apexcos.com; TAlfred@apexcos.com; TCochran@apexcos.com

Project Description: Andover Release Site - Quail Crossing

City/State Collected:

Phone: 503-924-4704
Fax: 503-943-6357

Client Project # E3CE-0065

Lab Project # ASHCREPOR-NUANDQUAIL

Collected by (print): Ted Alfred

Site/Facility ID # ANDOVER QUAIL CROSSING

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X__Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

ESC LABS SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L818452
K001

Acctnum: ASHCREPOR
Template: T107890
Prelogin: P541461
TSR: 358 - Jarred Willis
PB: 2-9

Shipped Via: FedEx Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Diss Metals- Fe 500mlHDPE-NoPres	Methane RSK175 40mlAmb HCl	NH3 125mlHDPE-H2SO4 (<2)	NITRATE* / ALK / CO2 250mlHDPE-NoPres	Sulfate / Ortho Phos 250mlHDPE-NoPres	Total Metals- K 500mlHDPE-HNO3 (<2)					Rem./Contaminant	Sample # (lab only)
MW-1	Grab	GW		2-17-16	1337	7	X	X	X	X	X	X						-01
MW-4		GW			1520	7	X	X	X	X	X	X						-02
MW-5		GW			1728	7	X	X	X	X	X	X						-03
MW-17		GW			1422	7	X	X	X	X	X	X						-04
MW-18		GW			1133	7	X	X	X	X	X	X						-05
MW-19		GW			1217	7	X	X	X	X	X	X						-06
~~SVE-4~~	~~X~~	~~X~~		~~X~~	~~X~~	~~3~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~						
DUP		GW		2-17-16		7	X	X	X	X	X	X						-07
						0												

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

COC 3611 7588 7577

Remarks:NITRATE HAS 48HR HOLD TIME

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ____	Condition: (lab use only) GOOD
	2-17-16	1845			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.2 °C Bottles Received: 49+2TB	OK
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2.18.16 Time: 900	COC Seal Intact: ___Y ___N ✓NA; pH Checked: <2; NCF:

Andy Vann

From: Jarred Willis
Sent: Monday, February 22, 2016 11:22 AM
To: Login
Subject: L818452 - ASHCREPOR - add GRO

Please add GRO to L818452-01 through -07 from *ASCHREPOR*. Use one of the vials from the RSK175 analysis for the GRO.

Add to existing L#.

Thanks,
Jarred

-----Original Message-----
From: Samuel Jackson [mailto:SJackson@apexcos.com]
Sent: Monday, February 22, 2016 10:10 AM
To: Jarred Willis
Subject: RE: ESC Lab Sciences Login for E3CE-0065 Andover Release Site - 4Q2015 Quail Crossing L818452

Jarred,

Good to talk with you this morning. Per our conversation, please add GRO by Method 8015 for these samples. Thanks,
Sam

Samuel Jackson, P.E.
Associate
Apex Companies, LLC

O) 503-924-4704 x1924 M) 503-278-9815

Appendix C

ORC Advanced® Specifications and Design Report

PRODUCT APPLICATION INSTRUCTIONS

Introduction

The features and benefits of controlled-release, ORC Advanced are posted in other areas (product brochure, www.regenesis.com, and MSDS). From the field application standpoint, the benefits of ORC Advanced® Pellets (ORC-A Pellets) are in ease of handling and Health & Safety. Pelletized ORC Advanced is much easier to use because it eliminates the need for water and equipment associated with spray application and Health & Safety are dramatically improved by elimination of ORC Advanced dust and associated respiration issues. The later feature makes the material much easier to handle in open-air application approaches such as excavations and trenches.

Design Considerations

The new configuration of this material does not change the quantity estimated in the design process. The materials' available oxygen is up to 17% by weight and its physical attributes are designed to be easier to handle through the use of a pelletized version of the product and the elimination of the dust associated with dry application of ORC Advanced powder.

Application Methods

The pelletized form allows the user to simply and easily apply the ORC Advanced in a dry format using existing on-site operations or by manual methods. Some typical methods include:

- Application via the excavator bucket:
  - Simply insert a pre-determined quantity (unit - bucket or bag) of ORC-A Pellets into an excavator bucket and use the excavator to mix and distribute the ORC-A Pellets into previously backfilled soil
- Application via manual or mechanical broadcasting/spreaders:
  - Manually or mechanically broadcast/spread pelletized ORC-A Pellets into the excavation at a pre-determined rate per unit of backfill material or per soil lift (as the soil is being backfilled)
  - Follow the manual broadcast step with mechanically mixing the ORC-A Pellets directly into the backfill using the excavator equipment

Example Estimates:

Using an example unit weight of ORC-A Pellets (40 lb. bag)

For a 0.1% weight of ORC-Advanced to backfill:

- Each 100,000 lbs. of soil
- Apply 100 lbs. (4 buckets) ORC-A Pellets

PRODUCT APPLICATION INSTRUCTIONS

For a 0.2% weight of ORC-Advanced to backfill:

- Each 100,000 lbs. of soil
- Apply 200 lbs. (approx. 5 bags) ORC-A Pellets

Example Estimates (SI Units):

Using an example unit weight of ORC-A Pellets (18.1 kg bag)

For a 0.1% weight of ORC-A Pellets to backfill:

- Each 45 metric tons of soil
- Apply 45 kg (approx. 3 bags) ORC-A Pellets

For a 0.2% weight of ORC-A Pellets to backfill:

- Each 90 metric tons of soil
- Apply 90 kg (approx. 5 bags) ORC-A Pellets

ORC Advanced® Pellets Technical Specification

ORC Advanced Pellets are a dust-minimizing, dry application, pelletized form of the widely-used ORC Advanced controlled-release oxygen compound.

They are designed specifically for the treatment of dissolved-phase petroleum hydrocarbons through direct application into excavations, petroleum storage tank pits, trenches and backfill.

Oxygen is released from ORC Advanced for a period of 9 to 12 months *in situ*.

Example of ORC Advanced Pellets

$$CaO(OH)_2 + H_2O \rightarrow \tfrac{1}{2} O_2 + Ca(OH)_2 + H_2O$$

ORC Advanced is a formulation of calcium oxyhydroxide which, upon hydration, releases oxygen and forms simple calcium hydroxide and water.

For a list of treatable contaminants with the use of ORC Advanced, view the Range of Treatable Contaminants Guide.

Chemical Composition

- Calcium Oxyhydroxide
- Calcium Hydroxide
- Monopotassium Phosphate
- Ammonium Phosphate Dibasic

Properties

- Pellet size: 3-10 mm
- Contains micro-nutrients such as nitrogen, phosphorous, and potassium (N,P,K) which can be beneficial to aerobic biodegradation processes

OXYGEN RELEASE COMPOUND

ORC Advanced® Pellets Technical Specification

Storage and Handling Guidelines

Storage
Store in a cool, dry place out of direct sunlight
Store in original tightly closed container
Store in a well-ventilated place
Do not store near combustible materials
Store away from incompatible materials
Provide appropriate exhaust ventilation in places where dust is formed

Handling
Minimize dust generation and accumulation
Keep away from heat
Routine housekeeping should be instituted to ensure that dust does not accumulate on surfaces
Observe good industrial hygiene practices
Take precaution to avoid mixing with combustibles
Keep away from clothing and other combustible materials
Avoid contact with water and moisture
Avoid contact with eyes, skin, and clothing
Avoid prolonged exposure
Wear appropriate personal protective equipment

Applications

- *In situ* or *ex situ* out of the bag
- Direct application into open excavations, petroleum storage tank pits and trenches
- Direct application to contaminated backfill or contaminated soils
- *Ex situ* biopile applications (requires a source of hydration)

Health and Safety

Wash thoroughly after handling. Wear protective gloves, eye protection, and face protection.
Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: ORC Advanced SDS.

REGENESIS

www.regenesis.com
1011 Calle Sombra, San Clemente CA 92673
949.366.8000

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REGENESIS

ORC ADVANCED
OXYGEN RELEASE COMPOUND

Design Summary Output

Regenesis Technical Support: USA (949) 366-8000

www.regenesis.com

Date:	5/12/2016
Site Name:	NuStar Andover Quail Crossing
Location:	Dissolved Plume
Consultant (Firm/Name):	Apex Companies, LLC

ORC Advanced Grid Design Specifications

NuStar Andover Quail Crossing

Dissolved Plume

Design Specifications	**Quantity**	**Units**
Treatment Area Size	6,000	ft^2
Depth to Top Treatment Interval	25	ft
Depth to Bottom Treatment Interval	40	ft
Vertical Treatment Thickness	15	ft
Number of Injection Points	38	---
Injection Point Spacing (within rows)	15	ft on center
Injection Point Spacing (between rows)	10	ft on center
Total Linear Drilling	1,520	ft
Product Quantities	**Quantity**	**Units**
ORC Advanced per Foot	13.4	lbs
ORC Advanced per Point	202	lbs
Total ORC Advanced	7,659	lbs
Field Mixing/Injection Ratios		**Units**
ORC Advanced Slurry %	20%	%
Mixing Water per Foot	6.4	gallons
Mixing Water per Point	97	gallons
Total Water for Mixing	3673	gallons
Injection Slurry (Water + ORC-A) per Foot	7.0	gallons
Injection Slurry (Water + ORC-A) per Point	106	gallons
Total Injection Slurry (all Points)	4018	gallons

REGENESIS

ORC ADVANCED OXYGEN RELEASE COMPOUND

Design Summary Output

SITE DATA - INPUT PARAMETERS		
Hydraulic Parameters	**Value**	**Units**
Soil Type (sand, silt, gravel, clay, etc.)	shale	---
Porosity	0.33	cm^3/cm^3
Effective Porosity	0.2	cm^3/cm^3
Hydraulic Conductivity	25	ft/day
Hydraulic Gradient	0.005	ft/ft
Seepage Velocity	228.3	ft/yr
Saturated Soil Concentrations (sorbed mass)	**Concentration**	**Units**
Benzene	1.0	mg/kg
Toluene	1.6	mg/kg
Ethylbenzene	0.1	mg/kg
Xylenes	1.5	mg/kg
MTBE	0.0	mg/kg
cis-1,2-DCE	0.0	mg/kg
Vinyl Chloride	0.0	mg/kg
Naphthalenes	0.1	mg/kg
TMBs	0.2	mg/kg
Groundwater Concentrations (dissolved mass)	**Concentration**	**Units**
Benzene	1.0	mg/L
Toluene	3.0	mg/L
Ethylbenzene	0.2	mg/L
Xylenes	2.5	mg/L
MTBE	0.0	mg/L
cis-1,2-DCE	0.0	mg/L
Vinyl Chloride	0.0	mg/L
Naphthalenes	0.0	mg/L
TMBs	0.1	mg/L
Reduced metals: Fe+2 and Mn+2	10.0	mg/L
Alternative Measures of Oxidant Demand	**Concentration**	**Units**
Total Petroleum Hydrocarbons (see pull-down for Ko	18.5	mg/L
Dissolved Phase Contaminant Mass	***102.6***	***lbs***

Additional Assumptions/Qualifications

1) Data Used for Modeling - GW - MW-1 (sample #)

2)

3)

REGENESIS
Technology-Based Solutions for the Environment

SAFETY DATA SHEET

1. Identification

Product identifier **Oxygen Release Compound Advanced (ORC Advanced®)**

Other means of identification None.

Recommended use Soil and Groundwater Remediation.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company Name Regenesis

Address 1011 Calle Sombra
San Clemente, CA 92673

Telephone 949-366-8000

E-mail CustomerService@regenesis.com

Emergency phone number CHEMTREC® at 1-800-424-9300 (International)

2. Hazard(s) identification

Physical hazards	Oxidizing solids	Category 2
Health hazards	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement May intensify fire; oxidizer. Causes skin irritation. Causes serious eye damage.

Precautionary statement

Prevention Keep away from heat. Keep/Store away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Wash thoroughly after handling. Wear protective gloves/eye protection/face protection.

Response If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish.

Storage Store away from incompatible materials.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Calcium hydroxide oxide	682334-66-3	≥85
Calcium hydroxide	1305-62-0	≤15
Dipotassium Phosphate	7758-11-4	<5
Monopotassium Phosphate	7778-77-0	<5

Composition comments All concentrations are in percent by weight unless otherwise indicated.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye contact	Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Ingestion	Never give anything by mouth to a victim who is unconscious or is having convulsions. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Dusts may irritate the respiratory tract, skin and eyes. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Take off all contaminated clothing immediately. Contact with combustible material may cause fire. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water spray, fog (flooding amounts). Foam. Dry chemical powder. Carbon dioxide (CO_2).
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Greatly increases the burning rate of combustible materials. Containers may explode when heated. During fire, gases hazardous to health may be formed. Combustion products may include: metal oxides.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Use water spray to cool unopened containers.
Specific methods	Cool containers exposed to flames with water until well after the fire is out.
General fire hazards	May intensify fire; oxidizer. Contact with combustible material may cause fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep away from clothing and other combustible materials. Wear appropriate protective equipment and clothing during clean-up. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Collect dust using a vacuum cleaner equipped with HEPA filter. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Ventilate the contaminated area. Stop the flow of material, if this is without risk. Absorb in vermiculite, dry sand or earth and place into containers. Large Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Shovel the material into waste container. Minimize dust generation and accumulation. Avoid the generation of dusts during clean-up. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. Place all material into loosely covered plastic containers for later disposal. For waste disposal, see section 13 of the SDS. Wear appropriate protective equipment and clothing during clean-up.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Keep away from heat. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Avoid contact with water and moisture. Do not get this material in contact with eyes. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Keep away from heat. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Do not store near combustible materials. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Calcium hydroxide (CAS 1305-62-0)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. ACGIH Threshold Limit Values

Components	Type	Value
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m3

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Use dust-tight, unvented chemical safety goggles when there is potential for eye contact.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. Frequent change is advisable. Recommended gloves include rubber, neoprene, nitrile or viton.

Other

Wear appropriate chemical resistant clothing.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Recommended use: Wear respirator with dust filter.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state

Solid.

Form

Powder.

Color

White to pale yellow.

Odor	Odorless.
Odor threshold	Not available.
pH	12.5 (3% suspension/water)
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Oxidizer.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Slightly soluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	527 °F (275 °C)
Viscosity	Not available.
Other information	
Bulk density	0.5 - 0.9 g/ml
Explosive limit	Non-explosive.

10. Stability and reactivity

Reactivity	Greatly increases the burning rate of combustible materials.
Chemical stability	Decomposes on heating. Product may be unstable at temperatures above: 275°C/527°F.
Possibility of hazardous reactions	Reacts slowly with water.
Conditions to avoid	Heat. Moisture. Avoid temperatures exceeding the decomposition temperature. Contact with incompatible materials.
Incompatible materials	Acids. Bases. Salts of heavy metals. Reducing agents. Combustible material.
Hazardous decomposition products	Oxygen. Hydrogen peroxide (H_2O_2). Steam. Heat.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Dust may irritate respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	Ingestion may cause irritation and malaise.
Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Dusts may irritate the respiratory tract, skin and eyes. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity

Components	Species	Test Results
Calcium hydroxide (CAS 1305-62-0)		
Acute		
Oral		
LD50	Rat	7340 mg/kg

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Due to the physical form of the product it is not expected to be an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components		Species	Test Results
Calcium hydroxide (CAS 1305-62-0)			
Aquatic			
Fish	LC50	Zambezi barbel (Clarias gariepinus)	33.8844 mg/l, 96 hours

Persistence and degradability Decomposes in the presence of water. The product contains inorganic compounds which are not biodegradable.

Bioaccumulative potential The product does not contain any substances expected to be bioaccumulating.

Mobility in soil This substance has very low solubility in water and low mobility in the environment.

Other adverse effects None known.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number UN1479

UN proper shipping name Oxidizing solid, n.o.s. (Calcium hydroxide oxide)

Transport hazard class(es)	
Class	5.1
Subsidiary risk	-
Label(s)	5.1
Packing group	II
Environmental hazards	
Marine pollutant	No
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	62, IB8, IP2, IP4, T3, TP33
Packaging exceptions	152
Packaging non bulk	212
Packaging bulk	240

IATA

UN number	UN1479
UN proper shipping name	Oxidizing solid, n.o.s. (Calcium hydroxide oxide)
Transport hazard class(es)	
Class	5.1
Subsidiary risk	-
Packing group	II
Environmental hazards	No
ERG Code	5L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1479
UN proper shipping name	OXIDIZING SOLID, N.O.S. (Calcium hydroxide oxide)
Transport hazard class(es)	
Class	5.1
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No
EmS	F-A, S-Q
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - Yes

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical	Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Calcium hydroxide (CAS 1305-62-0)

US. New Jersey Worker and Community Right-to-Know Act

Calcium hydroxide (CAS 1305-62-0)
Calcium hydroxide oxide (CAS 682334-66-3)

US. Pennsylvania Worker and Community Right-to-Know Law

Calcium hydroxide (CAS 1305-62-0)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 02-April-2015

Revision date -

Version # 01

Further information HMIS® is a registered trade and service mark of the American Coatings Association (ACA).

HMIS® ratings Health: 3
Flammability: 0
Physical hazard: 2

NFPA ratings

Disclaimer

Regenesis cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

May 17, 2016

Daniel Newman
Kansas Department of Health and Environment
Bureau of Environmental Remediation, Site Restoration Unit
Charles Curtis State Office Building
1000 SW Jackson Street, Suite 410
Topeka, Kansas 66612-1367

Re: Response to KDHE Comments
Revised Fourth Quarter 2015 Groundwater Monitoring Report, NuStar Pipeline Release Site
Quail Crossing Neighborhood
Consent Agreement and Final Order 12-E-36 BER
Andover, Kansas
1641-10

Dear Mr. Newman:

On behalf of NuStar Pipeline Operating Partnership L.P. (NuStar), Apex Companies, LLC (Apex) prepared this letter in response to the Kansas Department of Health and Environment (KDHE) comments provided in a May 5, 2016 letter to NuStar. The comments pertained to the *Groundwater Pilot Test Report and Expanded Pilot Test Work Plan, Quail Crossing Neighborhood* (the Report), prepared by Apex and submitted to KDHE on April 15, 2016. The Report was prepared as part of a continuing response to the release of gasoline from a pipeline in the Quail Crossing Neighborhood (the Neighborhood) in Andover, Kansas. The Report was revised in response to KDHE comments as described herein, and is transmitted with this letter. KDHE comments are presented below in *Italics*, followed by NuStar's response to each comment.

1. *Section 5.2, MNA parameters: The second bullet point states carbon dioxide concentrations in source areas MW-1 and MW-17 are elevated compared to other wells. For clarification purposes, please identify the wells being compared to MW-1 and MW-17.*

   Response: The second bullet point in Section 5.2 was revised as presented below:

   Aerobic microbial degradation of petroleum hydrocarbons is a process during which carbon dioxide is produced. In general, the carbon dioxide concentrations in source area wells MW-1 and MW-17 are elevated compared to wells MW-4, MW-5, MW-19 and MW-20, which suggests higher rates of aerobic microbial activity in groundwater near wells MW-1 and MW-17.

2. *Section 6.0, Proposed Pilot Test Expansion: The paragraph states "approximately 1,400 pounds of ORC Advanced®) were placed on the floor of the excavations. A layer of crushed rock was placed with the ORC Advanced® pellets to maintain placement of the pellets." Additionally, approximately 300 gallons of water was added to the ORC after placement. Please revise accordingly.*

Response: Section 6.0 was revised as presented below:

As noted in the *Soil Excavation Report* (Apex, 2015), approximately 1,400 pounds of ORC Advanced® were placed on the floor of the excavations. A layer of crushed rock was placed with the ORC Advanced® pellets to maintain placement of the pellets at the bottom of the excavation and in contact with the fluctuating groundwater table; and approximately 300 gallons of water were added to the ORC after placement. The excavations were then backfilled with flowable controlled-density fill from the bottom of the excavation to approximately 6 feet bgs.

3. *Section 6.1.3, ORC advanced Introduction: The second paragraph states ORC Advanced® will be introduced from 40 feet below ground surface (bgs) to 25 feet bgs. Section 6.0, third paragraph indicates a range of 40 feet bgs to 15 feet bgs. As we discussed on May 3, 2016, please revise to indicate that ORC Advanced® will be placed approximately 25 feet bgs to 40 feet bgs.*

   Response: Section 6.1.3 was revised as presented below:

   For the typical injection point, the ORC Advanced® pellets and sand mixture will be introduced from ten feet below to five feet above the approximate groundwater elevation to accommodate seasonal groundwater fluctuations at the Site. The groundwater is anticipated to be encountered at depths ranging from approximately 20 to 30 feet bgs. Approximately 196 pounds of ORC Advanced® and 100 pounds of sand will be introduced per boring; the total mass of ORC Advanced® introduced will be 7,600 pounds. Once in the aquifer, ORC Advanced® is expected to last approximately nine months.

4. *Section 6.3, Groundwater Sampling and Analytical Program – Baseline Conditions: Please indicate, for clarification purposes, that all work will be performed utilizing the recently approved KDHE Total Petroleum Hydrocarbon (TPH) policy, rather than the previously used analytical methods.*

   Response: Section 6.3 was revised as presented below:

   The mid-range hydrocarbon (MRH), low-range hydrocarbon (LRH) and volatile organic compounds (VOC) analyses are intended to evaluate constituent concentrations in groundwater prior to the implementation of the expanded pilot test. The MRH and LRH analyses are consistent with the recently adopted KDHE TPH Policy #BER-041 (KDHE, 2015); those analyses replace the previously used analytical method for gasoline-range organics (GRO), which was used for the groundwater pilot test during the period March 2015 through February 2016.

5. *General Comment: As we discussed on May 5, 2016, please include the manufacturer suggested recommendations for application of the ORC Advanced® compound. Please also clarify the diameter of the borings that will be used for the application of the ORC Advanced® compound.*

   Response: The Report was revised to indicate that 6-inch diameter borings will be advanced to introduce ORC Advanced®. Appendix C includes a design summary and application recommendations prepared by Regenesis (the *manufacturer of ORC Advanced®*).

Please do not hesitate to contact me at sjackson@apexcos.com or 503-924-4704 x1924 or Renee Robinson at renee.robinson@nustarenergy.com or 210-918-2975 with questions regarding these responses.

Sincerely,

Sam Jackson
Associate Engineer

ENCLOSURE

Revised Groundwater Pilot Test Report and Expanded Pilot Test Work Plan

cc: Renee Robinson, NuStar Energy L.P. (electronic deliverable)