National Aeronautics and
Space Administration

Ames Research Center
Moffett Field, CA 94035-1000

April 12, 2016

Reply to Attn of: JQ: 204-15

Ms. Alana Lee
U.S. Environmental Protection Agency
Region 9, Superfund Division
75 Hawthorne Street, SFD-7-3
San Francisco, CA 94105

SUBJECT: 2015 Annual Progress Report
NASA Ames Groundwater Area of Responsibility to
MEW Regional Plume

Dear Ms. Lee:

NASA Ames Research Center's 2015 Annual Progress Report is enclosed. The report presents operational and performance information for NASA Ames' groundwater treatment system and evaluates current groundwater quality within NASA Ames' area of responsibility to the MEW Regional Plume.

Please contact me at 650-604-1254 or kimberly.s.finch@nasa.gov with any questions.

Sincerely,

Kimberly Finch, P.E.
Restoration Program Manager
Environmental Management Division

Enclosure

cc: MEW Distribution
204-15\D. Chuck
T20G-4\B. Reddig

2015 Annual Progress Report

NASA Ames Groundwater Treatment System

Regional Groundwater Remediation Program

National Aeronautics and Space Administration
Ames Research Center
Moffett Field, CA

April 2016

2015 Annual Progress Report

NASA Ames Groundwater Treatment System

Regional Groundwater Remediation Program

Prepared for:

National Aeronautics and Space Administration
Ames Research Center
Moffett Field, CA

April 2016

Prepared by:

Earth Resources Technology, Inc.
NASA Ames Research Center
Moffett Field, California 94035-1000

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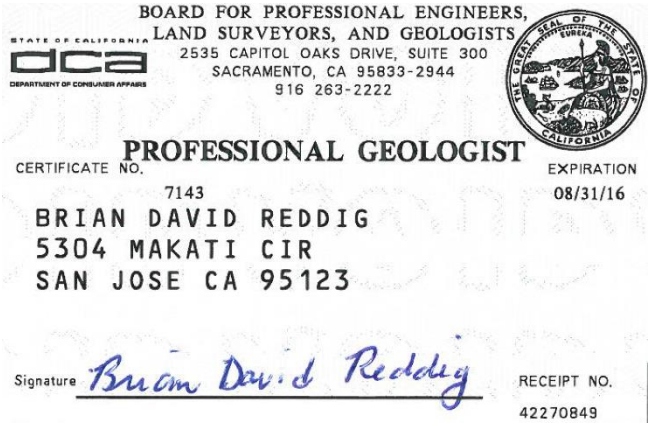
Brian David Reddig, PG
Certificate No. 7143

Date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2535 CAPITOL OAKS DRIVE, SUITE 300
SACRAMENTO, CA 95833-2944
916 263-2222

PROFESSIONAL GEOLOGIST

CERTIFICATE NO. 7143

EXPIRATION 08/31/16

BRIAN DAVID REDDIG
5304 MAKATI CIR
SAN JOSE CA 95123

Signature Brian David Reddig

RECEIPT NO. 42270849

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List of Acronyms

<	less than
AOI	Area of Investigation
bgs	below ground surface
COCs	chemicals of concern
CPT	cone penetrometer testing
CY	calendar year
DCA	dichloroethane
DCE	dichloroethene
EKI	Erler & Kalinowski, Inc
EPA	Environmental Protection Agency
ERT	Earth Resources Technology, Inc.
ft.	feet
GAC	granular activated carbon
gpm	gallons per minute
GWTS	Groundwater Treatment System
HRS	Hazardous Ranking System
LSI	Listing Site Inspection
MCL	maximum contaminant level
MEW	Middlefield-Ellis-Whisman
MSL	mean seal level
NASA	National Aeronautics and Space Administration
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
RGRP	Regional Groundwater Remediation Program
RWQCB	Regional Water Quality Control Board
TCE	trichloroethene
µg/L	micrograms per liter
VOC	volatile organic compound
VTOL	vertical takeoff and landing
WATS	West-Side Aquifer Treatment System

1 Introduction

On behalf of the National Aeronautics and Space Administration (NASA) Ames Research Center (Ames), Earth Resources Technology, Inc. (ERT) has prepared this 2015 Annual Progress Report for the NASA Ames Groundwater Treatment System (GWTS) associated with the Regional Groundwater Remediation Program (RGRP).

In calendar year 2015 (CY2015), the Environmental Protection Agency (EPA) verbally approved a request by the Middlefield-Ellis-Whisman (MEW) RGRP (Geosyntec, 2015) to perform a trial evaluation of annual water-level gauging and biennial sampling for the MEW RGRP. NASA generally adopts the MEW RGRP requirements for the NASA RGRP. Under the trial evaluation, CY2015 was the non-sampling year for the biennial sampling program. In order to maintain current chemical data for plume boundary monitoring, NASA elected to sample select wells during CY2015. The wells sampled by NASA during CY2015 are discussed in Section 1.3.

Based upon the reduced data collected during CY2015, the discussions contained within this facility-specific Annual Progress Report:

- Summarize NASA's groundwater remediation activities for CY2015.
- Summarize the performance of NASA's GWTS.
- Present groundwater chemical and water level data collected by NASA during CY2015.
- Provide conclusions and recommendations.
- Provide NASA's anticipated and proposed CY2016 activities.

1.1 Site Background

NASA Ames is a federal aerospace facility located near the southern end of the San Francisco Bay and the northern end of Santa Clara County (Figure 1), approximately 40 miles south of San Francisco adjacent to the cities of Mountain View and Sunnyvale, California. NASA Ames Research Center consists of the original Ames Campus and the portion of former Naval Air Station Moffett Field shown on Figure 2.

Since 1988, numerous investigations have been performed at NASA Ames to study suspected sources of soil and groundwater contamination. During 1992, Erler & Kalinowski, Inc. (EKI, 1992) completed an EPA Listing Site Inspection (LSI). The primary objective of the 1992 LSI was to generate a preliminary site ranking using the revised Hazardous Ranking System (HRS) developed by the EPA. Based on the final HRS score of 15.77, the NASA Ames site was classified as a non-National Priorities List (NPL) site.

Additional site work was completed in 1994. The "*Center-Wide Sampling and Analysis Program"* (EKI, 1994a) provided an overview of the requirements for a comprehensive site evaluation. As part of this plan, NASA Ames was divided into Areas of Investigation (AOIs) for detailed studies that are in various stages of characterization, cleanup, or have received closure.

Figure 1
Location Map of NASA Ames

Figure 2
Aerial View of NASA Ames

In 1998, NASA entered into an "*Allocation and Settlement Agreement For Remedial Program Management Between NASA and Fairchild Semiconductor Corporation, Raytheon Company, and Intel Corporation*" (NASA, 1998), which pertained to requirements established under the "*Record of Decision*" for the MEW Study Area (EPA, 1989). Under this Agreement, various geographical divisions of responsibility**,** chemicals of concern, and treatment system design, installation, operations and maintenance responsibilities were allocated between the Parties (MEW, Navy, and NASA). NASA's Area of Responsibility for the cleanup of volatile organic compounds in groundwater is shown on Figure 3.

1.2 Site Hydrogeology

NASA Ames lies at the northern end of the Santa Clara Valley along the southwestern rim of San Francisco Bay. The Santa Clara Valley is located between the Santa Cruz Mountains to the west and the Diablo Range to the east. The area is underlain by a sequence of Pliocene-Pleistocene and Upper Quaternary unconsolidated sediments up to 1,500 feet thick. Sediments underlying NASA Ames were derived from the Santa Cruz Mountains and deposited in alluvial, estuarine and sublittoral environments. Additionally, fine-grained sediments were transported by waters of the San Francisco Bay.

Underlying NASA Ames are alluvial or fluvial aquifers separated by lower permeability silts and clays. These aquifers are divided into two sequences based on the location of a laterally-extensive clayey layer which separates the shallower, unconfined or semi-confined sequence from the deeper, confined sequence. The shallower sequence consists of the "A" and "B" aquifers, while the lower sequence is comprised of the "C" and "Deep" aquifers. Groundwater is encountered at the site from 4 to 8 feet below ground surface (bgs). Groundwater generally flows to the northeast.

The "A" aquifer consists of stringer-like alluvial channel deposits composed of sand and gravel inter-bedded with fine-grained flood plain deposits. These channel deposits, oriented generally south to north, provide complex pathways for groundwater and contaminant transport. Although the degree of channel continuity is variable, the depositional environment of the A1 aquifer materials has been interpreted as a low-lying flood basin subject to periodic flooding events (PRC, 1997). The A1 aquifer extends from about 5 to 25 feet bgs. Most of NASA Ames groundwater monitoring wells have been installed to monitor contaminants in the A1 aquifer. A few wells have been screened in the deeper A2 aquifer, which generally extends from 30 to 50 feet bgs. According to the "*West-Side Aquifer Treatment System, Long-Term Groundwater Monitoring Plan*" (PRC, 1997), the A1 aquifer is separated from the A2/B1 aquifer by a discontinuous, lower permeability horizon located between 25 and 30 feet bgs.

Groundwater flow in the A1 aquifer is greatly affected by the presence of engineered structures in the subsurface (gravel-filled pipe trenches; compacted, engineered fill; and building basements). At the northern edge of NASA Ames, the alluvial aquifers interfinger with relatively impermeable marine and estuarine sediments that restrict groundwater flow towards San Francisco Bay.

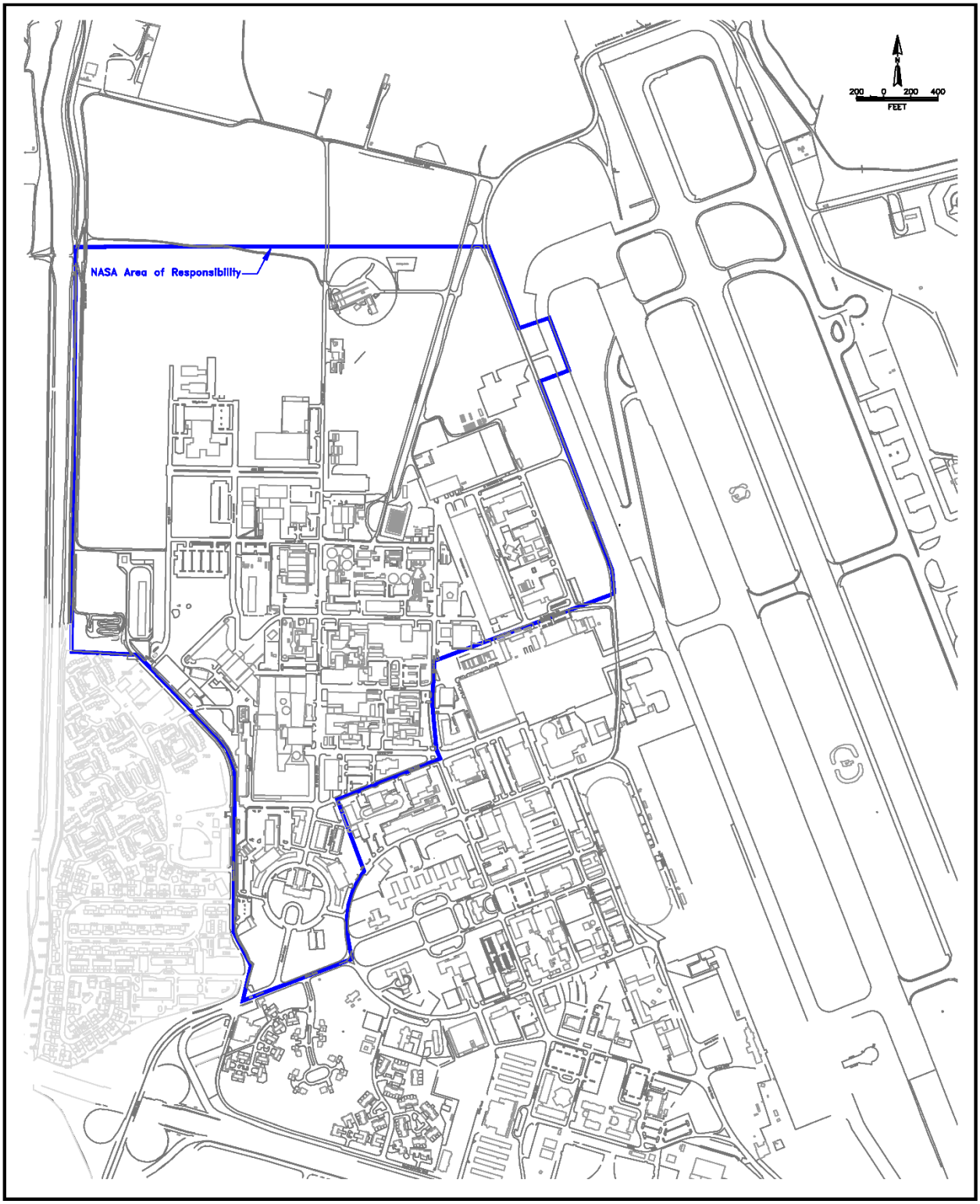

Figure 3
NASA Ames Groundwater Clean-Up Area of Responsibility for Volatile Organic Compounds associated with the MEW RGRP

1.3 Remedy Description and Remedial Action Summary

The remedial objective of NASA's GWTS is treatment and hydraulic containment of volatile organic compound (VOC)-contaminated groundwater down-gradient from known and/or suspected sources located within NASA's Area of Responsibility to the MEW RGRP. The GWTS addresses two primary areas associated with the Regional Plume.

1. NASA extraction wells NASA-1A and NASA-2A are located near building N240, north of building N211 (Figure 4). Although historic soils data do not identify a source in local soils, historical groundwater data available during the time of the design phase for the *North of US Highway 101 RGRP* (Smith, 1996) indicated the presence of TCE in groundwater at concentrations above cleanup levels in this area. Wells NASA-1A and NASA-2A were installed in 2000 and groundwater extraction was initiated in late 2001. Pumping from NASA-2A was suspended on April 28, 2009 with approval from the EPA and Regional Water Quality Control Board (RWQCB).

2. NASA extraction wells NASA-3A and NASA-4A are located down-gradient from a known source area in the vicinity of Navy Site 8 North and NASA's Vertical Takeoff and Landing (VTOL) Pad. Historical information and site investigation data revealed contamination of both soil and groundwater in this area where drums of miscellaneous oils and solvents had previously been stored by the Navy. Previous actions by NASA in this area included the removal of both contaminated soil (excavation and disposal) and groundwater (excavation pit dewatering, treatment, and discharge). Wells NASA-3A and NASA-4A were installed in 2000 and groundwater extraction began in late 2001. Pumping from NASA-4A was suspended on April 28, 2009 with approval from the EPA and RWQCB.

The effectiveness of the remedy is monitored using a network of RGRP monitoring wells. In the past, NASA has sampled 13 NASA RGRP and five MEW RGRP groundwater monitoring wells (on behalf of the MEW Parties) annually (September) and NASA's two operating extraction wells quarterly. NASA has proposed to modify its sampling network to include 24 monitoring wells (19 NASA wells and the five MEW RGRP wells), as well as the two operating extraction wells. The locations of the proposed wells are shown on Figure 4. In CY2015 (non-sampling year), NASA elected to sample 12 monitoring wells and the two operating extraction wells in order to maintain current chemical data for plume boundary monitoring. The locations of the wells are also provided on Figure 4. A discussion on NASA's proposed monitoring network is provided in Section 8.3 – *Groundwater Sampling Program Modifications*.

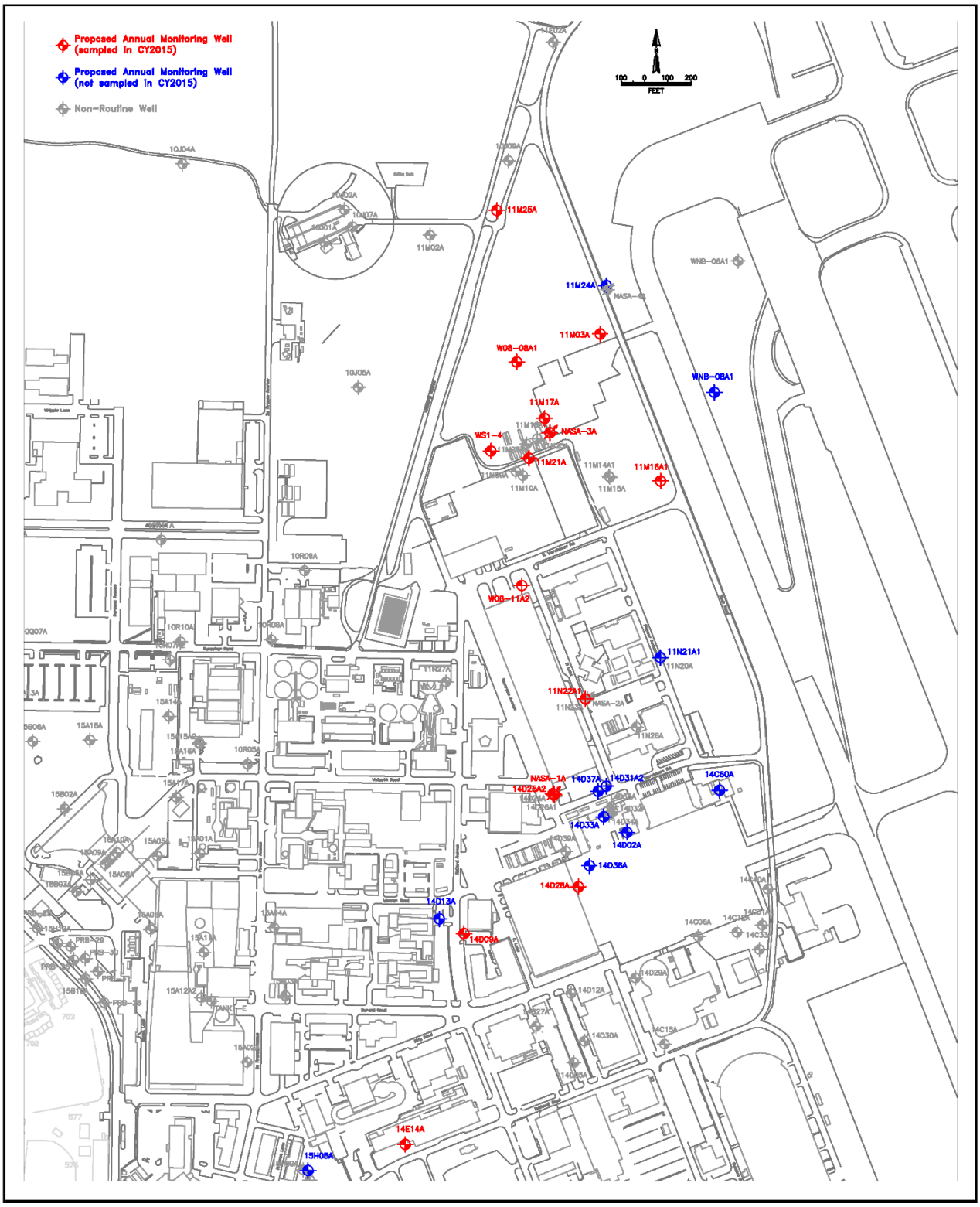

Figure 4
Monitoring and Extraction Well Locations

1.4 CY2015 Site Activities and Deliverables Summary

NASA field activities and deliverables associated with the RGRP performed during CY2015 are provided in Table 1 and Table 2, respectively.

Table 1
CY2015 Site Activities Summary

Activity	Date
Continuing GWTS system operations	On-Going
Monthly GWTS NPDES Sampling	January 21, 2015
Monthly GWTS NPDES sampling	February 17, 2015
Regional depth-to-water gauging	March 19, 2015
Quarter 1 extraction well sampling	March 25, 2015
Monthly GWTS NPDES sampling	March 23, 2015
Monthly GWTS NPDES sampling	April 22, 2015
Monthly GWTS NPDES sampling	May 27, 2015
Quarter 2 extraction well sampling	July 7, 2015
Monthly GWTS NPDES sampling	June 24, 2015
Monthly GWTS NPDES sampling	July 22, 2015
Monthly GWTS NPDES sampling	August 19, 2015
Regional depth-to-water gauging	September 17, 2015
Quarter 3 annual RGRP groundwater sampling	September 21-24, 2015
Monthly GWTS NPDES sampling	September 21, 2015
NASA GWTS carbon replacement	September 23, 2015
Monthly GWTS NPDES sampling	October 21, 2015
Conducted A2-Aquifer Assessment field investigation	November 2-5, 2015
Monthly GWTS NPDES sampling	November 18, 2015
Monthly GWTS NPDES sampling	December 9, 2015
Quarter 4 extraction well sampling	December 9, 2015

Table 2
CY2015/CY2016 Deliverables Summary

Deliverable	Date
Submitted A2-Aquifer Assessment Work Plan Amendment to EPA	January 13, 2015
Quarter 4, 2014 NPDES Self-Monitoring Report	January 20, 2015
2014 Annual NPDES Self-Monitoring Report	February 12, 2015
Quarter 1, 2015 NPDES Self-Monitoring Report	April 13, 2015
2014 Annual NASA Facility-Specific Progress Report	April 14, 2015
Quarter 2, 2015 NPDES Self-Monitoring Report	July 22, 2015
Received EPA approval for A2-Aquifer Assessment Work Plan Amendment	September 23, 2015
Quarter 3, 2015 NPDES Self-Monitoring Report	October 29, 2015
Submitted Technical Memorandum-Summary Findings for the Northernmost A2/B1-Aquifer Plume Definition Assessment to EPA	January 6, 2016
Quarter 4, 2015 NPDES Self-Monitoring Report	January 28, 2016
2015 Annual NPDES Self-Monitoring Report	January 28, 2016

2 Groundwater Extraction and Treatment

NASA's groundwater treatment facility is located at the corner of North Warehouse Road and H Lane (Figure 5). Quarterly and annual Self-Monitoring Reports were prepared in accordance with the reporting requirements contained in the National Pollutant Discharge Elimination System (NPDES) Permit Number CAG912002 (VOC and Fuel General Permit, Order R2-2012-0012, CIWQS Place Identification 243875), issued by the California Regional Water Quality Control Board (RWQCB) to NASA on August 25, 2014. For reference, a copy of the *2015 Annual NPDES Self-Monitoring Report for the NASA Ames RGRP GWTS* (ERT, 2015a) is attached as Appendix A.

2.1 System Description

Groundwater extracted from NASA extraction wells NASA-1A and NASA-3A is pre-filtered by two 10-micron bag filters operating in parallel prior to passing through two 5,000-pound granular activated carbon (GAC) vessels operating in series. Treated groundwater is then discharged to Stevens Creek in accordance with the NPDES permit. Figure 5 shows NASA's extraction wells and the discharge route to Stevens Creek. NASA's GWTS started operations on September 10, 2001.

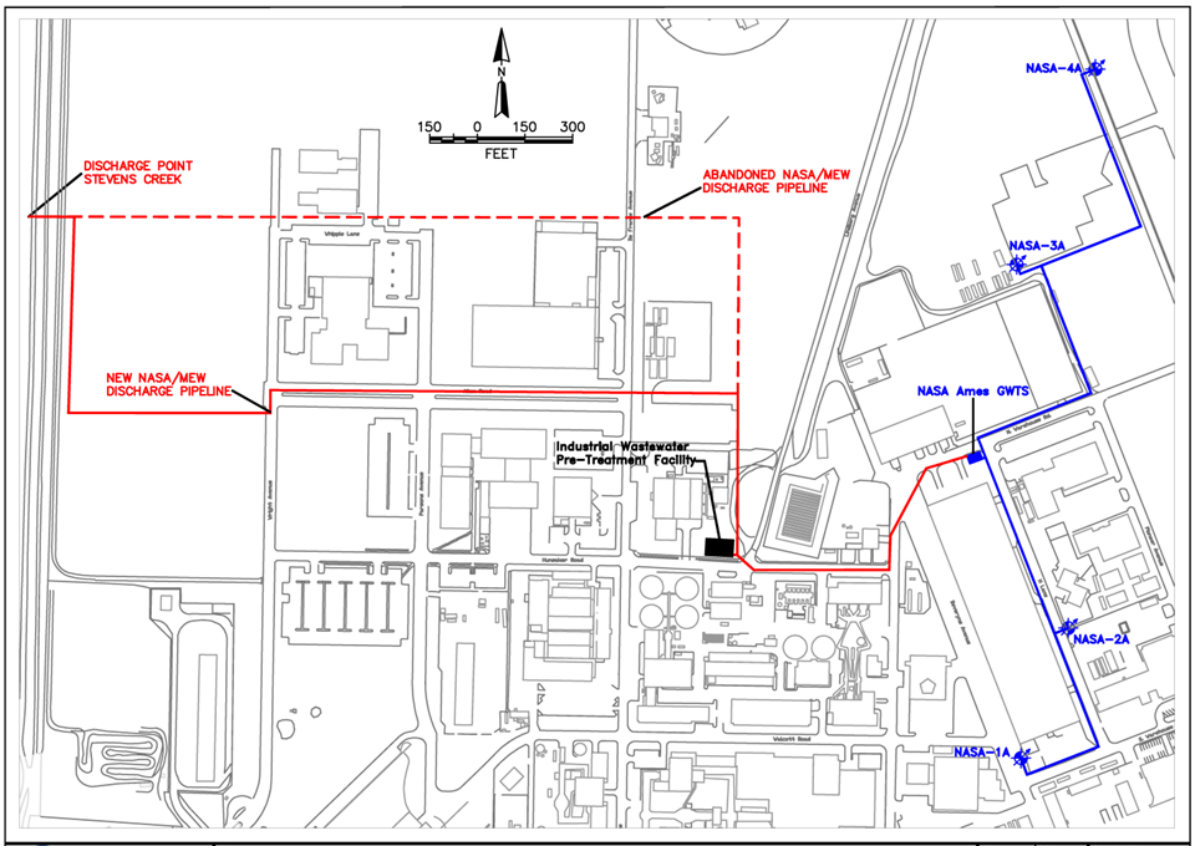

Figure 5
NASA Ames GWTS Location and Layout

2.1.1 NASA Extraction Well Pump Rates

During the CY2015 reporting period, the pump rates for NASA-1A and NASA-3A were periodically adjusted. The pump rate of NASA-3A was increased to expand the area of capture and hydraulic containment. Table 3 summarizes the designed pump rates, average annual pump rates and total gallons extraction during CY2015. Pumping from extraction wells NASA-2A and NASA-4A was suspended in April 2009 with approval from the EPA and RWQCB.

Table 3
NASA Extraction Well Pump Rate Details

Well ID	Designed Pump Rate (gpm)	Average Annual Pump Rate (gpm)	Total Gallons Extracted in 2015
NASA-1A	8.0	8.3	4,635,517
NASA-2A	3.0	0	0
NASA-3A	6.0	7.2	4,011,518
NASA-4A	3.0	0	0

gpm = gallons per minute

2.1.2 System Influent and Effluent Data

During CY2015, the NASA GWTS removed a total of 4.36 pounds of total VOCs from 8,647,035 gallons of groundwater. This compares to 4.06 pounds of VOCs removed from 8,335,505 gallons of groundwater in CY2014. The average flow rate into the system was 16.4 gpm, compared to 15.9 gpm in CY2014. Figure 6 presents the monthly effluent flow for CY2015. Since pumping began in CY2001, the NASA GWTS has removed 69.1 pounds of total VOCs from 112 million gallons of groundwater.

The monthly influent VOC concentrations for selected chemicals are presented in Figure 7, and Figure 8 presents the monthly total VOC and TCE mass removal data for CY2015. The average total VOC influent concentration in CY2015 was 60.19 µg/L, compared to 57.91 µg/L in CY2014. The influent and effluent analytical data for NASA's monthly NPDES compliance sampling is provided in the *2015 Self-Monitoring Report* (Appendix A).

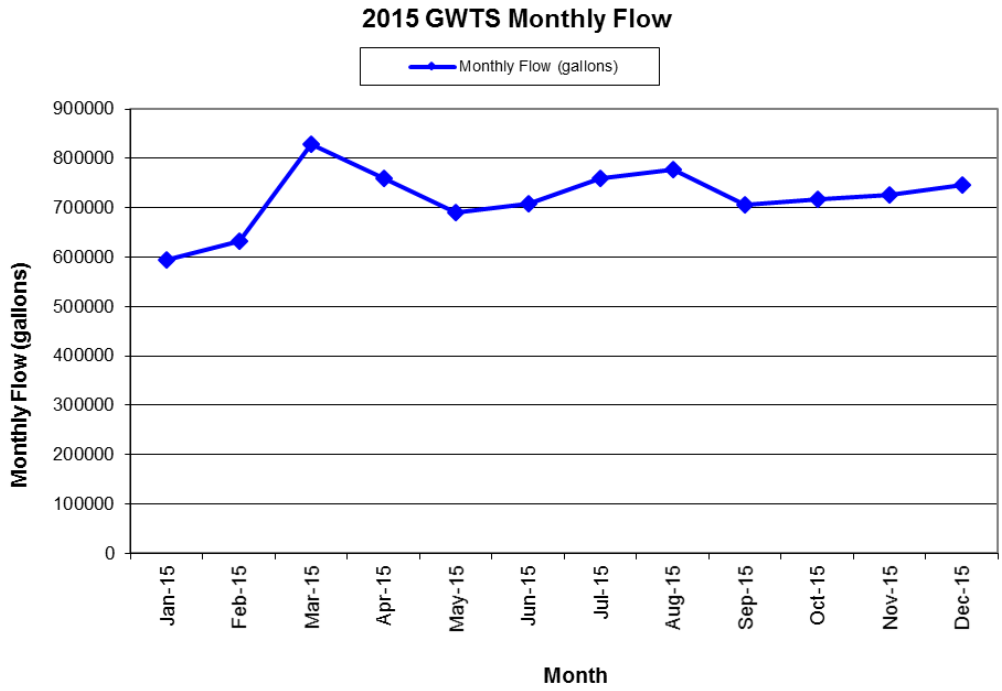

Figure 6
CY2015 GWTS Monthly Groundwater Extraction Volume

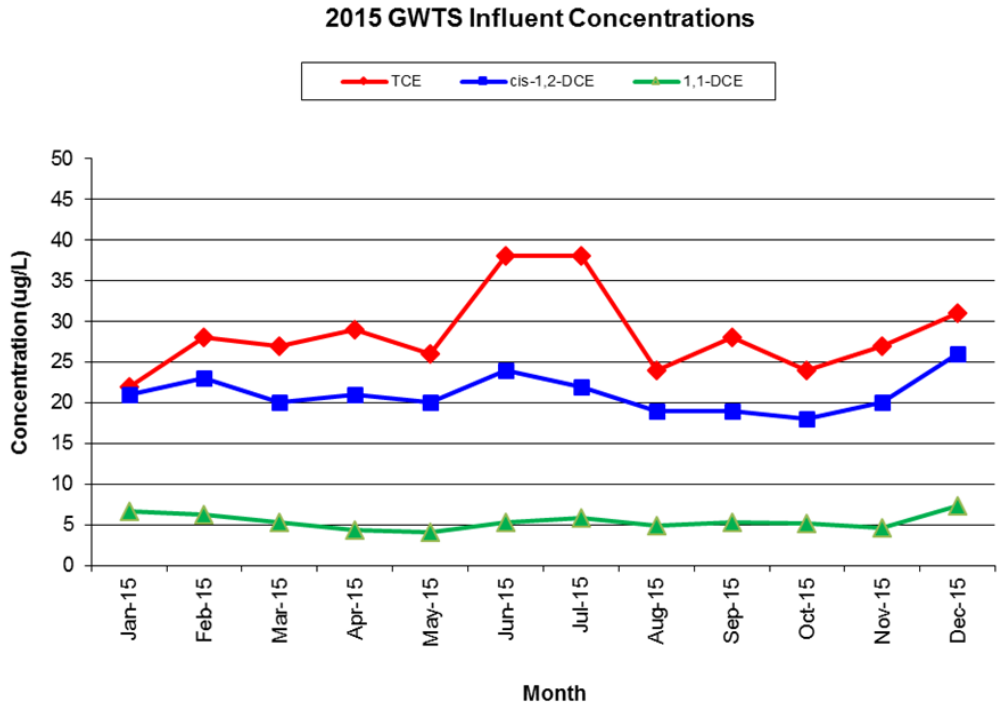

Figure 7
CY2015 GWTS Monthly Influent VOC Concentrations

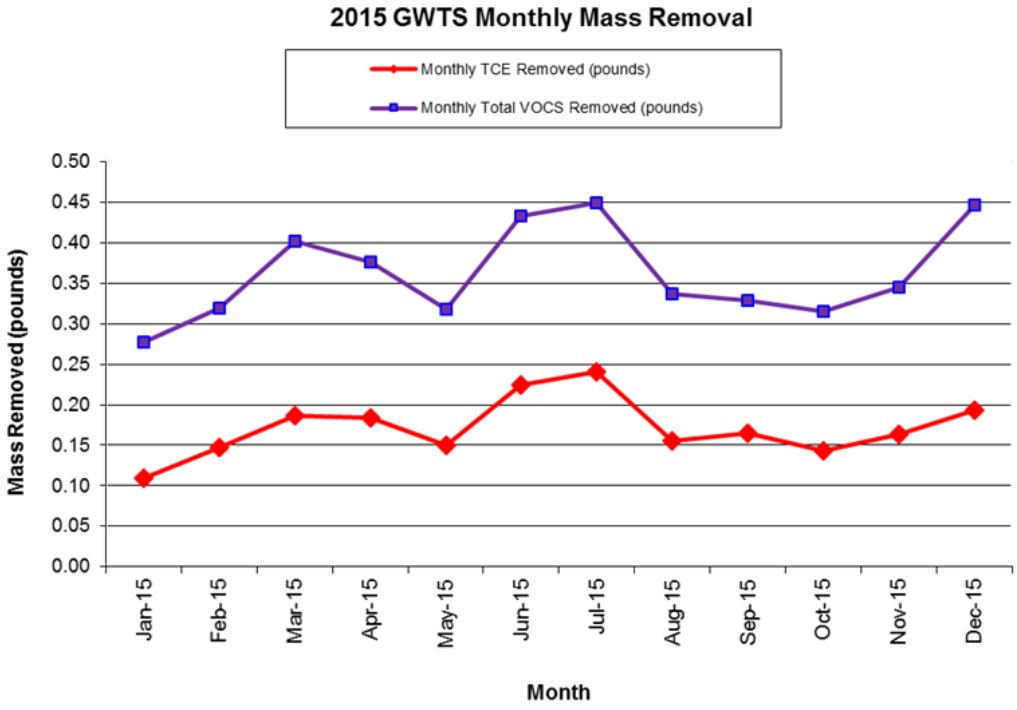

Figure 8
CY2015 GWTS Monthly Mass Removal

2.2 System Performance

During CY2015, NASA's GWTS treated influent groundwater as designed. The NASA GWTS was fully operational with pumping from both extraction wells for 85.9% of CY2015, and was partially operational (pumping from one extraction well) for 12.6% of the year. The GWTS did not operate (no extraction wells operating) for 1.5 % of CY2015. Overall, the NASA GWTS operated with pumping from at least one extraction well for 98.5% of CY2015.

During CY2015, the NASA GWTS experienced several automatic and manual system-wide shutdowns. These automatic system-wide shutdowns resulted from problems with electrical systems and/or faulty sensors. The manual shutdowns occurred during GAC change-outs and maintenance activities. Dates and durations of these shutdowns are detailed in the *2015 Self-Monitoring Report* (Appendix A).

2.2.1 System Operations and Maintenance

On September 23, 2015, the GAC within vessel GAC-552 was replaced. Vessel GAC-552 served as secondary GAC vessel from May 15, 2014 to December 23, 2014 (7 months of service) and served as the primary GAC vessel from December 23, 2014 to September 23, 2015 (9 months of service). No system shutdown was required during the carbon replacement and associated system maintenance activities.

2.3 Groundwater Level Monitoring

NASA, the Navy and the MEW companies collect semi-annual groundwater elevation data on a pre-arranged day. Depth-to-water measurements were recorded for NASA Ames monitoring wells in the A1 aquifer as part of the MEW site data exchange program. Depth-to-water measurements from 64 monitoring wells were collected by NASA on March 19 and September 17, 2015 and are included in Appendix B. These data were used to generate groundwater hydrographs and elevation contour maps of the A1 aquifer.

2.3.1 Hydrographs

Hydrographs were prepared from the groundwater elevation data to aid in the evaluation of site-specific and seasonal trends and to illustrate the hydraulic impact of groundwater extraction. The hydrographs are included in Appendix C.

All of the A1 aquifer monitoring wells exhibit seasonal groundwater elevation trends. During the wet season (November 2014 through March 2015), groundwater levels rose an average of 1.42 feet, ranging from 0.66 feet to 2.84 feet. During the dry season (April 2015 through September 2015), groundwater levels dropped an average of 1.67 feet, ranging from 0.98 feet to 2.77 feet. Overall, groundwater levels rose an average of 0.01 feet from CY2014 to CY2015.

2.3.2 Horizontal and Vertical Gradients

Depth-to-water measurements collected on March 19 and September 17, 2015 (Appendix B) were used to generate groundwater elevation contour maps of the A1 aquifer (Figures 9 and 10, respectively). The following sections provide a discussion of the groundwater gradients estimated for each gauging event.

March 19, 2015 Data Interpretation

A groundwater elevation contour map was generated from water levels measured on March 20 and is shown on Figure 9. Groundwater generally flows north-northeast. The average horizontal gradient was approximately 0.0029 feet/foot (ft/ft). The groundwater gradient in the southern portion of NASA Ames (south of Hunsaker Road) was approximately 0.0047 ft/ft, while the average gradient in the northern portion was approximately 0.0014 ft/ft.

The vertical gradient between the A1 aquifer and A2 aquifer in the vicinity of NASA-1A was estimated using the groundwater elevation data for well pair 14D25A2/14D26A1. A local upward groundwater gradient of 11.25 feet existed between the A2 aquifer and the A1 aquifer at this well pair, located within 10 feet of extraction well NASA-1A. Prior to groundwater extraction, this well pair indicated a local upward gradient of about 1.0 foot. While well 14D26A1 experienced a noticeable response to initiation of pumping, well 14D25A2 exhibited little response.

September 17, 2015 Data Interpretation

A groundwater elevation contour map was generated from water levels measured on September 17 and is shown on Figure 10. Groundwater generally flowed north-northeast at an average horizontal gradient of approximately 0.0030 ft/ft. During this quarter, the groundwater gradient in the southern portion of NASA Ames was approximately 0.0054 ft/ft, while the average gradient in the northern portion was approximately 0.0015 ft/ft.

The vertical gradient between the A1 aquifer and A2 aquifer in the vicinity of NASA-1A as measured on September 17 in well pair 14D25A2/14D26A1 was 11.30 feet.

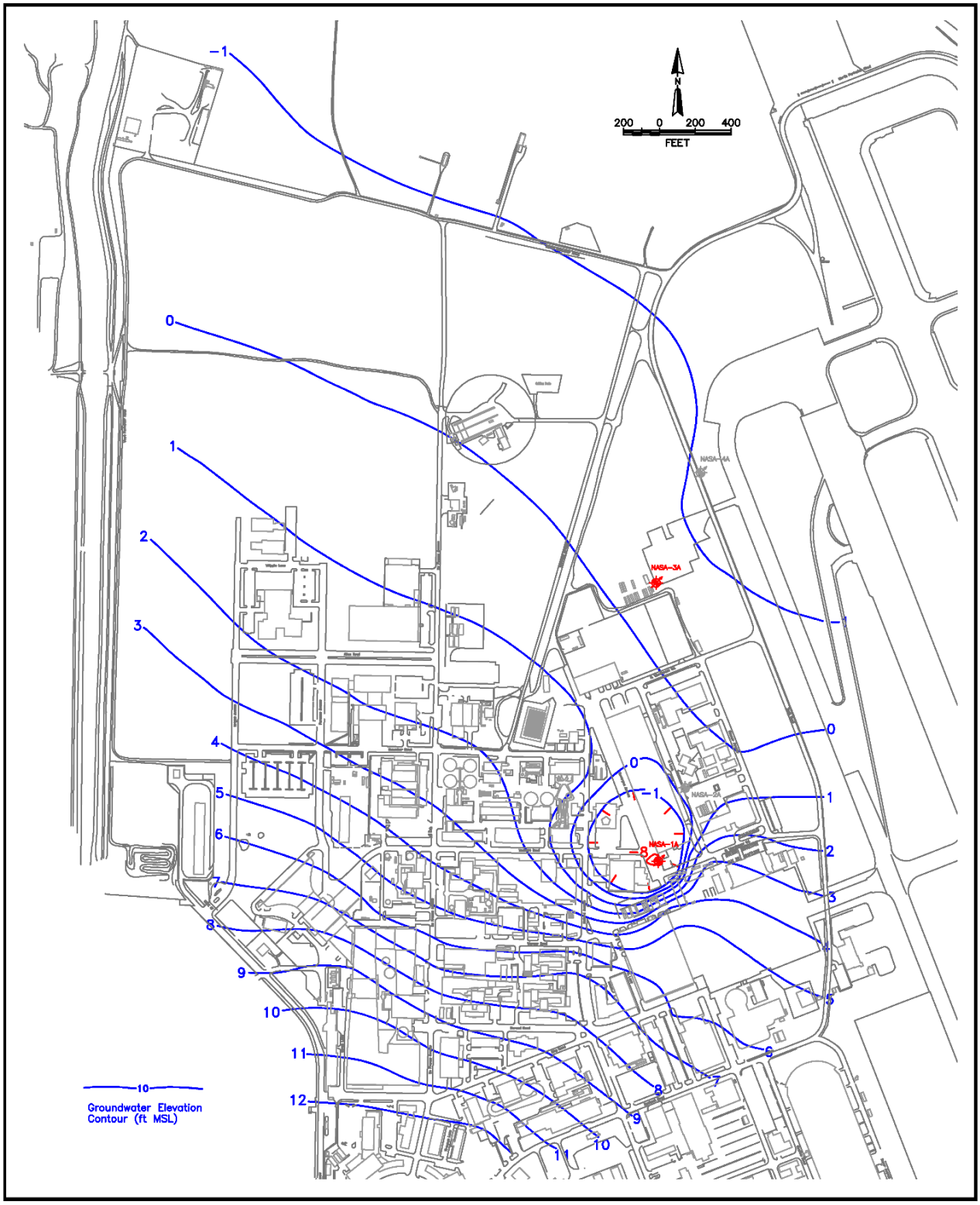

Figure 9
A1-Aquifer Groundwater Elevation Contour Map
March 19, 2015

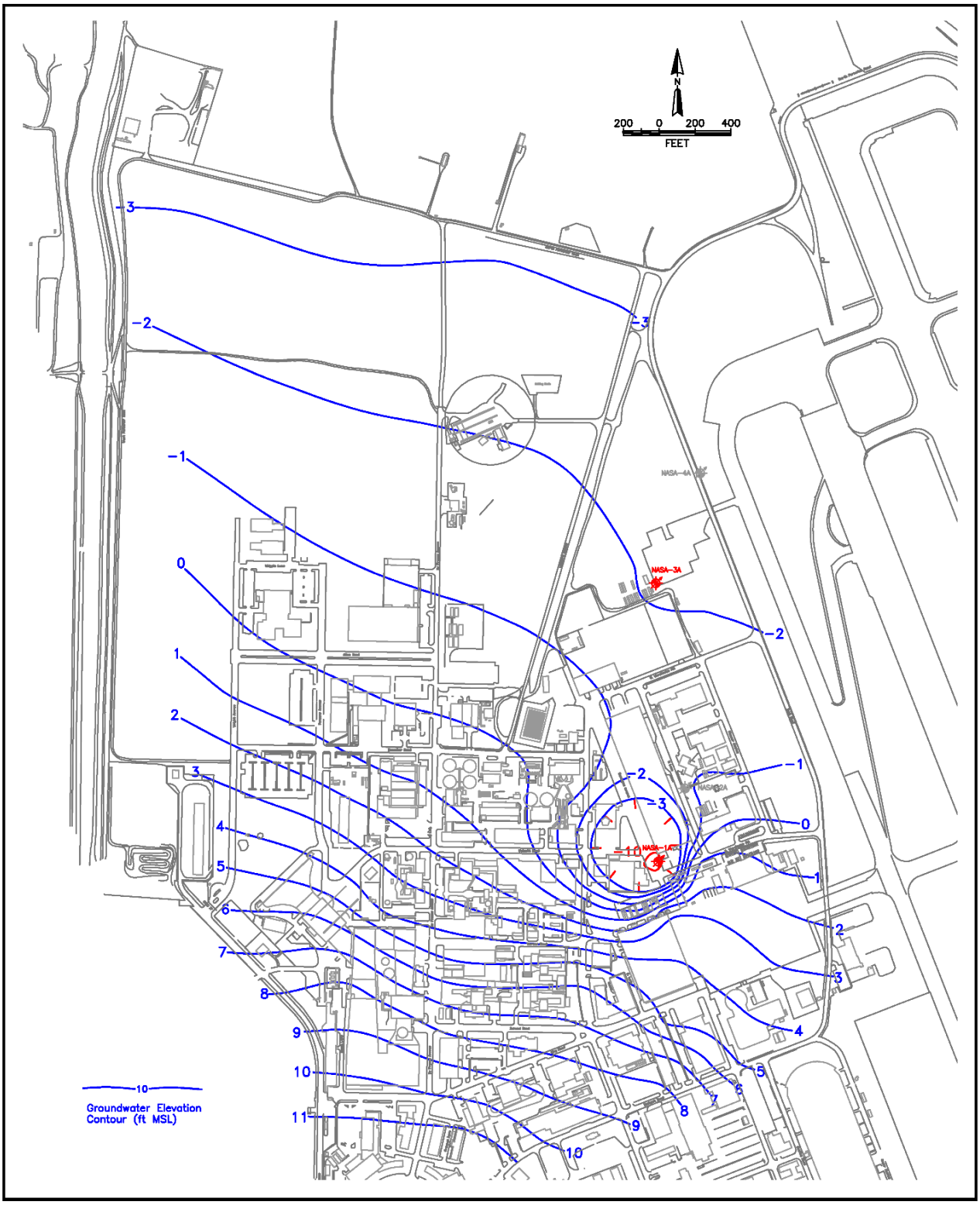

Figure 10
A1-Aquifer Groundwater Elevation Contour Map
September 17, 2015

2.4 Hydraulic Control and Capture

The NASA GWTS was designed to address two areas that were discussed in the *Proposed Locations of NASA Ames Groundwater Extraction Wells in the VTOL Pad and South Navy Warehouse Areas* (EKI, 1995). The first area of concern is located south of the former Navy Warehouse (building N144), between buildings N240 and N259. Although no soil source area was identified during groundwater investigations conducted in CY1994, contouring of trichloroethene (TCE) concentrations in groundwater in this area suggested a potential source area of TCE contamination in the A1 aquifer. However, recent plume mapping and concentration data indicate that the plume in this area is a continuation of the Regional Plume. NASA extraction wells NASA-1A and NASA-2A were installed in the A1 aquifer to address this area.

The second area is located down-gradient of Navy Site 8 North, near the southwest corner of the Vertical Take-Off and Landing (VTOL) pad. As documented in the *Center-Wide Sampling and Analysis Program, Volume VII: Work Plan for Area of Investigation 7* (EKI, 1994b), the likely source of any solvent contamination to groundwater in this area was from chemicals previously located at the Navy Site 8 storage areas. In 1994, NASA removed solvent-contaminated soil exceeding cleanup levels by excavating over 3,000 cubic yards of soil (*Site 8-North Soil Excavation & Source Removal* (NASA, 1994). The area of excavation is shown in Figure 11. NASA extraction wells NASA-3A and NASA-4A were installed in the A1 aquifer to address residual groundwater contamination down-gradient of this area.

2.4.1 Estimated CY2015 Capture Zones

Capture zones have been estimated for NASA's two active extraction wells using flow net analyses of March 19 (Figure 12) and September 17, 2015 (Figure 13) groundwater elevation data and potentiometric surfaces in the A1 aquifer. NASA Ames extraction wells are completed in the A1 aquifer; therefore, the following sections are relative only to the A1 aquifer.

The capture zone of an extraction well may be interpreted graphically from the shape of the potentiometric surface. The shape of the potentiometric surface is influenced by many factors, especially the extraction well zone of influence, aquifer/aquitard heterogeneities, geologic materials, and discharge/recharge boundaries.

The flow net analysis method provides a simple graphical solution that reflects site-specific aquifer heterogeneities and hydraulic interference effects from other extraction wells that cannot be incorporated into an analytical estimate of capture zones without the development of an extensive groundwater model. The limitation of using flow-net analysis is that groundwater flow and contaminant transport through preferential pathways and "channelized" groundwater flow is not adequately reflected (e.g. effects may be minimized).

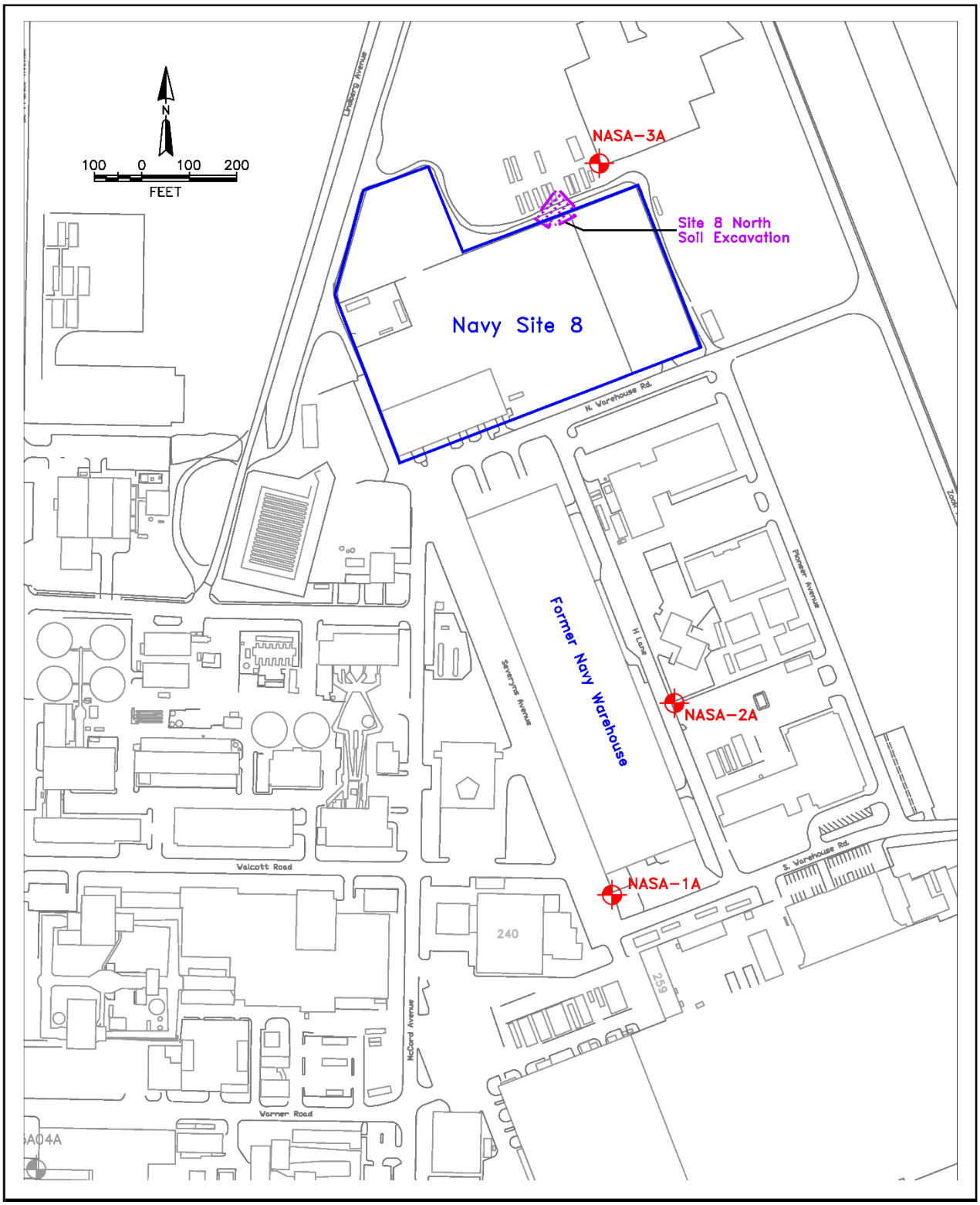

Figure 11
Areas Addressed by NASA GWTS

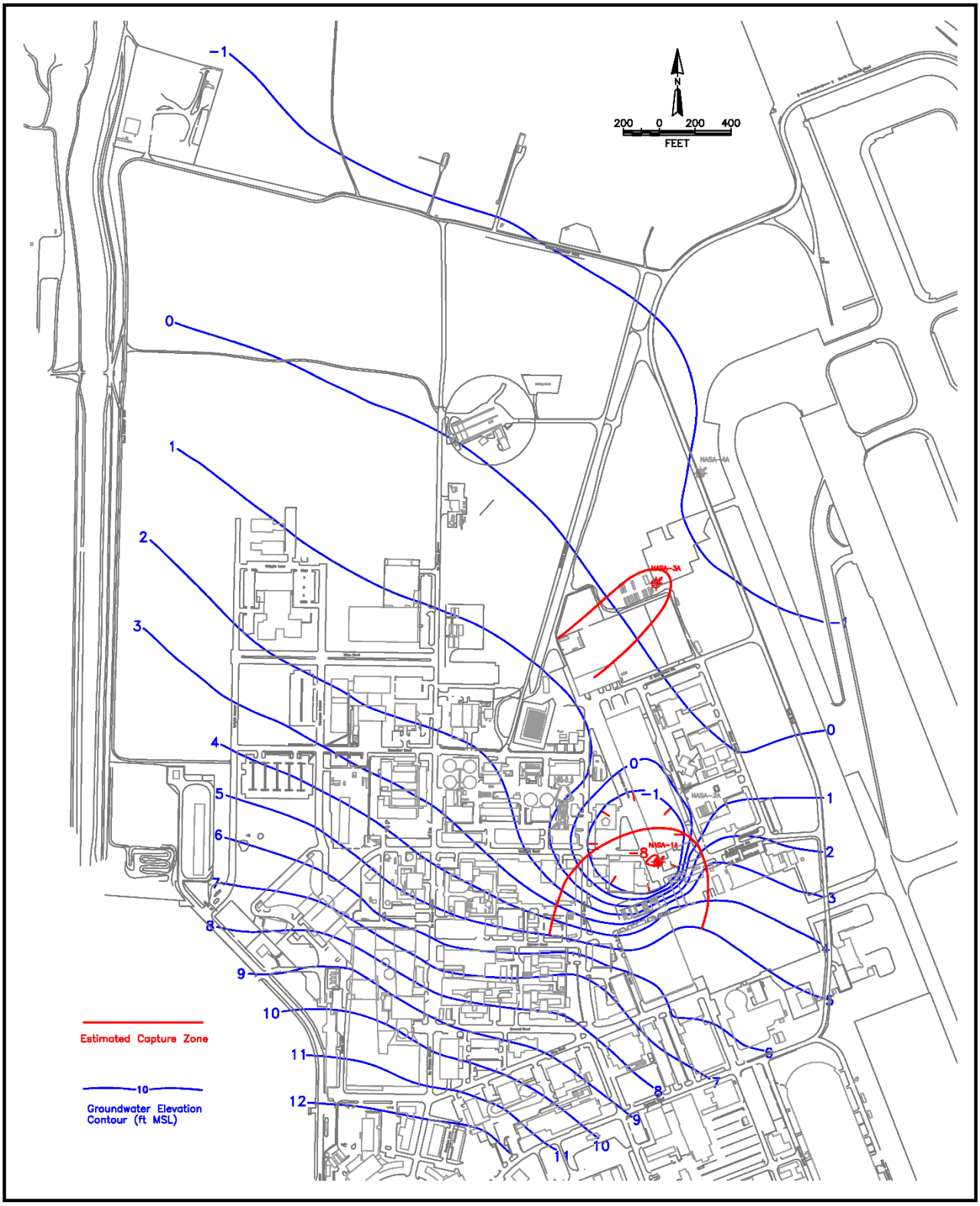

Figure 12
Estimated A1-Aquifer Capture Zones, March 19, 2015

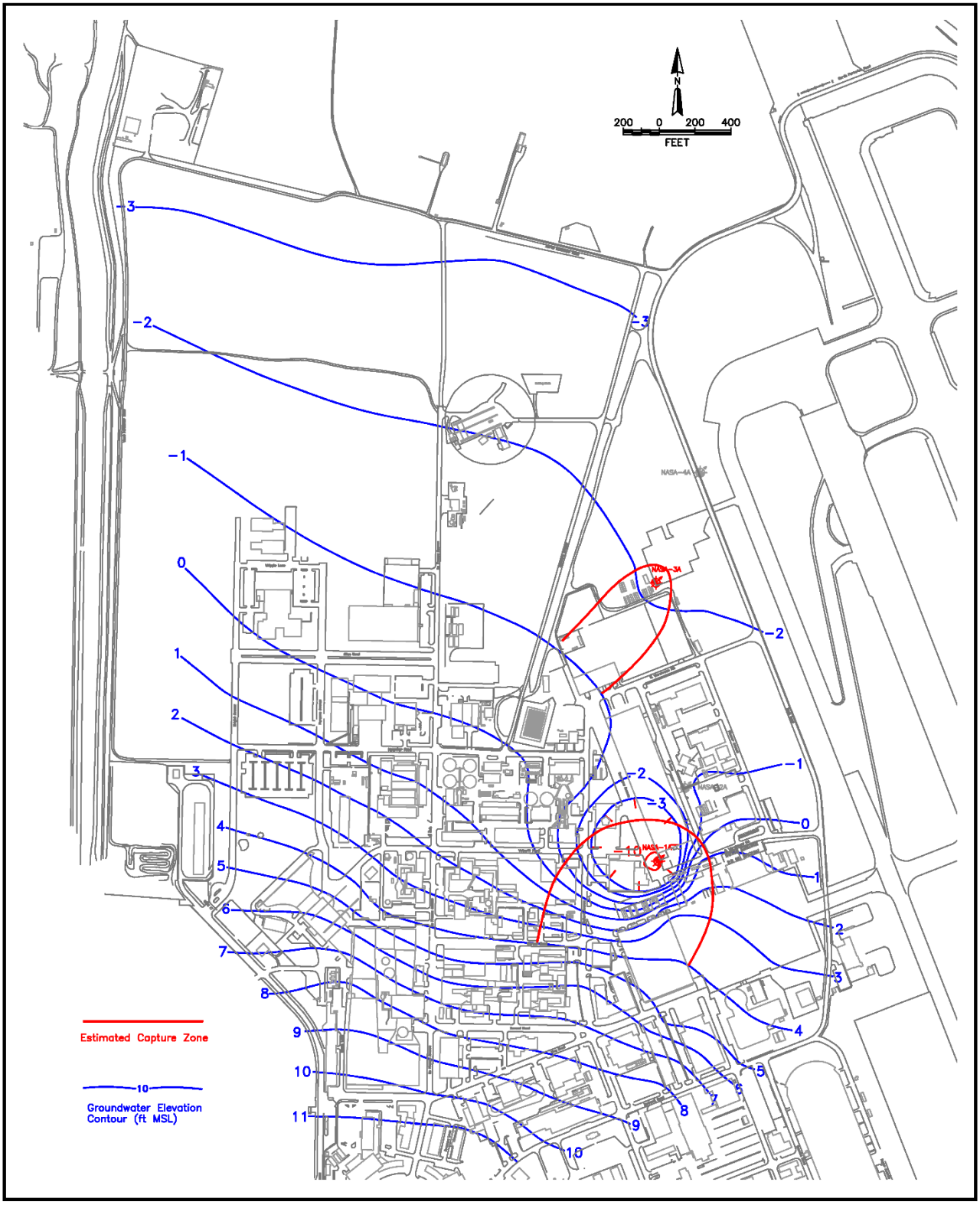

Figure 13
Estimated A1-Aquifer Capture Zones, September 17, 2015

2.5 Groundwater Quality Monitoring

Groundwater quality in NASA's Area of Responsibility has been evaluated to assess conditions during CY2015 and changes that have taken place since CY2014. Based on the prevalence of TCE and *cis*-1,2-DCE in site groundwater, discussion of these two groundwater contaminants are included in this section. Limiting the analysis to these compounds is appropriate based on the following:

- TCE is specified as the indicator compound in the MEW Record of Decision.
- *Cis*-1,2-DCE is a degradation product of TCE and is present in most wells. At many locations, *cis*-1,2-DCE is present at concentrations greater than TCE. Some locations may contain *cis*-1,2-DCE without detectable TCE concentrations.
- TCE and *cis*-1,2-DCE made up approximately 82 percent of the contaminant mass being removed by the NASA GWTS.

In CY2015, the EPA verbally approved a request by the MEW RGRP (Geosyntec, 2015) to perform a trial evaluation of annual water-level gauging and biennial sampling for the MEW RGRP. NASA generally adopts the MEW RGRP requirements for the NASA RGRP. Under the trial evaluation, CY2015 was the non-sampling year for the biennial sampling program.

In order to maintain current chemical data for plume boundary monitoring, NASA elected to sample select wells during CY2015. A total of 10 NASA RGRP-related wells were sampled in September 2015 (Figure 4). NASA also collected samples from two RGRP wells on behalf of the Parties. NASA's two operating extraction wells (NASA-1A and NASA-3A) were sampled quarterly. Analytical data for CY2015 is summarized in Appendix D. Concentration-versus-Time graphs for selected wells are presented in Appendix E. Copies of the laboratory analytical reports and chain-of-custody forms are presented in Appendix F.

2.5.1 Concentration Contour Maps

TCE and *cis*-1,2-DCE concentrations obtained during the CY2015 limited sampling event were posted on Figures 14 and 15, respectively. Because sufficient chemical data was not collected during CY2015 to accurately map current concentration contours, the TCE and *cis*-1,2-DCE concentration contours derived from the previous year's data, as presented in NASA's *CY2014 Annual Progress Report* (ERT, 2015b), are included in their respective figures. By comparing the CY2015 concentration data to the CY2014 concentration contours, any significant changes between CY2014 and CY2015 can be assessed. The mapped extent shown in each figure is based on the chemical's cleanup level.

The TCE and *cis*-1,2-DCE plumes shown along the western margin of NASA Ames are part of the "Orion Park Plume" and are discussed separately in Section 3.1.

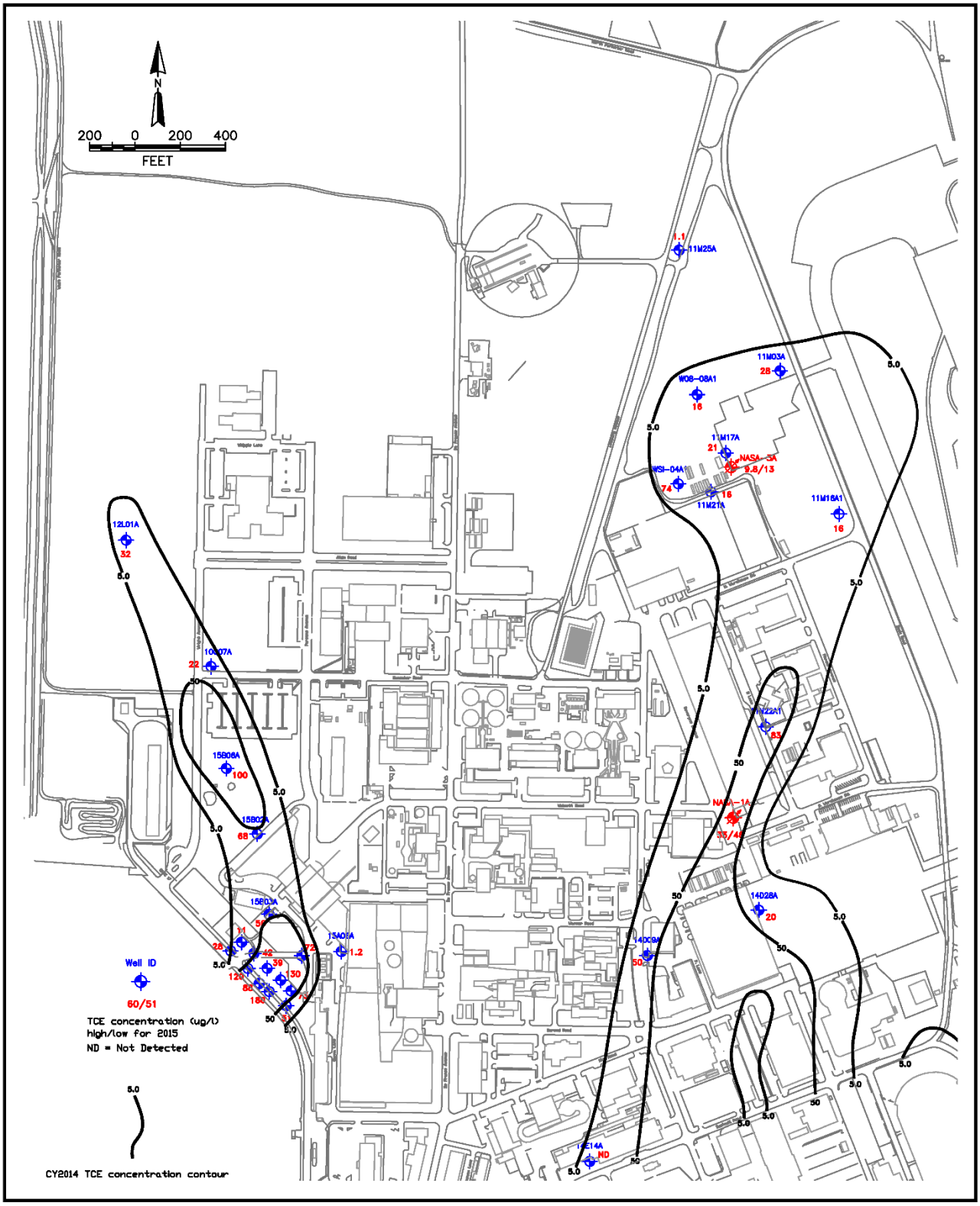

Figure 14
CY2015 TCE Concentrations, A1 Aquifer

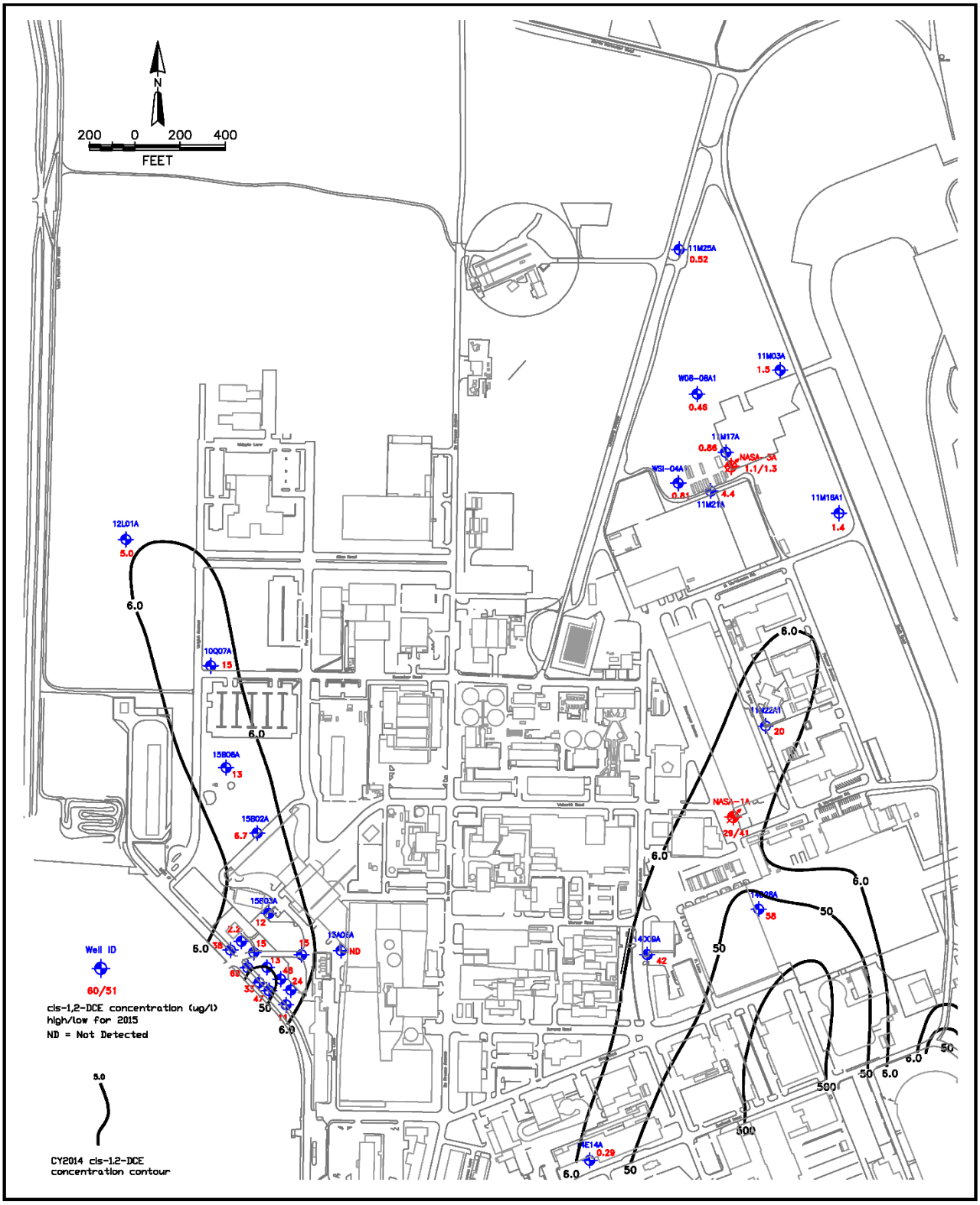

Figure 15
CY2015 *Cis*-1,2-DCE Concentrations, A1 Aquifer

TCE Boundaries

The overall shape and extent of the CY2014 TCE concentration contours shown in Figure 14 has not changed significantly since CY2004. TCE concentrations obtained from the limited sampling event in CY2015 generally fall within the CY2014 contours, with the following exceptions:

- Well 14E14A (southwestern margin of Regional Plume in Figure 14) now falls outside the CY2014 5.0 µg/L contour interval.
- Well WSI-04A1 (west of NASA-3) has increased from 58 µg/L (CY2014) to 74 µg/L (CY2015). This increase in concentration is likely a result of local shifts in the groundwater flow direction resulting from the increased pumping rate at NASA-3A.

Cis-1,2-DCE Boundaries

The overall shape and extent of the *cis*-1,2-DCE concentration contours shown in Figure 15 have not changed significantly since CY2004. C*is*-1,2-DCE concentrations obtained from the limited sampling event in CY2015 generally fall within the CY2014 contours, with the following exception:

- Well 14E14A now falls outside the CY2014 6.0 µg/L contour interval.

2.5.2 Concentration Trends

VOC concentrations obtained during NASA's limited CY2015 sampling event were generally comparable to CY2014 concentrations. A complete concentration trend analysis will be performed in CY2016 when results obtained from the full sampling network are available.

2.5.3 Other Samples Collected This Reporting Period

In July, 2015, 17 A1-aquifer groundwater monitoring wells well sampled as part of NASA's on-going monitoring of the "Orion Park" groundwater plume located along the western edge of NASA Ames. The TCE and *cis*-1,2-DCE concentrations are posted on Figures 14 and 15, respectively, with the analytical results presented in Appendix D. Additional information regarding the Orion Park Plume is provided in Section 3.1.

During CY2015, three A2/B1-aquifer wells were sampled as part of NASA's on-going Northernmost A2/B1-Aquifer Plume Definition Assessment. Additional information regarding the Northernmost A2/B1-Aquifer Plume Definition Assessment is provided in Section 3.2.

2.5.4 Remedy Performance

A full evaluation of remedy performance has historically been based on evaluating converging lines of evidence based on groundwater elevations, graphical flow-net analysis, flow budget calculations, capture zone width calculations, VOC spatial distribution, and VOC concentration trends.

Because of the reduced data collected during the limited sampling event in CY2015, the remedy performance for this year is based solely on the predicted capture zones derived using graphical flow-net analysis and VOC spatial distribution using the CY2014 TCE concentration contour map. A complete remedy performance evaluation will be performed in CY2016 when results obtained from the full sampling network are available

The CY2014 TCE concentration contours were superimposed on the March 2015 and September 2015 estimated capture zone maps (Figures 16 and 17, respectively).

At NASA-1A, the estimated capture zones for CY2015 are comparable in extent to those estimated for CY2014. Assuming that the plume boundaries from CY2014 have not changed significantly (based on comparable concentration obtained during NASA's limited CY2015 sampling), it appears that the extraction well is achieving adequate horizontal and vertical capture and/or hydraulic containment of the Regional Plume in the A1 aquifer within NASA's Area of Responsibility.

At NASA-3A, the estimated capture zones for CY2015 have increased markedly from those estimated for CY2014, especially the September 2015 capture zone. This has occurred as the result of increased pumping at NASA-3A (5.8 gpm in CY2014 to 7.2 gpm in CY2015). Assuming that the plume boundaries from CY2014 have not changed, it appears that the extraction well is achieving adequate horizontal and vertical capture of the former Navy Site 8 North source area. Although the capture zone analysis suggest that the low-concentration Regional portion of the plume is not being fully captured or hydraulically contained by NASA-3A, previous concentration trend analysis and plume mapping indicate that the plume boundaries are stable and the low hydraulic gradient limits potential down-gradient plume migration.

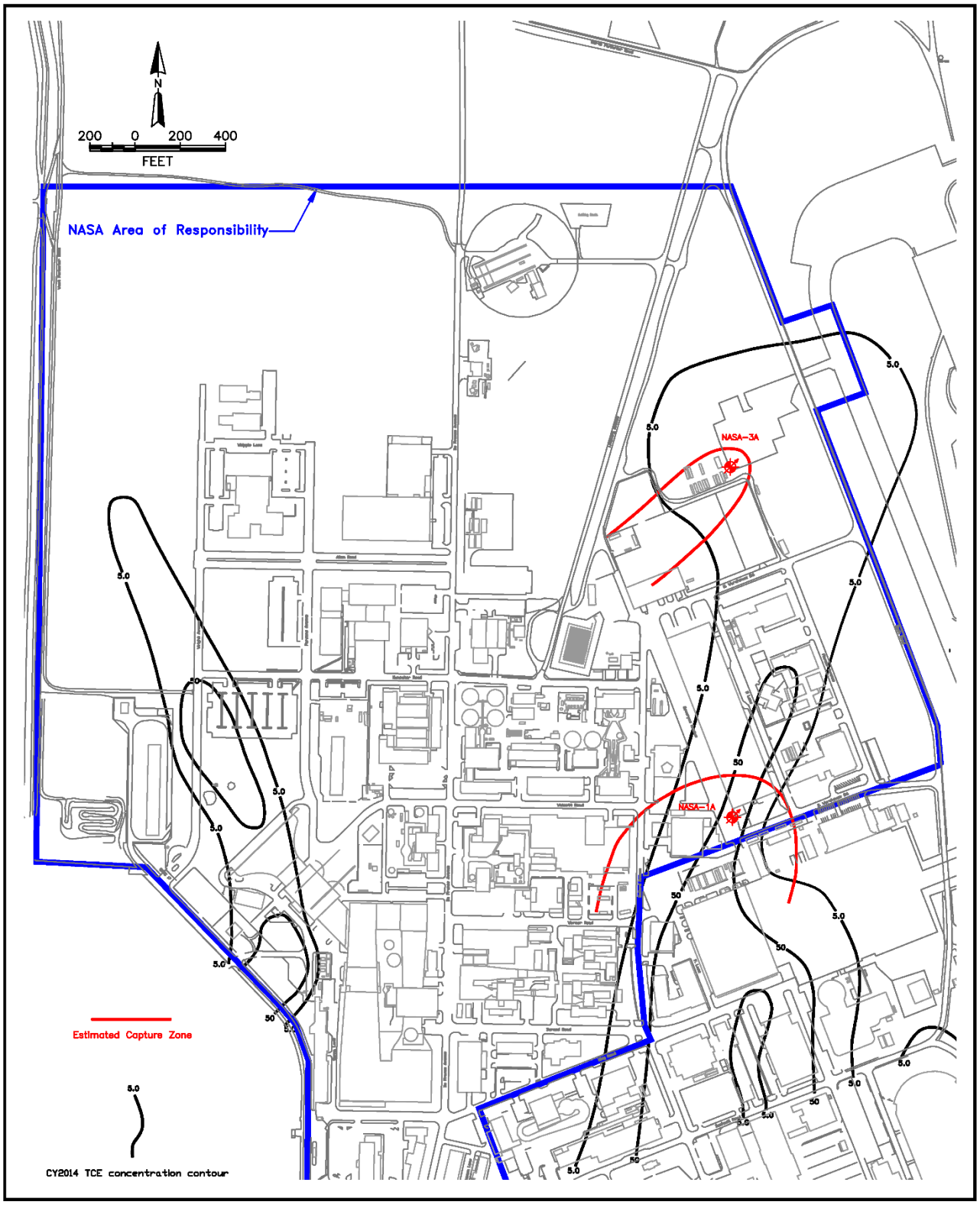

Figure 16
March 2015 Capture Zones with CY2014 TCE Plume Boundaries

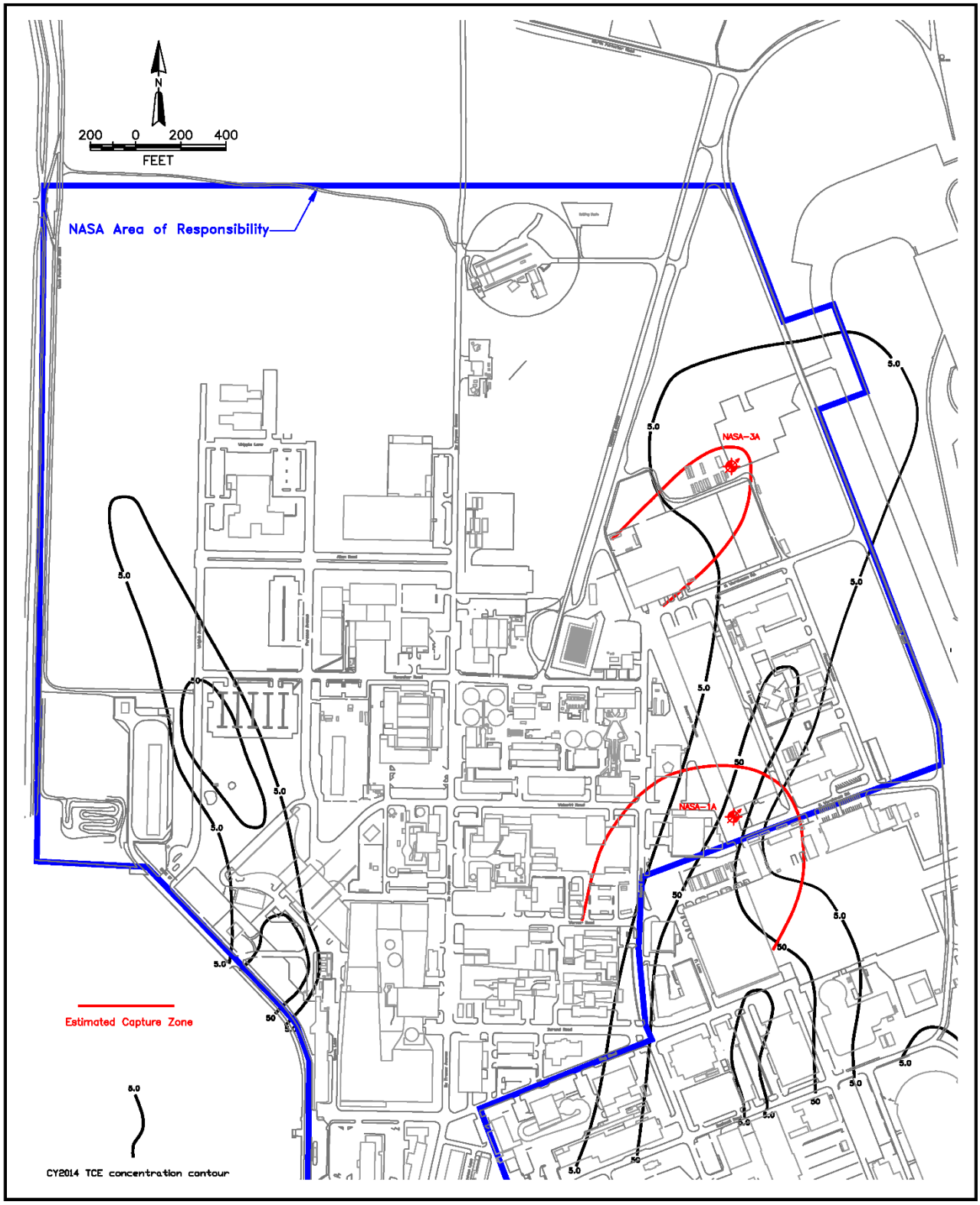

Figure 17
September 2015 Capture Zones with CY2014 TCE Plume Boundaries

3 Other Activities

3.1 Orion Park Plume

The "Orion Park Plume" is located along NASA'S western property boundary and is named after the Navy's former Orion Park Housing area (Figures 14 and 15). A number of investigations in and around the former Orion Park Housing area have been conducted by NASA, the Navy, the Air Force, the Army, and the EPA. The majority of the reports conclude that the main source of the plume lays up-gradient of the housing area. The source of this VOC plume has not been definitively identified. However, on-going work by the EPA presented at the January 27, 2015 All-Parties Meeting indicates that the Orion Park Plume may be an extension of the Regional Plume caused by lateral migration of contaminated groundwater along sanitary sewer and storm drain lines south of Highway 101.

NASA installed an air sparge/soil vapor extraction barrier along the NASA property boundary and began continuous operation in CY2008. Details of the system can be found in "*Draft Boundary Treatment Zone, Air Sparge Barrier, Operation and Maintenance Plan*" (TTEMI, 2008). NASA currently conducts annual groundwater sampling in the vicinity of the air sparge/soil vapor extraction barrier to monitor the performance of the system and to monitor changes in the extent and magnitude of the groundwater plume.

TCE and *cis*-1,2-DCE concentrations have become relatively stable within the core of the plume as it migrates onto NASA Ames. However, concentrations along the lateral and down-gradient margins of the plume haven been showing recent increasing trends.

3.2 Northernmost A2/B1-Aquifer Plume Definition Assessment

In June, 2014, EPA and the RWQCB approved the *Final Work Plan for the Northernmost A2/B1 Aquifer Plume Definition Assessment at NASA Ames Research Center* (ERT, 2014). NASA prepared the Final Work Plan in response to EPA's request to install a 'sentinel' A2/B1 monitoring well within the northernmost area of the Regional Groundwater Plume based on the recommendation provided in *Final Grab-Groundwater Assessment and Proposed Well Installations* (Geosyntec, 2013).

The first phase of the investigation was conducted between July 28 and August 1, 2014 in accordance with the *Final Work Plan for the Northernmost A2/B1 Aquifer Plume Definition Assessment at NASA Ames Research Center* (ERT, 2014). Based upon the findings of the first phase of investigation, the leading edge of the A2/B1-aquifer VOC plume was not identified.

Based upon the findings of the first phase of investigation and supplemental well sampling, a second phase of investigation was conducted between November 2 and November 5, 2015 in accordance with *Amendment to the Final Work Plan for the Northernmost A2/B1 Aquifer Plume Definition Assessment* (ERT, 2015c).

The results of NASA's Northernmost A2/B1 Aquifer Plume Definition Assessment were summarized in a Technical Memorandum (ERT, 2016b) submitted to the Agencies in January 2016. Based upon the findings of the two phases of investigation, along with the data obtained from the supplemental well sampling and historical data review, NASA recommended that existing well W08-11A2 is appropriate to monitor the leading edge of the A2/B1-aquifer VOC plume and proposed that the well be added to its biennial sampling network. A complete Report of Findings for both phases of the investigation will be prepared upon concurrence from the Agencies on the sentinel well recommendation.

3.3 Treated Effluent Reuse

During CY2015, approximately 1,574,579 gallons of treated groundwater from NASA's GWTS was diverted to NASA's Arc Jet Complex for reuse. The reused water accounts for approximately 18% of NASA's extracted and treated groundwater.

4 Problems Encountered

Sections 2.1 and 2.2 summarize the operating efficiency and non-routine O&M events that occurred at NASA's GWTS during CY2015. No other problems related to the operation or performance of the GWTS were encountered.

5 Technical Assessment

The following technical assessment of the groundwater remedy performance was made based on data collected through CY2015.

5.1 Remedy Functionality

NASA-1A and NASA-3A are functioning as designed in that they are both providing adequate horizontal and vertical capture of their targeted treatment areas. NASA-1A is also providing hydraulic containment of the Regional portion of the plume.

5.2 Are Capture Zones Adequate?

At NASA-1A, the estimated capture zones for CY2015 are comparable in extent to those estimated for CY2014. Assuming that the plume boundaries from CY2014 have not changed significantly (based on comparable concentration obtained during NASA's limited CY2015 sampling), it appears that the extraction well is achieving adequate horizontal and vertical capture and/or hydraulic containment of the Regional Plume in the A1 aquifer within NASA's Area of Responsibility.

At NASA-3A, the estimated capture zones for CY2015 have increased markedly from those estimated for CY2014, especially the September 2015 capture zone. This has occurred as the result of increased pumping at NASA-3A (5.8 gpm in CY2014 to 7.2 gpm in CY2015). Assuming that the plume boundaries from CY2014 have not changed significantly, it appears that the extraction well is achieving adequate horizontal and vertical capture of the former Navy Site 8 North source area. Although the capture zone analysis suggest that the low-concentration Regional portion of the plume is not being fully captured or hydraulically contained by NASA-3A, previous concentration trend analysis and plume mapping indicate that the plume boundaries are stable and the low hydraulic gradient limits potential down-gradient plume migration.

5.3 Are Concentrations Decreasing Over Time?

VOC concentrations obtained during NASA's limited CY2015 sampling event were generally comparable to CY2014 concentrations. A complete concentration trend analysis will be performed in CY2016 when results obtained from the full sampling network are available.

6 Optimization Progress

6.1 Existing Network Optimization

With the replacement of the pump at NASA-1A in March 2013, the mass removal at this location has been maximized. During the dry months (June-October), maximum drawdown of 24 feet was maintained in this well. At the current pumping rate (8.3 gpm), the extraction well is achieving adequate horizontal and vertical capture and/or hydraulic containment of the Regional Plume in the A1 aquifer.

Prior to September 2014, pumping at NASA-3A was limited to between 4.7 and 5.0 gpm to maintain compliance with NASA's NPDES discharge limit of 15 gpm. In August 2014, during the NPDES permit renewal process, NASA's obtained approval from the RWQCB to increase its discharge limit to 20 gpm. This allows extraction at NASA-3A to be maintained between 9 gpm and 10 gpm. The effect of the increased pumping rate can be observed in the Groundwater Elevation Contour Maps presented in Figures 9 and 10, where deflection of the groundwater elevation contours have appeared adjacent to NASA-3A during the September 17 gauging event (Figure 10). Based on evidence discussed in this Report, it appears NASA-3A is providing adequate capture and/or hydraulic containment of the up-gradient Navy Site 8 North residual source area. Because NASA-3A is located in a laterally and vertically extensive deposit of highly permeable sands and gravels, it is unlikely that the increased extraction rate at NASA-3A will be sufficient to provide complete hydraulic containment of the entire Regional Plume in this area. However, the increased capture zone will provide incremental mass removal and hydraulic containment. Because of the stability of the plume, the relatively low VOC concentrations and the flat hydraulic gradient, further down-gradient migration of the plume is limited.

6.2 Future Optimization Efforts

For CY2016, NASA plans to continue increasing the pumping rate of NASA-3A from the CY2015 rate of 7.2 gpm to rates between 8 and 9 gpm and evaluate the impact of the increased pumping rate on capture zone propagation.

7 Conclusions

During CY2015, the NASA GWTS removed a total of 4.36 pounds of total VOCs from 8,647,035 gallons of groundwater. The NASA Ames GWTS was operational for 98.5% of CY2015. No significant problems related to the system operations were noted.

NASA-1A and NASA-3A are functioning as designed in that they are both providing adequate horizontal and vertical capture of their targeted treatment areas. NASA-1A is also providing hydraulic containment of the Regional portion of the plume. However, the incomplete hydraulic containment in this area is not critical because concentration trend analysis and plume mapping indicate that the plume boundaries are stable and the low hydraulic gradient limits potential down-gradient plume migration. The increased pumping rate at NASA-3A will provide an incremental increase in capture and hydraulic containment of the Regional portion of the plume.

TCE concentrations in wells 14E14A and WSI-04A1sampled in CY2015 indicate a potential shift in the TCE plume boundary in the vicinity of the wells. Groundwater flow direction and VOC concentrations at these locations will be monitored in CY2016 to verify these results.

8 Recommendations

Based on the remedy assessment provided in this Annual Progress Report, as well as previous recommendations provided by the EPA in their 5-Year Reviews (EPA, 2004 and 2009) and other documents, NASA provides the following recommendations.

8.1 Northernmost A2/B1-Aquifer Plume Definition Assessment

As described in Section 3.2, NASA believes the objective of the Northernmost A2/B1-Aquifer Plume Definition Assessment has been achieved and anticipates that a Repot of Findings will be completed during CY2016.

8.2 Existing Network Optimization

During the recent NPDES discharge permit renewal for NASA's treated groundwater discharge, NASA requested an increased permitted discharge limit of 20 gpm. The increased discharge limit was approved by the RWQCB and the pumping rate of extraction well NASA-3A was increased to 7.2 gpm in October, 2014. The increased pumping rate has enlarged the capture zone of NASA-3A and allowed for an incremental increase in mass removal and hydraulic containment. NASA will continue to operate NASA-3A at increased pumping rates during CY2016 and will continue to evaluate the impact of the increased pumping rate on capture zone propagation.

8.3 Groundwater Sampling Program Modifications

Prior to CY2014, NASA sampled 13 wells for the RGRP monitoring program on a semi-annual basis in March and September. During the September sampling event, NASA also sampled five RGRP wells on behalf of the Parties. In June of each year, NASA voluntarily sampled seven non-RGRP wells to obtain additional data within and up-gradient of NASA's Area of Responsibility. NASA's two operating extraction wells were sampled quarterly.

Because the data collected by NASA during the March and June sampling events was not used by the RGRP for mapping and reporting purposes, NASA switched to annual sampling in CY2014 to align with the RGRP annual sampling event. On September 3, 2014, NASA submitted a letter to the EPA proposing a modification to NASA's monitoring well network (NASA, 2014). The proposed network included selected wells from NASA's 13 RGRP wells, five MEW RGRP wells, seven voluntary wells, and additional wells at locations important for remedy evaluation. The EPA responded in a September 24, 2014 e-mail that additional information was required before the modified well network could be approved (EPA, 2014). On July 20, 2015, NASA provided the EPA with the additional information requested regarding the proposed modified monitoring well network (NASA, 2015). NASA anticipates that the proposed sampling network will be approved prior to the CY2016 annual sampling event.

8.4 RGRP Biennial Sampling and Annual Water Level Gauging Trial Evaluation

In February 2015, the MEW RGRP submitted a request to EPA for the reduction in the frequency of groundwater sampling and water-level gauging for wells associated with the MEW RGRP (Geosyntec, 2015). In July 2015, EPA provided verbal approval of the initiation of the trial period which includes annual water-level gauging in September 2015 and September 2016 and biennial groundwater sampling in September/October 2016 such that sampling was not required in CY2015 and water-level gauging was not required in March 2016. On March 16, 2016, the EPA provided a letter to the Parties officially confirming their conditional approval of the trial reduction.

NASA concurs with the rationale provided by Geosyntec in their 2015 submittal. The following observations based on NASA's historical data support Geosyntec's position:

- Seasonal changes in groundwater elevations observed at NASA are also modest and do not have a significant impact on the groundwater flow and extraction well capture interpretations derived from groundwater elevation maps.
- The spatial distribution of VOCs (concentration contouring) has become relatively stable in NASA's Area of Responsibility. TCE and *cis*-1,2-DCE plume boundaries have not changed significantly since CY2004.
- Although changes in concentration trends would be observed sooner applying annual sampling , the reduced sampling frequency would be sufficient to identify significant changes, especially in light of the long estimated timeframe required to achieve site cleanup.

NASA understands that certain events or activities would require the initiation of increased sampling and/or water-level gauging frequency. A partial list of those events were provided in the EPA's March 2016 *Conditional Approval letter*. If NASA initiates any of those activities, sampling and water-lever gauging frequency would be proposed in the activity Work Plan.

9 Upcoming CY2016 Work and Planned Future Activities

NASA plans the following tasks for CY2016/2017:

- Monthly GWTS NPDES influent and effluent sampling.
- Quarterly GWTS NPDES reporting in April, July, October 2016 and January 2017.
- Annual GWTS NPDES reporting in January 2017.
- Annual groundwater sampling in September 2016.
- Annual site-wide groundwater level measurements in September 2016.
- Prepare A2/B1 Report of Findings for the Northernmost A2/B1-Aquifer Plume Definition Assessment.

10 References

EKI, 1992. *Listing Site Inspection for NASA Ames Research Center, Moffett Field, California.*

EKI, 1994a. *Center-Wide Sampling and Analysis Program, Program Overview, NASA Ames Research Center, Moffett Field, California*.

EKI, 1994b. *Center-Wide Sampling and Analysis Program, Volume VII: Work Plan for Area of Investigation 7, NASA Ames Research Center, Moffett Field, CA.*

EKI, 1995. *Proposed Locations of NASA Ames Groundwater Extraction Wells in the VTOL Pad and South Navy Warehouse Areas, NASA Ames Research Center, Moffett Field, California*.

EPA, 1989. *Record of Decision, Fairchild, Intel, and Raytheon Sites, Middlefield/Ellis/ Whisman (MEW) Study Area, Mountain View, California*.

EPA, 2004. *Final First Five-Year Review Report for Middlefield-Ellis-Whisman (MEW) Superfund Study Area, Mountain View, California*.

EPA, 2009. *Final Second First Five-Year Review Report for Middlefield-Ellis-Whisman (MEW) Superfund Study Area, Mountain View, California*.

EPA, 2014. September 4, 2014 e-mail to NASA requesting additional information for proposed modification to NASA's groundwater monitoring network.

EPA, 2016. March 16, 2016 letter providing EPA Conditional Approval of the Trial Reduction of Groundwater Monitoring Frequency, Middlefield-Ellis-Whisman Superfund Area, Mountain View and Moffett Field, California.

ERT, 2014. *Draft Work Plan for the Northernmost A2/B1-Aquifer Plume Definition Assessment*.

ERT, 2015a. *2015 Annual NPDES Self-Monitoring Report for the NASA Ames RGRP GWTS.*

ERT, 2015b. *2014 Annual Progress Report, NASA Ames Groundwater Treatment System, Regional Groundwater Remediation Program*.

ERT, 2015c. *Draft Amendment to Final Work Plan for the Northernmost A2/B1-Aquifer Plume Definition Assessment*.

ERT, 2016a. *Draft Area of Investigation 4 2015 Annual Operations and Maintenance Report*.

ERT, 2016b. *Technical Memorandum, Summary Findings for the Northernmost A2/B1 Aquifer Plume Definition Assessment*.

Geosyntec, 2013. *Final Grab-Groundwater Assessment and Proposed Well Installations*.

Geosyntec, 2015. *Request for Reduction in Groundwater Monitoring Frequency, Middlefield-Ellis-Whisman Study Area, Mountain View, California*.

NASA, 1994. *Site 8-North Soil Excavation & Source Removal, NASA Ames Research Center*.

NASA, 1998. *Allocation and Settlement Agreement for MEW Remedial Program Management between the National Aeronautics and Space Administration and Fairchild Semiconductor Corporation, Raytheon Company, and Intel Corporation*.

NASA, 2014. September 3, 2014 letter to EPA requesting modification to NASA's groundwater monitoring network.

NASA, 2015. July 20, 2015 letter to EPA providing requested information for proposed modification to NASA's groundwater monitoring network.

PRC, 1997. *West-Side Aquifer Treatment System, Long-Term Groundwater Monitoring Plan*.

Smith Environmental, 1996. *Revised Final Design, Regional Ground Water Remediation Program, North of U.S. Highway 101, Middlefield-Ellis-Whisman Site, Mountain View, California*.

TTEMI, 2008. *Draft Boundary Treatment Zone Air Sparge Barrier, Operation and Maintenance Plan*.

APPENDIX A

CY2015 NASA GWTS NPDES SELF-MONITORING REPORT

2015 Annual Self-Monitoring Report

NASA Ames Groundwater Treatment System

Regional Groundwater Remediation Program

Order No. R2-2012-0012
NPDES Permit Number CAG912002

National Aeronautics and Space Administration
Ames Research Center
Moffett Field, CA

January 2016

2015 Annual
Self-Monitoring Report

NASA Ames Groundwater Treatment System

Regional Groundwater Remediation Program

Order No. R2-2012-0012
NPDES Permit Number CAG912002

Prepared for:

NASA Ames Research Center
Environmental Management Division
Code JQ
Moffett Field, CA

Prepared by:

Earth Resources Technology, Inc.
NASA Ames Research Center
Moffett Field, California 94035-1000

January 2016

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List of Acronyms & Abbreviations

°C	degrees Celsius
<	less than
mg/L	milligrams per liter
µg/L	micrograms per liter
As	arsenic
Ag	silver
Be	beryllium
BTEX	benzene, toluene, ethylbenzene and xylenes
Cd	cadmium
CIWQS	California Integrated Water Quality System
Cr	chromium
Cu	copper
CY	calendar year
DBP	di-n-butyl phthalate
DCA	dichloroethane
DCE	dichlorothene
DEHP	bis(2-ethylhexyl)phthalate
DEP	diethyl phthalate
DNOP	di-n-octyl phthalate
ERT	Earth Resources Technology
Freon 11	trichlorofluoromethane
Freon 113	1,1,2-trichloro-1,2,2-trifluoroethane
GAC	granular activated carbon
gpd	gallons per day
gpm	gallons per minute
GWTS	Groundwater Treatment System
Hg	mercury
MTBE	methyl tert-butyl ether
NASA	National Aeronautics and Space Administration
ND	not detected
Ni	nickel
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
Pb	lead
pH	potential Hydrogen
RGRP	Regional Groundwater Remediation Program
RWQCB	Regional Water Quality Control Board
Sb	antimony
Se	selenium
SVOCs	semi-volatile organic compounds
TCE	trichloroethene
Tl	thallium
TPH-D	total petroleum hydrocarbons as diesel
TPH-G	total petroleum hydrocarbons as gasoline
TPH-JP4	total petroleum hydrocarbons as JP4 jet fuel
TPH-JP5/8	total petroleum hydrocarbons as JP5 and JP8 jet fuel
TPH-MO	total petroleum hydrocarbons as motor oil
VFD	Variable Frequency Drive
VOCs	volatile organic compounds
Zn	zinc

1 Introduction

On behalf of the National Aeronautics and Space Administration (NASA) Ames Research Center (NASA Ames), Earth Resources Technology, Inc. (ERT) has prepared this 2015 Annual Self-Monitoring Report for the NASA Ames Groundwater Treatment System (GWTS) located at the corner of North Warehouse Road and H Lane at Moffett Field, California (Figure 1). This Annual Report was prepared in accordance with the Self-Monitoring Program reporting requirements contained in the National Pollutant Discharge Elimination System (NPDES) Permit Number CAG912002 (VOC and Fuel General Permit, Order R2-2012-0012, CIWQS Place Identification 243875), issued by the California Regional Water Quality Control Board (RWQCB) to NASA on August 25, 2014. This Report details the results of water quality analyses and operational data obtained from the NASA Ames GWTS during the calendar year (CY) 2015.

2 Background

NASA Ames' GWTS currently extracts groundwater from wells NASA-1A and NASA 3A. Extracted groundwater is pre-filtered by two 25-mircon bag filters operated in parallel prior to passing through two 5,000-pound granular activated carbon (GAC) vessels operating in series. Treated groundwater is then discharged to Stevens Creek in accordance with the NPDES permit. Figure 1 shows the locations of the treatment system outfall and discharge route to Stevens Creek. Figure 2 details the treatment process and influent and effluent sample points. The NASA Ames GWTS began operation in September 2001 and currently utilizes two extraction wells (NASA-1A and NASA 2-A) to treat up to 20 gallons per minute (gpm). Groundwater extraction from wells NASA-2A and NASA-4A was suspended in 2009.

3 System Operational Status, Calendar Year 2015

3.1 System-Wide Shutdowns

During CY 2015, the NASA GWTS experienced several manual and automatic shutdowns. The automatic shutdowns resulted from a faulty water level sensor (NASA-3A), a malfunctioning transfer pump, and VFD (Variable Frequency Drive) faults (NASA-1A). The manual shutdowns were associated with maintenance activities being performed on the GWTS system; the water level sensor and transfer pump were replaced on February 9, 2015 and July 21, 2015, respectively. The dates and durations of the automatic and manual shutdowns are detailed in Table 1.

Following repeated automatic shutdowns of NASA-1A triggered by the VFD alarm, the NASA-1A pump rate was reduced by one gpm to approximately 8 gpm during October 2015. The alarm was likely triggered by either blocked lines or a malfunctioning pump and both possibilities will be investigated during CY 2016.

The NASA GWTS was fully operational with pumping from both extraction wells for 85.9% of CY 2015, and was partially operational (pumping from one extraction well) for 12.6% of CY 2015. The GWTS did not operate (no extraction wells operating) for 1.5% of CY 2015. Overall, the NASA GWTS operated with pumping from at least one extraction well for 98.5% of CY 2015.

Table 1
CY 2015 NASA GWTS Operational Shut-Downs

Date(s)	Duration (hours)	Cause
1/1/15 – 2/9/15	936	Water-level sensor malfunction (NASA-3A only)
2/9/15	4	Maintenance on RGRP system (water level sensor replacement)
2/12/15	9	Voltage overload of transfer pump
3/5/15	12	Voltage overload of transfer pump
4/3/15	5	Voltage overload of transfer pump
4/7/15	2	Rainfall-induced system alarm
4/13/15	4	Electrical problem likely caused by rodents
4/22/15	1	Voltage overload of transfer pump
5/6/15	2	Voltage overload of transfer pump
5/19/15 – 5/20/15	8	Voltage overload of transfer pump
5/23/15 – 5/26/15	69	Site wide electrical power outage
6/16/15	5	Voltage overload of transfer pump
6/16/15 – 6/17/15	9	Voltage overload of transfer pump
6/30/15 – 7/1/15	14	VFD Fault (NASA-1A only)
7/15/15 – 7/16/15	12	VFD Fault (NASA-1A only)
7/21/15	1	Maintenance on RGRP system (transfer pump replacement)
8/10/15 – 8/11/15	13	VFD Fault (NASA-1A only)
8/15/15 – 8/17/15	40	VFD Fault (NASA-1A only)
9/6/15 – 9/8/15	41	VFD Fault (NASA-1A only)
9/8/15 – 9/9/15	13	VFD Fault (NASA-1A only)
10/11/15 – 10/13/15	39	VFD Fault (NASA-1A only)

VFD = Variable Frequency Drive

3.2 Granular Activated Carbon Replacements

On September 23, 2015, the GAC within vessel GAC-552 was replaced. Vessel GAC-552 served as secondary GAC vessel from May 15, 2014 to December 23, 2014 (7 months of service) and served as the primary GAC vessel from December 23, 2014 to September 23, 2015 (9 months of service). No system shutdown was required during the carbon replacement and associated system maintenance activities.

3.3 VOC Mass Removal

During CY 2015, the NASA Ames GWTS removed a total of 4.36 pounds of Volatile Organic Compounds (VOCs) from 8,647,035 gallons of groundwater. Table 2 summarizes the volume of groundwater and VOC mass removal for the NASA GWTS.

Table 2
CY 2015 Flow and Mass Removal Data

Month	Total System Influent (gallons)	Average Flow (gpd)	Average Flow (gpm)	Influent VOC Concentration (µg/L)	Total VOC Mass Removed (pounds)
January	594,070	19,164	13.31	55.87	0.28
February	632,121	22,576	15.68	60.60	0.32
March	828,245	26,718	18.55	58.14	0.40
April	759,123	25,304	17.57	59.39	0.38
May	689,811	22,252	15.45	55.19	0.32
June	707,541	23,585	16.38	73.40	0.43
July	760,671	24,538	17.04	70.69	0.45
August	777,700	25,087	17.42	51.83	0.34
September	705,686	22,764	15.81	55.85	0.33
October	718,082	23,164	16.09	52.65	0.32
November	726,945	23,450	16.28	56.93	0.34
December	747,040	24,098	16.73	71.71	0.45
Monthly Average	**720,586**	**23,558**	**16.36**	**60.19**	**0.36**
Yearly Sum	**8,647,035**	**---**	**---**	**---**	**4.36**

gpd = gallons per day
gpm = gallons per minute
VOC = Volatile Organic Compounds
µg/L = micrograms per liter

4 Water Quality Analysis

The results of the CY 2015 analytical testing and standard observations are summarized in the tables as follows:

- Table 3 – Volatile Organic Compounds
- Table 4 – Petroleum Hydrocarbons & Fuel-Related Compounds
- Table 5 – Semi-Volatile Organic Compounds, Cyanide & Turbidity
- Table 6 – Priority Pollutant Metals
- Table 7 – Fish Bioassay
- Table 8 - Temperature & pH
- Table 9 – Standard Observations

Laboratory-certified analytical reports were provided in the previously submitted Quarterly Self-Monitoring Reports. The influent and effluent sample points are shown in Figure 2.

Table 3
CY 2015 NASA Ames GWTS
Analytical Results – Volatile Organic Compounds

Sample Location	Sample Date	1,1-DCA (µg/L)	1,1-DCE (µg/L)	*cis*-1,2-DCE (µg/L)	TCE (µg/L)	Other VOCs (µg/L)
NASA-I	1/21/15	3.1	6.7	21	22	Chloroform = 0.13[J] *trans*-1,2-DCE = 0.64[J] Freon 11 = 0.42[J] Freon 113 = 1.3[J] Vinyl Chloride = 0.58
NASA-E	1/21/15	<0.061	<0.098	<0.057	<0.20	ND
NASA-I	2/17/15	3.3	6.3	23	28	ND
NASA-E	2/17/15	<0.061	<0.098	<0.057	<0.20	ND
NASA-I	3/23/15	2.5	5.3	20	27	*trans*-1,2-DCE = 0.64[J] Freon 11 = 1.3[J] Freon 113 = 1.4[J]
NASA-E	3/23/15	<0.061	<0.098	<0.057	<0.20	ND
NASA-I	4/22/15	2.6	4.4	21	29	1,1,1-TCA = 0.34[J] *trans*-1,2-DCE = 0.56[J] Freon 11 = 0.29[J] Freon 113 = 1.2[J]
NASA-E	4/22/15	<0.061	<0.098	<0.057	<0.20	ND
NASA-I	5/27/15	1.9	4.1	20	26	1,1,1-TCA = 0.26[J] *trans*-1,2-DCE = 0.52[J] Freon 113 = 1.2[J] Freon 11 = 0.28[J] Vinyl Chloride = 0.93
NASA-E	5/27/15	<0.061	<0.098	<0.057	<0.20	ND
NASA-I	6/24/15	3.5	5.3	24	38	1,1,1-TCA = 0.26[J] *trans*-1,2-DCE = 0.52[J] Freon 113 = 1.4[J] Vinyl Chloride = 0.68
NASA-E	6/24/15	<0.061	<0.098	<0.057	<0.20	ND

Sample Location	Sample Date	1,1-DCA (µg/L)	1,1-DCE (µg/L)	*cis*-1,2-DCE (µg/L)	TCE (µg/L)	Other VOCs (µg/L)
NASA-I	7/22/15	3.3	5.9	22	38	*trans*-1,2-DCE = 0.41[J] Freon 113 = 0.53[J] Vinyl Chloride = 0.55
NASA-E	7/22/15	<0.061	<0.098	<0.057	<0.20	ND
NASA-I	8/19/15	3.0	4.9	19	24	*trans*-1,2-DCE = 0.48[J] Vinyl Chloride = 0.45[J]
NASA-E	8/19/15	<0.061	<0.098	<0.057	<0.20	ND
NASA-I	9/21/15	3.0	5.3	19	28	*trans*-1,2-DCE = 0.55[J]
NASA-E	9/21/15	<0.061	<0.098	<0.057	<0.20	ND
NASA-I	10/21/15	3.2	5.2	18	24	Freon 113 = 1.7[J] Vinyl Chloride = 0.55
NASA-E	10/21/15	<0.061	<0.098	<0.057	<0.20	ND
NASA-I	11/18/15	2.7	4.6	20	27	Freon 113 = 1.3 Freon 11 = 0.32 *trans*-1,2-DCE = 0.51 Vinyl Chloride = 0.50
NASA-E	11/18/15	<0.061	<0.098	<0.057	<0.20	ND
NASA-I	12/9/15	4.2	7.3	26	31	Freon 113 = 1.9[J] Freon 11 = 0.4[J] *trans*-1,2-DCE = 0.63[J] 1-2-DCA = 0.39[J]
NASA-E	12/9/15	<0.061	<0.098	<0.057	<0.20	ND

NASA-I = Influent
NASA-E = Effluent
ND = Not detected at or above the Method Detection Limit
µg/L = micrograms per liter
DCA = dichloroethane
DCE= dichloroethene
TCA = trichloroethane
TCE = trichloroethene
Freon 11 = trichlorofluoromethane
Freon 113 = 1,1,2-trichloro-1,2,2-trifluoroethane
VOCs = Volatile Organic Compounds
[J] = detected at or above Method Detection Limit but below the laboratory Reporting Limit; therefore, result is an estimated concentration

Table 4
CY 2015 NASA Ames GWTS
Analytical Results - Petroleum Hydrocarbons & Fuel-Related Compounds

Sample Location	Sample Date	Total Petroleum Hydrocarbons (µg/L)	BTEX (µg/L)	MTBE (µg/L)	Fuel Oxygenates (µg/L)
NASA-I	1/21/15	TPH-G = 55	ND	<0.030	---
NASA-E	1/21/15	TPH-MO = 170 TPH-G = 41[J]	ND	<0.030	---
NASA-I	2/17/15	TPH-G = 29[J]	ND	<0.030	---
NASA-E	2/17/15	TPH-G = 13[J]	ND	<0.030	---
NASA-I	3/23/15	TPH-G = 18[J]	ND	<0.030	---
NASA-E	3/23/15	TPH-G = 35[J]	ND	<0.030	---
NASA-I	4/22/15	TPH-G = 30[J]	ND	<0.030	---
NASA-E	4/22/15	TPH-G = 15[J]	ND	<0.030	---
NASA-I	5/27/15	TPH-G = 55	ND	<0.030	---
NASA-E	5/27/15	ND	ND	<0.030	---
NASA-I	6/24/15	TPH-G = 88	ND	<0.030	DIPE = 2.1
NASA-E	6/24/15	TPH-MO = 27[J] TPH-G = 15[J]	ND	<0.030	ND
NASA-I	7/22/15	TPH-G = 71	ND	<0.030	---
NASA-E	7/22/15	TPH-G = 40[J]	ND	<0.030	---
NASA-I	8/19/15	TPH-G = 43[J]	ND	<0.030	---
NASA-E	8/19/15	TPH-G = 19[J]	ND	<0.030	---
NASA-I	9/21/15	ND	ND	<0.030	---
NASA-E	9/21/15	ND	ND	<0.030	---
NASA-I	10/21/15	TPH-G = 33[J]	ND	<0.030	---
NASA-E	10/21/15	TPH-MO = 45[J]	ND	<0.030	---
NASA-I	11/18/15	TPH-G = 25[J]	ND	<0.030	---
NASA-E	11/18/15	TPH-G = 10[J]	ND	<0.030	---
NASA-I	12/9/15	TPH-G = 46[J]	ND	<0.030	---
NASA-E	12/9/15	TPH-G = 36[J]	ND	<0.030	---

NASA-I = Influent
NASA-E = Effluent
ND = Not detected at or above the Method Detection Limit
-- = Analysis/analyses not required
Total Petroleum Hydrocarbons includes motor oil (TPH-MO), diesel, JP4/5/8, and gasoline (TPH-G)
BTEX = benzene, toluene, ethylbenzene, xylenes
MTBE = methyl tertiary butyl ether
DIPE = di-isopropyl Ether
[J] = detected at or above Method Detection Limit but below the laboratory Reporting Limit; therefore, result is an estimated concentration

Table 5
CY 2015 NASA Ames GWTS
Analytical Results – Semi-Volatile Organic Compounds, Cyanide & Turbidity

Sample Location	Sample Date	SVOCs (µg/L)	1,4-Dioxane (µg/L)	Cyanide (µg/L)	Turbidity (NTU)
NASA-I	1/21/15	---	---	---	---
NASA-E	1/21/15	ND	---	---	---
NASA-I	2/17/15	---	---	---	---
NASA-E	2/17/15	DEHP = 1.4[J] DBP = 2.1[J]	---	---	---
NASA-I	3/23/15	2-Chlorophenol = 0.72[J] DEHP = 1.8[J] DEP = 1.1[J] DBP = 2.5[J]	<0.50	---	---
NASA-E	3/23/15	DEHP = 2.9[J] DEP = 1.1[J] DNOP = 3.7[J] DBP = 2.8[J]	<0.50	---	---
NASA-I	4/22/15	DEHP = 2.4[J]	---	---	---
NASA-E	4/22/15	DEHP = 1.5[J]	---	---	---
NASA-I	5/27/15	DEHP = 0.83[J]	---	---	---
NASA-E	5/27/15	DEHP = 0.66[J]	---	---	---
NASA-I	6/24/15	DEHP = 1.1[J] DBP = 0.86[J]	---	---	---
NASA-E	6/24/15	DEHP = 0.67[J] DEP = 0.67[J]	---	---	---
NASA-I	7/22/15	---	---	---	---
NASA-E	7/22/15	ND	---	---	---
NASA-I	8/19/15	---	---	---	---
NASA-E	8/19/15	DNOP = 0.76[J]	---	---	---
NASA-I	9/21/15	DEHP = 0.77[J]	0.81[J]	---	---
NASA-E	9/21/15	DEHP = 0.75[J]	0.99[J]	---	---
NASA-I	10/21/15	---	---	---	---
NASA-E	10/21/15	ND	---	---	---
NASA-I	11/18/15	---	---	---	---
NASA-E	11/18/15	ND	---	---	---

Sample Location	Sample Date	SVOCs (µg/L)	1,4-Dioxane (µg/L)	Cyanide (µg/L)	Turbidity (NTU)
NASA-I	12/9/15	ND	---	---	---
NASE-E	12/9/15	ND	---	<1.2	0.13[J]

NASA-I = Influent
NASA-E = Effluent
SVOCs = Semi-Volatile Organic Compounds
µg/L = micrograms per liter
DBP = di-n-butyl phthalate
DEHP = bis(2-ethylhexyl)phthalate
DEP = diethyl phthalate
DNOP = di-n-octyl phthalate
ND = Not detected at or above the Method Detection Limit
NTU = Nephelometric Turbidity Units
[J] = detected at or above Method Detection Limit but below the laboratory Reporting Limit; therefore, result is an estimated concentration
--- = Not Analyzed

Table 6
CY 2015 NASA Ames GWTS
Analytical Results – Priority Pollutant Metals

Sample Location	Sample Date	As (µg/L)	Cr (µg/L)	Cu (µg/L)	Ni (µg/L)	Tl (µg/L)	Ag, Be, Cd, Hg, Pb, Sb, Se, Zn (µg/L)
NASA-E	12/9/15	1.5	<0.28	0.35[J]	<0.22	<0.11	Sb = 0.63[J] Se = 2.3[J]
Trigger Level		10	11	4.7	19	1.7	varies

NASA-E = Effluent
µg/L = micrograms per liter
[J] = detected at or above Method Detection Limit but below the laboratory Reporting Limit; therefore, result is an estimated concentration
As = arsenic, Cr = chromium, Cu = copper, Ni = nickel, Tl = thallium, Ag = silver, Be = beryllium, Cd = cadmium, Hg = mercury, Pb = lead, Sb = antimony, Se = selenium, Zn = zinc

Table 7
Fourth Quarter 2015 NASA Ames GWTS
Analytical Results – Fish Bioassay

96 hr. Static Renewal Fish Bioassay (Rainbow Trout)				
Sample Location	**Sample Date**	**Parameter**	**Result A**	**Result B**
NASA-E	12/9/15	96-Hour % Survival	100%	100%

NASA-E = Effluent

Table 8
CY 2015 NASA Ames GWTS
Monitoring Data - Temperature & pH

Sample Location	Sample Date	Temperature (°C)	pH (Standard Units)
NASA-I	1/21/15	18.0	7.25
NASA-E	1/21/15	15.9	7.35
NASA-I	2/17/15	18.2	7.36
NASA-E	2/17/15	17.2	7.40
NASA-I	3/23/15	18.1	7.30
NASA-E	3/23/15	17.2	7.31
NASA-I	4/22/15	18.2	7.32
NASA-E	4/22/15	17.1	7.38
NASA-I	5/27/15	18.6	7.17
NASA-E	5/27/15	18.5	7.17
NASA-I	6/24/15	19.4	7.27
NASA-E	6/24/15	19.6	7.25
NASA-I	7/22/15	19.9	7.31
NASA-E	7/22/15	20.0	7.30
NASA-I	8/19/15	20.0	7.33
NASA-E	8/19/15	19.7	7.33
NASA-I	9/21/15	19.5	7.26
NASA-E	9/21/15	19.9	7.30
NASA-I	10/21/15	19.8	7.34
NASA-E	10/21/15	18.5	7.38
NASA-I	11/18/15	18.9	7.35
NASA-E	11/18/15	16.7	7.33
NASA-I	12/9/15	19.2	7.30
NASA-E	12/9/15	18.9	7.22

NASA-I = Influent
NASA-E = Effluent
°C = degrees Celsius

Table 9
CY 2015 NASA Ames GWTS
Monitoring Data - Standard Observations

Sample Location	Sample Date	Floating/ Suspended Material	Deposits, Discoloration and/or Plugging	Prevention of Overflow or Bypass	Odor
NASA-I	1/21/15	--	--	--	No
NASA-E	1/21/15	No	No	OK	No
NASA-I	2/17/15	--	--	--	No
NASA-E	2/17/15	No	No	OK	No
NASA-I	3/23/15	--	--	--	No
NASA-E	3/23/15	No	No	OK	No
NASA-I	4/22/15	--	--	--	No
NASA-E	4/22/15	No	No	OK	No
NASA-I	5/27/15	--	--	--	No
NASA-E	5/27/15	No	No	OK	No
NASA-I	6/24/15	--	--	--	No
NASA-E	6/24/15	No	No	OK	No
NASA-I	7/22/15	--	--	--	No
NASA-E	7/22/15	No	No	OK	No
NASA-I	8/19/15	--	--	--	No
NASA-E	8/19/15	No	No	OK	No
NASA-I	9/21/15	--	--	--	No
NASA-E	9/21/15	No	No	OK	No
NASA-I	10/21/15	--	--	--	No
NASA-E	10/21/15	No	No	OK	No
NASA-I	11/18/15	--	--	--	No
NASA-E	11/18/15	No	No	OK	No
NASA-I	12/9/15	--	--	--	No
NASA-E	12/9/15	No	No	OK	No

NASA-I = Influent
NASA-E = Effluent
-- = Observation not required

5 Discussion

5.1 January Effluent Detections and Exceedances

In the January 21, 2015 effluent sample, Total Petroleum Hydrocarbons as Gasoline (TPH-G) was detected at an estimated concentration of 41 micrograms per liter (µg/L). Estimated concentrations, or "J" values, are used when an analyte is detected at concentrations above the Method Detection limit but below the laboratory Reporting Limit. TPH-G was detected in the influent sample at a concentration of 55 µg/L. The effluent trigger level for TPH-G is 50 µg/L. No further action was required.

In the January 21, 2015 effluent sample, Total Petroleum Hydrocarbons as Motor Oil (TPH-MO) was detected at a concentration of 170 µg/L. TPH-MO was not analyzed for in the influent sample. The effluent trigger level for TPH-MO is 50 µg/L. In accordance with the Special Provisions required under Section VI.C.6 of the NPDES Permit, three samples of both the influent and effluent were collected during the following calendar quarter and analyzed for TPH-MO.

The results of the follow-up trigger level sampling are provided in Table 10, including the original January trigger level exceedance results. All of the trigger level sampling results were below the Method Detection Limit of 9.1 µg/L. A blank sample was created on February 17 using the same lot of sample bottles used for the January sampling event. The results of the blank sample were also non-detect, indicating that the sample bottles were not the source of contamination. The laboratory method blank sample was also non-detect. The source of the motor oil in the January sample is unknown.

Because the results of the follow-up trigger level sampling were all non-detect, no further action was required.

Table 10
TPH-MO Trigger Level Sampling Results

Sample Location	Sample Date	TPH-MO (µg/L)
NASA-I	1/21/15	---
NASA-E	1/21/15	170
NASA-I	2/17/15	<9.1
NASA-E	2/17/15	<9.1
Trip Blank	2/17/15	<9.1
NASA-I	3/23/15	<9.1
NASA-E	3/23/15	<9.1
NASA-I	4/22/15	<9.1
NASA-E	4/22/15	<9.1

5.2 February Effluent Detections

In the February 17, 2015 effluent sample, TPH-G was detected at an estimated concentration of 13 µg/L. TPH-G was detected in the influent sample at an estimated concentration 29 µg/L. The effluent trigger level for TPH-G is 50 µg/L. No further action was required.

In the February 17, 2015 effluent sample, bis(2-ethylhexyl)phthalate (DEHP) was detected at an estimated concentration of 1.4 µg/L. DEHP was not analyzed for in the influent sample. The effluent trigger level for DEHP is 1.8 µg/L. No further action was required.

In the February 17, 2015 effluent sample, di-n-butyl phthalate (DBP) was detected at an estimated concentration of 2.1 µg/L. DBP was not analyzed for in the influent sample. Neither an effluent limitation concentration nor a trigger level concentration has been established for DBP. However, according to the Agency for Toxic Substances & Disease Registry's ToxFAQ, the EPA recommends that levels of DBP in lakes and streams should be limited to 34 milligrams per liter (mg/L) to prevent possible human health effects from drinking water or eating fish contaminated with this chemical. No further action was required.

5.3 March Effluent Detections and Exceedances

In the March 23, 2015 effluent sample, TPH-G was detected at an estimated concentration of 35 µg/L in the effluent sample. TPH-G was detected in the influent sample at and estimated concentration 18 µg/L. The effluent trigger level for TPH-G is 50 µg/L. No further action was required.

In March 23, 2015, DBP was detected at an estimated concentration of 2.8 µg/L in the effluent sample and at an estimated concentration of 2.5 µg/L in the influent sample. Neither an effluent limitation concentration nor a trigger level concentration has been established for DBP, however the concentration of DBP detected was below the Agency for Toxic Substances & Disease Registry's ToxFAQ limit of 34 mg/L in lakes and streams. No further action was required.

In the March 23, 2015 effluent sample, di-n-octyl phthalate (DNOP) was detected at an estimated concentration of 3.7 µg/L. DNOP was not detected in the influent sample. Neither an effluent limitation concentration nor a trigger level concentration has been established for DNOP. No further action was required.

In the March 23, 2015 effluent sample, diethyl phthalate (DEP) was detected at an estimated concentration of 1.1 µg/L. DEP was detected in the influent sample at an estimated concentration of 1.1 µg/L. Neither an effluent limitation concentration nor a trigger level concentration has been established for DEP. No further action was required.

In the March 23, 2015 effluent sample, DEHP was detected at an estimated concentration of 2.9 µg/L. DEHP was detected in the influent sample at an estimated concentration of 1.8 µg/L. The effluent concentration exceeded the DEHP trigger level of 1.8 µg/L. In accordance with the Special Provisions required under Section VI.C.6 of the NPDES Permit, , three samples of both the influent and effluent were collected during the following calendar quarter and analyzed for SVOCs, including DEHP.

The results of the follow-up trigger level sampling are provided in Table 11, including the original March trigger level exceedance results. On April 22, 2015, DEHP was detected at estimated concentrations of 0.89 µg/L and 1.5 µg/L in the influent and effluent samples, respectively. On May 27, 2015, DEPH was detected in the influent and effluent samples at estimated concentrations of 0.83 µg/L and 0.66 µg/L, respectively. In the June 24, 2015 final follow-up sampling event, DEHP was detected at estimated concentrations of 1.1 µg/L and 0.67 µg/L in the influent and effluent samples, respectively. The results of the follow-up trigger level sampling are provided in Table 8, including the original March trigger level exceedance results. Based on the results of the follow-up sampling, no additional action was required.

Table 11
DEHP Trigger Level Sampling Results

Sample Location	Sample Date	DEHP (µg/L)
NASA-I	3/23/15	1.8[J]
NASA-E	3/23/15	2.9[J]
NASA-I	4/22/15	2.4[J]
NASA-E	4/22/15	1.5[J]
NASA-I	5/27/15	0.83[J]
NASA-E	5/27/15	0.66[J]
NASA-I	6/24/15	1.1[J]
NASA-E	6/24/15	0.67[J]

[J] = detected at or above Method Detection Limit but below the laboratory Reporting Limit; therefore, result is an estimated concentration

5.4 April Effluent Detection

In the April 22, 2015 effluent sample, TPH-G was detected at an estimated concentration of 15 µg/L. TPH-G was detected in the influent sample at an estimated concentration of 30 µg/L. The trigger level for TPH-G is 50 µg/L. No further action was required.

5.5 June Effluent Detections

In the June 24, 2015 effluent sample, DEP was detected at an estimated concentration of 0.67 µg/L. DEP was not detected in the influent sample. Neither an effluent limitation concentration nor a trigger level concentration has been established for DEP. No further action was required.

In the June 24, 2015 effluent sample, TPH-G was detected at an estimated concentration of 15 µg/L. TPH-G was detected in the influent sample at a concentration of 88 µg/L. The trigger level for TPH-G is 50 µg/L. The trigger level for TPH-G is 50 µg/L. No further action was required.

In the June 24, 2015 effluent sample, TPH-MO was detected at an estimated concentration of 27 µg/L. TPH-MO was not detected in the influent sample. The effluent trigger level for TPH-MO is 50 µg/L. The trigger level for TPH-MO is 50 µg/L. No further action was required.

5.6 July Effluent Detection

In the July 22, 2015 effluent sample, TPH-G was detected at an estimated concentration of 40 µg /L. TPH-G was detected in the influent sample at a concentration of 71 µg/L. The effluent trigger level for TPH-G is 50 µg /L. No further action was required.

5.7 August Effluent Detections

In the August 19, 2015 effluent sample, TPH-G was detected at an estimated concentration of 19 µg /L. TPH-G was detected in the influent sample at an estimated concentration of 43 µg/L. The effluent trigger level for TPH-G is 50 µg /L. No further action was required.

In the August 19, 2015 effluent sample, DNOP was detected at an estimated concentration of 0.76 µg /L. DNOP was not analyzed for in the influent. Neither an effluent limitation concentration nor a trigger level concentration has been established for DNOP. No further action was required.

5.8 September Effluent Detection

In the September 21, 2015 effluent sample, DEHP was detected at an estimated concentration of 0.75 µg /L. DEHP was detected in the influent sample at an estimated concentration of 0.77 µg/L. The effluent trigger level for DEHP is 1.8 µg/L. No further action was required.

In the September 21, 2015 effluent sample, 1,4-Dioxane was detected at an estimated concentration of 0.99 µg/L. 1,4-Dioxane was detected in the influent sample at an estimated concentration of 0.81 µg/L. The effluent trigger level for 1,4-Dioxane is 3.0 µg/L. No further action was required.

5.9 October Effluent Detection

In the October 21, 2015 effluent sample, TPH-MO was detected at an estimated concentration of 45 µg/L. TPH-MO was not analyzed for in the influent sample. The effluent trigger level for TPH-MO is 50 µg/L. No further action was required.

5.10 November Effluent Detection

In the November 18, 2015 effluent sample, TPH-G was detected at an estimated concentration of 10 µg/L. TPH-G was detected in the influent sample at an estimated concentration of 25 µg/L. The effluent trigger level for TPH-G is 50 µg/L. No further action was required.

5.11 December Effluent Detections

In the December 9, 2015 effluent sample, TPH-G was detected at an estimated concentration of 36 µg/L. TPH-G was detected in the influent sample at an estimated concentration of 46 µg/L. The effluent trigger level for TPH-gasoline is 50 µg/L. No further action was required.

In the December 9, 2015 effluent sample, arsenic, copper, antimony, and selenium were detected at concentrations well below their respective trigger levels. No further action was required.

5.12 Treated Groundwater Reuse

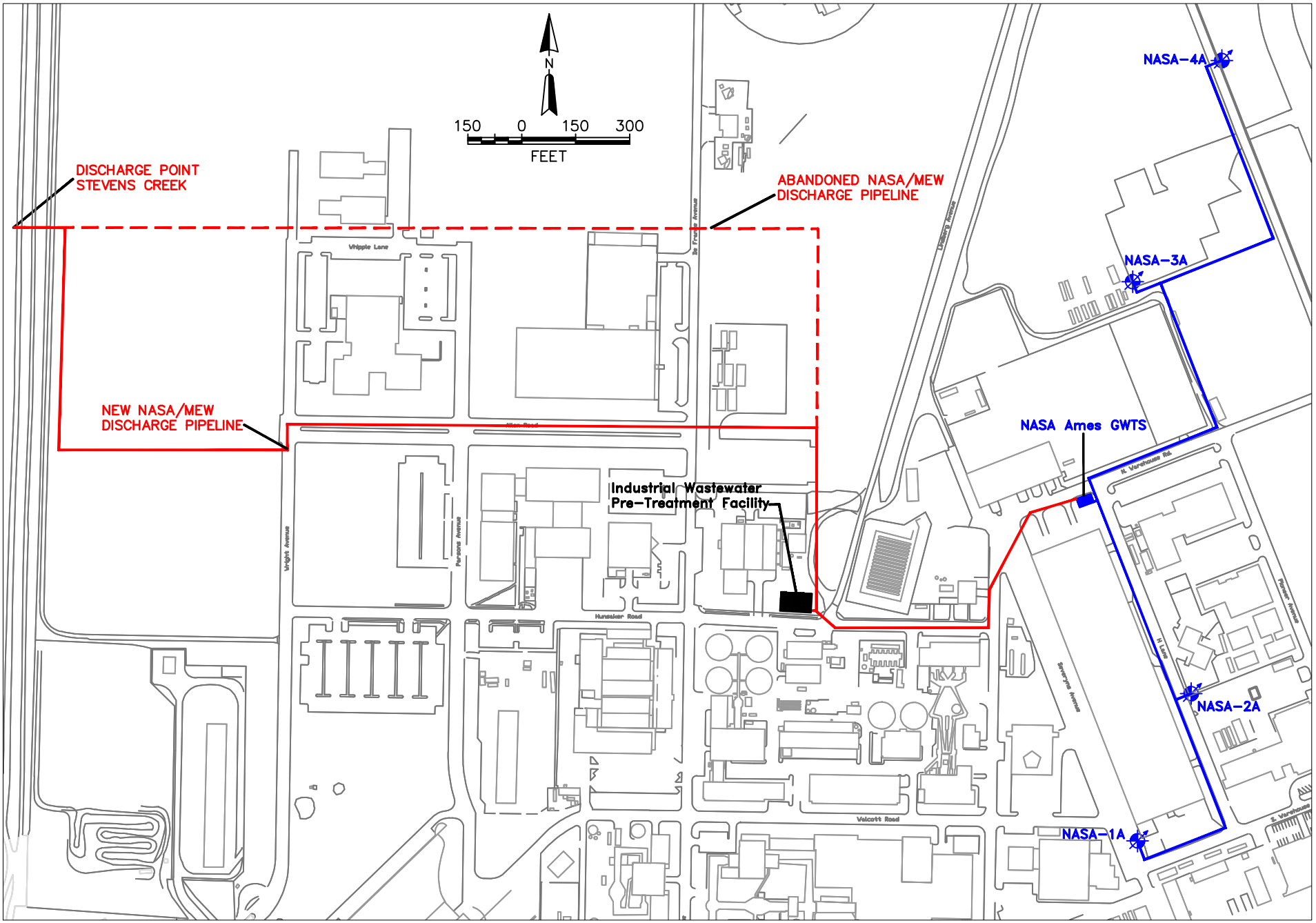
During CY 2015, approximately 1,574,579 gallons of treated groundwater from the NASA GWTS was diverted to NASA's Arc Jet Complex for reuse. Table 12 outlines the volume of treated groundwater reused during each quarter.

Table 12
CY 2015 NASA Treated Groundwater Reuse

Quarter	NASA GWTS Reused Groundwater (gallons)
Quarter 1	265,271
Quarter 2	355,078
Quarter 3	498,468
Quarter 4	428,761
Yearly Sum	**1,547,579**

6 Conclusions

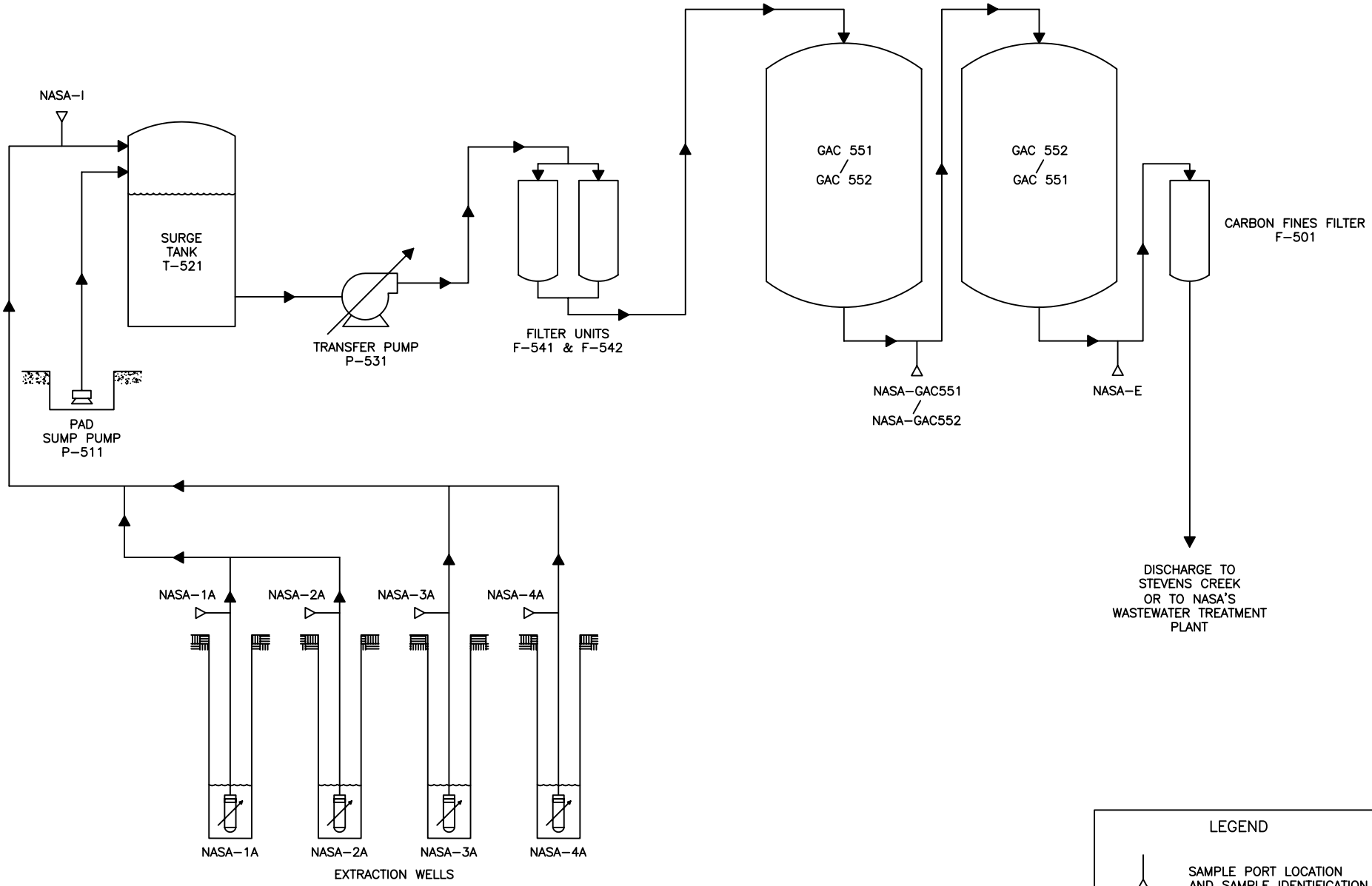
The GWTS monitoring data indicate that the NASA Ames GWTS was in compliance with the effluent discharge limitations set forth in the August 25, 2014 NPDES permit during this reporting period.



Ames Research Center
Moffett Field, California 94035

TITLE:
NASA Ames Groundwater Treatment System
Extraction Wells, Treatment Piping, Discharge Pipeline, and Discharge Point

DWN: BDR	DES.: CNF	PROJECT NO.: RGRP GWTS
CHKD: JRL	APPD: JRL	FIGURE NO.: 1
DATE: 1/17/14	REV.: 05	



Ames Research Center
Moffett Field, California 94035

TITLE:
NASA AMES RGRP GWTS
GWTS FLOW DIAGRAM AND SAMPLE PORT LOCATIONS

DWN: CNF	DES.: CNF	PROJECT NO.: RGRP GWTS
CHKD: DHV	APPD: JRL	
DATE: 03/2003	REV.: 02	FIGURE NO.: 2

APPENDIX B

CY2015 Depth-to-Water Measurements

APPENDIX B
2015 Depth-to-Water Measurements

Well	Date	Measuring Point Elevation (ft MSL)	Depth to Water (ft)	Groundwater Elevation (ft MSL)
10B01A	3/19/2015	5.85	6.57	-0.72
10B01A	9/17/2015	5.85	9.34	-3.49
10B04A	3/19/2015	1.76	2.56	-0.80
10B04A	9/17/2015	1.76	5.15	-3.39
10G04A	3/19/2015	3.59	4.52	-0.93
10G04A	9/17/2015	3.59	6.59	-3.00
10H01A	3/19/2015	5.16	5.97	-0.81
10H01A	9/17/2015	5.16	8.29	-3.13
10H02A	3/19/2015	2.26	3.04	-0.78
10H02A	9/17/2015	2.26	5.78	-3.52
10J04A	3/19/2015	3.89	4.02	-0.13
10J04A	9/17/2015	3.89	6.12	-2.23
10J05A	3/19/2015	6.34	5.89	0.45
10J05A	9/17/2015	6.34	7.78	-1.44
10J09A	3/19/2015	3.70	3.82	-0.12
10J09A	9/17/2015	3.70	6.43	-2.73
10Q08A	3/19/2015	6.54	4.16	2.38
10Q08A	9/17/2015	6.54	6.09	0.45
10R09A	3/19/2015	8.78	7.20	1.58
10R09A	9/17/2015	8.78	9.05	-0.27
10R10A	3/19/2015	9.15	6.71	2.44
10R10A	9/17/2015	9.15	8.57	0.58
10R11A	3/19/2015	9.25	7.59	1.66
10R11A	9/17/2015	9.25	9.46	-0.21
11E02A	3/19/2015	4.76	6.12	-1.36
11E02A	9/17/2015	4.76	7.98	-3.22
11M02A	3/19/2015	4.27	4.74	-0.47
11M02A	9/17/2015	4.27	6.40	-2.13
11M03A	3/19/2015	6.51	7.61	-1.10
11M03A	9/17/2015	6.51	8.97	-2.46
11M07A	3/19/2015	5.86	6.20	-0.34
11M07A	9/17/2015	5.86	7.77	-1.91
11M14A1	3/19/2015	8.26	8.79	-0.53
11M14A1	9/17/2015	8.26	10.19	-1.93

APPENDIX B
2015 Depth-to-Water Measurements

Well	Date	Measuring Point Elevation (ft MSL)	Depth to Water (ft)	Groundwater Elevation (ft MSL)
11M16A1	3/19/2015	8.79	9.60	-0.81
11M16A1	9/17/2015	8.79	10.79	-2.00
11M17A	3/19/2015	4.16	4.74	-0.58
11M17A	9/17/2015	4.16	6.29	-2.13
11M18A1	3/19/2015	3.72	4.58	-0.86
11M18A1	9/17/2015	3.72	6.09	-2.37
11M21A	3/19/2015	7.10	7.36	-0.26
11M21A	9/17/2015	7.10	8.90	-1.80
11M25A	9/17/2015	3.73	6.10	-2.37
11N21A1	3/19/2015	6.14	6.16	-0.02
11N21A1	9/17/2015	6.14	7.48	-1.34
11N22A1	3/19/2015	10.75	10.26	0.49
11N22A1	9/17/2015	10.75	11.77	-1.02
11N27A	3/19/2015	12.25	10.67	1.58
11N27A	9/17/2015	12.25	12.44	-0.19
14C06A	3/19/2015	15.02	9.99	5.03
14C06A	9/17/2015	15.02	11.87	3.15
14C15A	3/19/2015	13.39	7.29	6.10
14C15A	9/17/2015	13.39	8.80	4.59
14C33A	3/19/2015	13.55	8.75	4.80
14C33A	9/17/2015	13.55	10.35	3.20
14C40A	3/19/2015	11.49	7.68	3.81
14C40A	9/17/2015	11.49	9.25	2.24
14C60A	3/19/2015	10.27	8.04	2.23
14C60A	9/17/2015	10.27	9.65	0.62
14D02A	3/19/2015	10.15	6.46	3.69
14D02A	9/17/2015	10.15	8.07	2.08
14D05A	3/19/2015	14.68	NM	NM
14D05A	9/17/2015	14.68	6.94	7.74
14D09A	3/19/2015	15.81	9.00	6.81
14D09A	9/17/2015	15.81	10.30	5.51
14D12A	3/19/2015	14.78	8.80	5.98
14D12A	9/17/2015	14.78	10.11	4.67

APPENDIX B
2015 Depth-to-Water Measurements

Well	Date	Measuring Point Elevation (ft MSL)	Depth to Water (ft)	Groundwater Elevation (ft MSL)
14D13A	3/19/2015	13.19	6.62	6.57
14D13A	9/17/2015	13.19	8.09	5.10
14D24A	3/19/2015	8.29	13.50	-5.21
14D24A	9/17/2015	8.29	Dry	NM
14D26A1	3/19/2015	8.35	17.04	-8.69
14D26A1	9/17/2015	8.35	18.63	-10.28
14D29A	3/19/2015	13.93	8.12	5.81
14D29A	9/17/2015	13.93	9.72	4.21
14D33A	3/19/2015	10.00	6.75	3.25
14D33A	9/17/2015	10.00	8.38	1.62
14D35A	3/19/2015	9.29	6.30	2.99
14D35A	9/17/2015	9.29	7.90	1.39
14D36A	3/19/2015	12.05	7.23	4.82
14D36A	9/17/2015	12.05	NM	NM
14D37A	3/19/2015	8.19	5.58	2.61
14D37A	9/17/2015	8.19	7.19	1.00
14D39A	3/19/2015	12.51	8.33	4.18
14D39A	9/17/2015	12.51	9.82	2.69
14E14A	3/19/2015	21.64	10.91	10.73
14E14A	9/17/2015	21.64	11.89	9.75
15A01A	3/19/2015	15.36	9.82	5.54
15A01A	9/17/2015	15.36	11.59	3.77
15A02A	3/19/2015	17.14	6.65	10.49
15A02A	9/17/2015	17.14	7.83	9.31
15A04A	3/19/2015	14.24	7.51	6.73
15A04A	9/17/2015	14.24	8.95	5.29
15A06A	3/19/2015	15.24	6.16	9.08
15A06A	9/17/2015	15.24	7.53	7.71
15A08A	3/19/2015	14.31	6.66	7.65
15A08A	9/17/2015	14.31	8.10	6.21
15A16A	3/19/2015	12.21	8.28	3.93
15A16A	9/17/2015	12.21	10.00	2.21
15A18A	3/19/2015	12.74	7.70	5.04
15A18A	9/17/2015	12.74	9.50	3.24

APPENDIX B
2015 Depth-to-Water Measurements

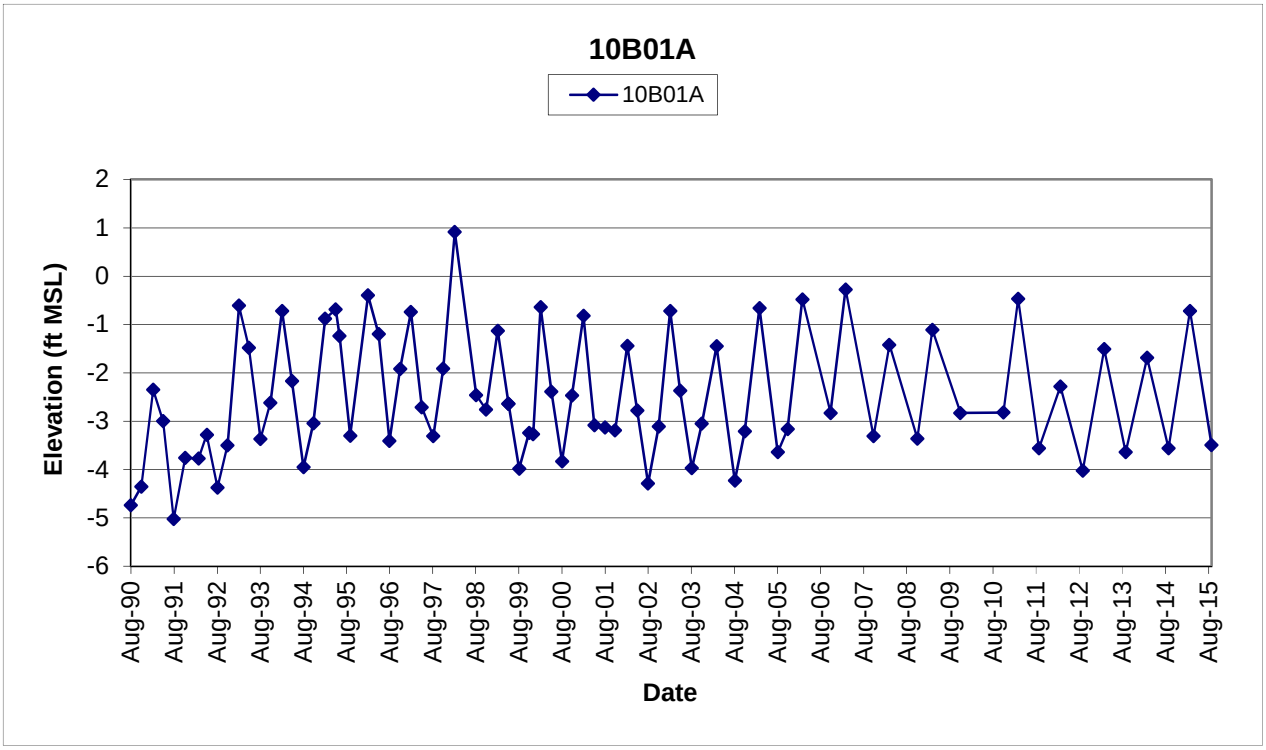
Well	Date	Measuring Point Elevation (ft MSL)	Depth to Water (ft)	Groundwater Elevation (ft MSL)
15B08A	3/19/2015	14.75	6.56	8.19
15B08A	9/17/2015	14.75	8.07	6.68
15B09A	3/19/2015	13.20	6.13	7.07
15B09A	9/17/2015	13.20	7.70	5.50
15B10A	3/19/2015	15.30	5.41	9.89
15B10A	9/17/2015	15.30	6.96	8.34
15H05A	3/19/2015	18.69	5.80	12.89
15H05A	9/17/2015	18.69	6.79	11.90
15H12A	3/19/2015	14.77	5.69	9.08
15H12A	9/17/2015	14.77	7.16	7.61
TANK1-E	3/19/2015	16.45	6.55	9.90
TANK1-E	9/17/2015	16.45	7.87	8.58
10R07A2	3/19/2015	10.70	8.04	2.66
10R07A2	9/17/2015	10.70	9.78	0.92
14D25A2	3/19/2015	8.30	5.74	2.56
14D25A2	9/17/2015	8.30	7.28	1.02
14D31A2	3/19/2015	8.02	6.02	2.00
14D31A2	9/17/2015	8.02	7.57	0.45
15A12A2	3/19/2015	16.94	7.35	9.59
15A12A2	9/17/2015	16.94	7.98	8.96
15A15A2	3/19/2015	12.35	8.45	3.90
15A15A2	9/17/2015	12.35	10.21	2.14
15B17A2	3/19/2015	14.83	5.48	9.35
15B17A2	9/17/2015	14.83	6.95	7.88
15B18A2	3/19/2015	15.20	5.70	9.50
15B18A2	9/17/2015	15.20	6.94	8.26

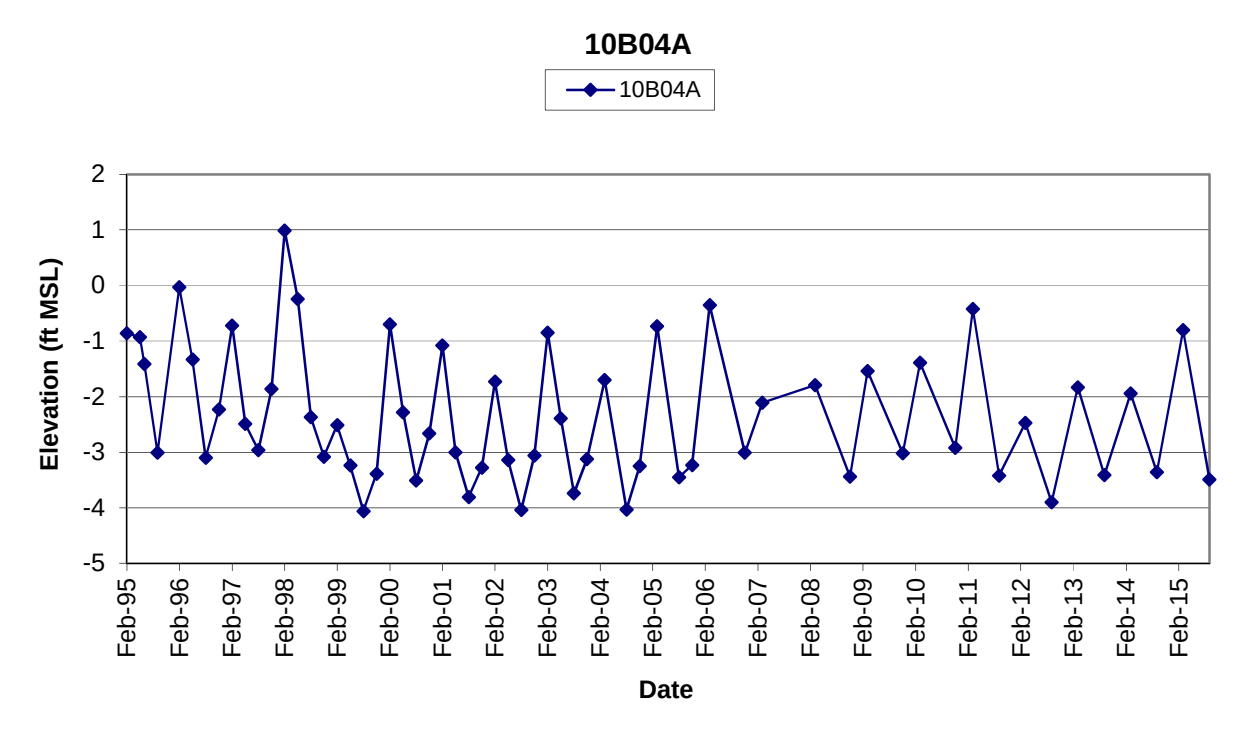
ft = feet
MSL = mean sea level
NM = not measured

APPENDIX C

Hydrographs

APPENDIX C
CY2015 Hydrographs





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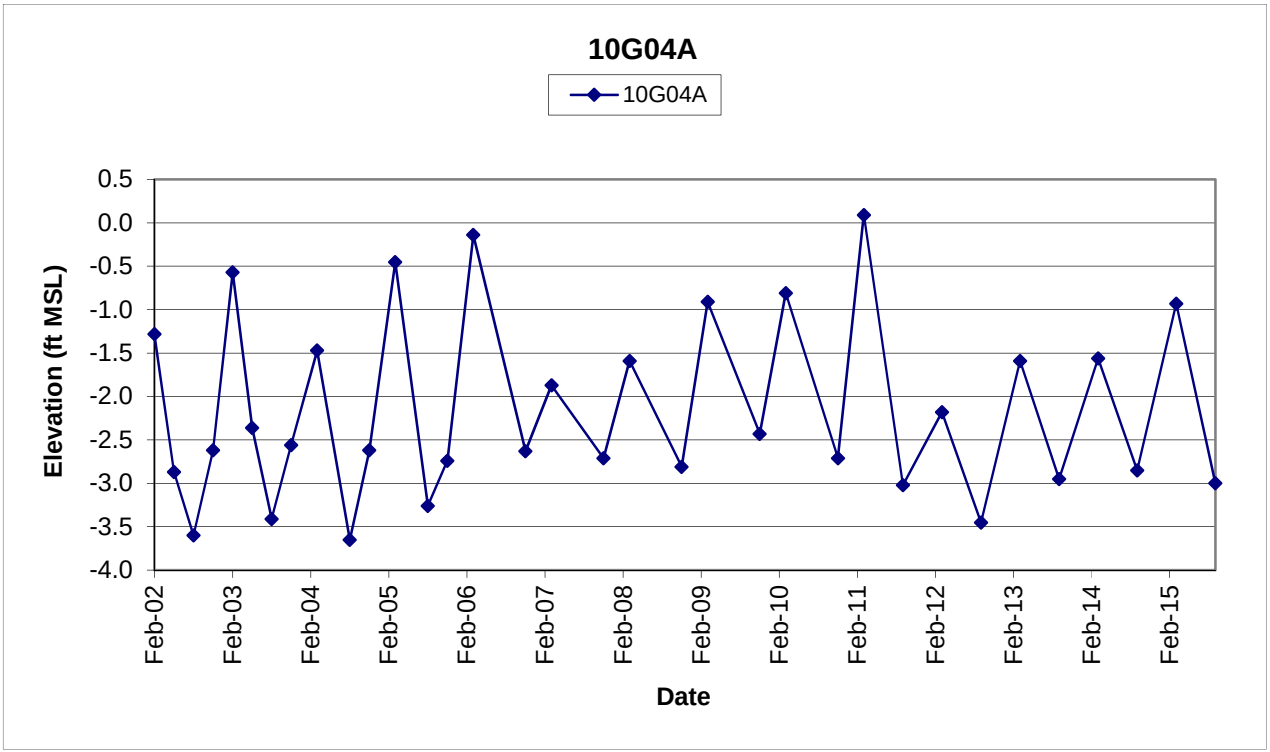
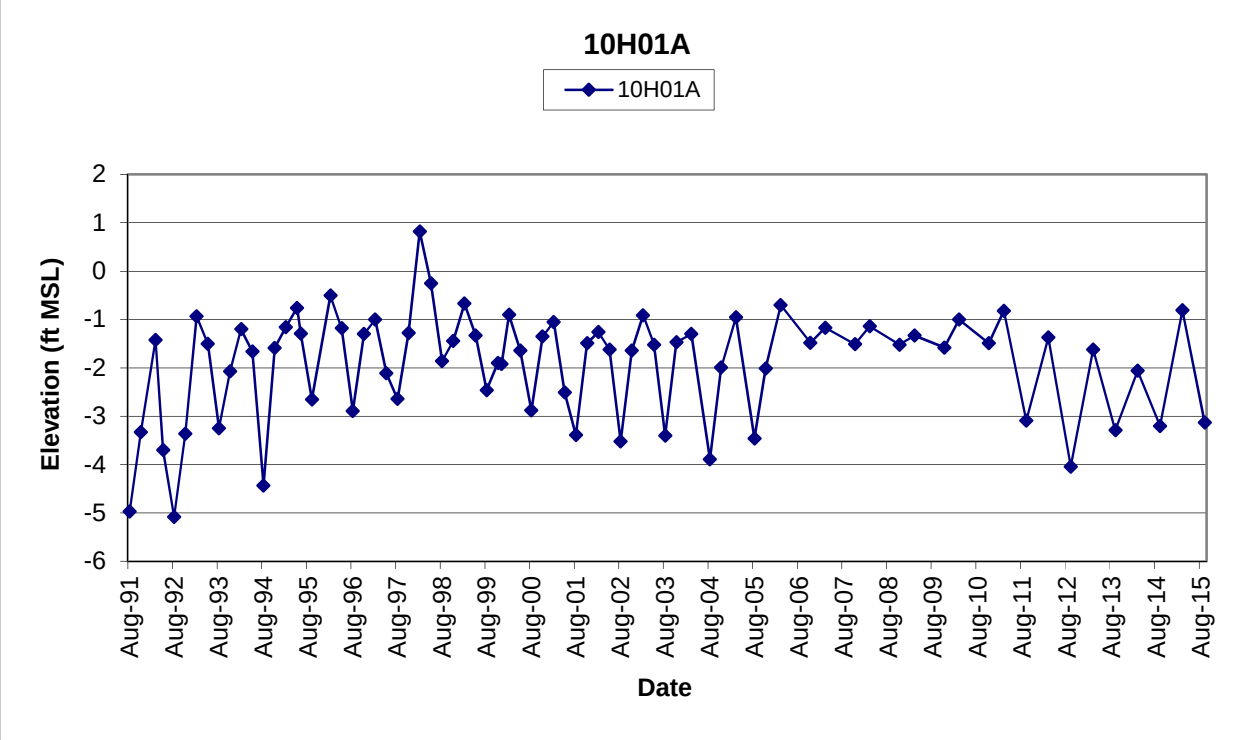
CY2015 Hydrographs





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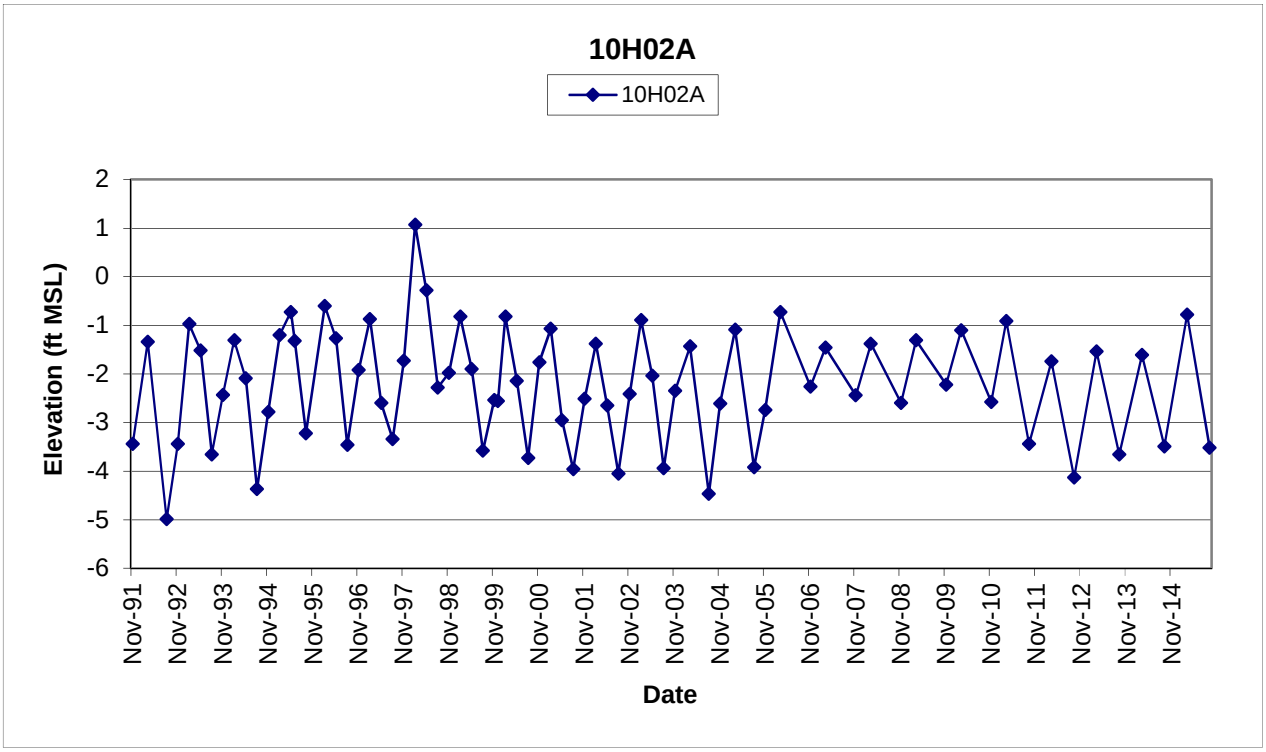
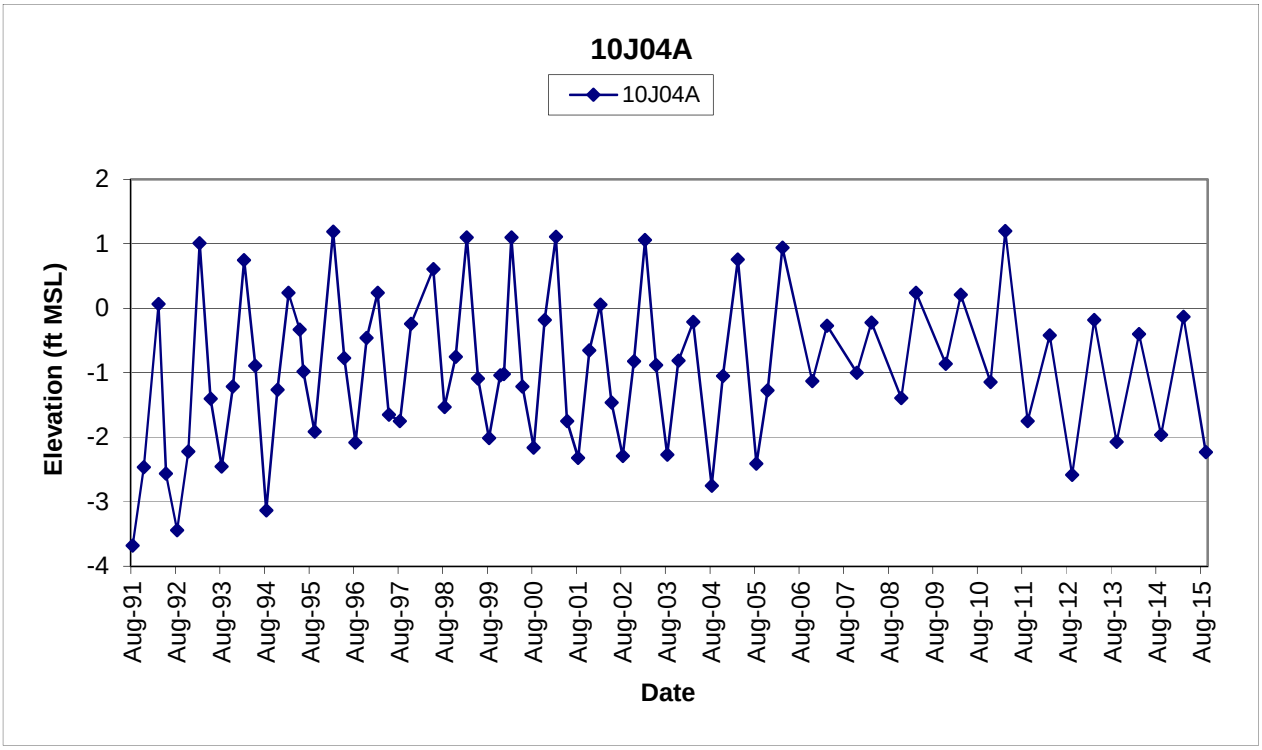
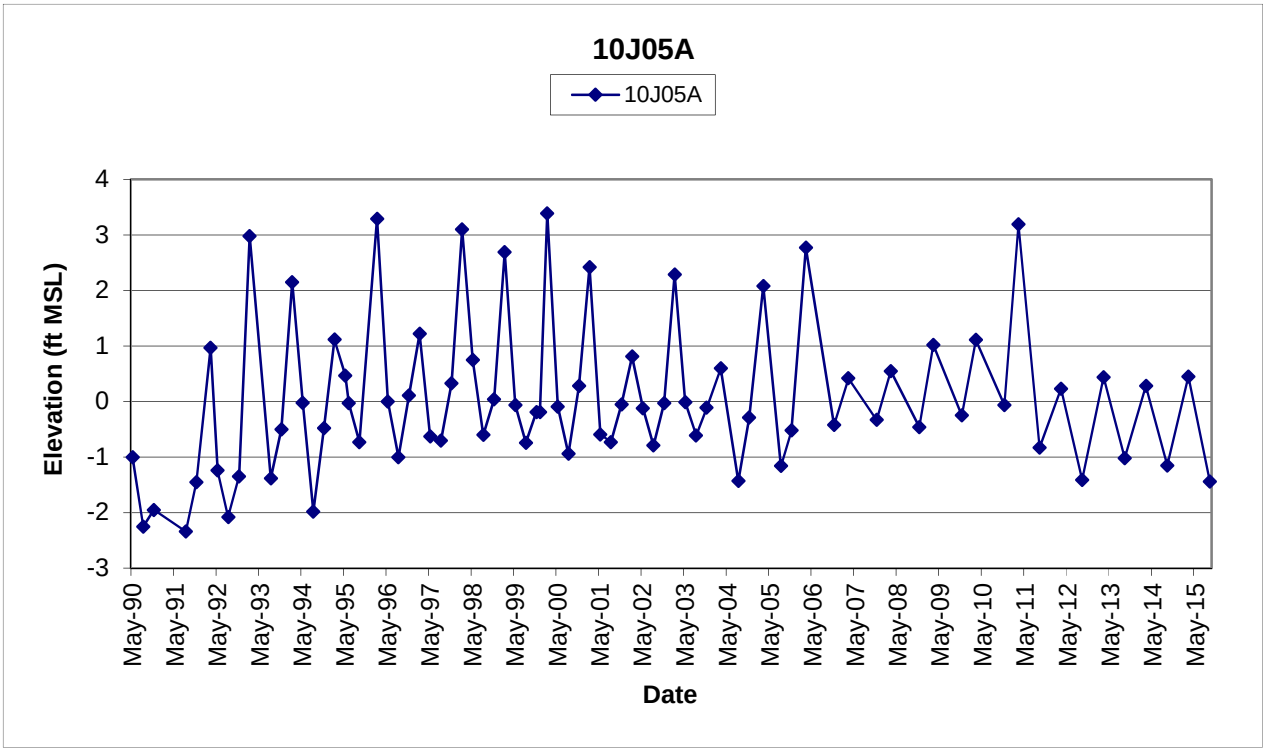
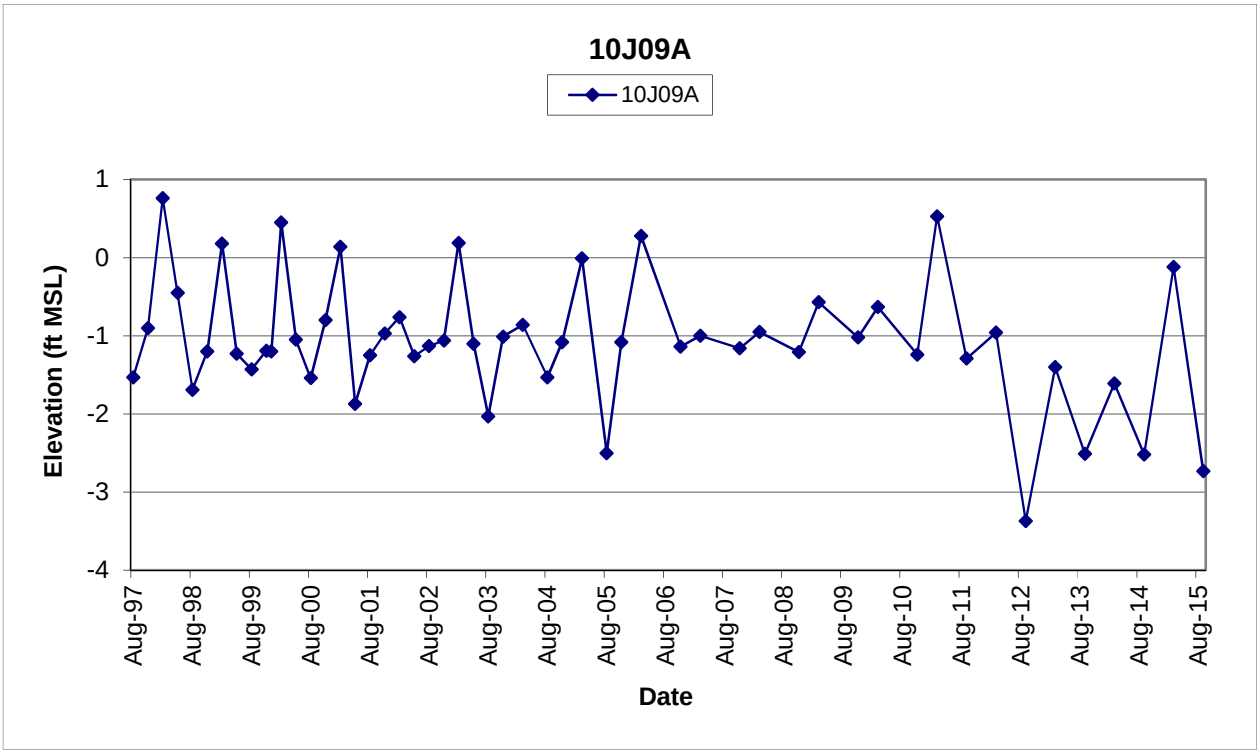
CY2015 Hydrographs





APPENDIX C
CY2015 Hydrographs





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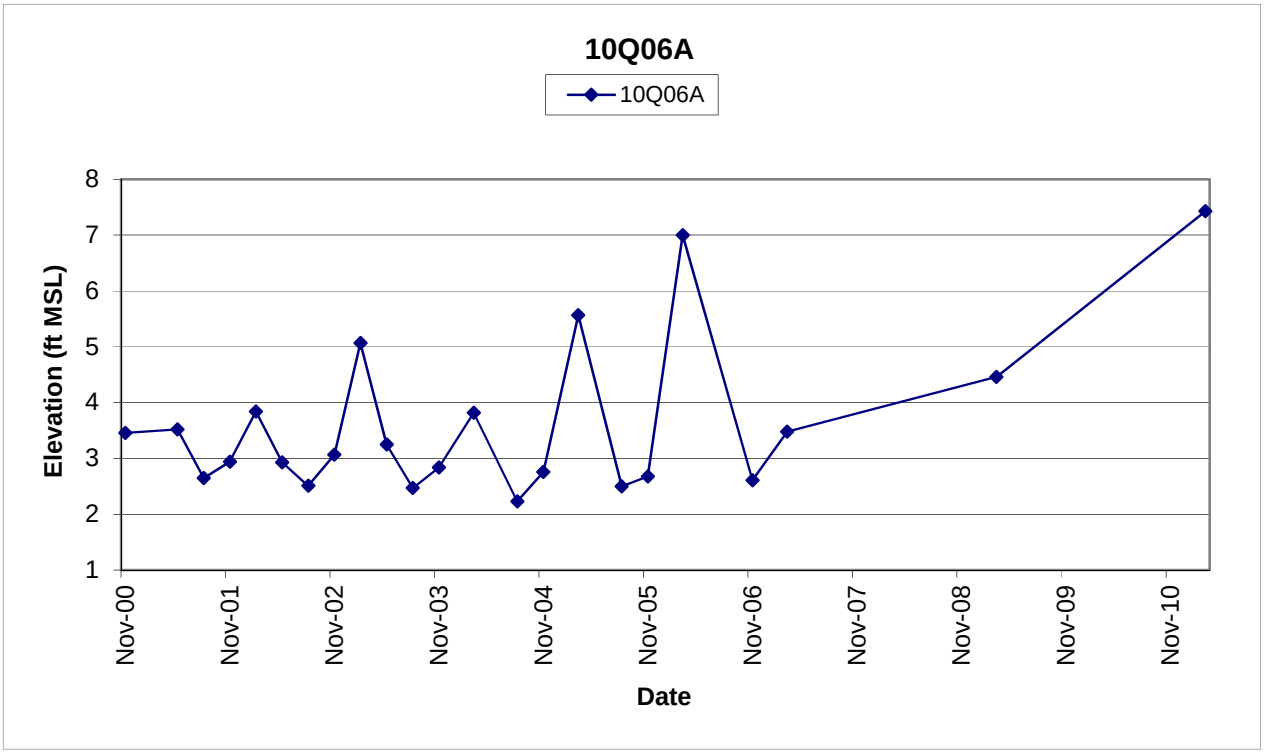
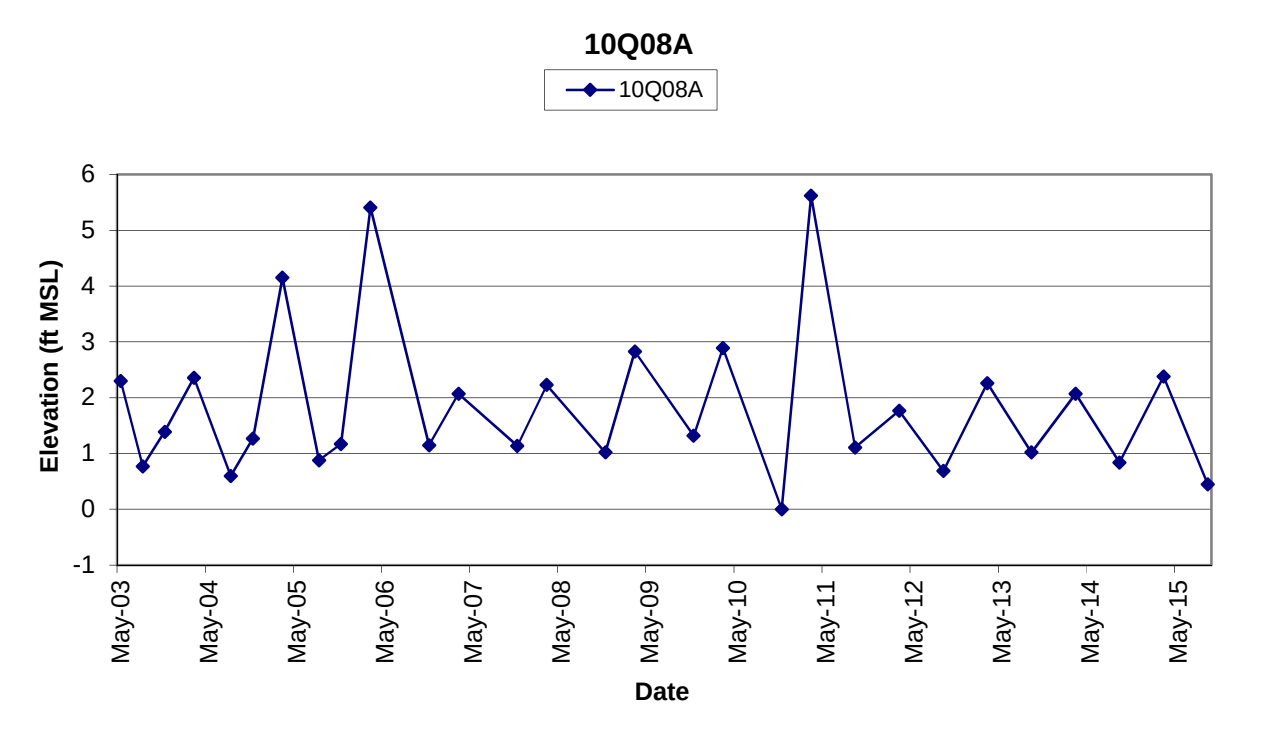
CY2015 Hydrographs





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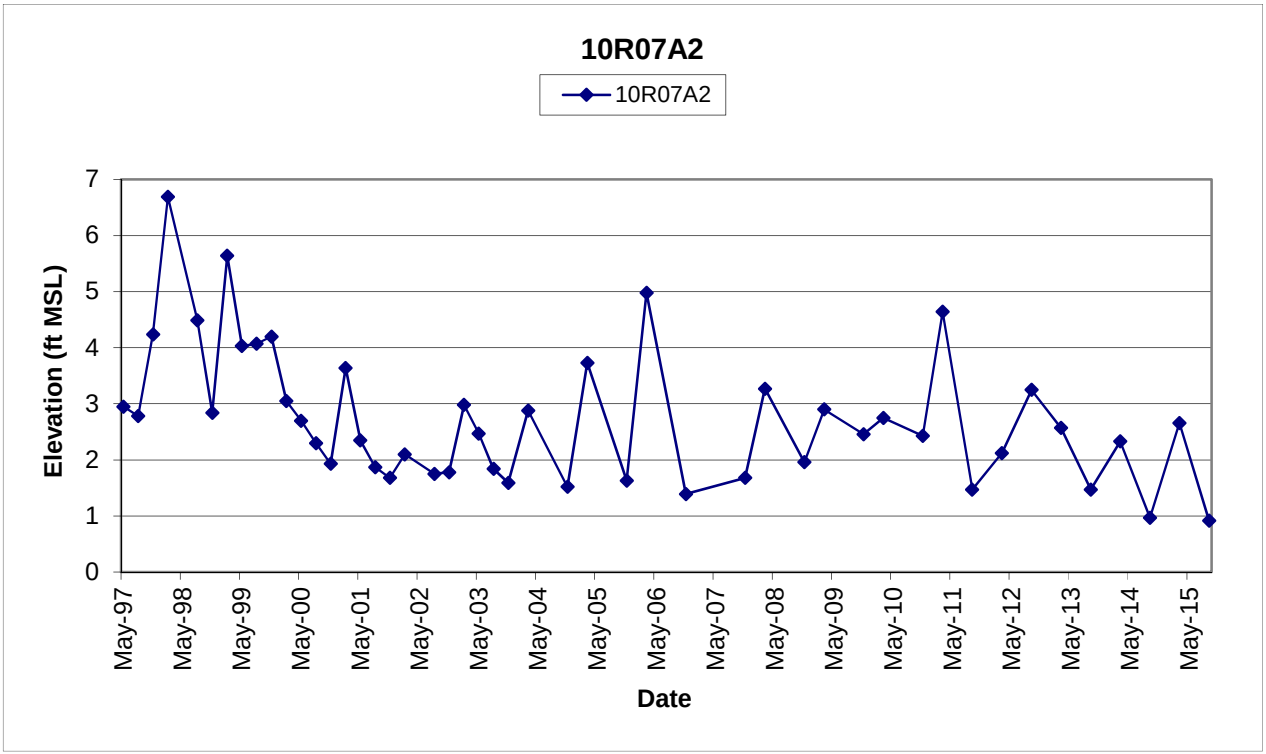
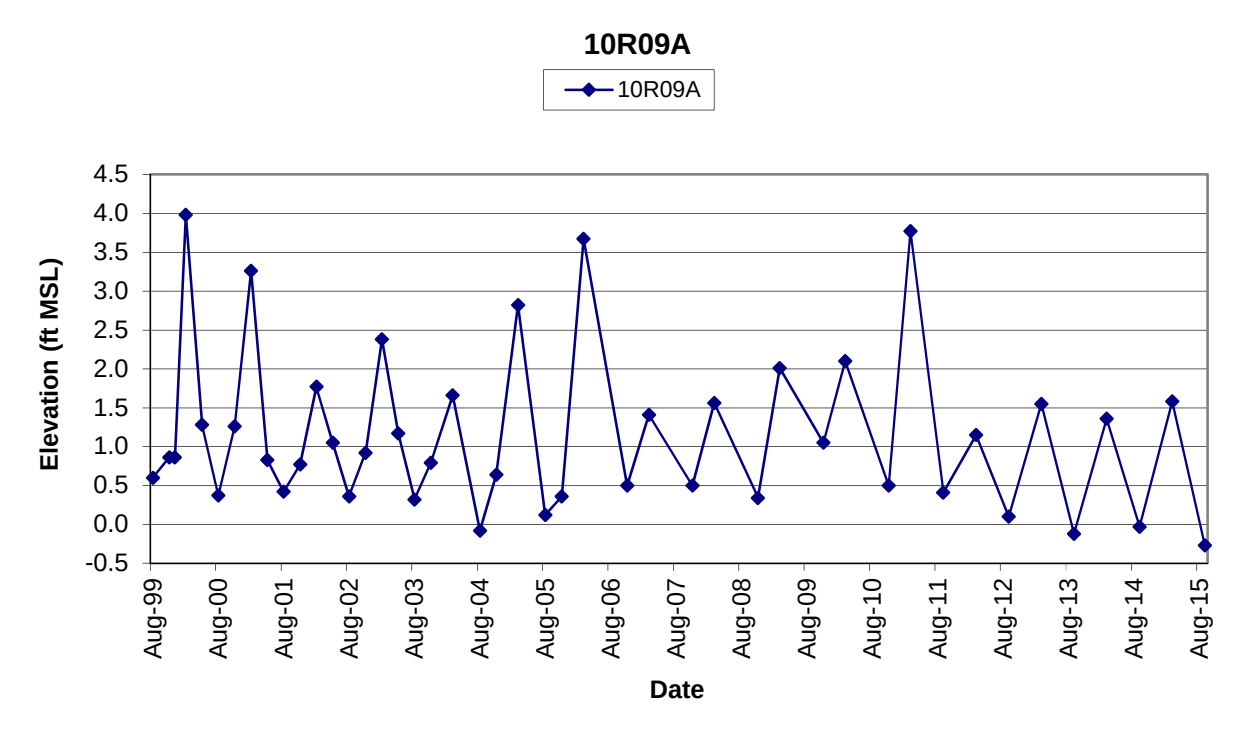
CY2015 Hydrographs





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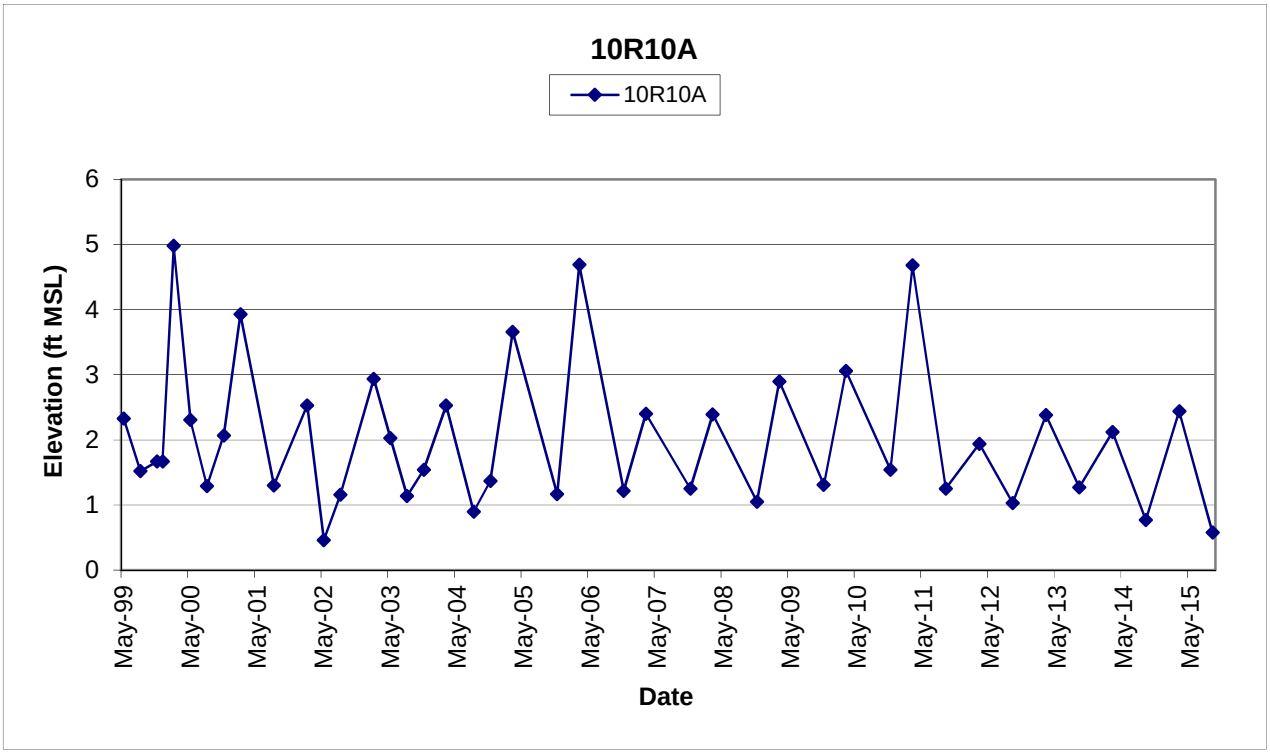
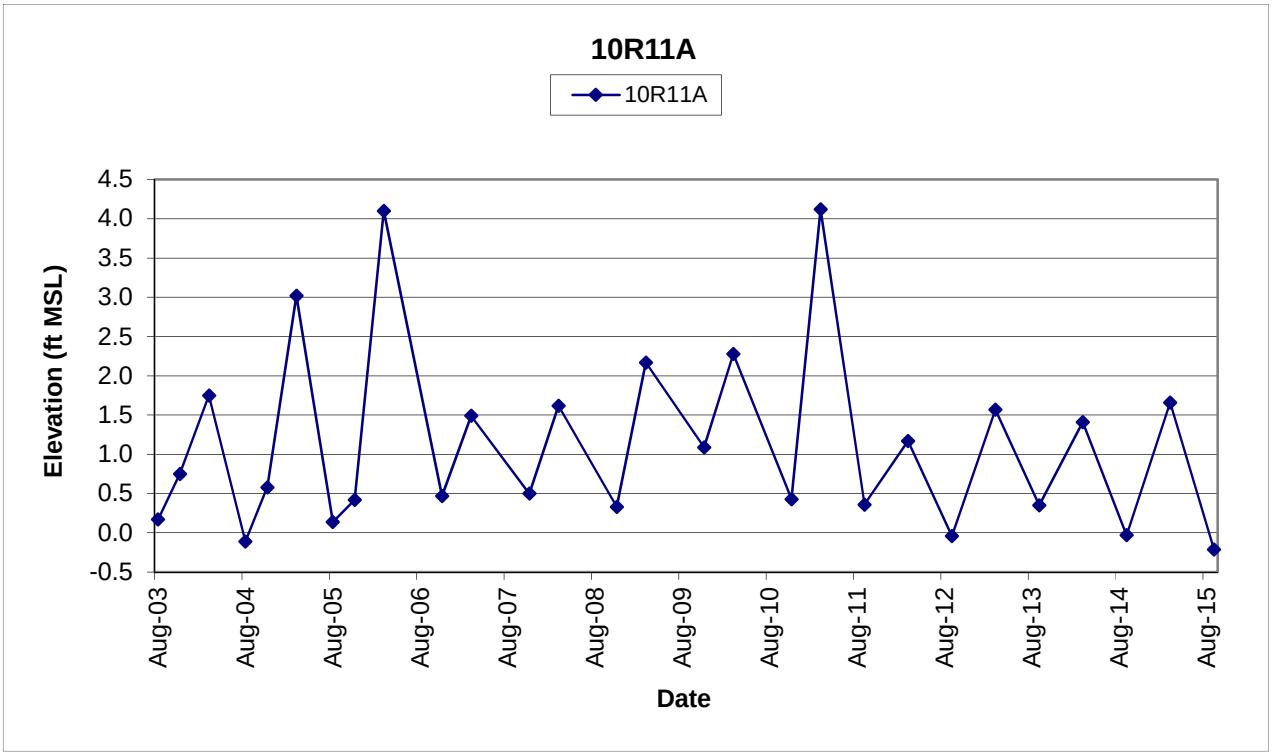
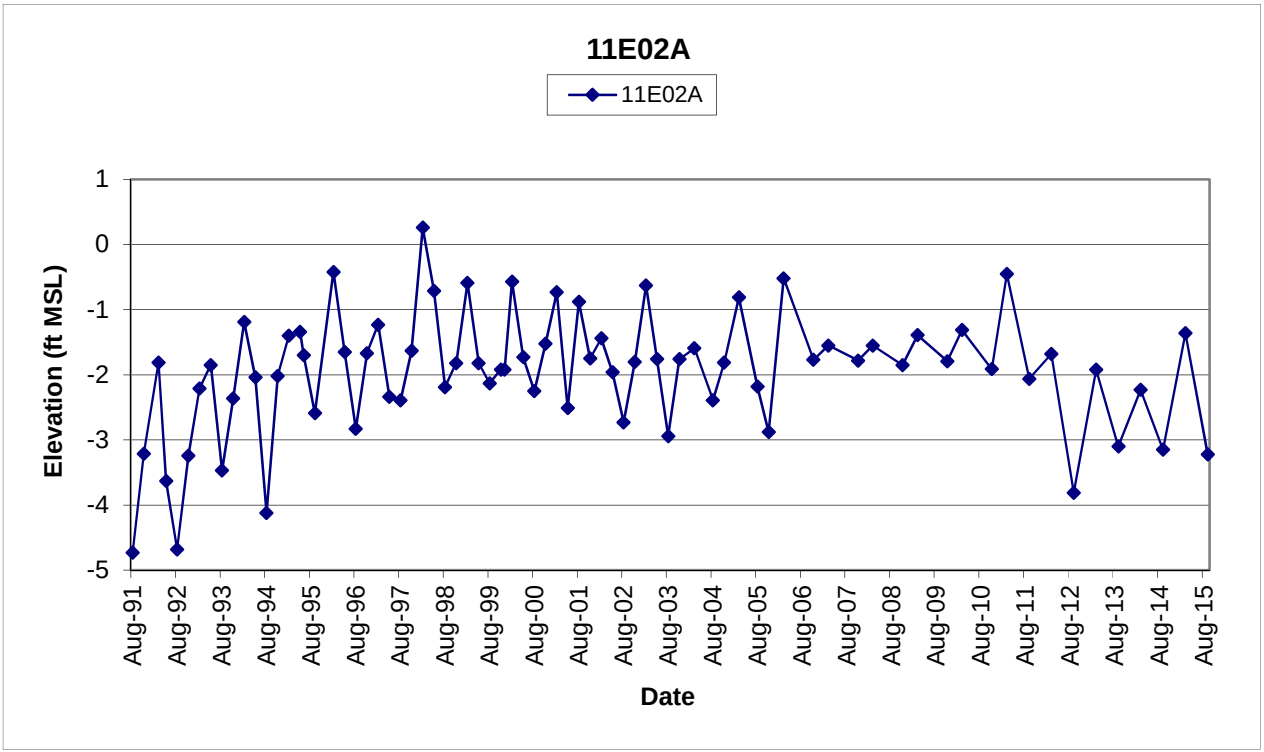
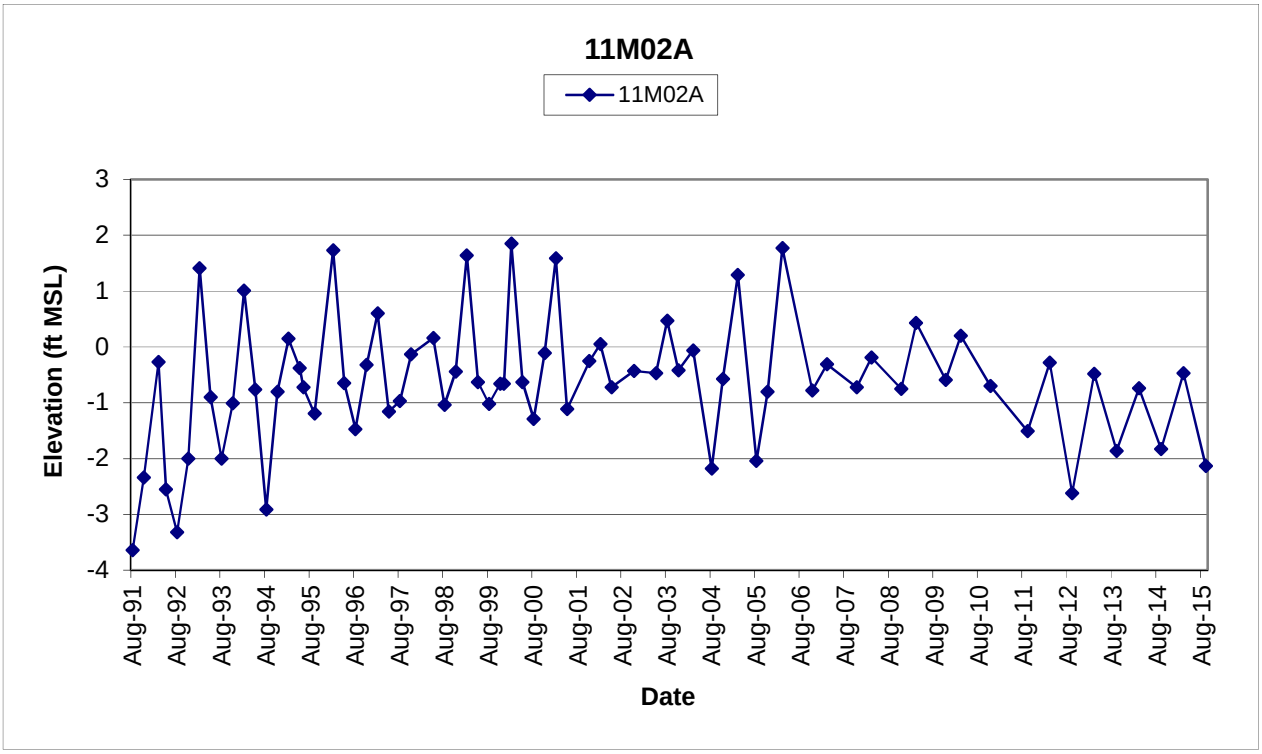
CY2015 Hydrographs



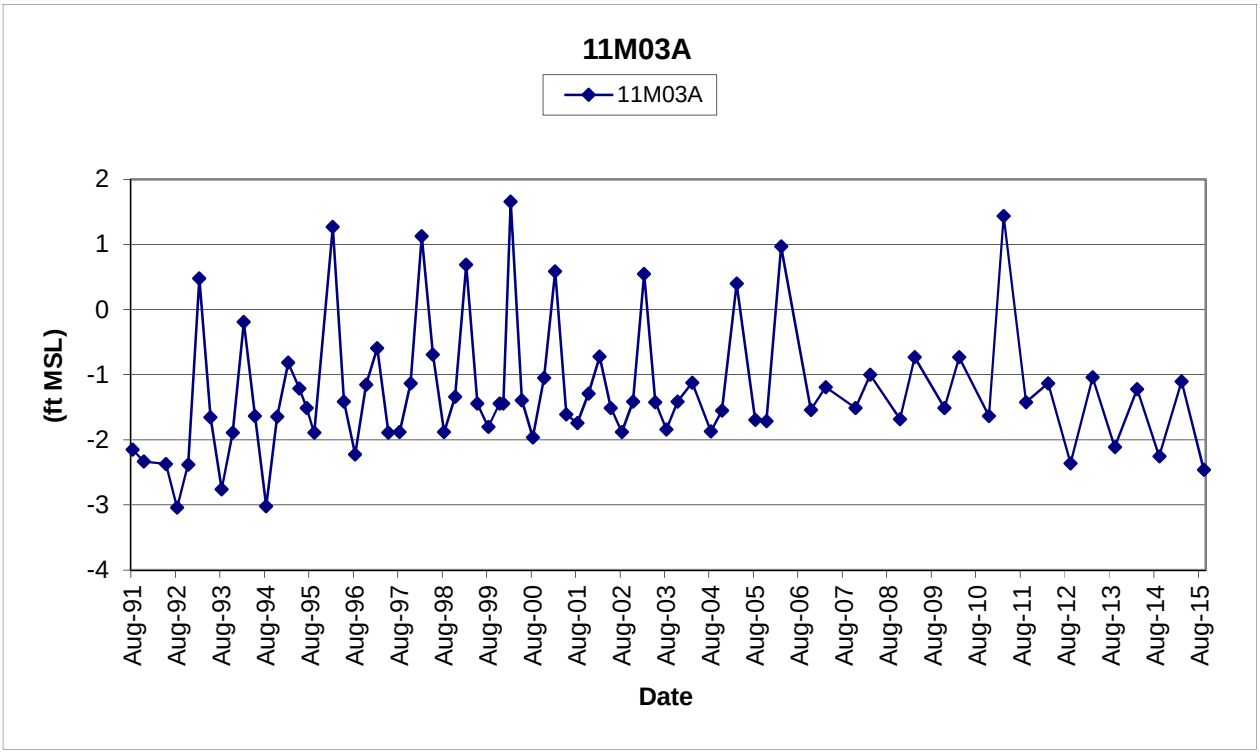


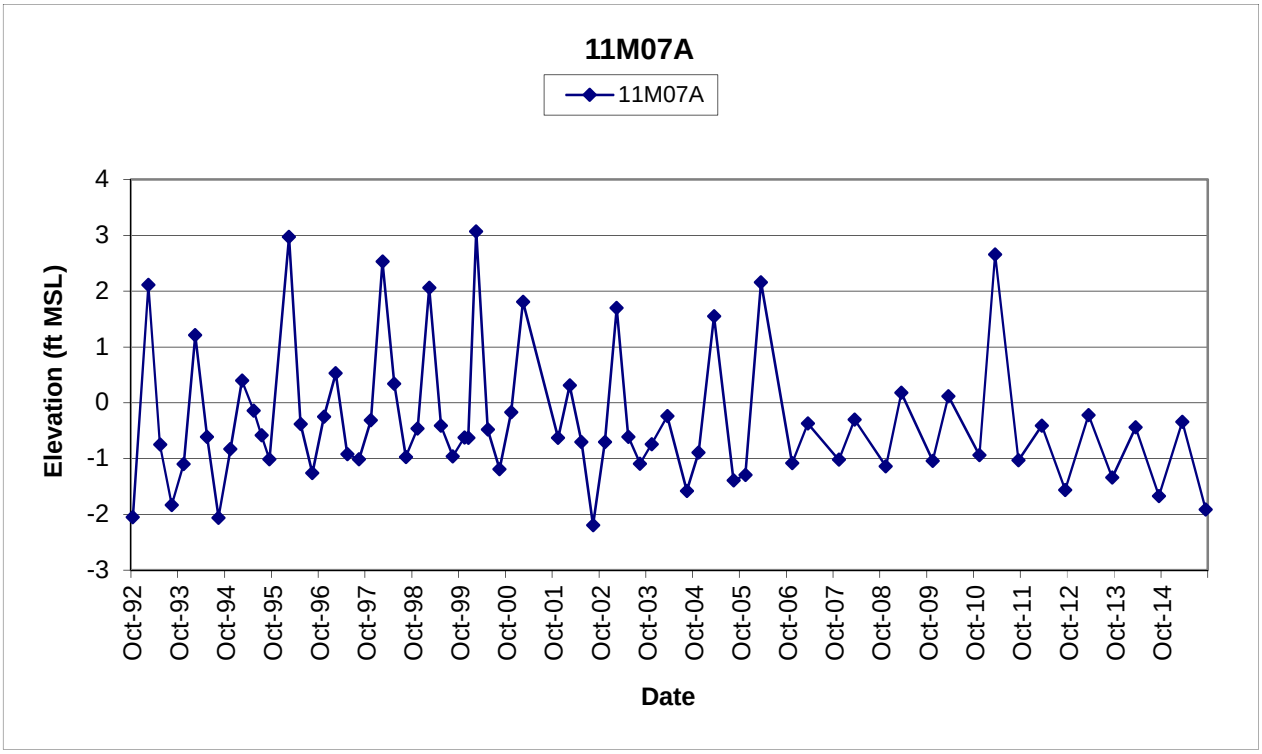
APPENDIX C
CY2015 Hydrographs



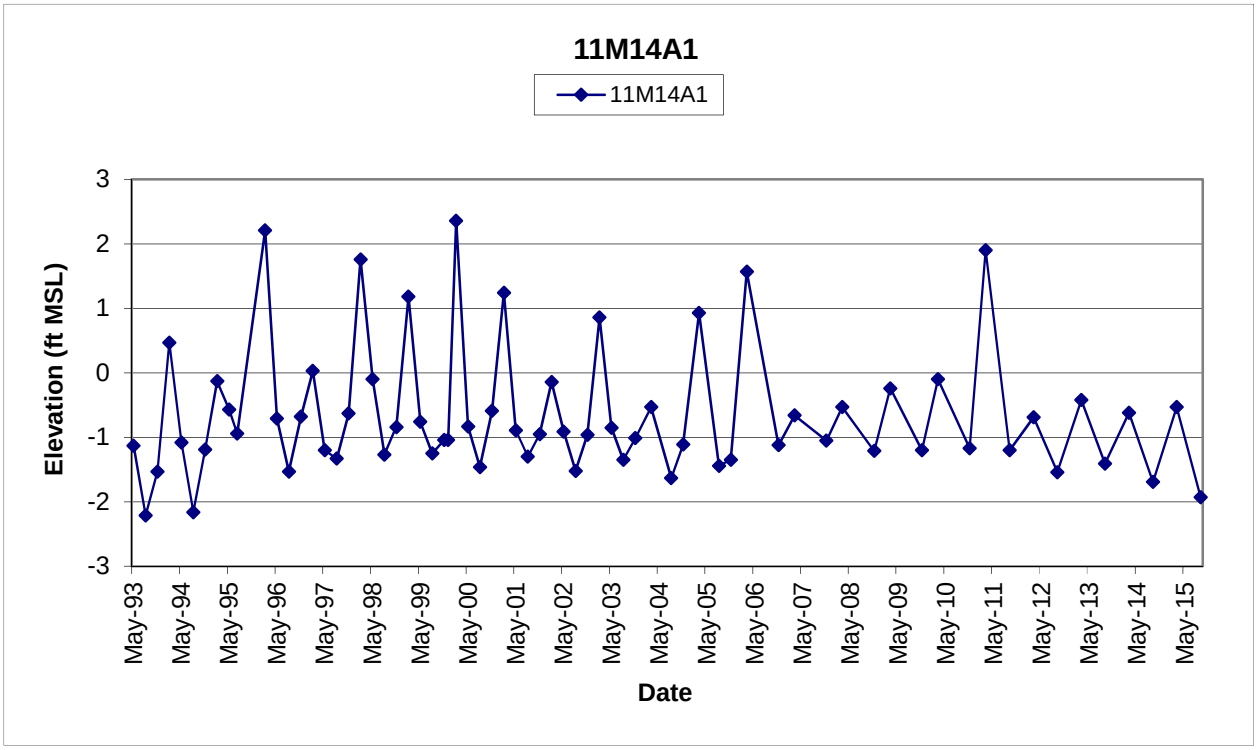


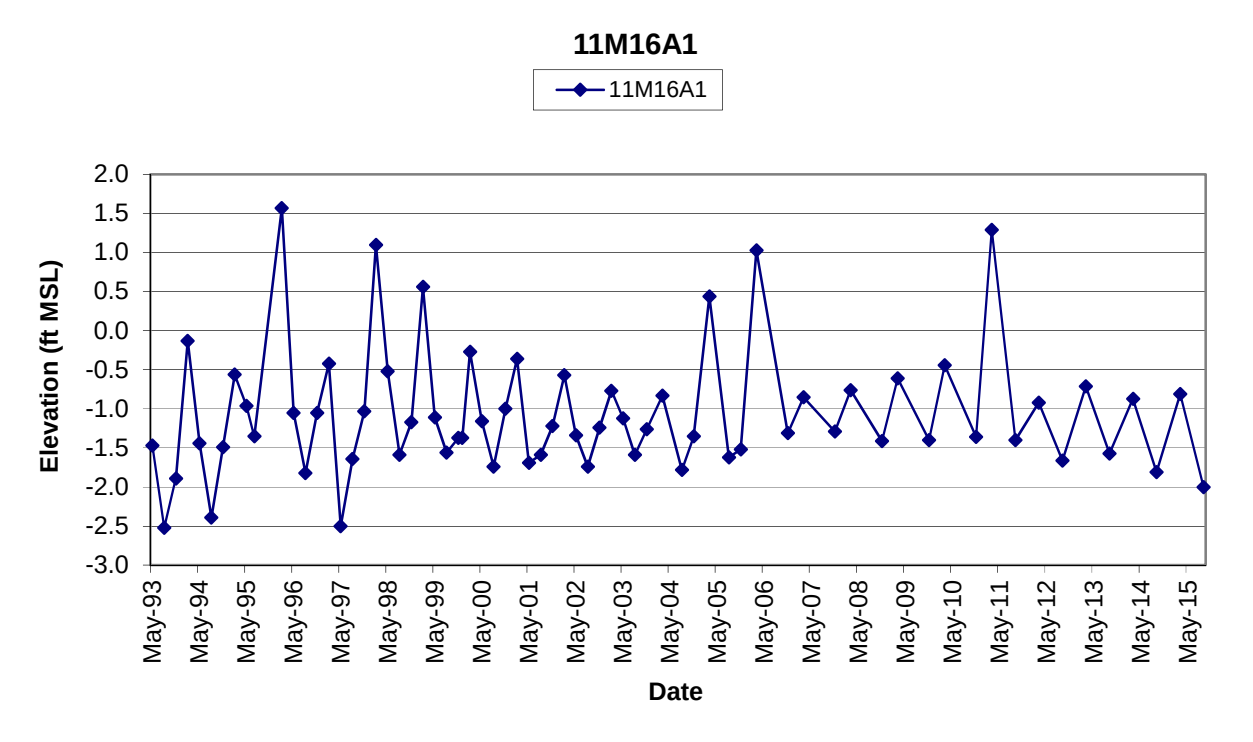
APPENDIX C
CY2015 Hydrographs



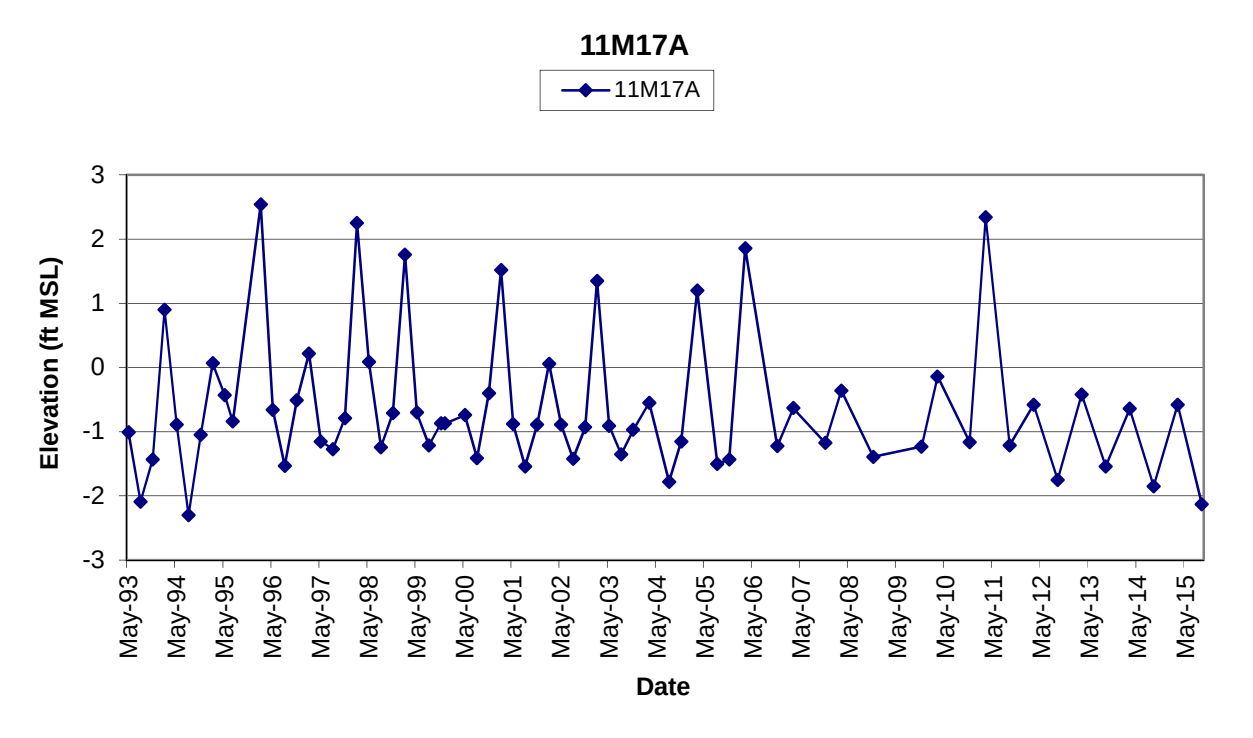


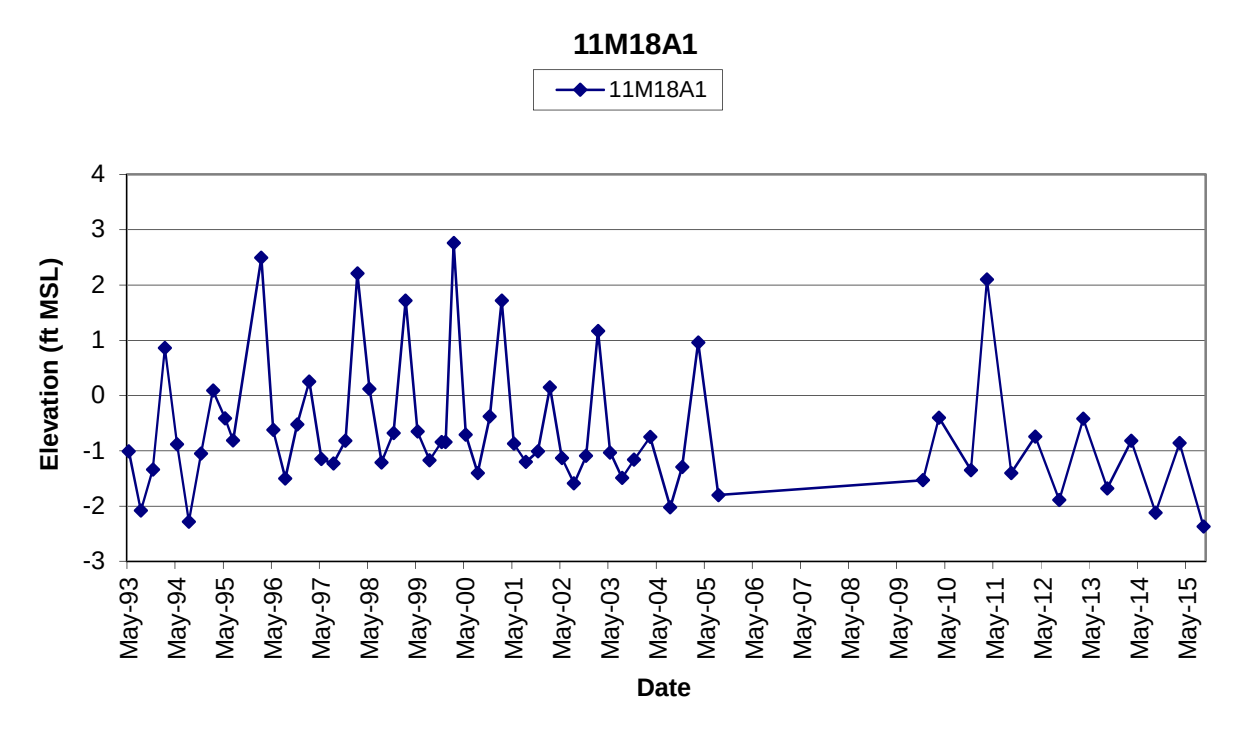
APPENDIX C
CY2015 Hydrographs



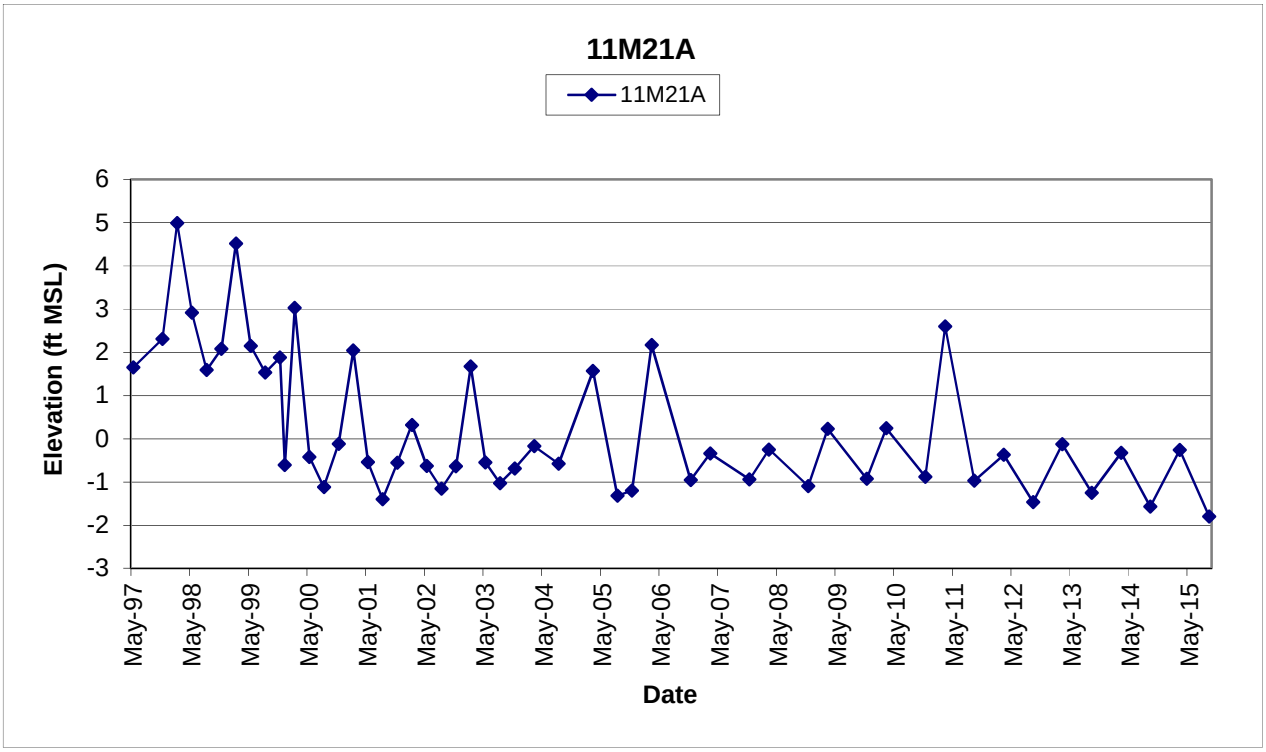


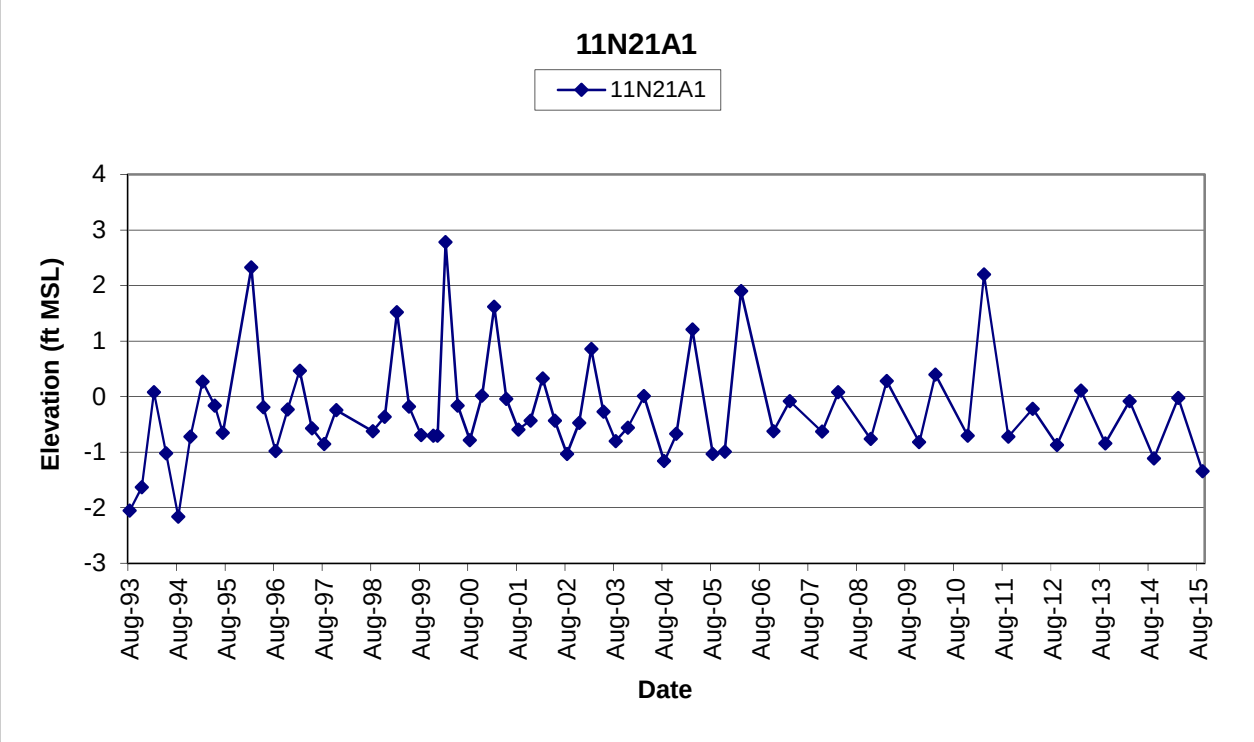
APPENDIX C
CY2015 Hydrographs





APPENDIX C
CY2015 Hydrographs





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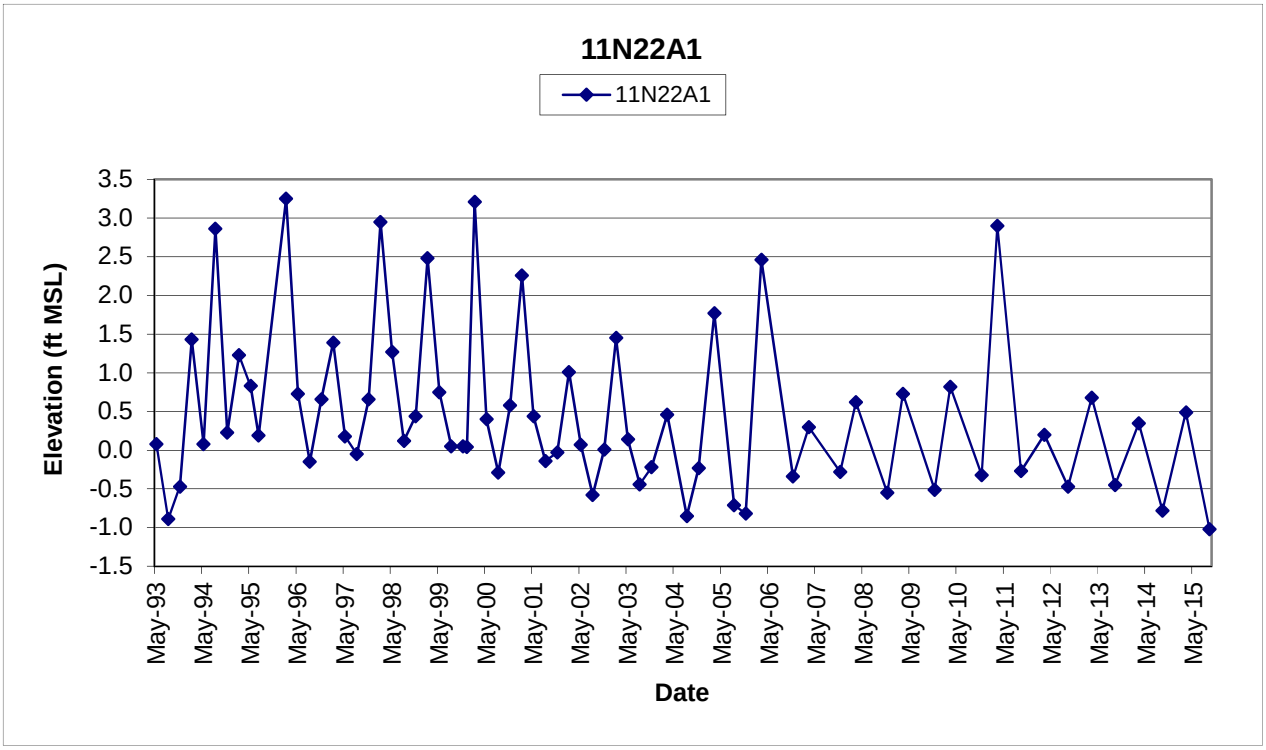
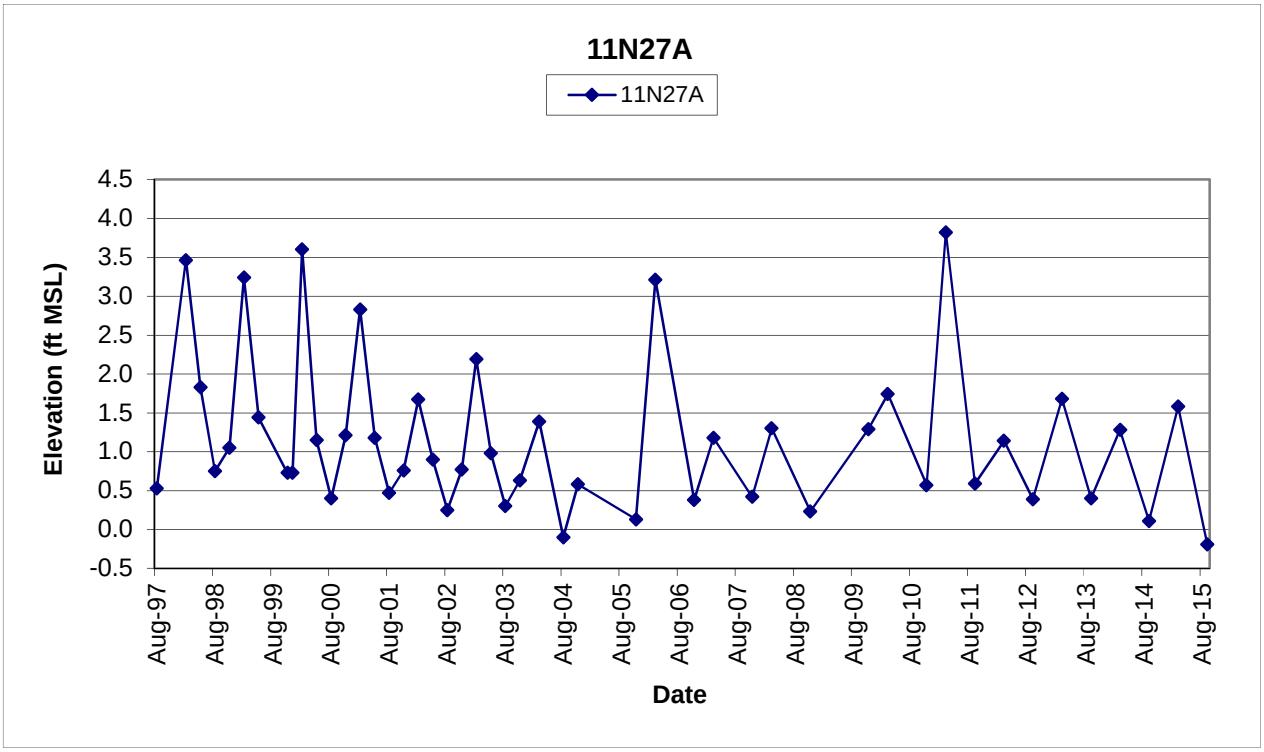
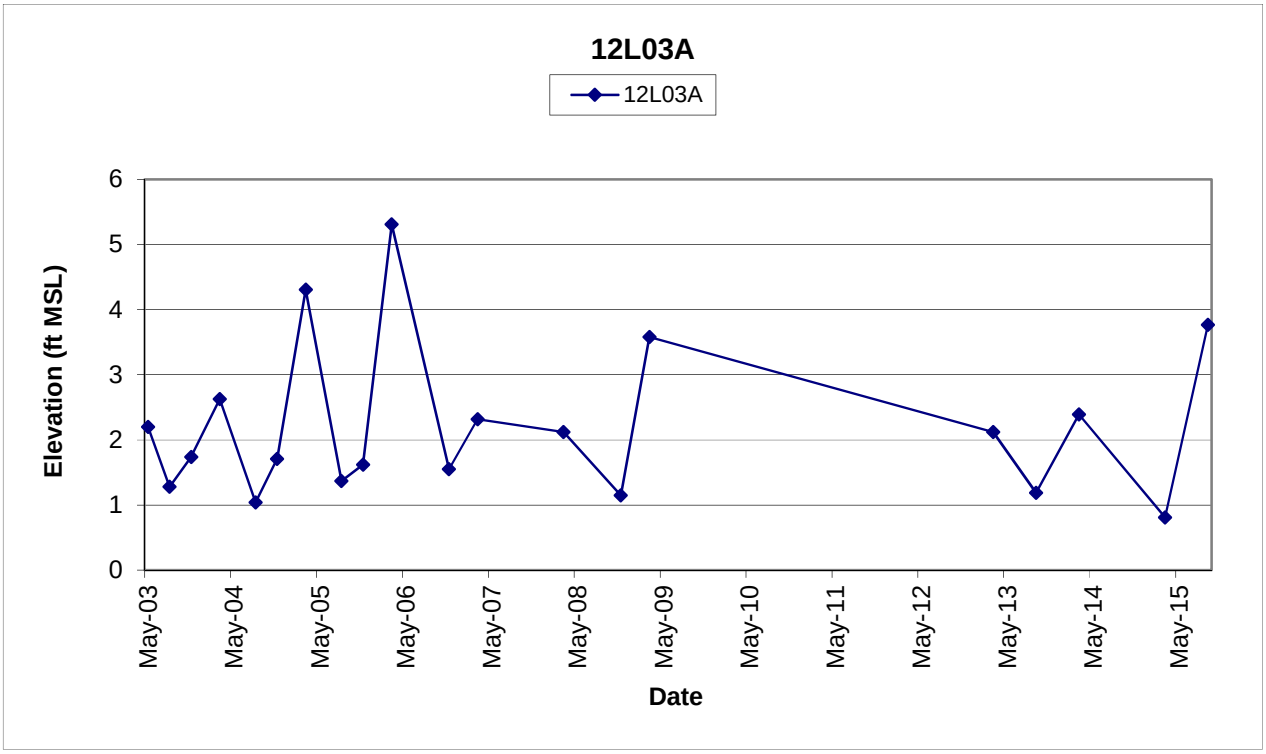
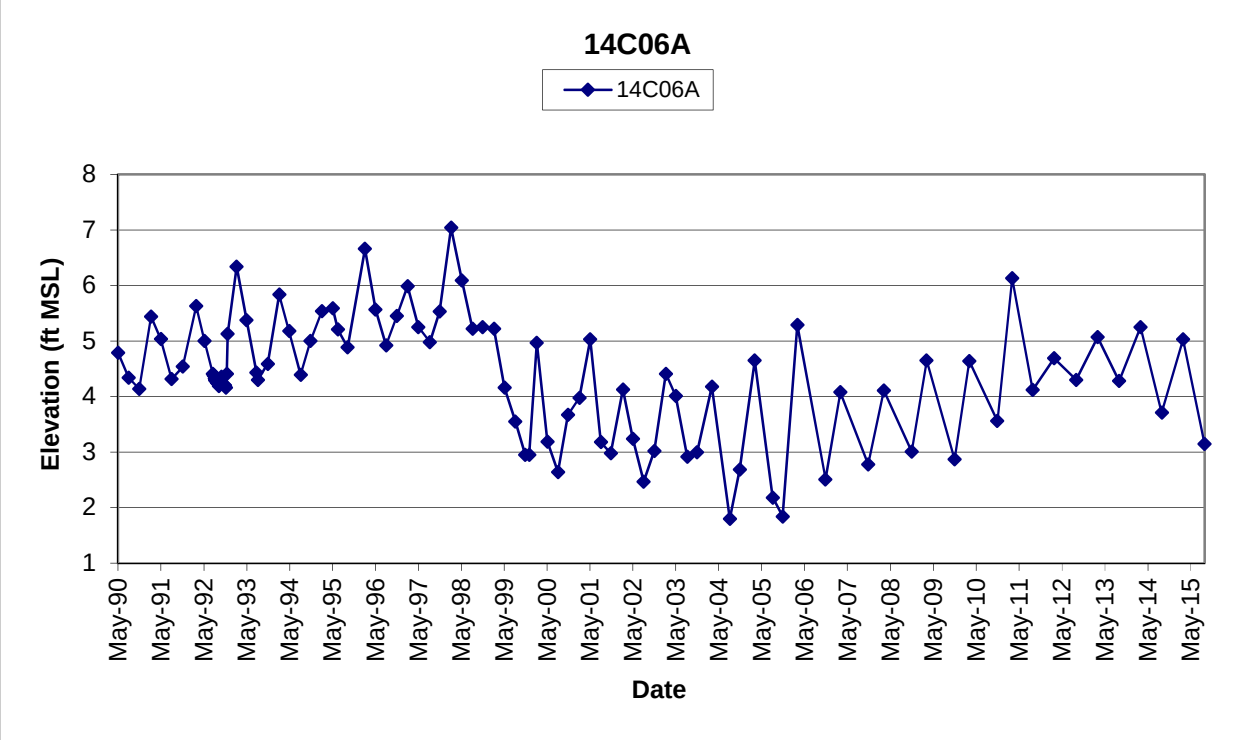


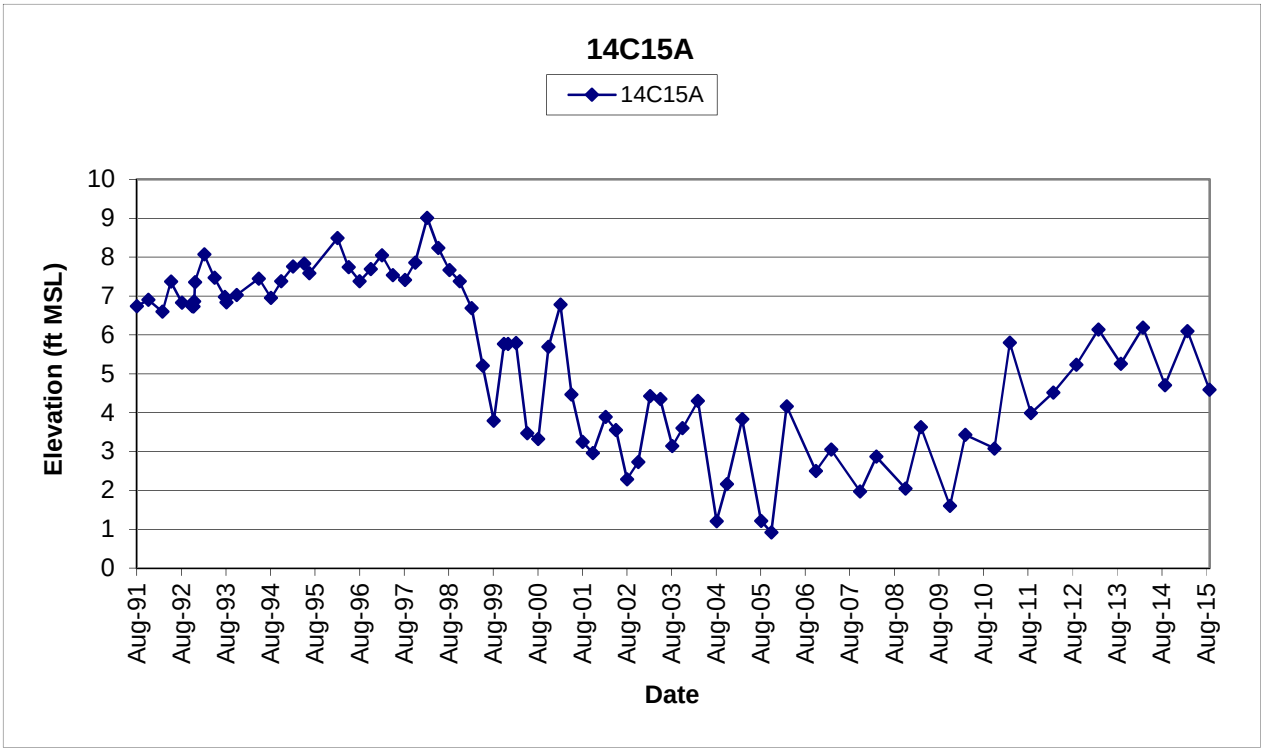


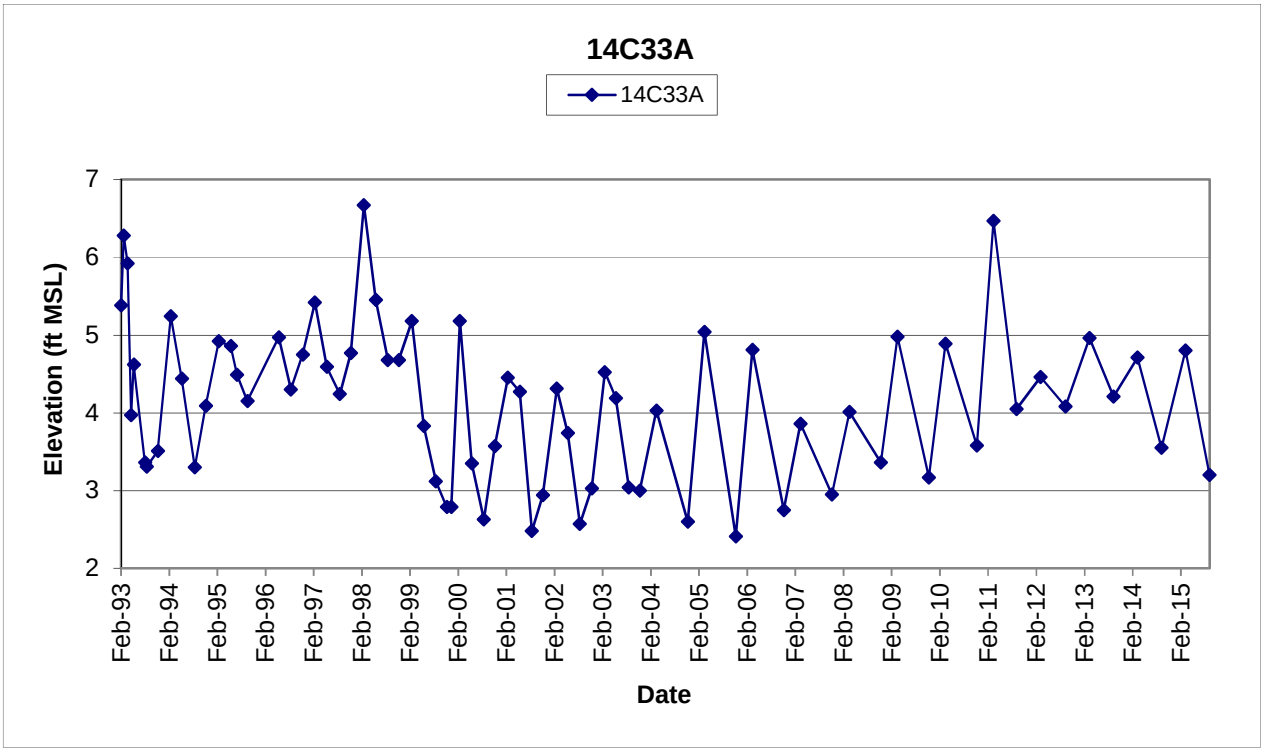
APPENDIX C
CY2015 Hydrographs





APPENDIX C
CY2015 Hydrographs





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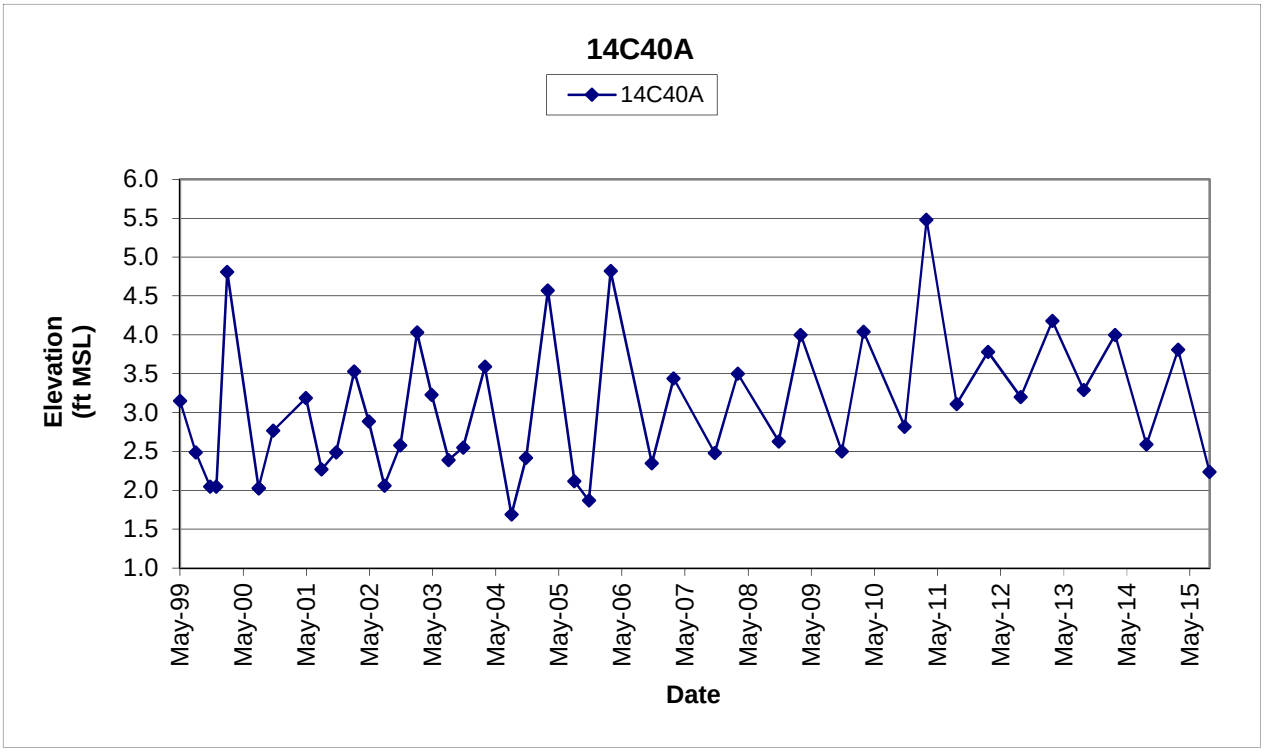
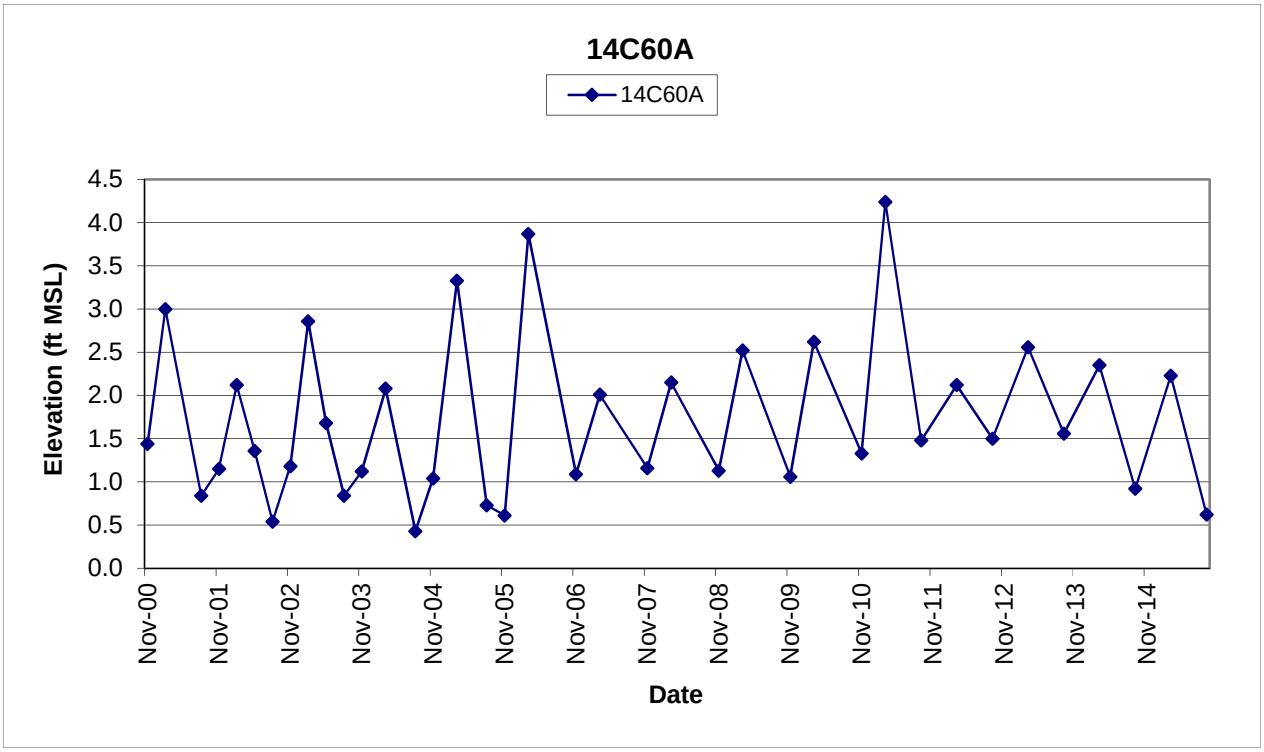
CY2015 Hydrographs





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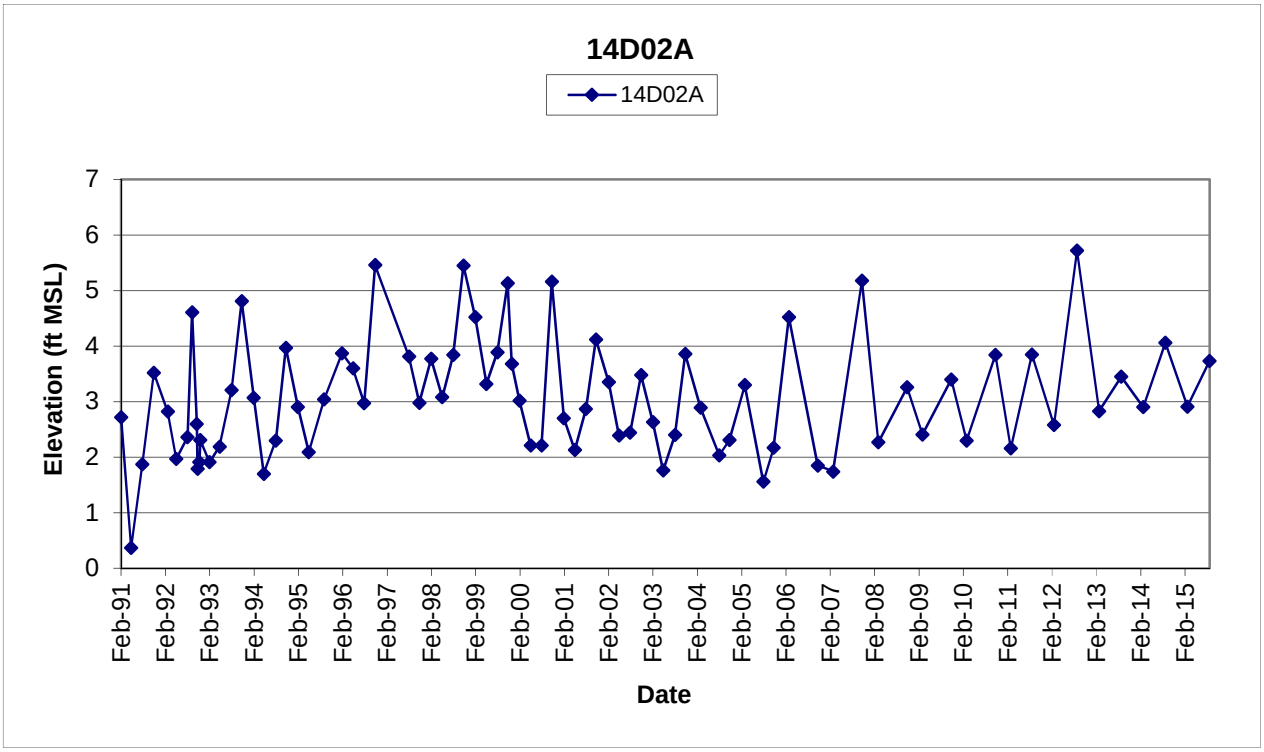
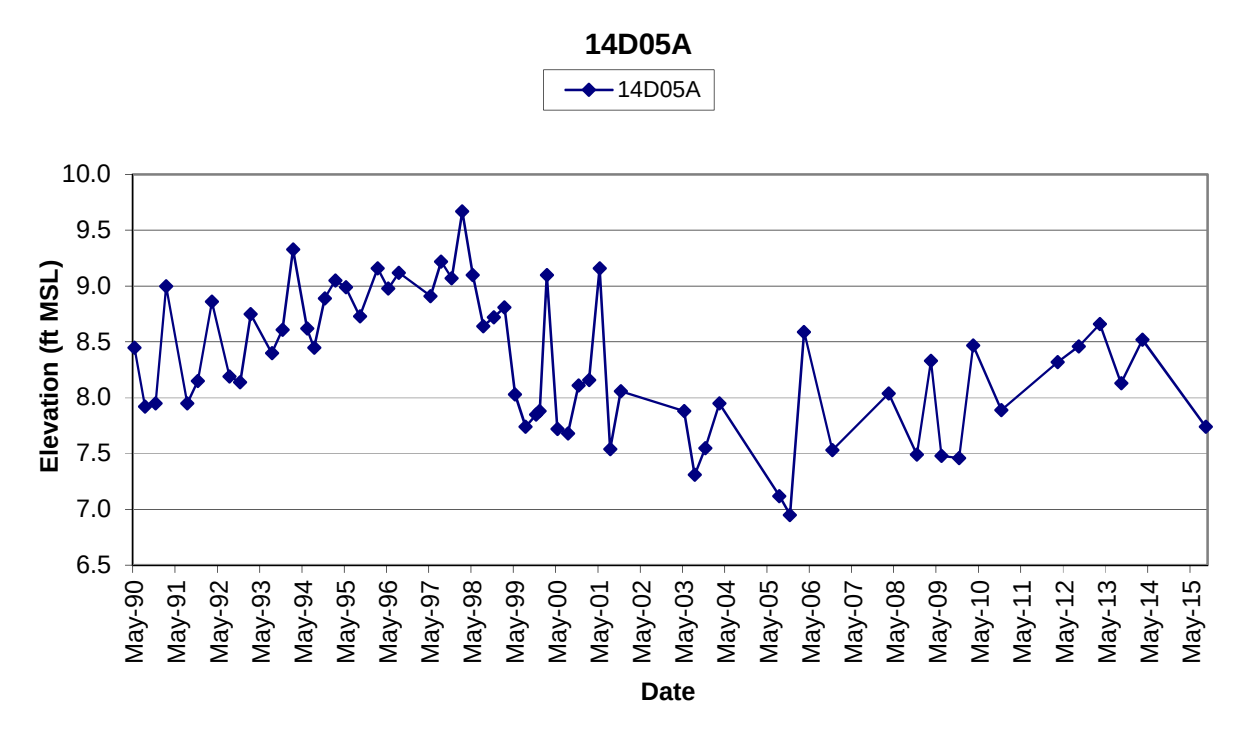
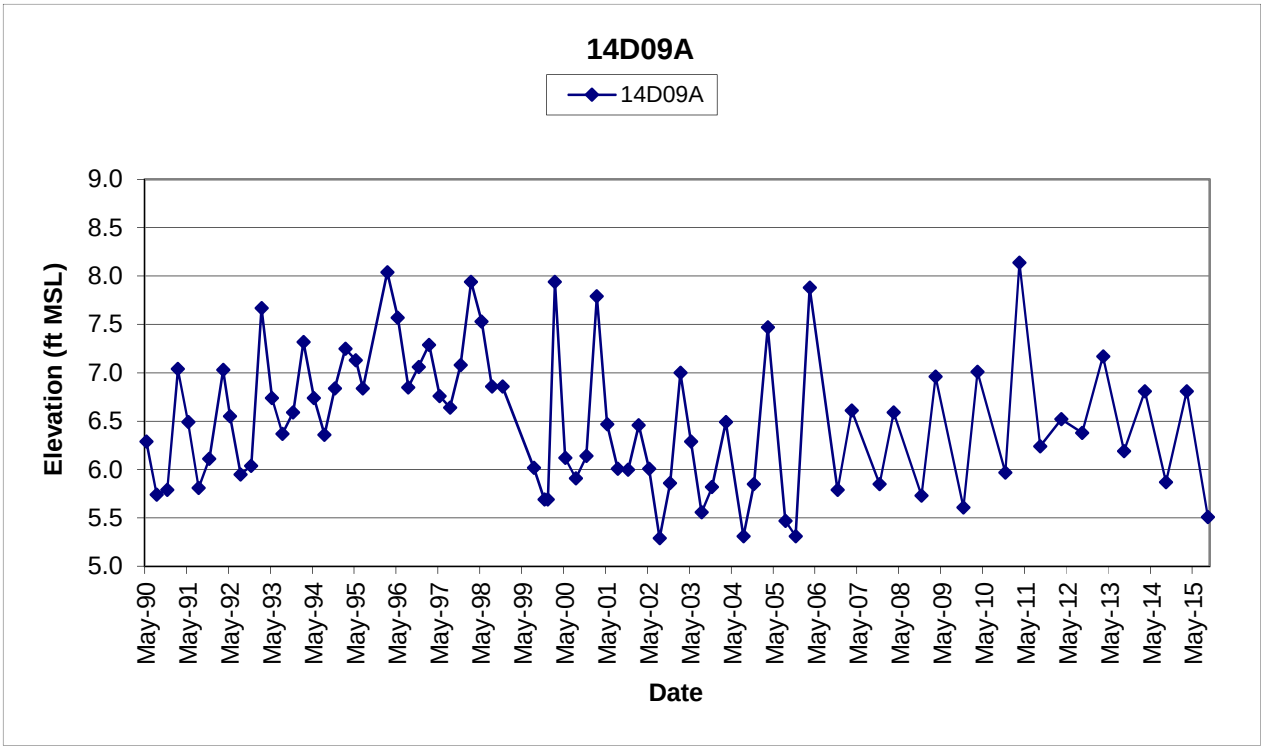
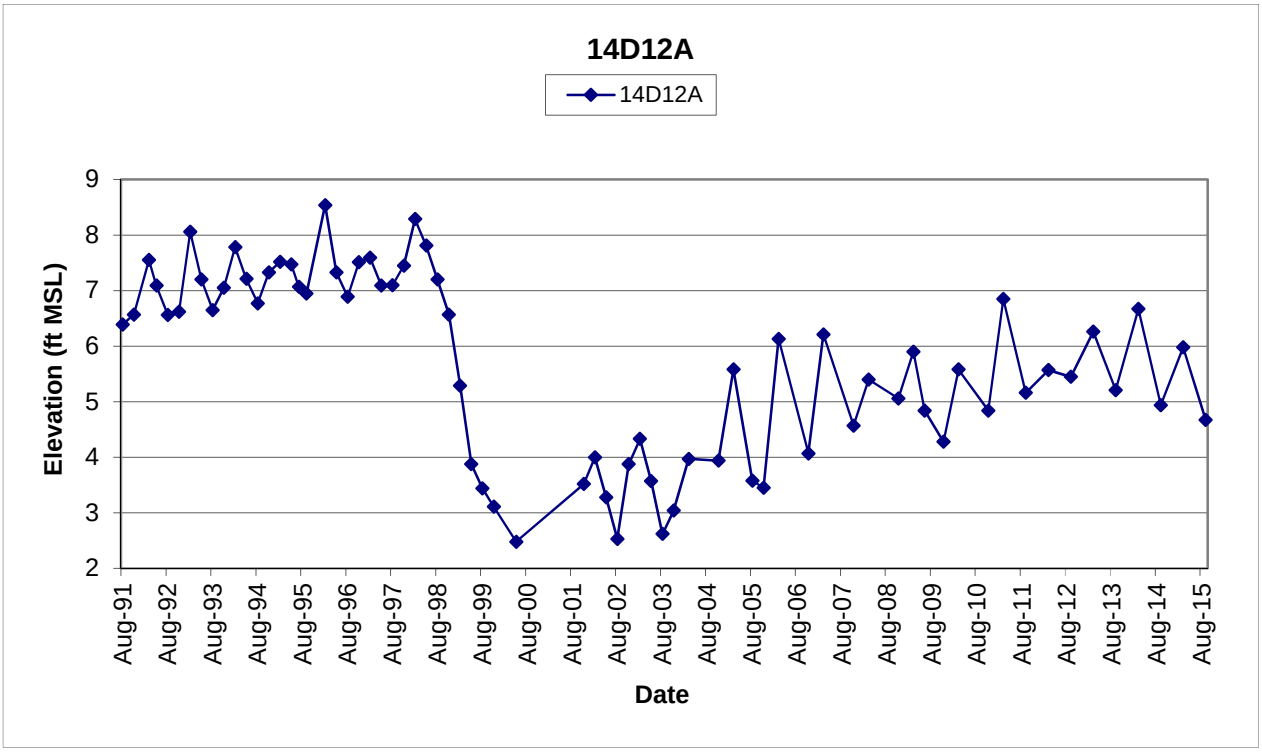
CY2015 Hydrographs



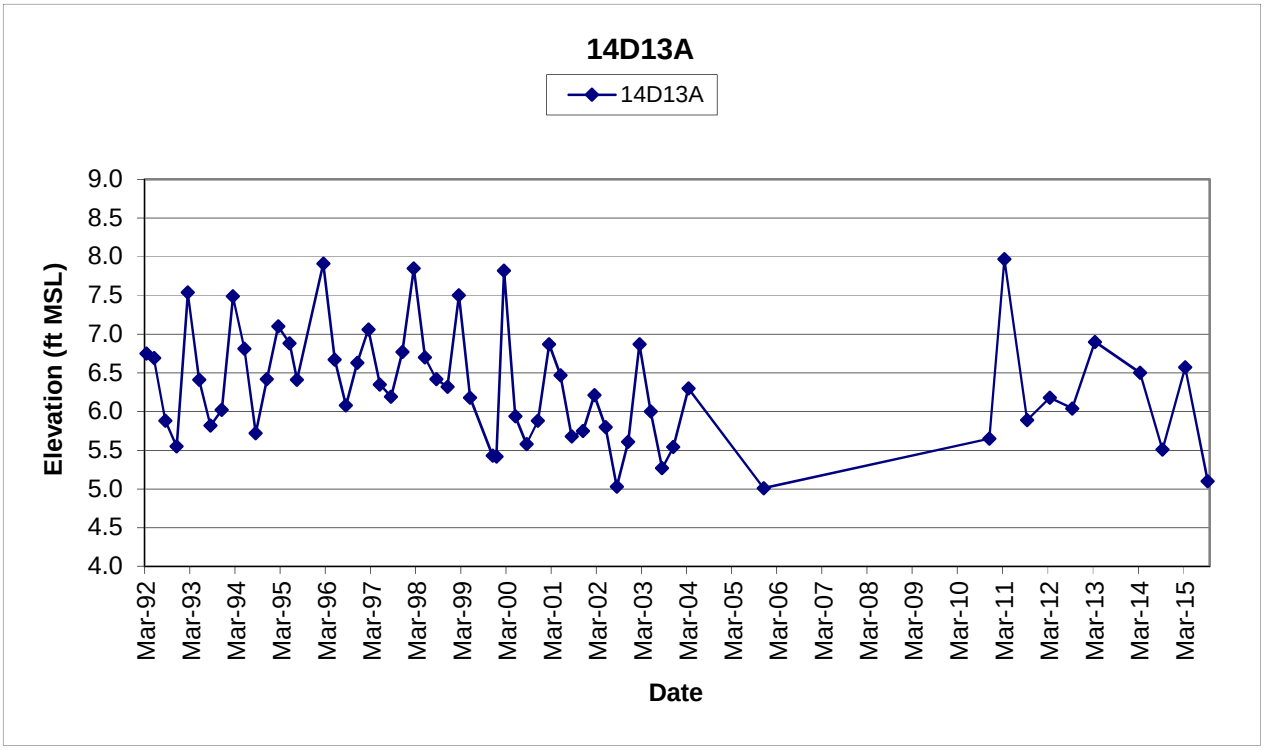


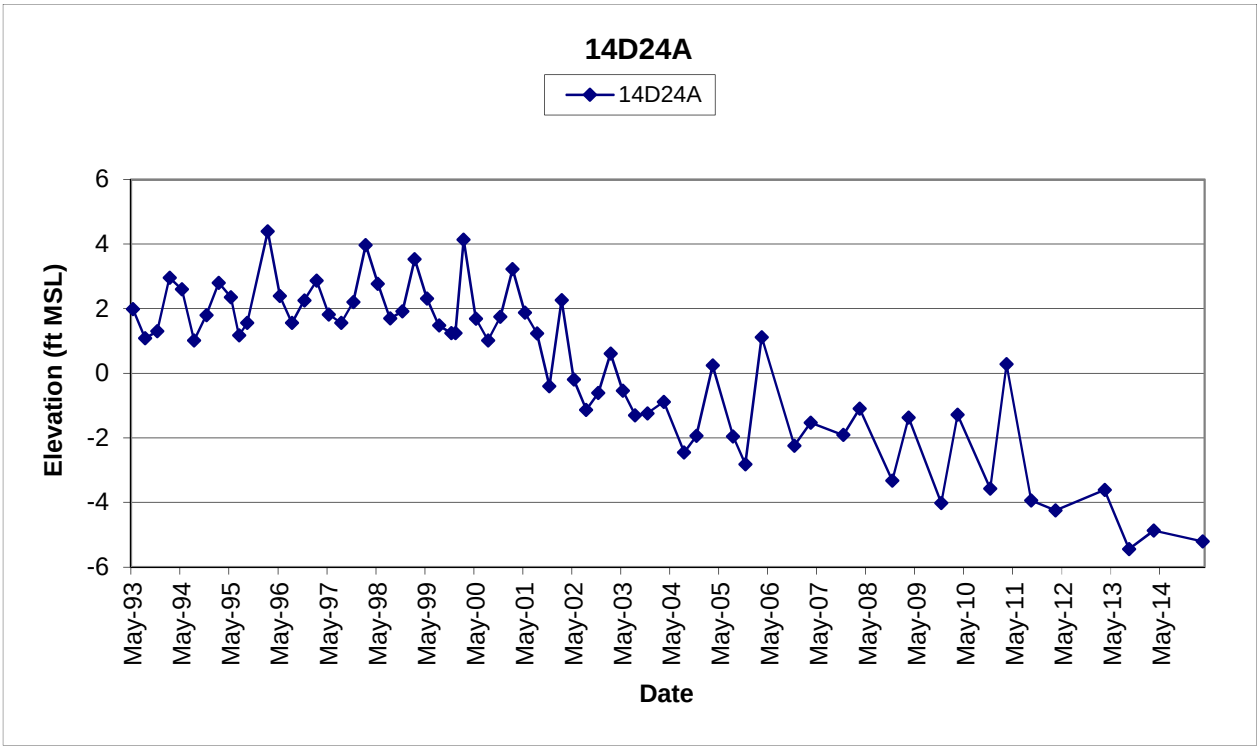
APPENDIX C
CY2015 Hydrographs



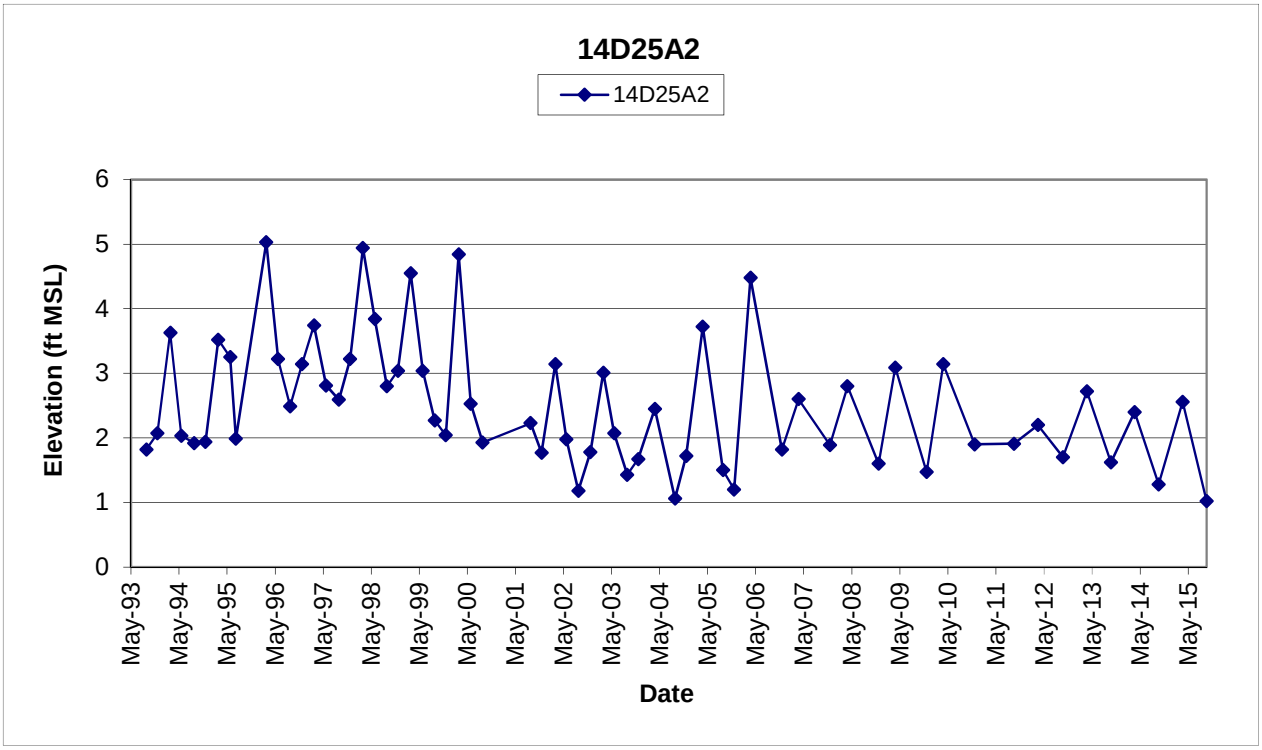


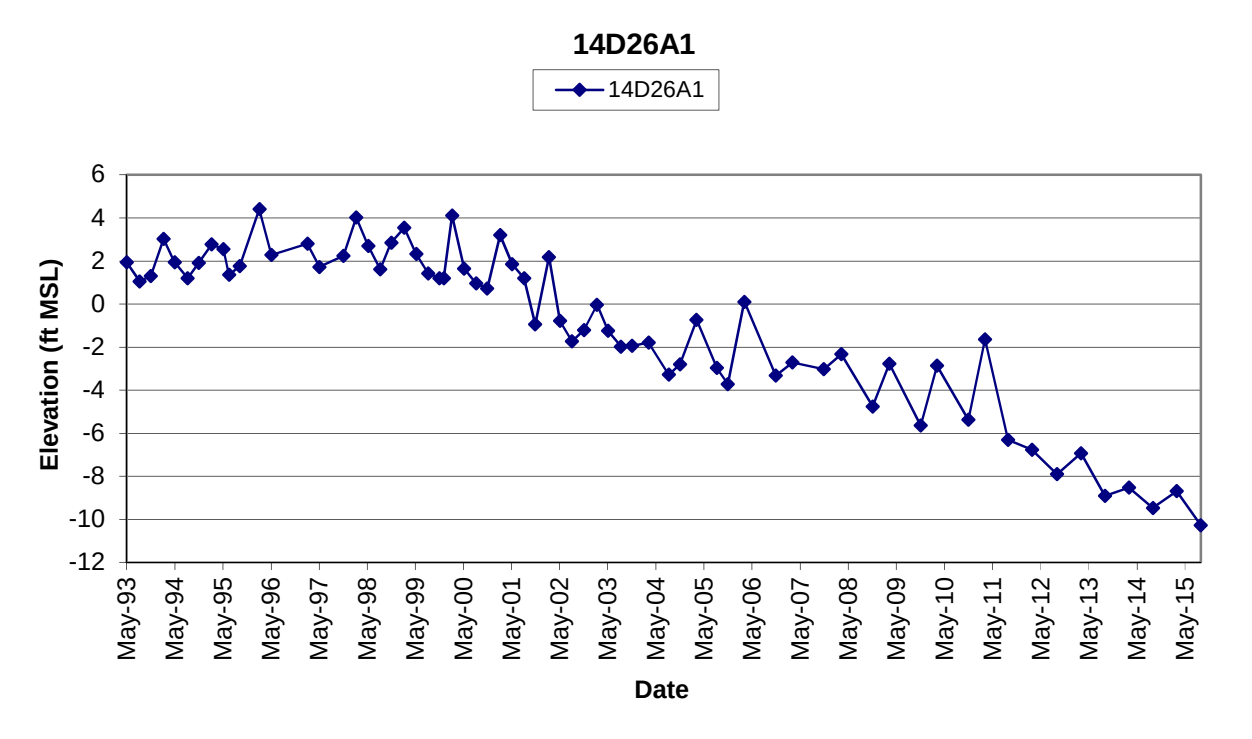
APPENDIX C
CY2015 Hydrographs



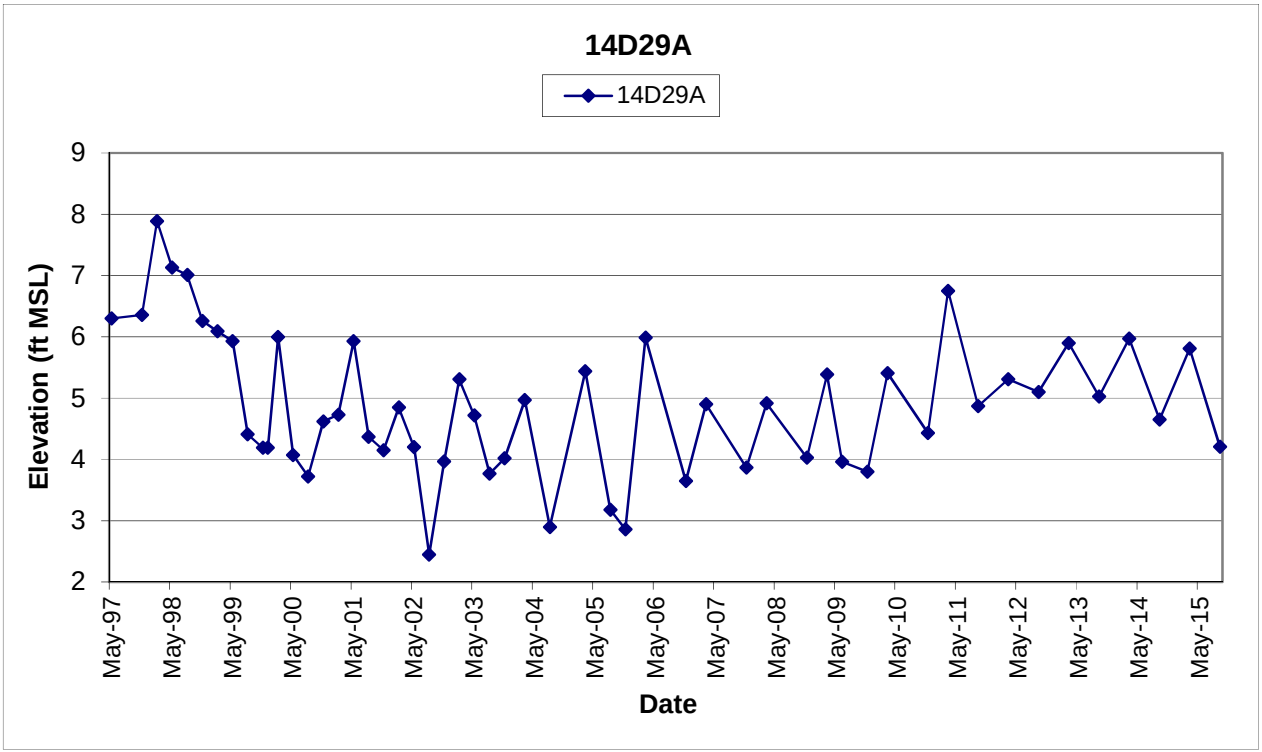


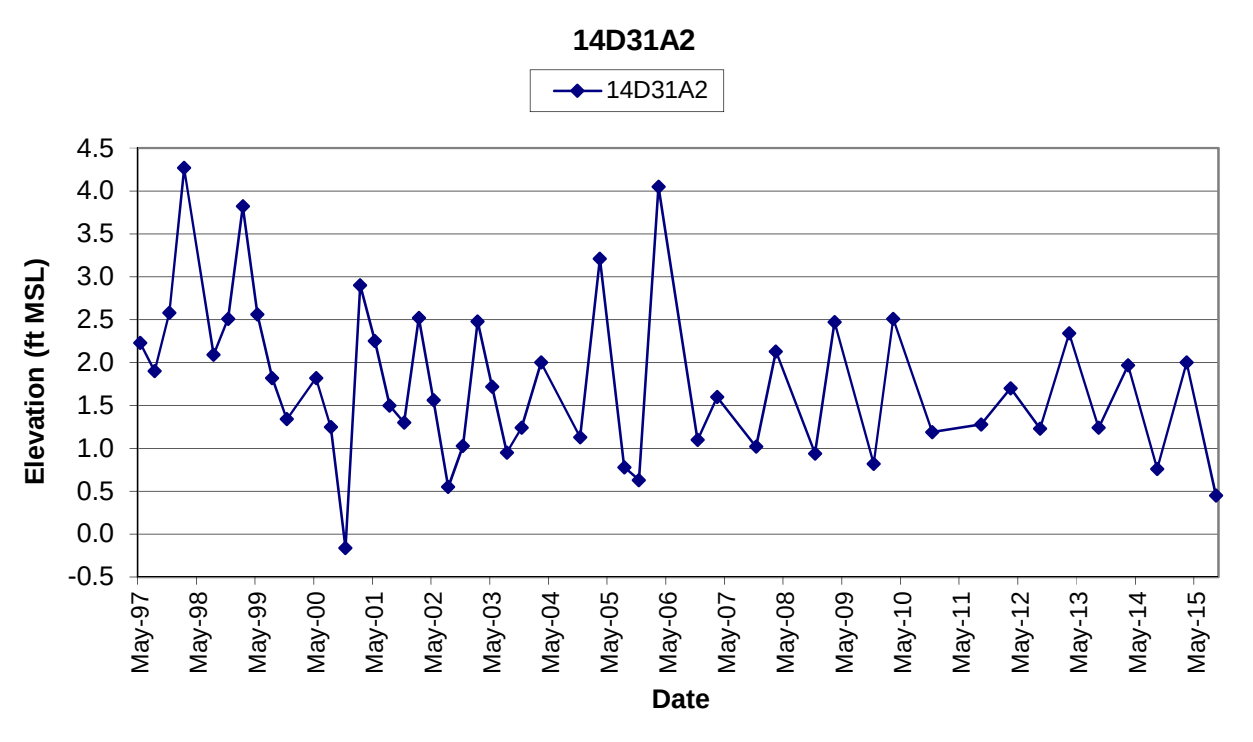
APPENDIX C
CY2015 Hydrographs



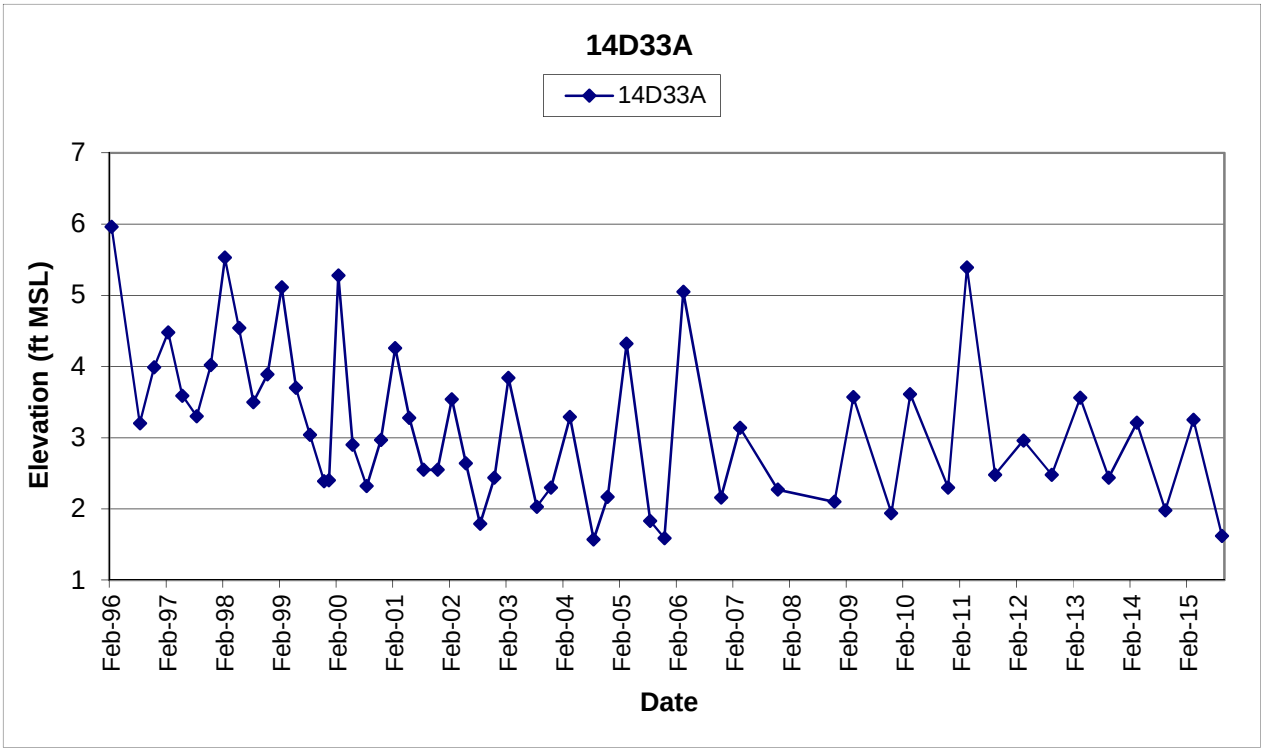


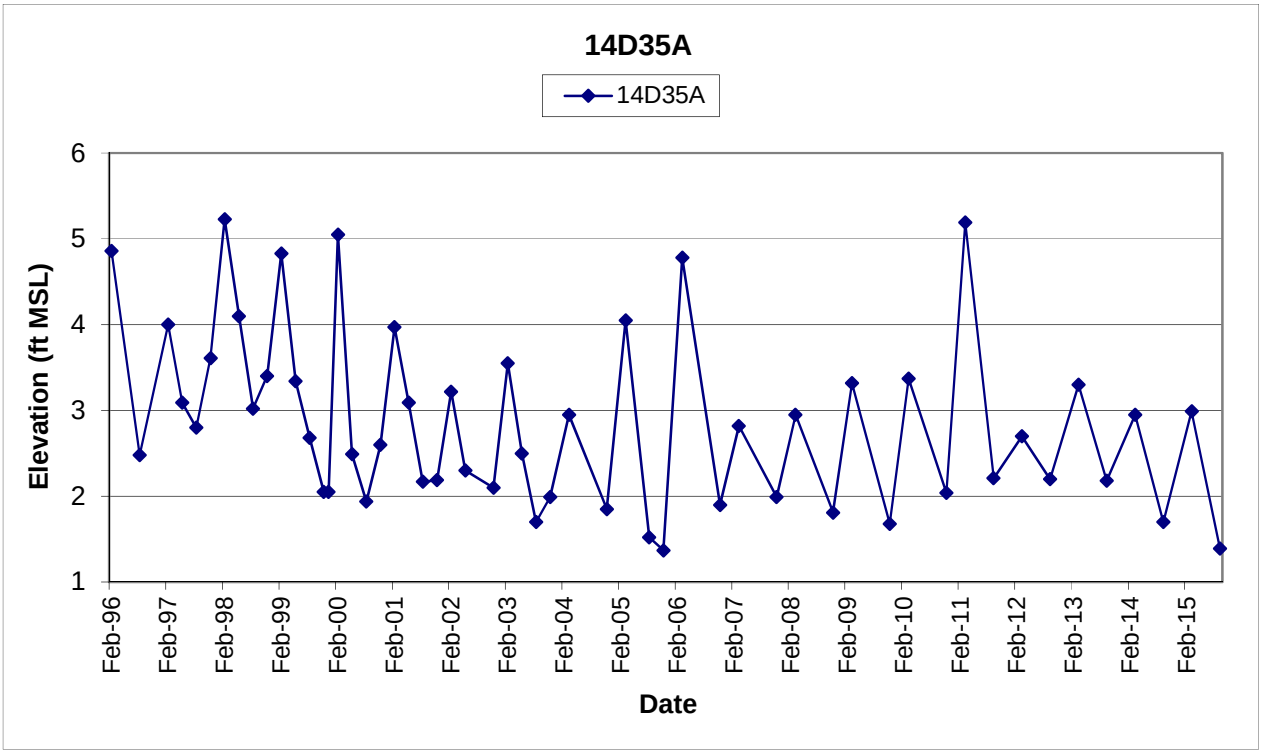
APPENDIX C
CY2015 Hydrographs





APPENDIX C
CY2015 Hydrographs





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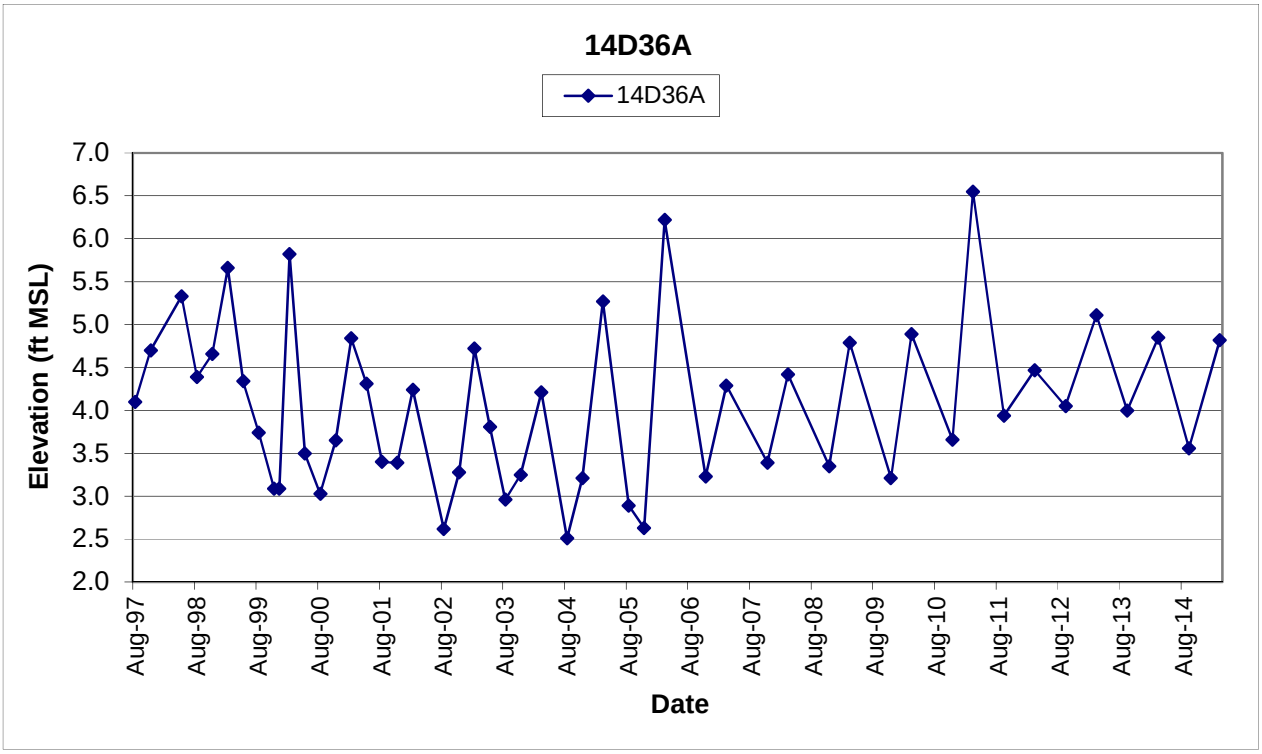
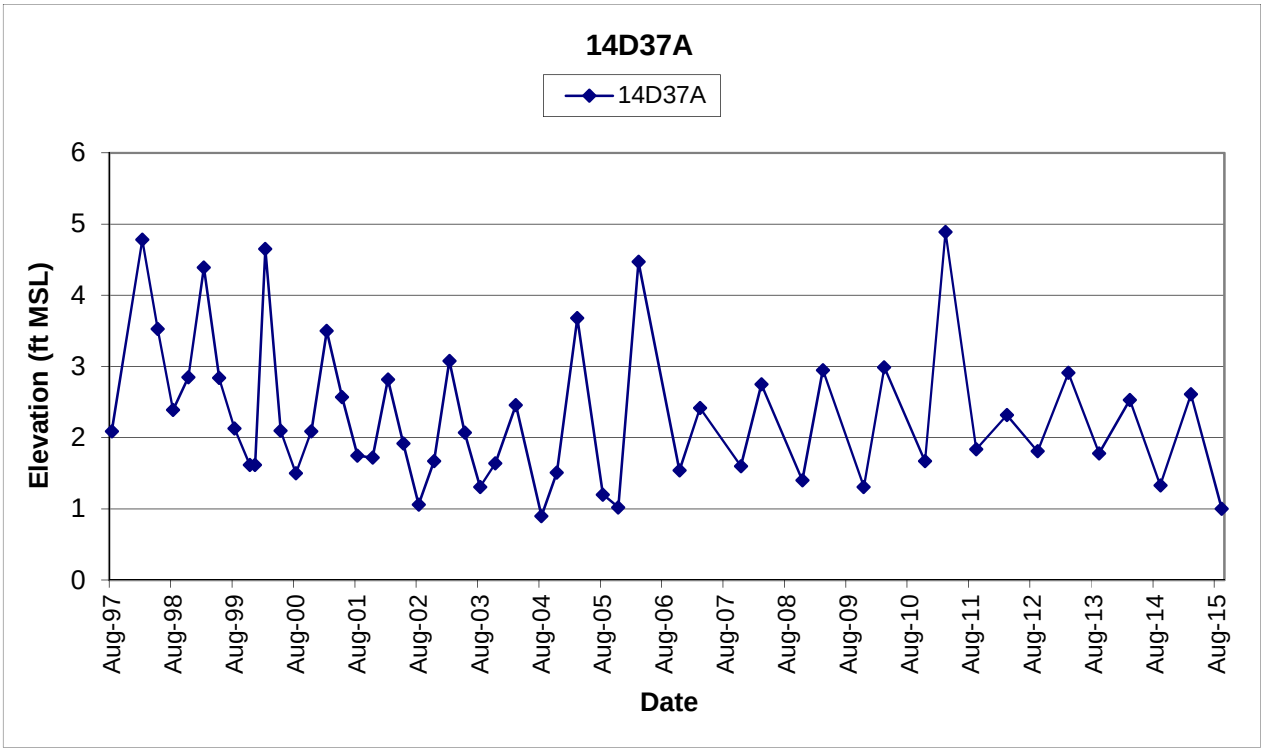
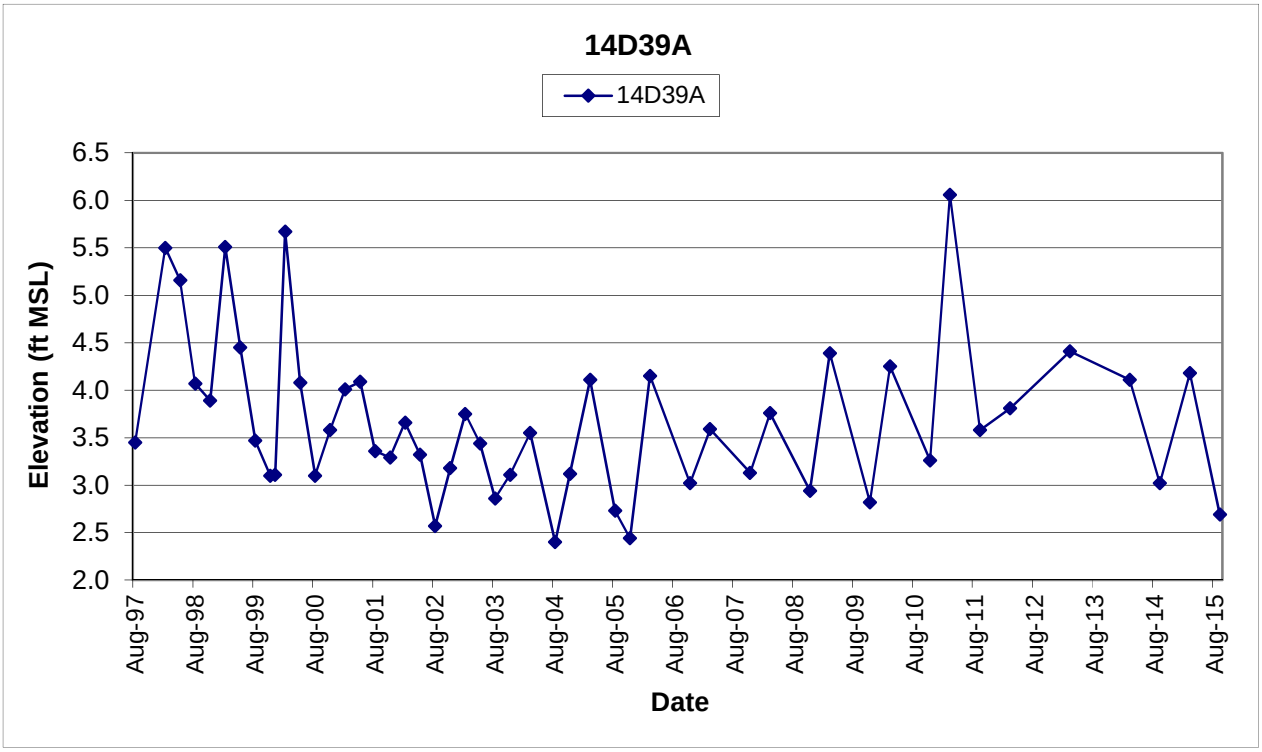
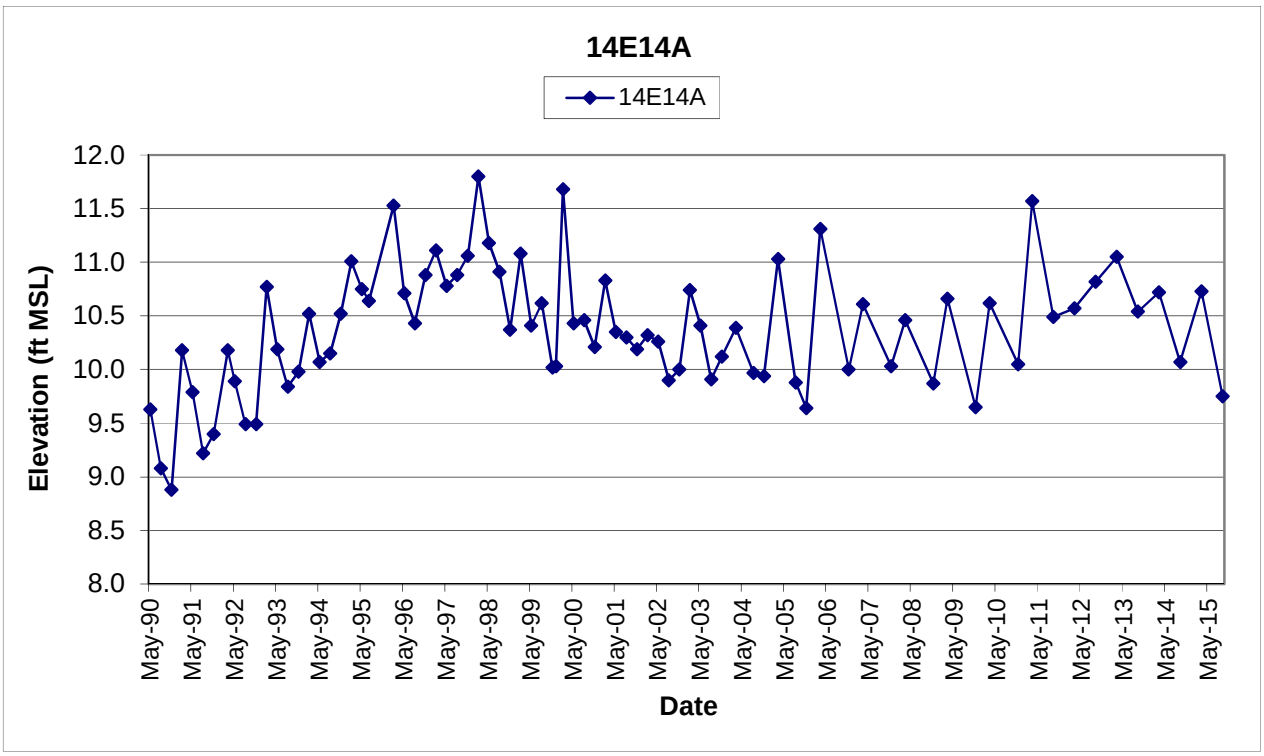
CY2015 Hydrographs





APPENDIX C
CY2015 Hydrographs





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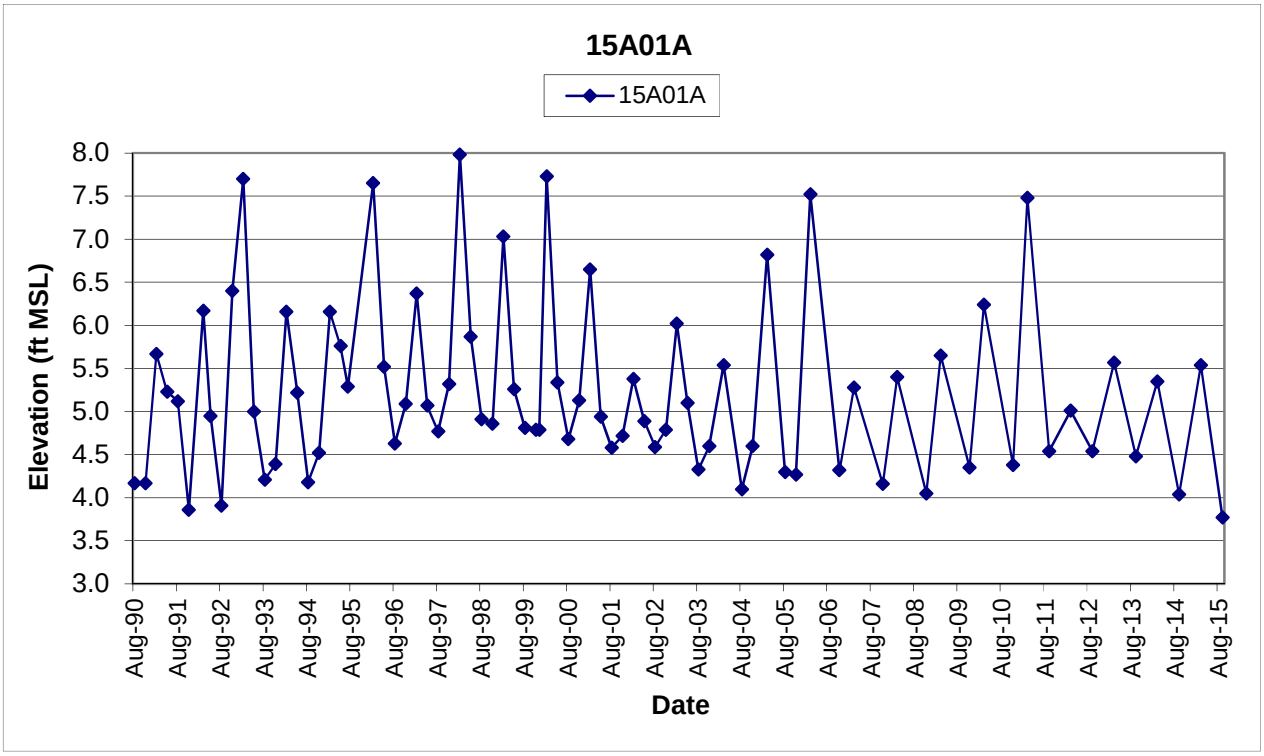
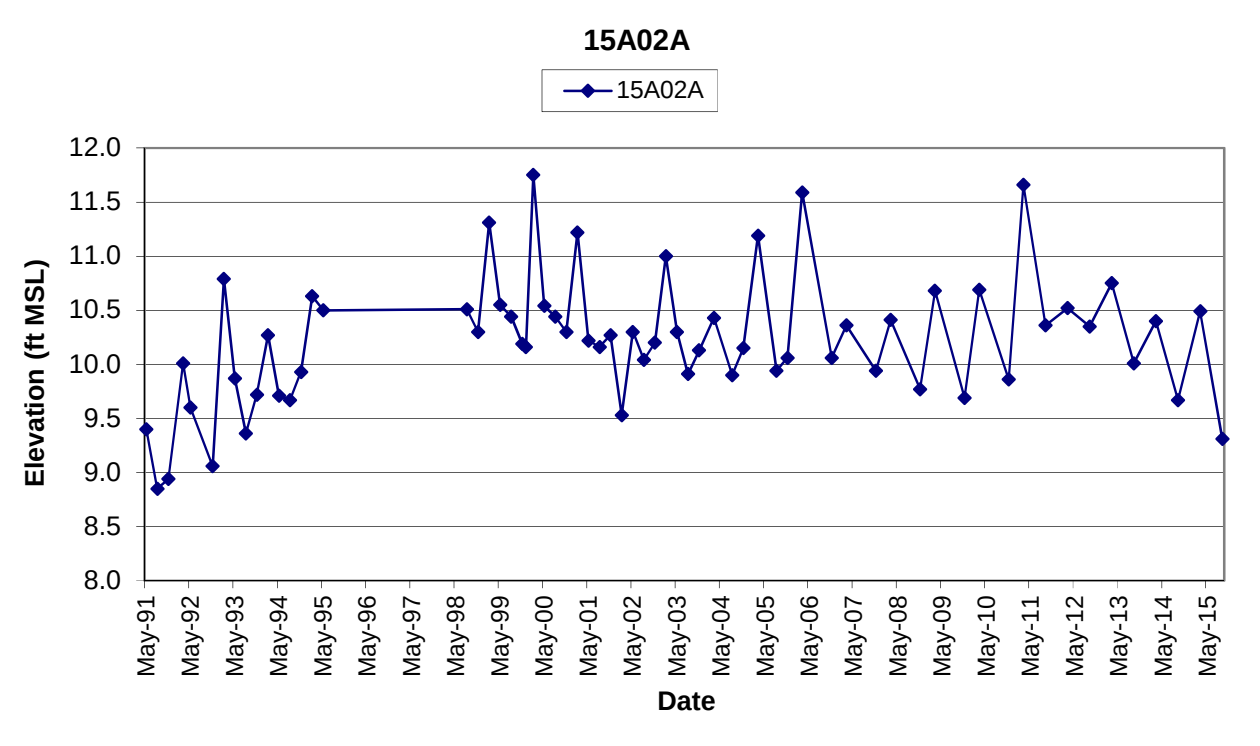
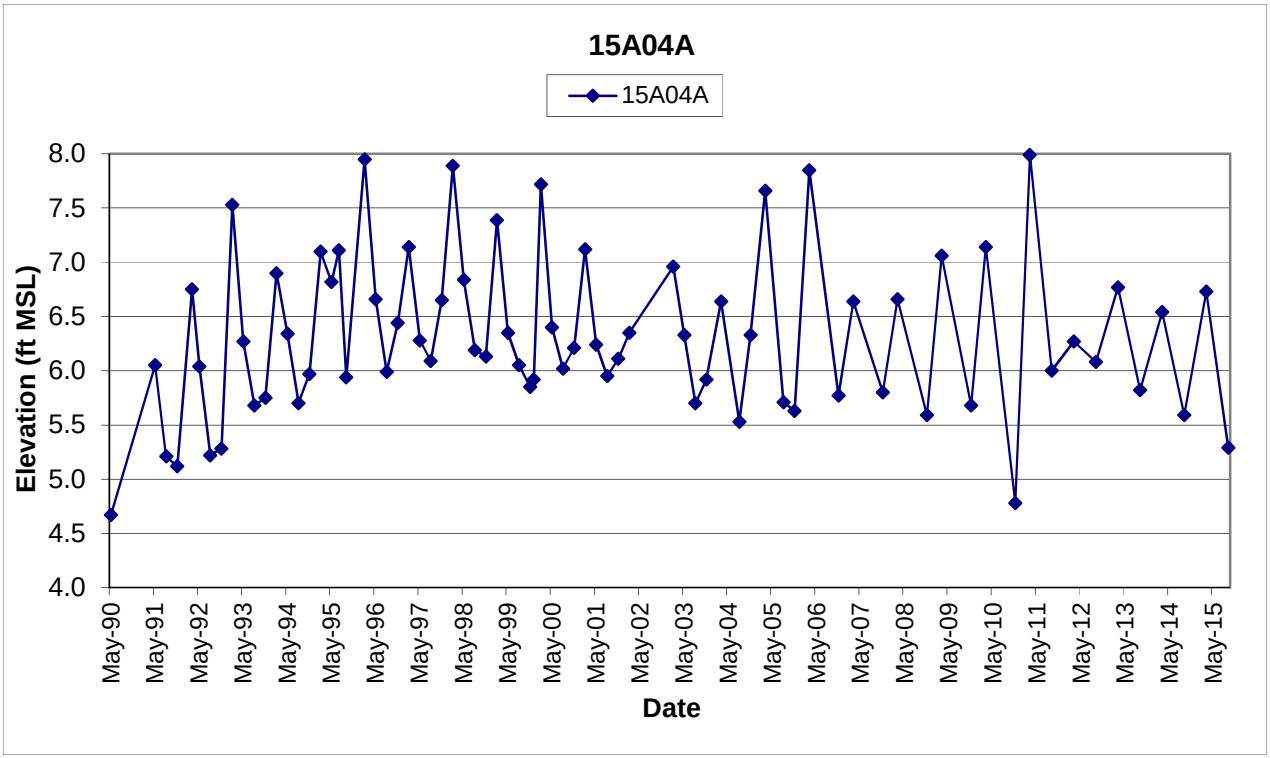
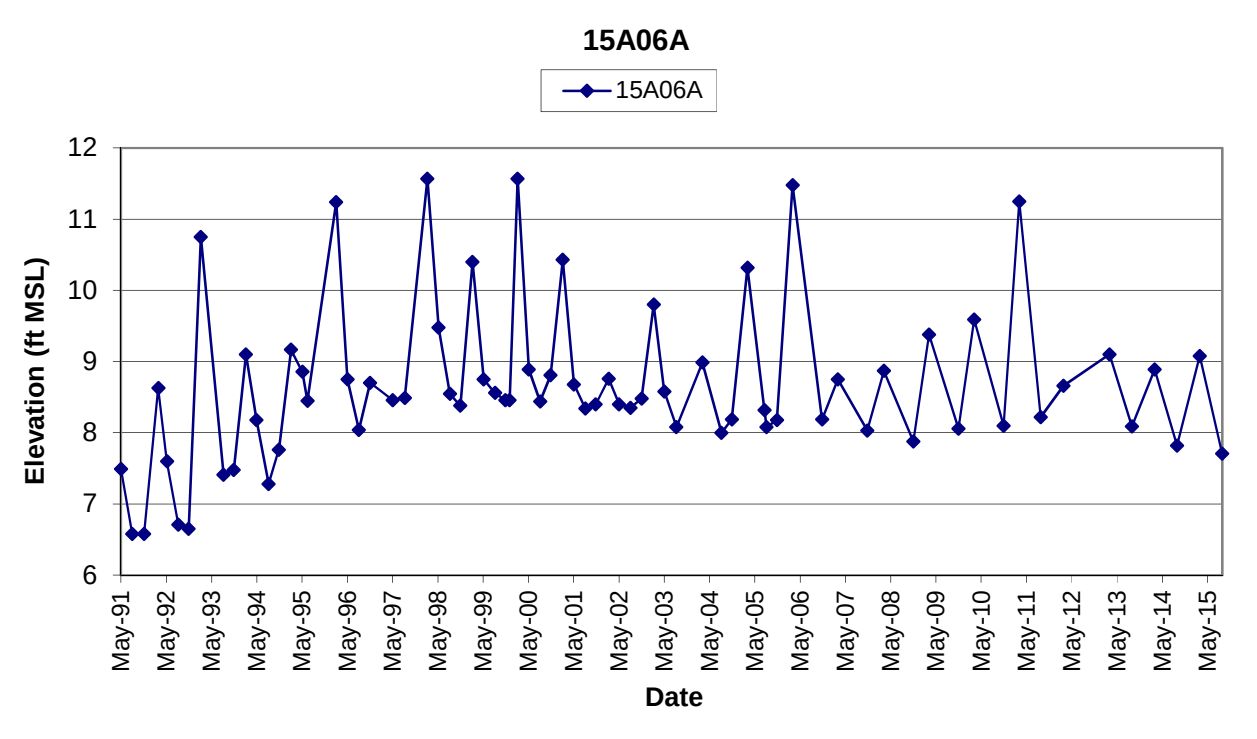


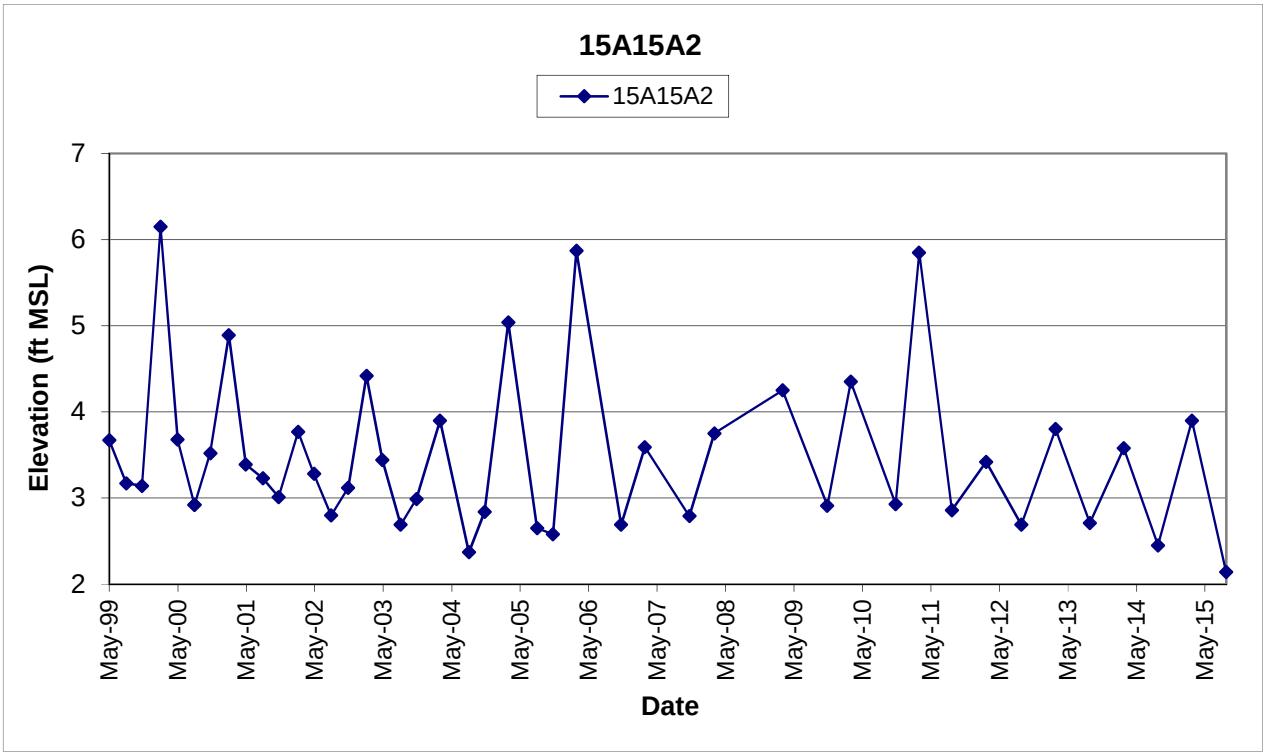


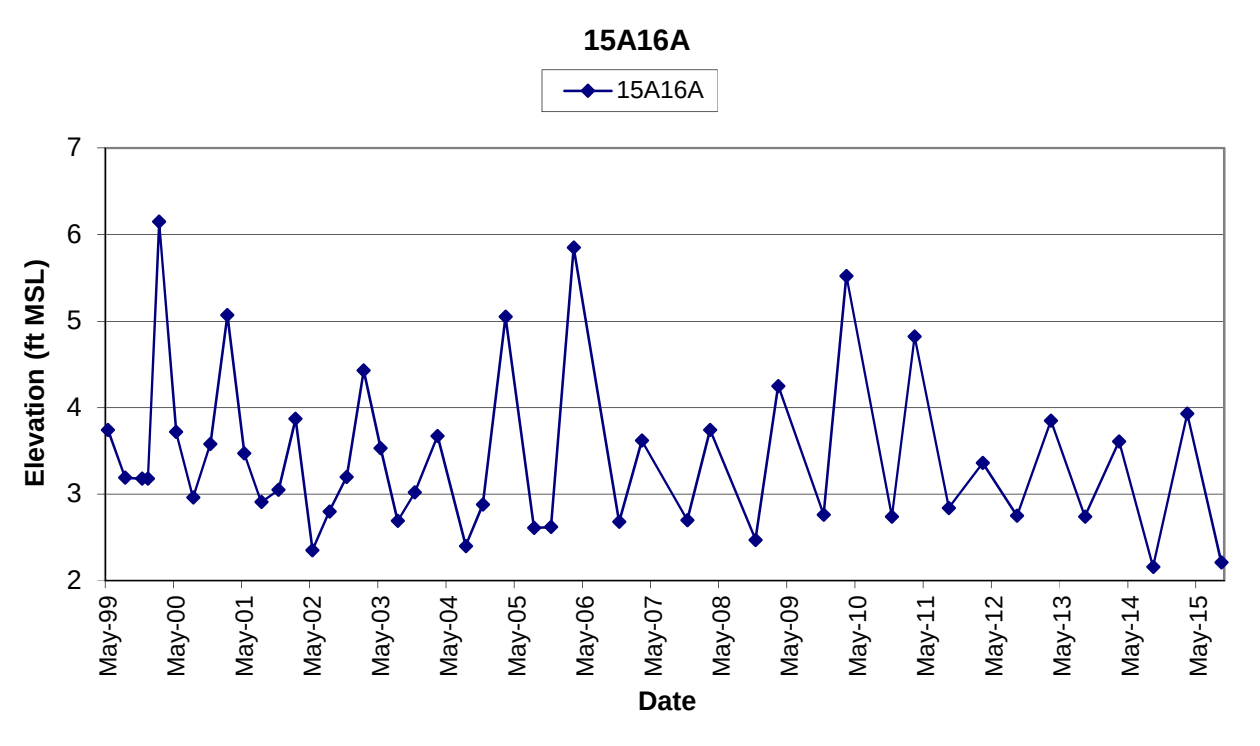
APPENDIX C
CY2015 Hydrographs



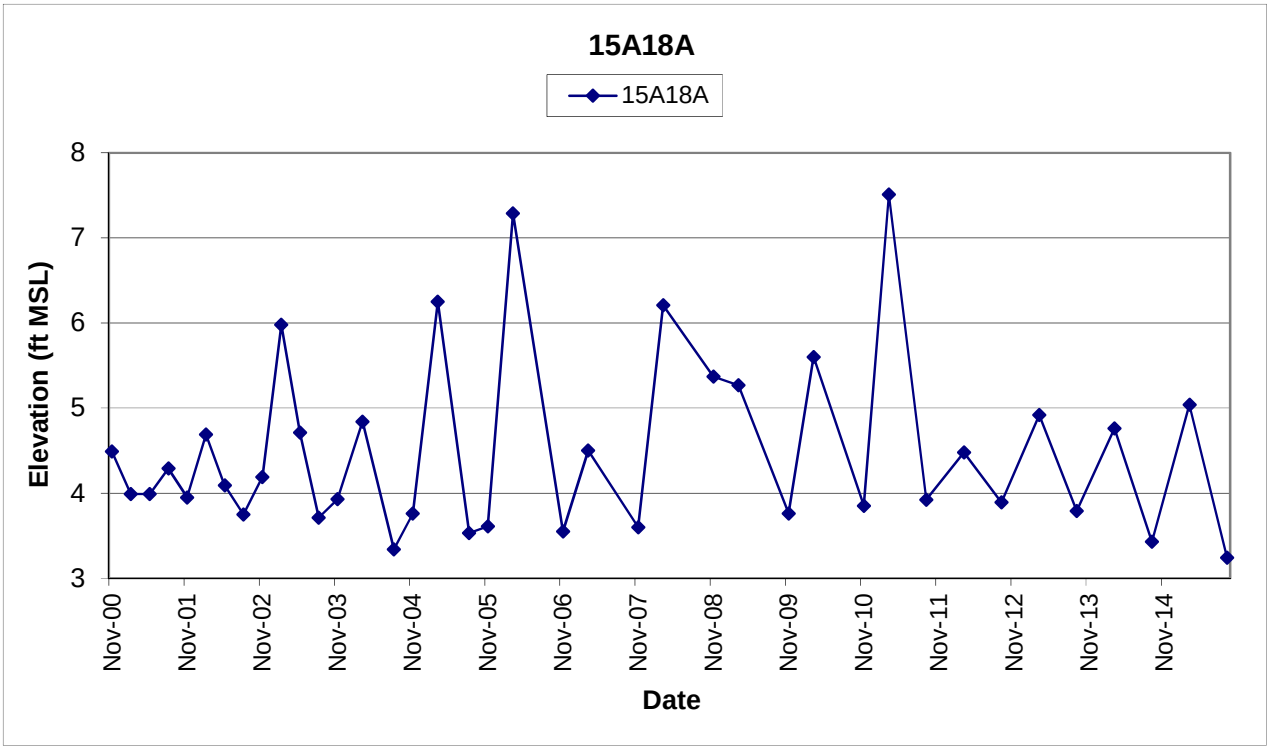


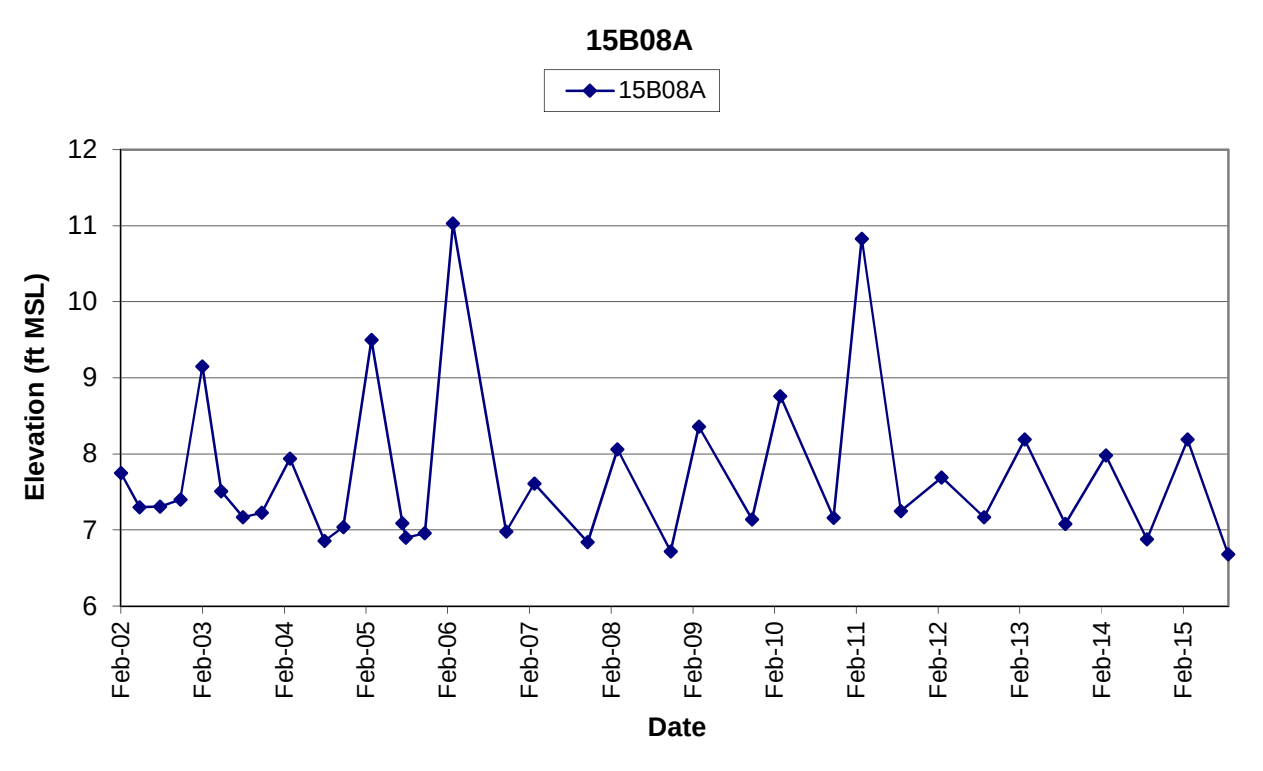
APPENDIX C
CY2015 Hydrographs



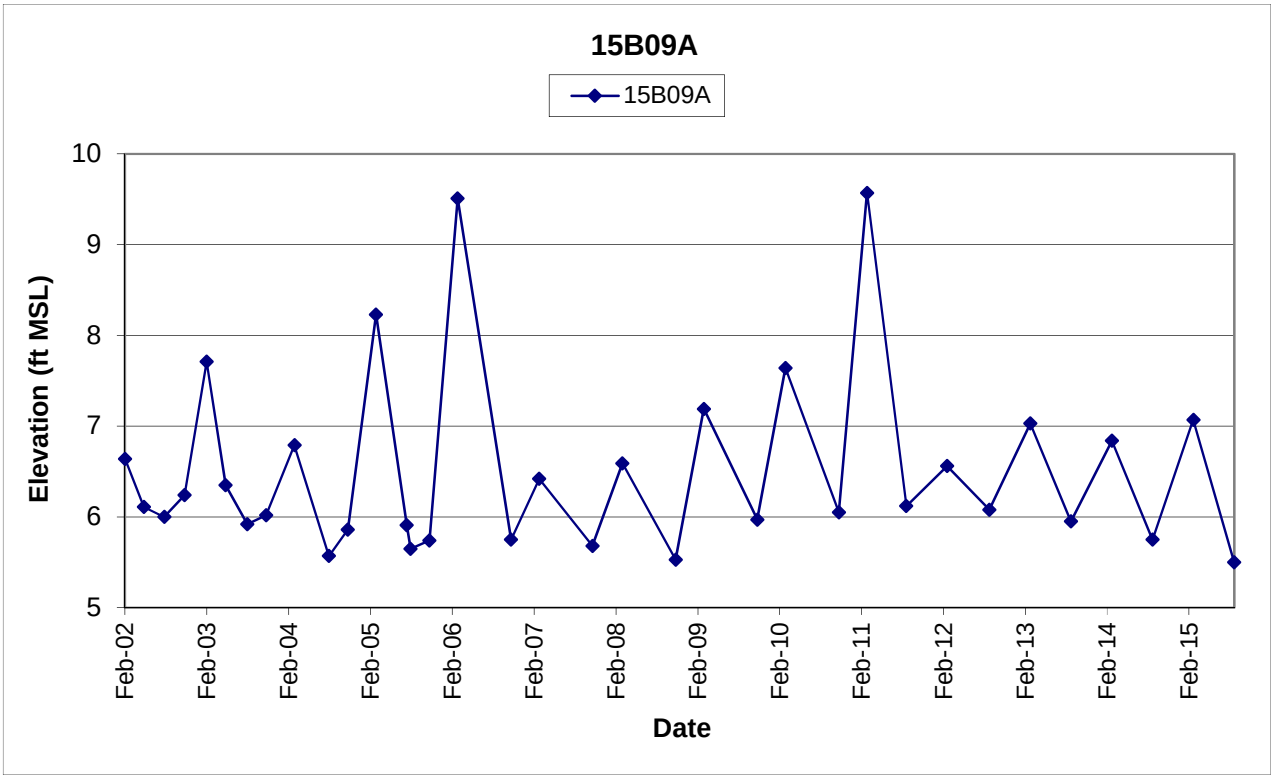


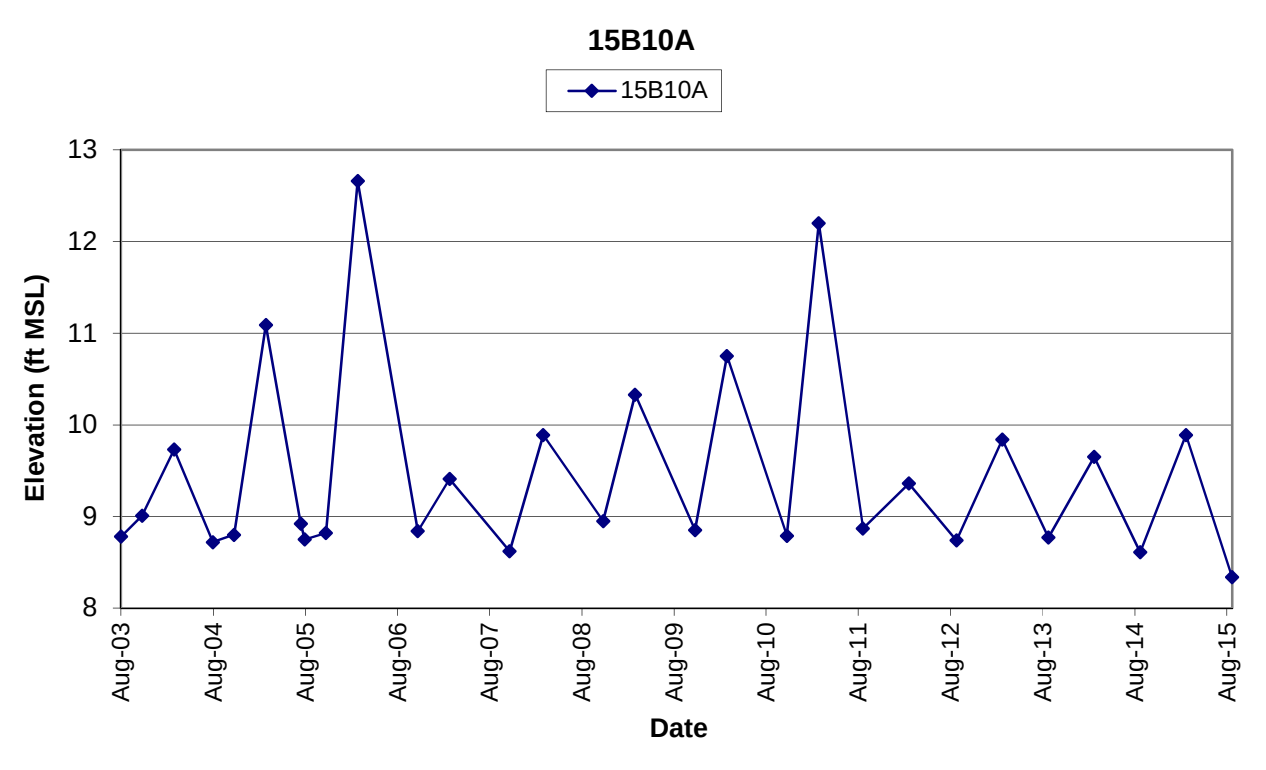
APPENDIX C
CY2015 Hydrographs



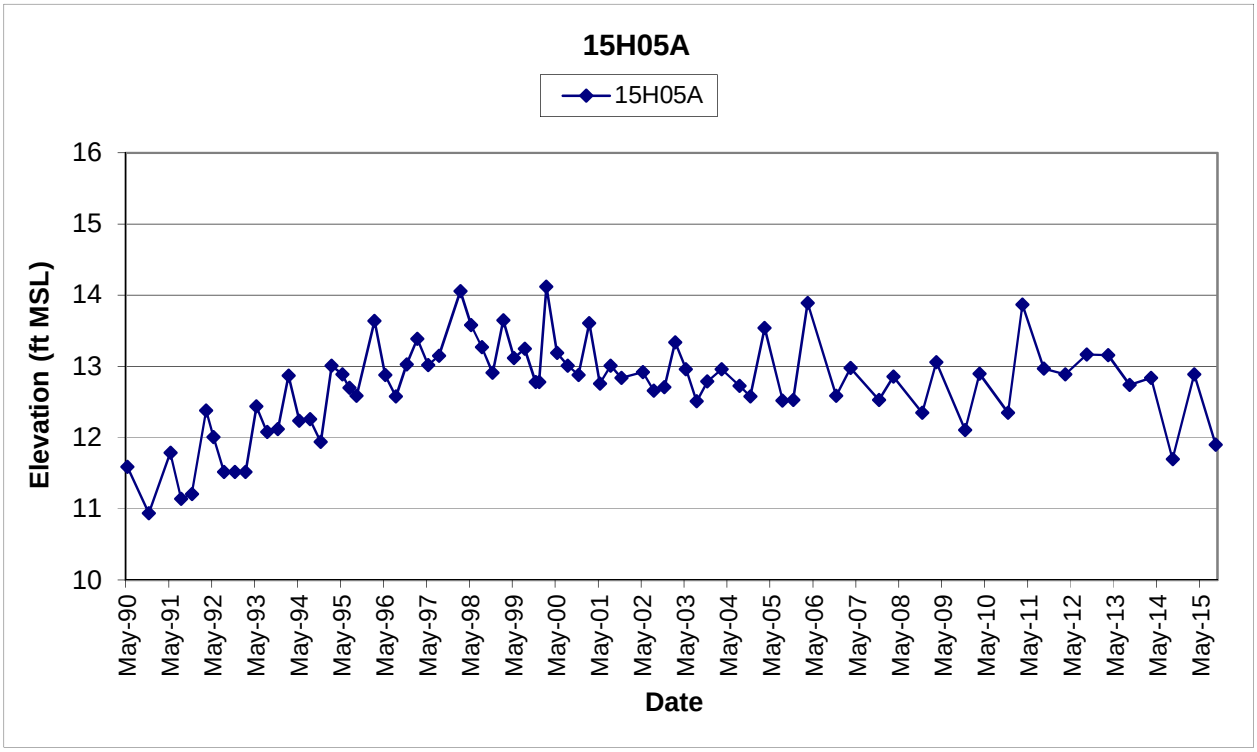


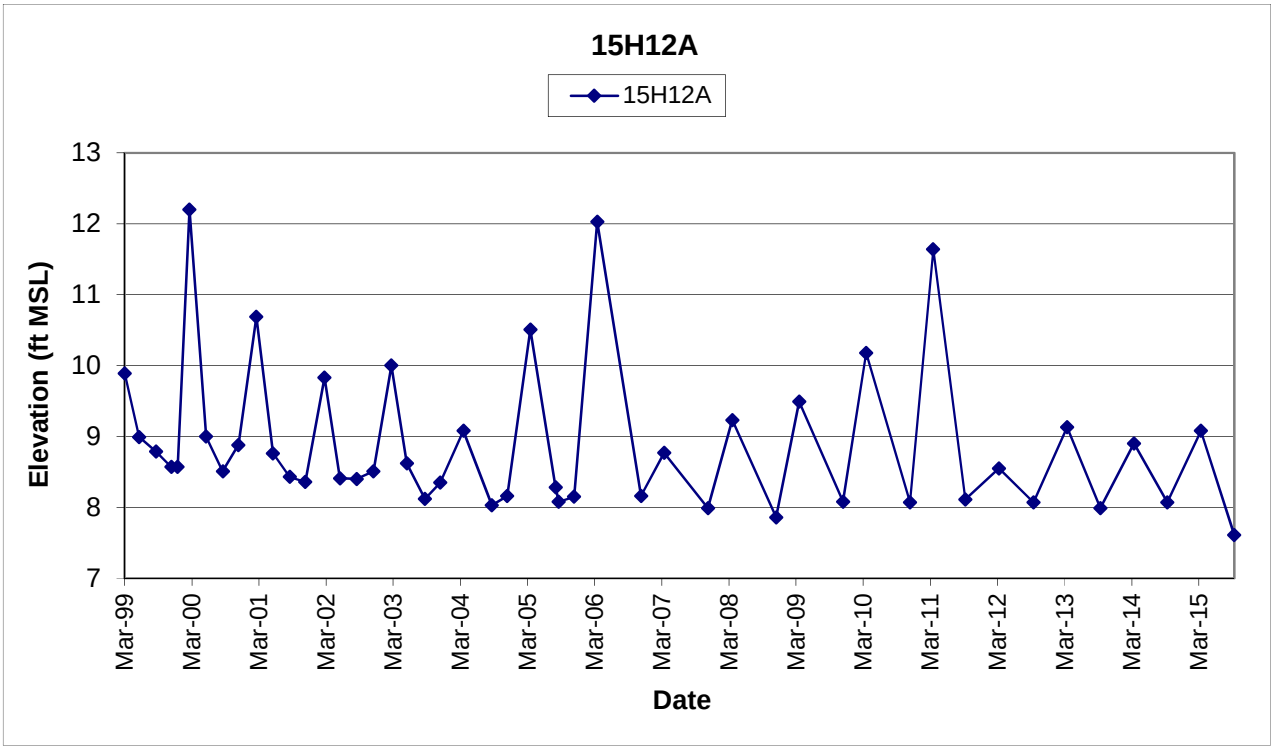
APPENDIX C
CY2015 Hydrographs





APPENDIX C
CY2015 Hydrographs





APPENDIX D

CY2015 Groundwater Analytical Results

APPENDIX D
2015 Groundwater Analytical Results
Volatile Organic Compounds

Well ID	Date	PCE (µg/L)	TCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl chloride (µg/L)	1,1,1-TCA (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	Chloroform (µg/L)	Chloroethane (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)
085B1	8/4/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
10Q07A	9/29/2015	<0.50	**22**	**15**	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
11M03A	9/24/2015	<0.50	**28**	1.5	<0.50	**8.9**	<0.50	<0.50	3.0	<0.50	<0.50	<0.50	1.2	3.5
11M16A1	9/24/2015	<0.50	**16**	1.4	0.52	<0.50	<0.50	<0.50	0.90	<0.50	<0.50	<0.50	<0.50	<0.50
11M17A	9/24/2015	<0.50	**21**	0.86	<0.50	5.7	<0.50	<0.50	1.9	<0.50	<0.50	<0.50	0.99	<0.50
11M21A	9/24/2015	<0.50	**16**	4.4	<0.50	**17**	<0.50	<0.50	4.5	<0.50	<0.50	<0.50	1.2	<0.50
11M25A	9/24/2015	0.67	1.1	0.52	<0.50	<0.50	<0.50	<0.50	0.70	<0.50	<0.50	<0.50	<0.50	<0.50
11N22A1	9/24/2015	<0.50	**83**	**20**	1.1	0.59	<0.50	<0.50	1.8	<0.50	<0.50	<0.50	<0.50	3.7
12L01A	9/30/2015	<0.50	**32**	5.0	0.72	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
14D09A	9/24/2015	<0.50	**50**	**42**	<0.50	2.8	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	<0.50
14D25A2	9/24/2015	<0.50	**110**	**16**	<0.50	5.5	<0.50	<0.50	4.5	**1.1**	<0.50	<0.50	<0.50	8.0
14D28A	9/24/2015	3.3	**20**	**58**	<0.50	2.1	<0.50	<0.50	3.5	<0.50	<0.50	<0.50	<0.50	<0.50
14E14A	9/24/2015	<0.50	<0.50	0.29^{J}	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
15A06A	9/28/2015	<0.50	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5
15B02A	9/29/2015	<0.50	**68**	**6.7**	0.40^{J}	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
15B03A	9/29/2015	<0.50	**56**	**12**	0.51	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
15B06A	9/29/2015	<0.50	**100**	**13**	1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-AS1	9/29/2015	<0.50	**11**	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-AS3	9/29/2015	<0.50	**42**	**15**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-AS4	9/29/2015	<0.50	**120**	**69**	3.9	0.43^{J}	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cleanup Level		**5.0**	**5.0**	**6.0**	**10**	**6.0**	**0.50**	**200**	**5.0**	**0.50**	**80***	**NE**	**150**	**1,200**

µg/L = micrograms per liter
J = detected, but below the Report Limit; therefore, result is an estimated concentration
NE = Not Established

APPENDIX D
2015 Groundwater Analytical Results
Volatile Organic Compounds

Well ID	Date	PCE (µg/L)	TCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl chloride (µg/L)	1,1,1-TCA (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	Chloroform (µg/L)	Chloroethane (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)
MW-AS6	9/29/2015	<0.50	**88**	**33**	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-AS8	9/29/2015	<0.50	**180**	**47**	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-AS11	9/29/2015	<0.50	**51**	**11**	0.43[J]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-AS13	9/29/2015	<0.50	**72**	**15**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
NASA-1A	3/25/2015	<0.50	**33**	**29**	0.92	1.7	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	1.3
NASA-1A	7/7/2015	<0.50	**46**	**38**	0.71	2.5	**0.77**	<0.50	3.3	<0.50	<0.50	<0.50	<0.50	1.5
NASA-1A	9/21/2015	<0.50	**39**	**32**	0.77	2.5	<0.50	<0.50	2.9	**0.50**	<0.50	<0.50	<0.50	2.1
NASA-1A	12/9/2015	<0.50	**44**	**41**	1.0	3.3	<0.50	<0.50	3.9	**0.58**	<0.50	<0.50	<0.50	1.7
NASA-3A	3/25/2015	<0.50	**9.8**	1.1	<0.50	**8.8**	<0.50	0.89	3.2	<0.50	0.30[J]	<0.50	0.98	1.7
NASA-3A	7/7/2015	<0.50	**13**	1.3	<0.50	**15**	<0.50	<0.50	**5.3**	<0.50	0.51	<0.50	1.5	2.2
NASA-3A	9/21/2015	<0.50	**11**	1.1	<0.50	**12**	<0.50	<0.50	3.8	<0.50	0.34[J]	<0.50	1.0	2.2
NASA-3A	12/9/2015	<0.50	**12**	1.3	<0.50	**16**	<0.50	<0.50	**5.4**	<0.50	0.37[J]	<0.50	1.3	2.0
PRB-25	9/29/2015	<0.50	**28**	**38**	2.9	0.52	**0.78**	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50
PRB-29	9/29/2015	<0.50	**39**	**13**	0.87	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
PRB-30	9/29/2015	<0.50	**130**	**48**	0.61	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
PRB-31	9/29/2015	<0.50	**73**	**24**	0.83	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
WSI-04A1	9/24/2015	<0.50	**74**	0.81	<0.50	3.6	<0.50	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<0.50
W08-02A2	6/2/2015	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	0.81	1.8	<0.50	<0.50	1.5	<0.50	<0.50
W08-08A1	9/24/2015	<0.50	**16**	0.46[J]	<0.50	1.5	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50	<0.50
W08-11A2	6/2/2015	<0.50	2.8	0.94	<0.50	0.64	<0.50	<0.50	0.76	<0.50	<0.50	0.66	<0.50	<0.50
Cleanup Level		**5.0**	**5.0**	**6.0**	**10**	**6.0**	**0.50**	**200**	**5.0**	**0.50**	**80***	**NE**	**150**	**1,200**

µg/L = micrograms per liter
J = detected, but below the Report Limit; therefore, result is an estimated concentration
NE = Not Established

APPENDIX D
2015 Groundwater Analytical Results
Petroleum Hydrocarbons

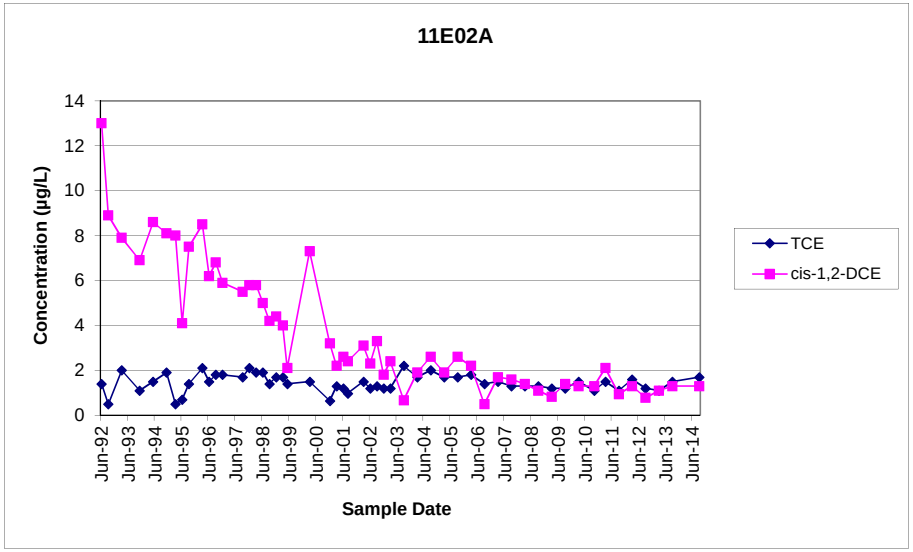
Well	Date	TPH-MO (µg/L)	TPH-D (µg/L)	TPH-JP5/8 (µg/L)	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethybenzene (µg/L)	Xylenes (µg/L)
14D28A	9/24/2015	<50	<50	<50	**60**	<0.30	<0.30	<0.30	<0.50
NASA-1A	3/25/2015	<50	<50	<50	45[J]	<0.30	<0.30	<0.30	<0.50
	7/7/2015	<50	<50	<50	**86**	<0.30	<0.30	<0.30	<0.50
	9/21/2015	<50	<50	<50	<50	<0.30	<0.30	<0.30	<0.50
	12/9/2015	<50	<50	<50	46[J]	<0.30	<0.30	<0.30	<0.50
Cleanup Level		**640**	**700**	**700**	**50**	**1.0**	**150**	**300**	**1,750**

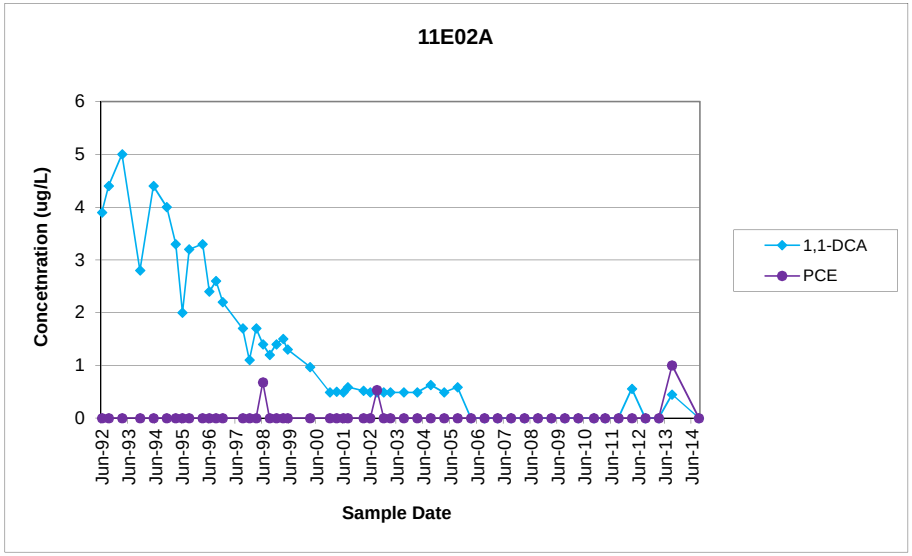
µg/L = micrograms per liter
J = detected, but below the Report Limit; therefore, result is an estimated concentration
--- = Not Analyzed

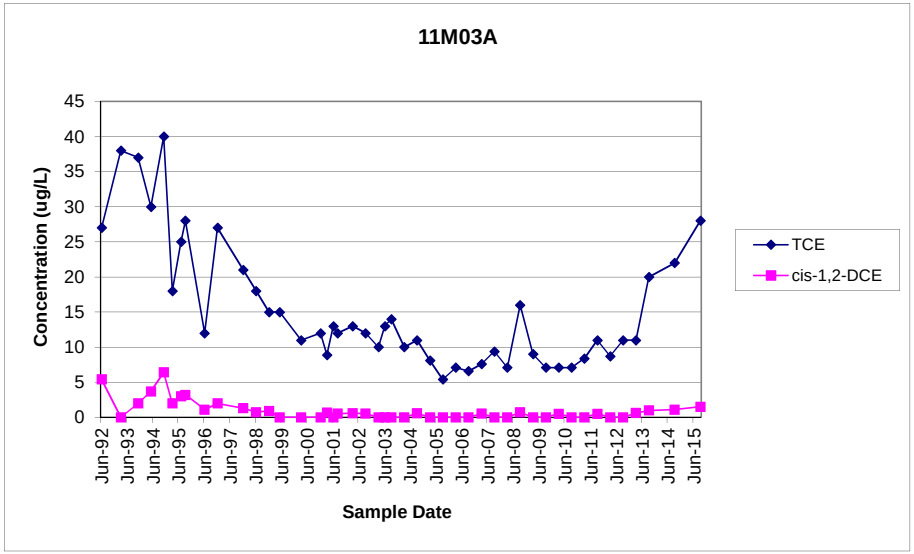
APPENDIX E

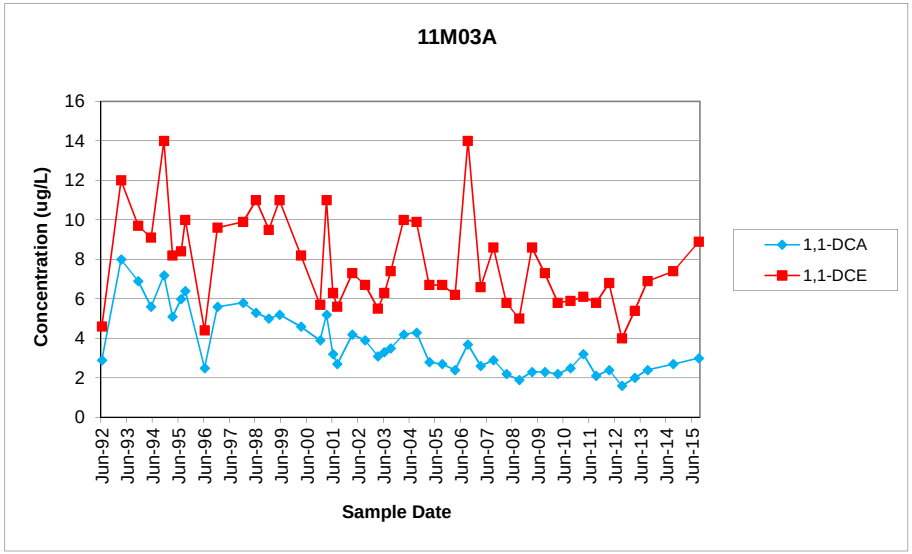
Concentration-Versus-Time Graphs

APPENDIX E
2015 Concentration-versus-Time Graphs









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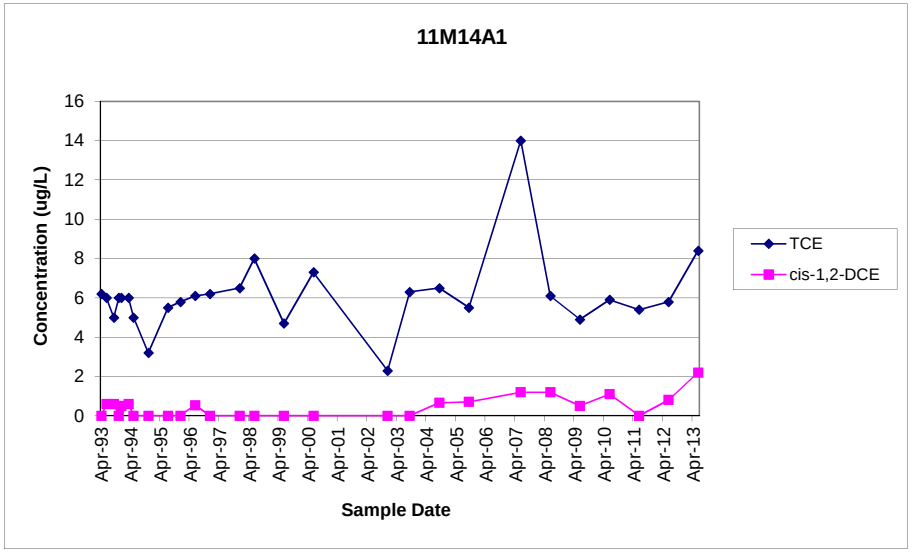

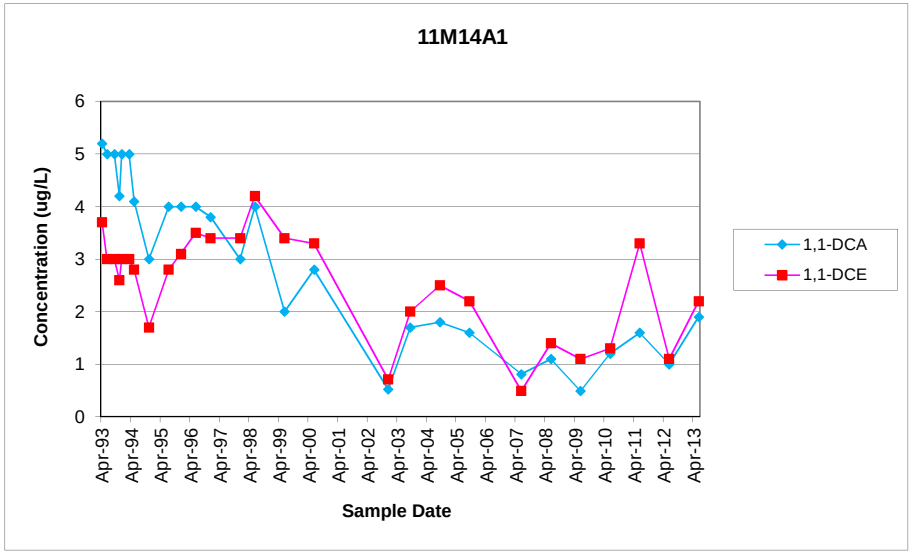

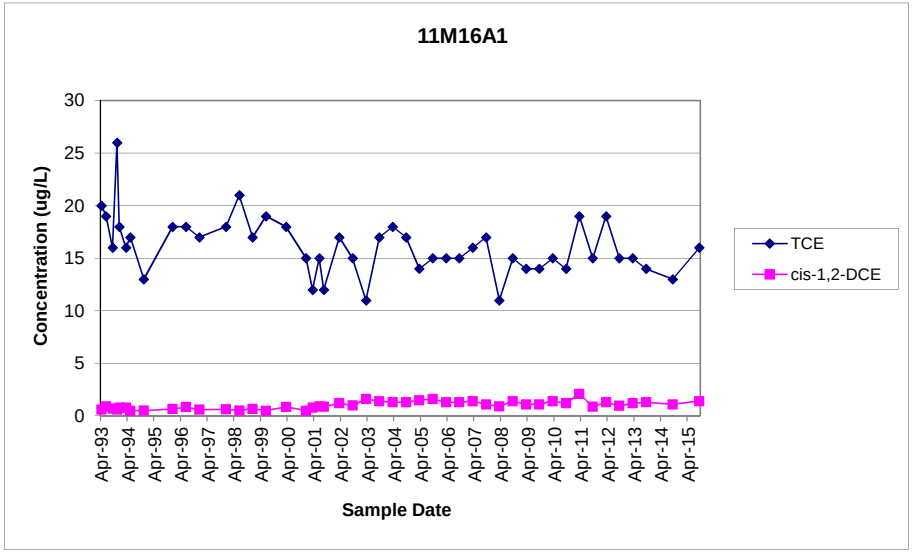

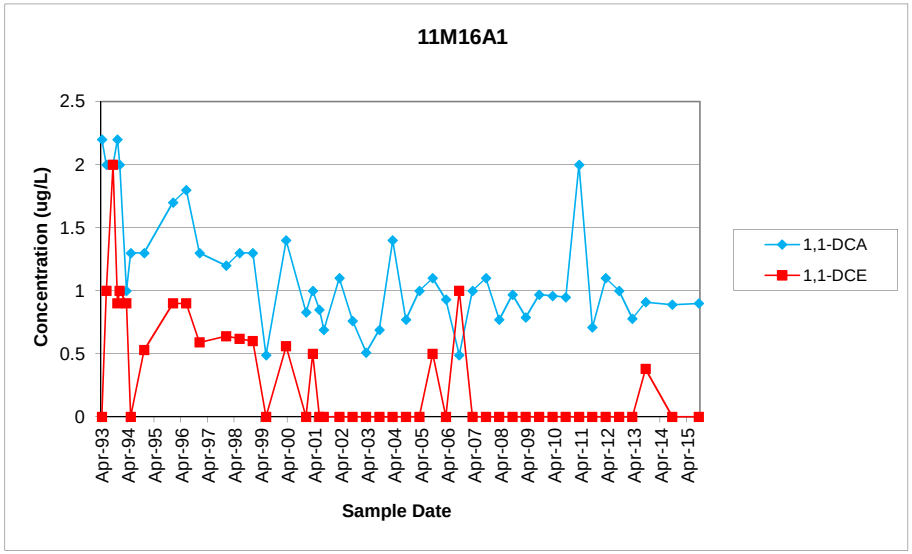

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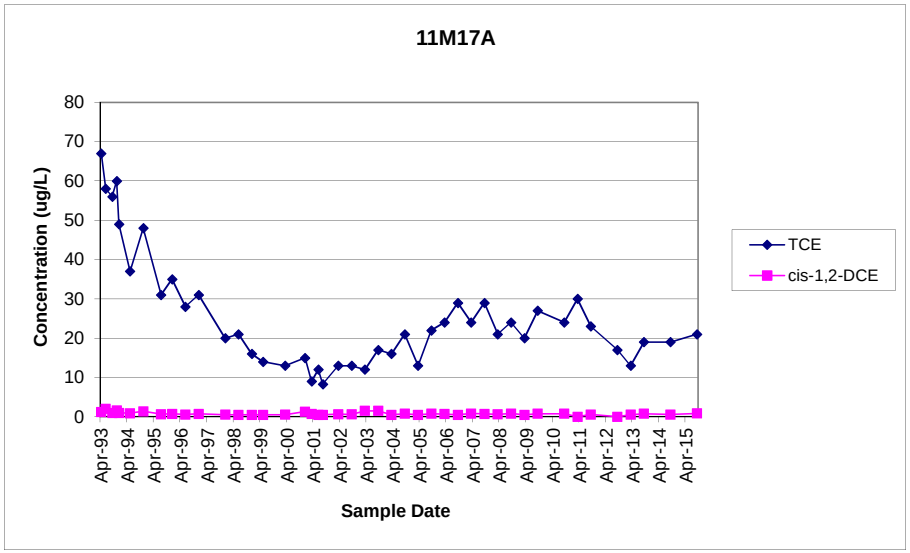

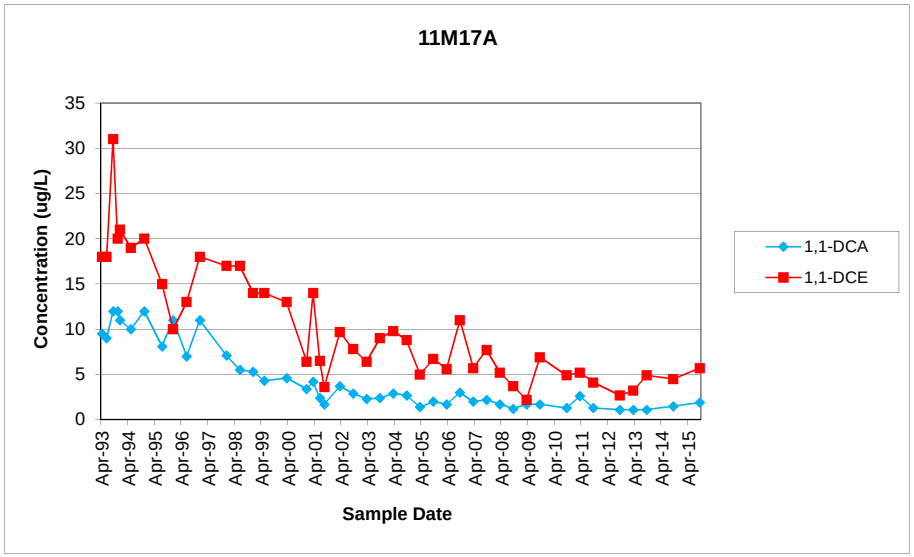

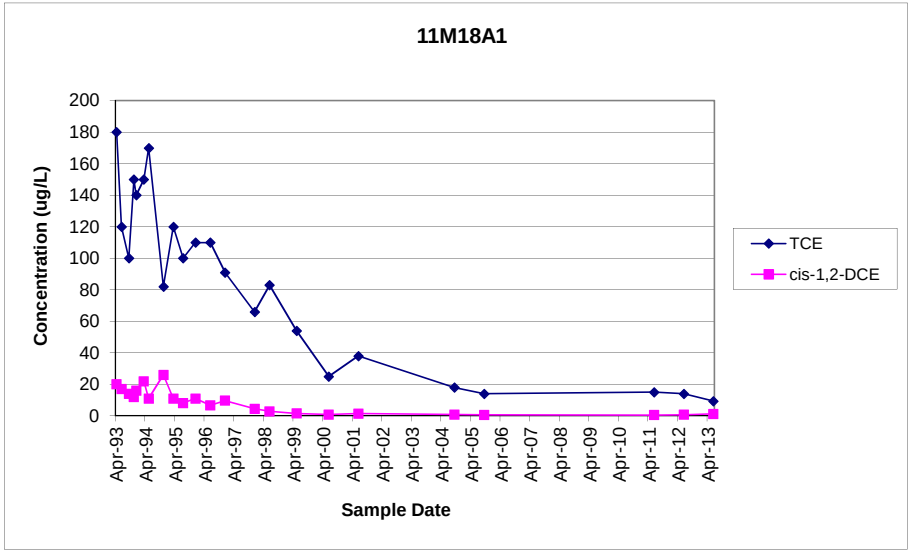

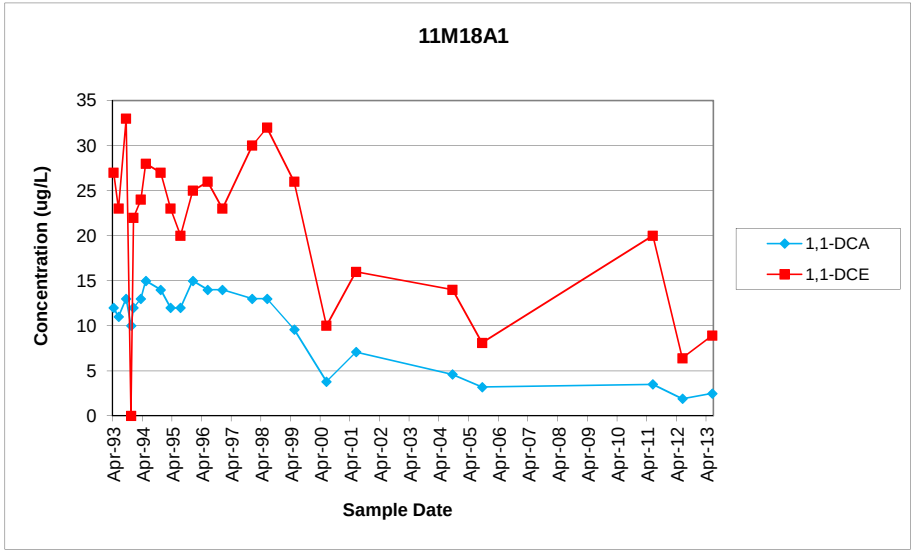

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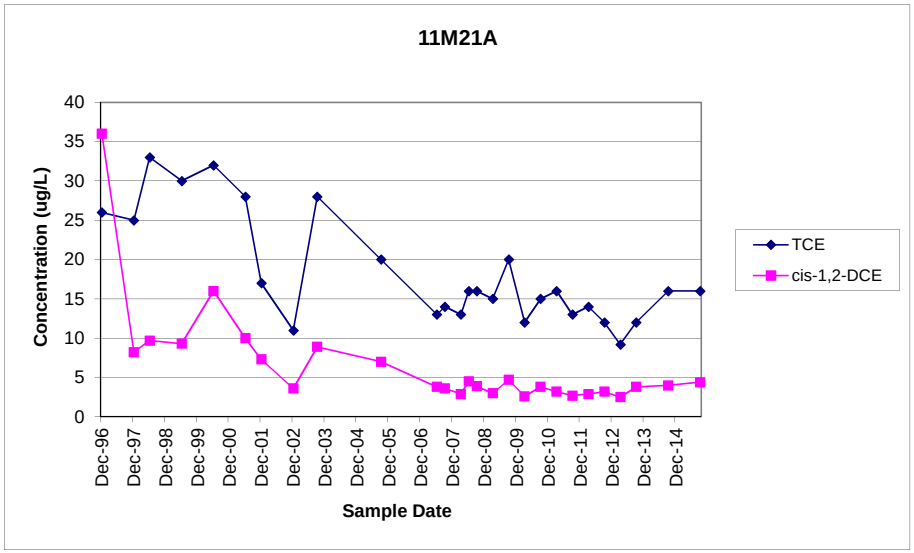

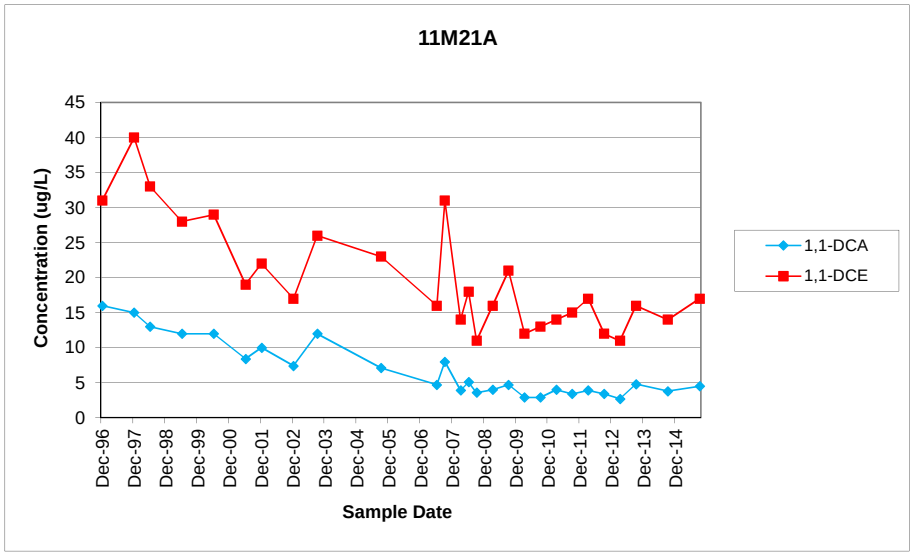

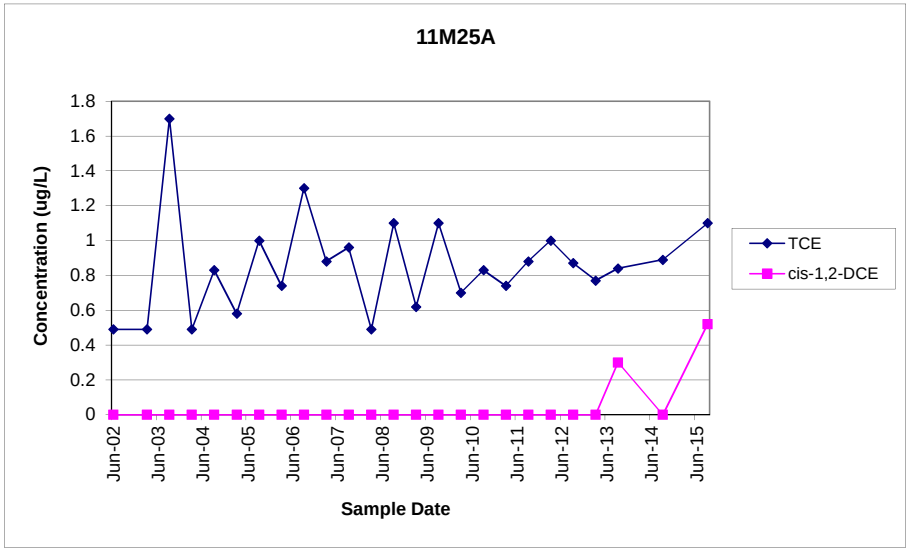

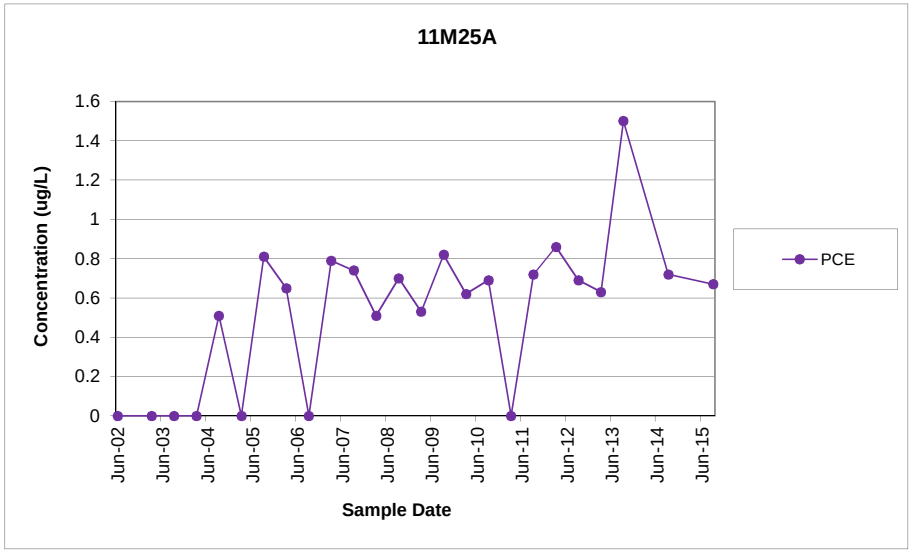

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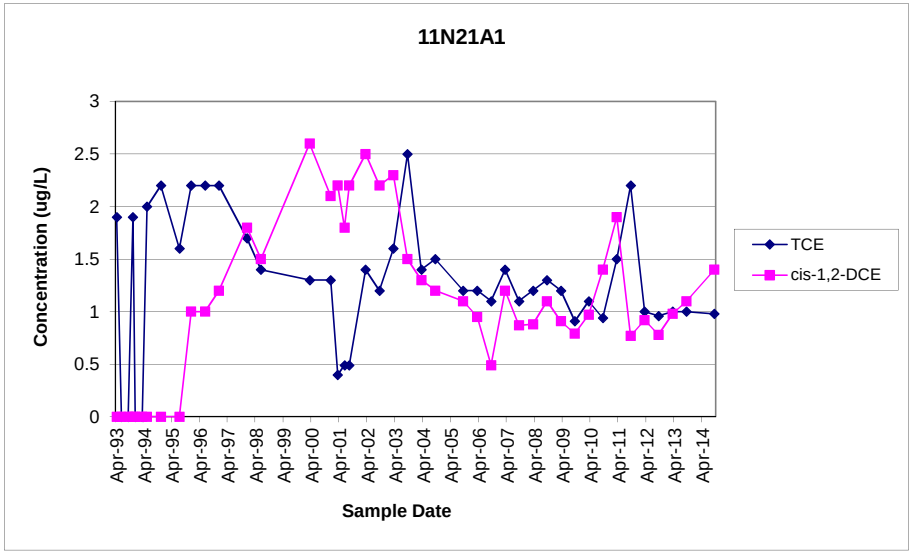

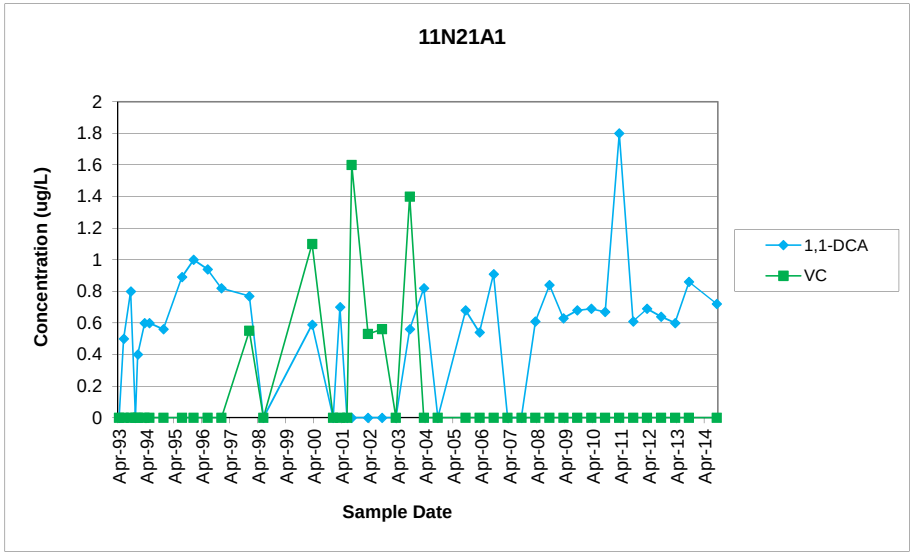

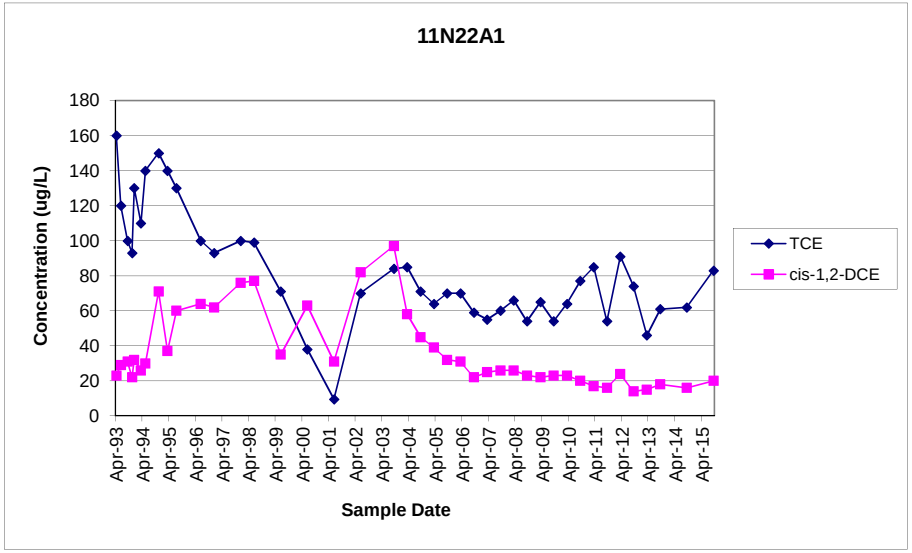

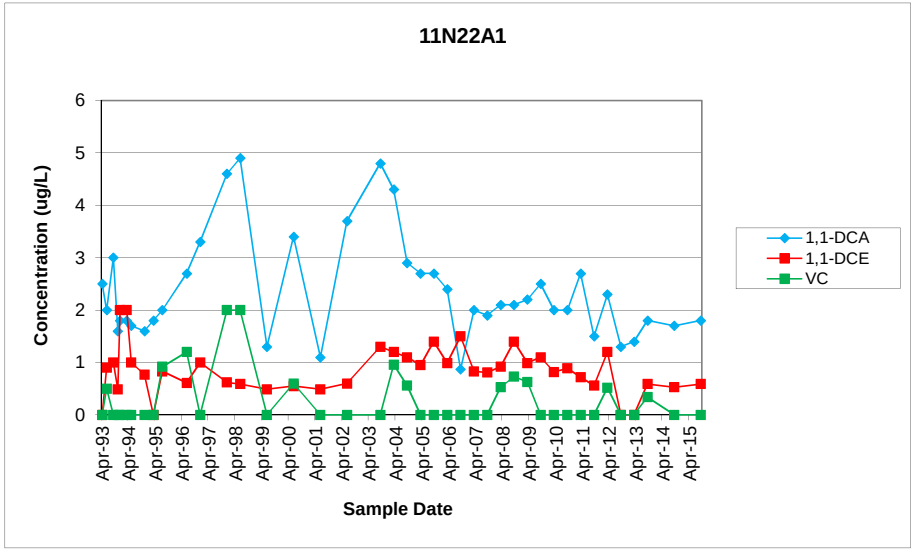

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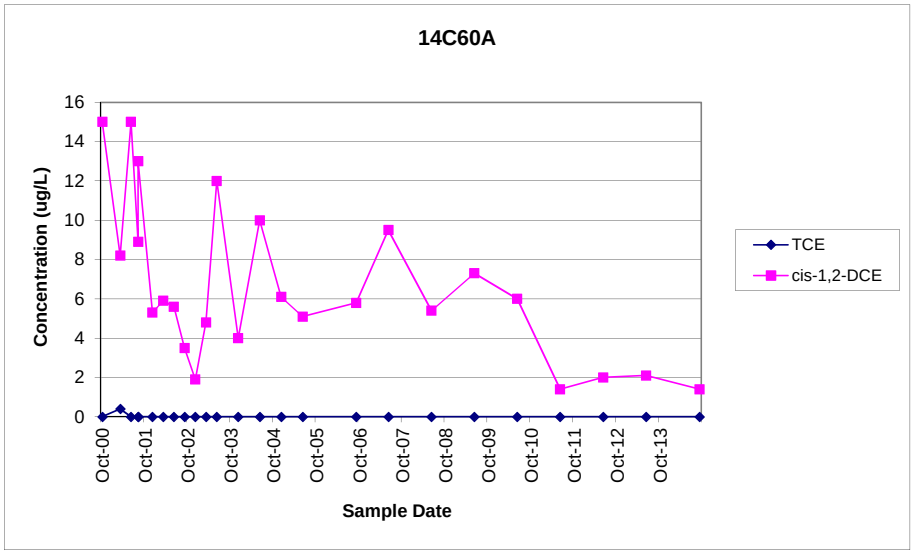

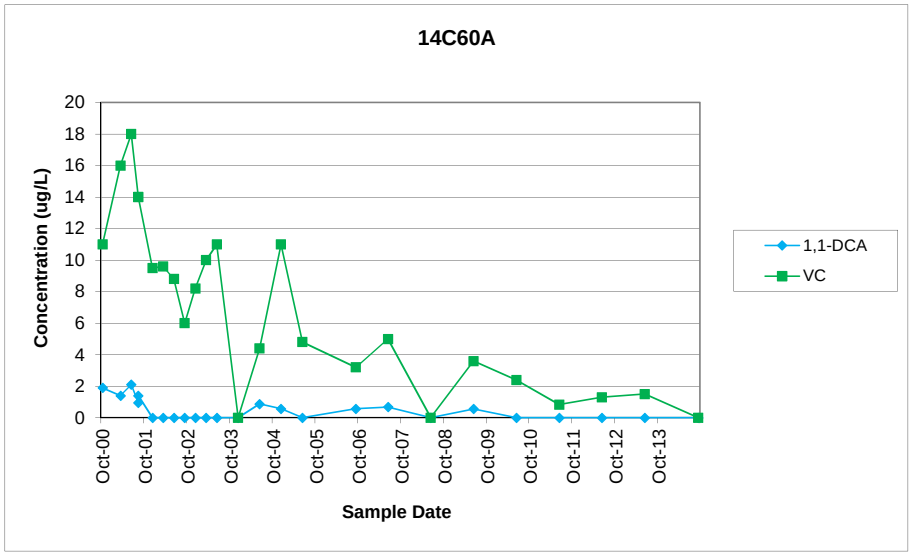

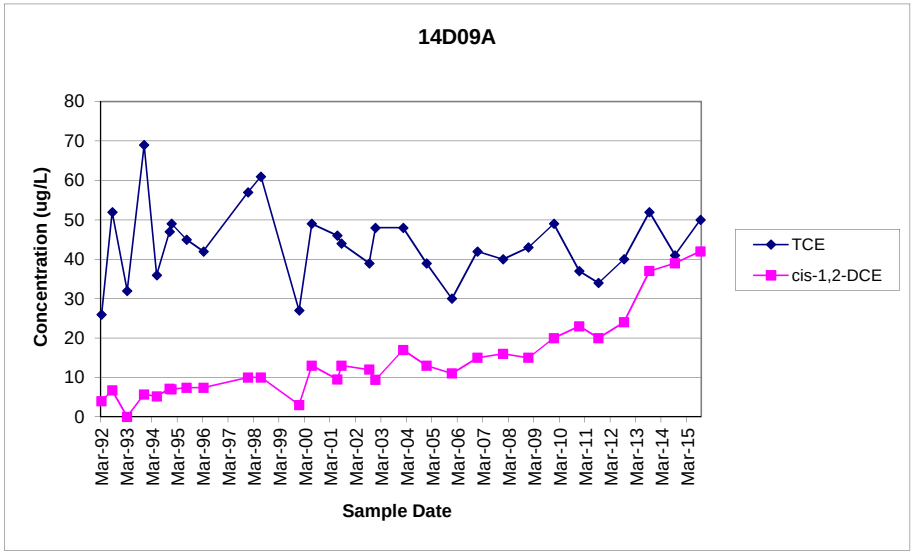

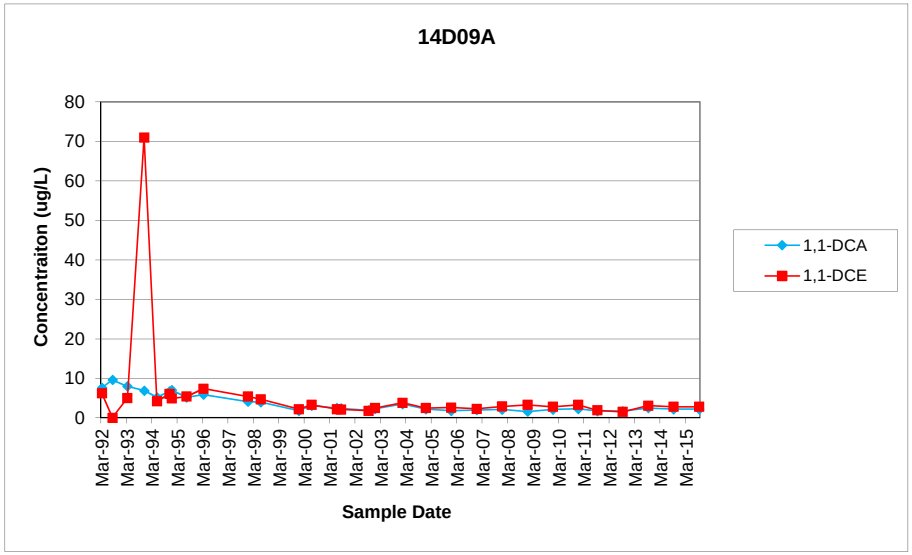

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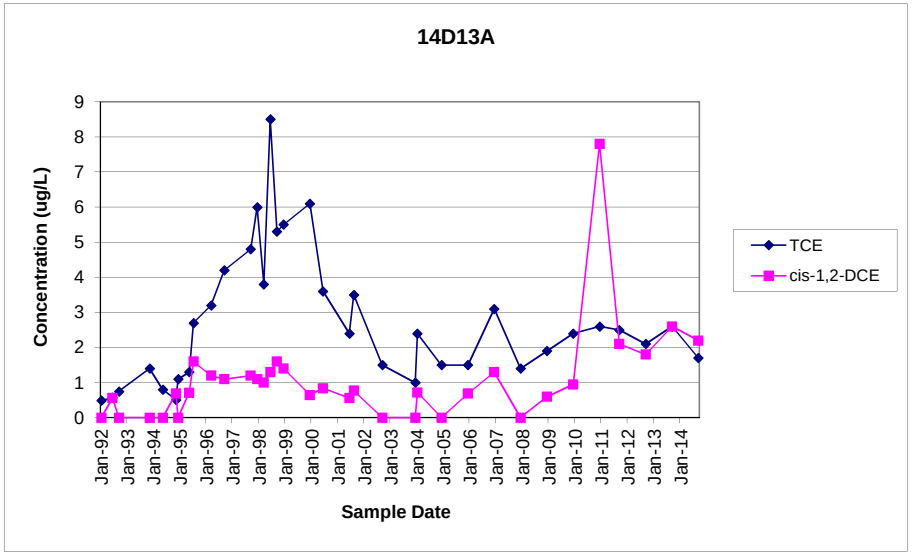

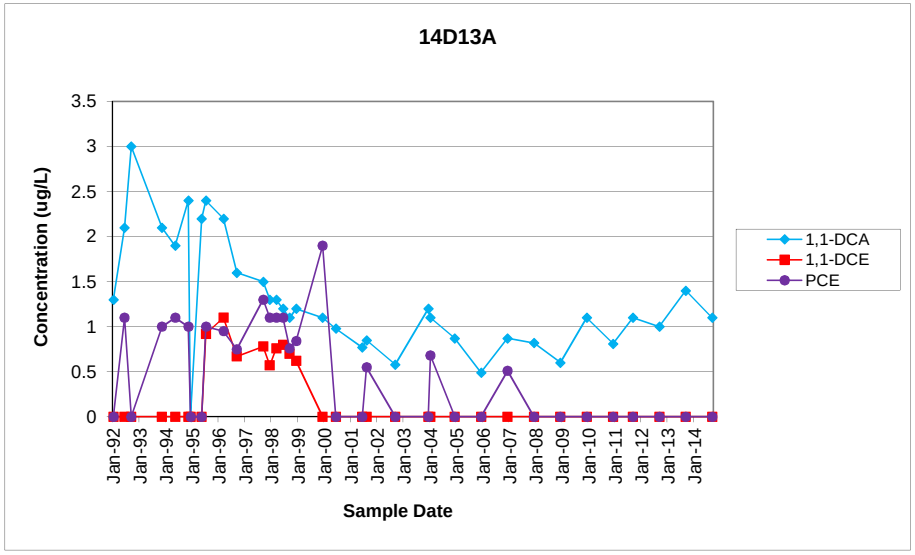

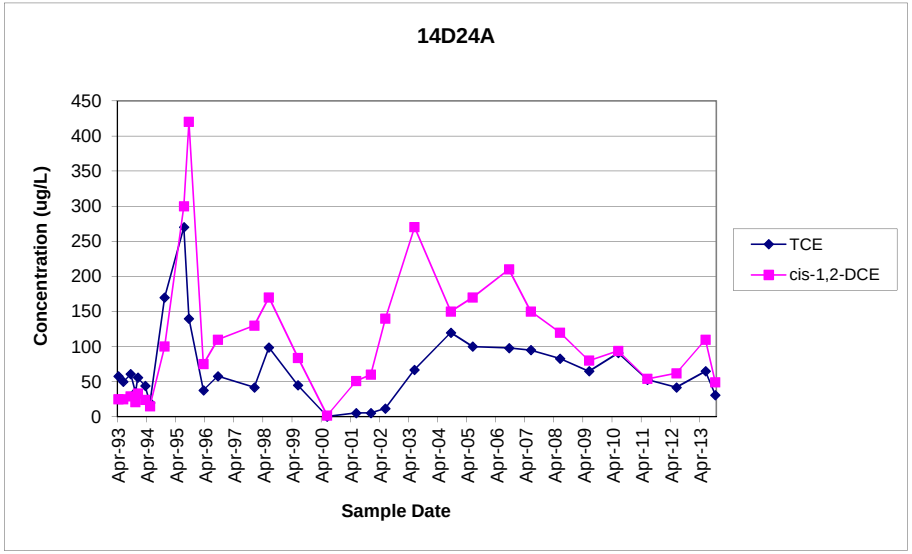

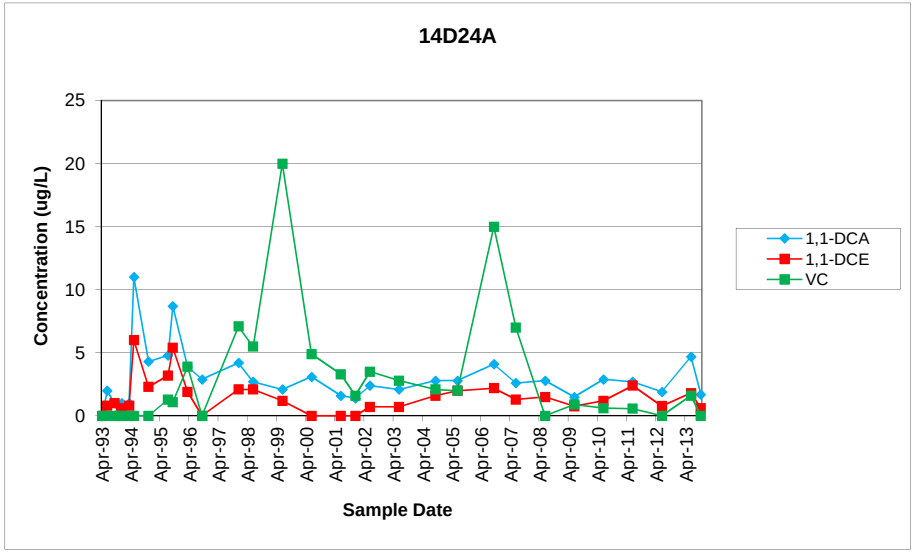

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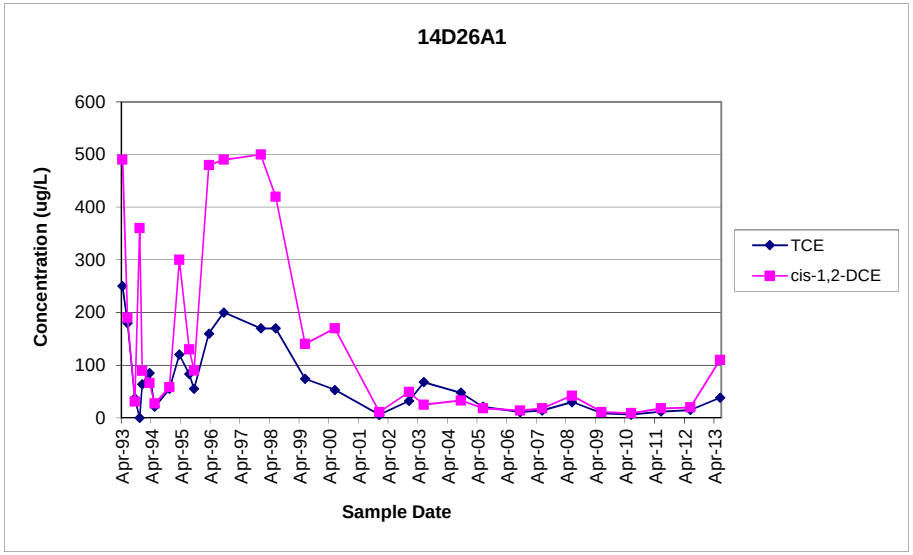

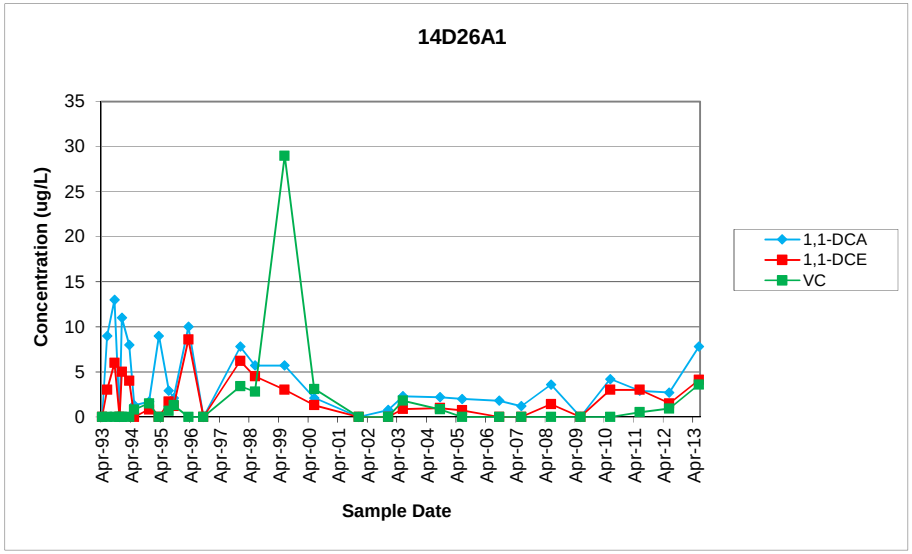

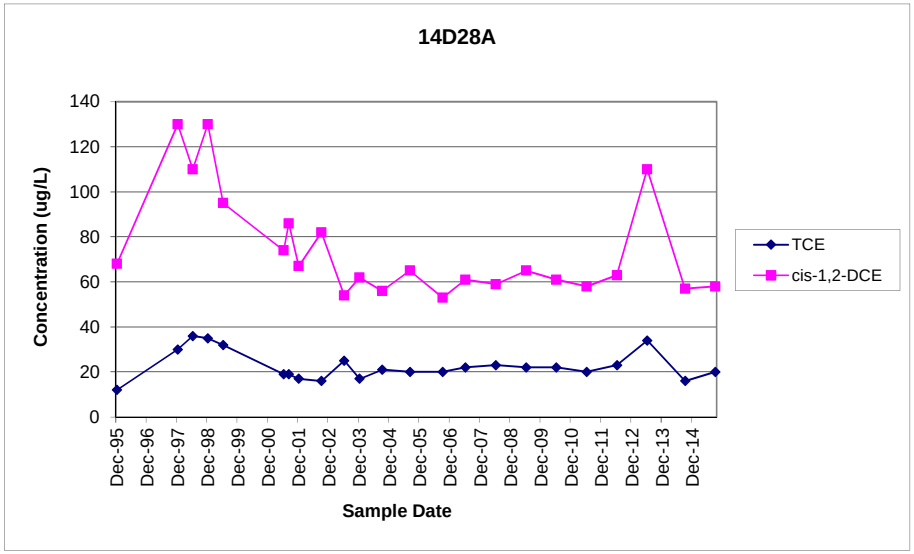

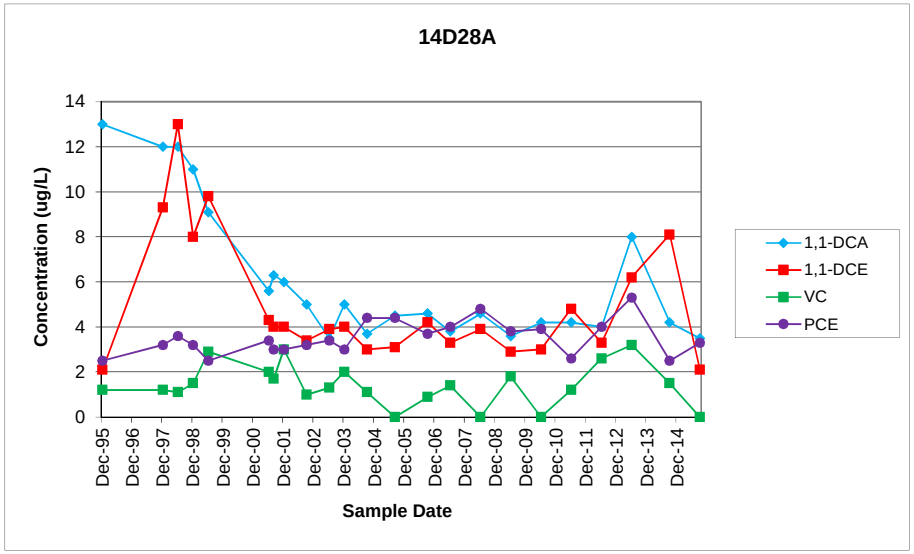

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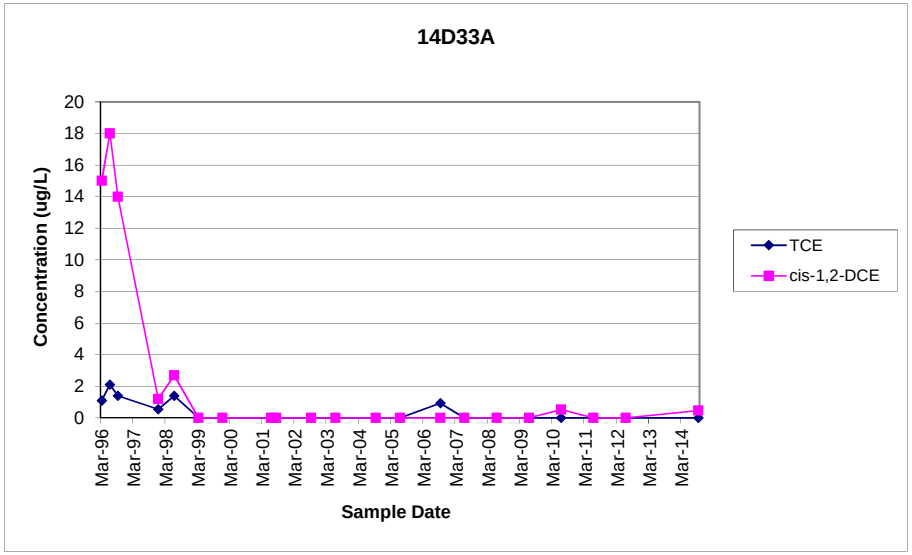

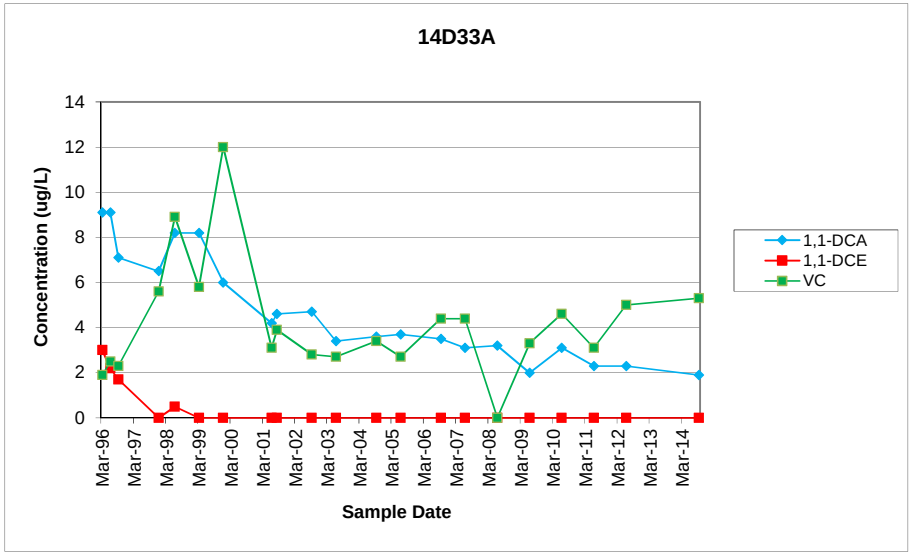

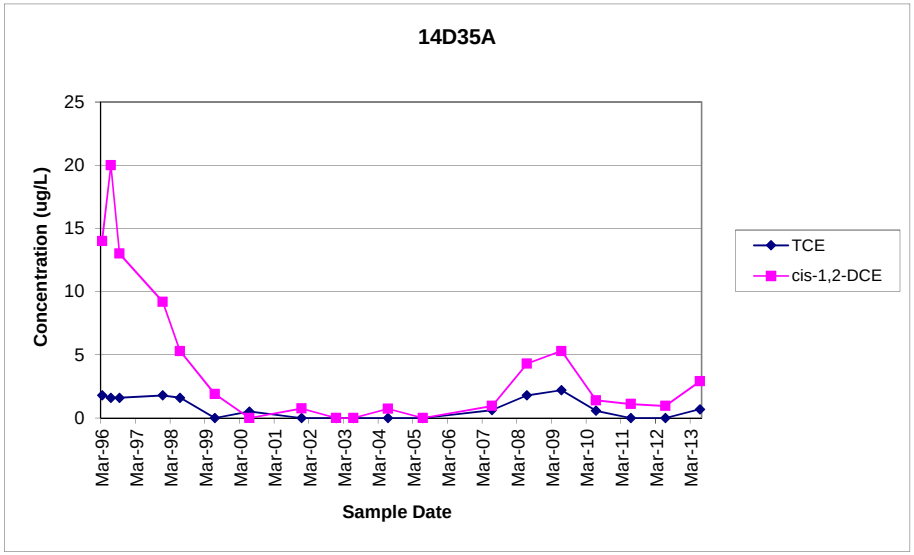

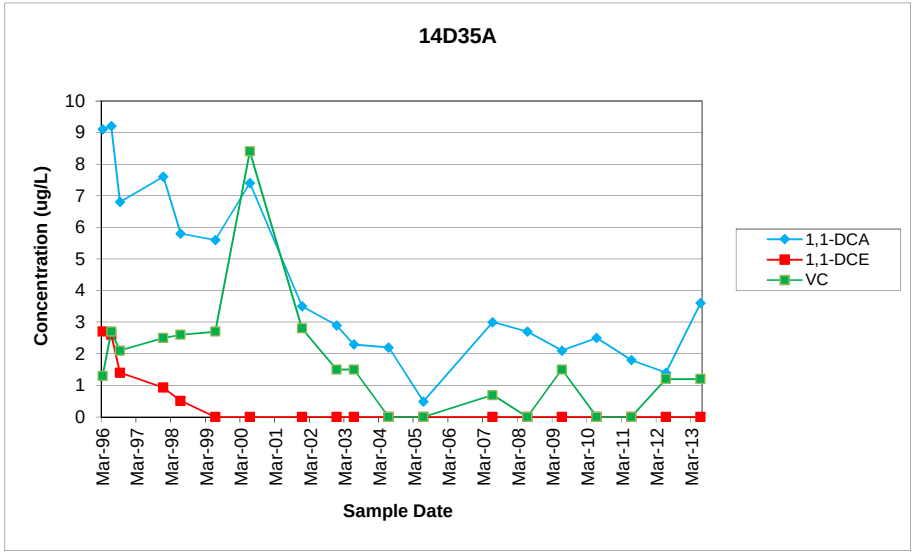

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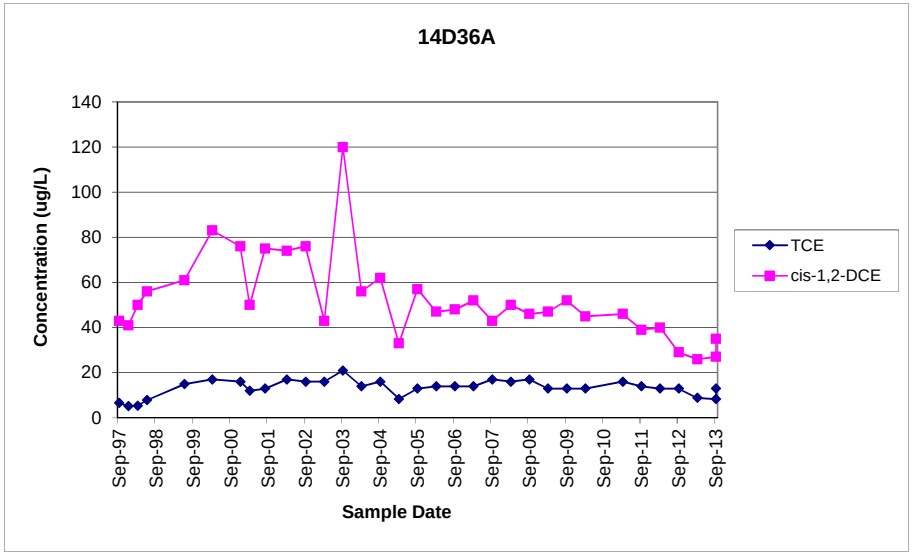

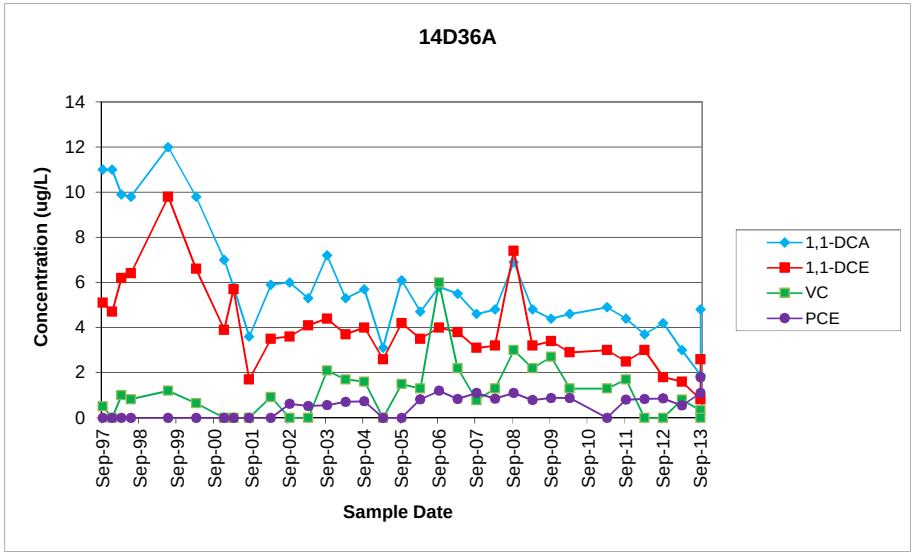

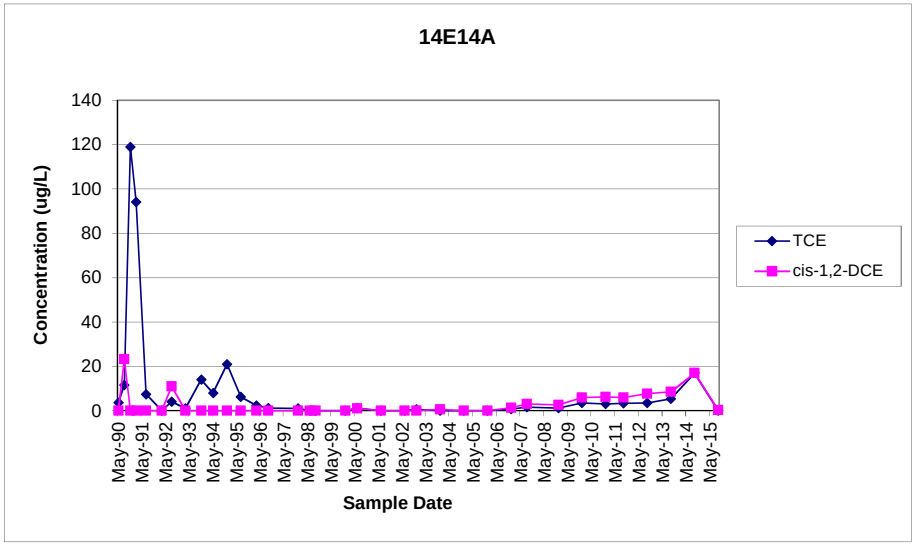

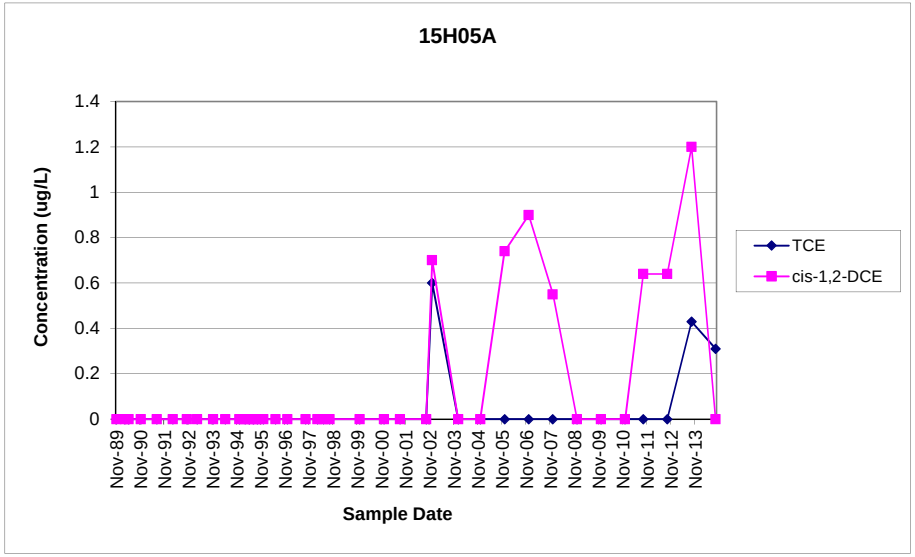

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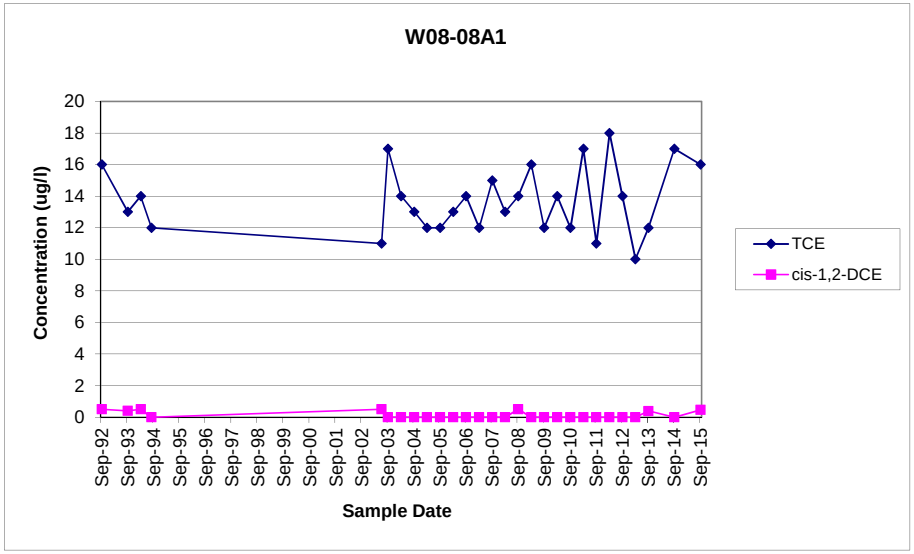

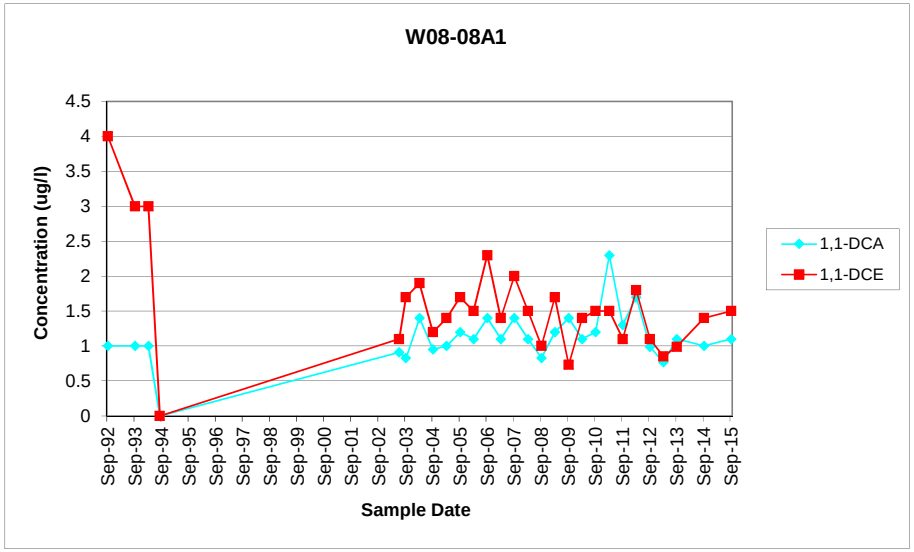

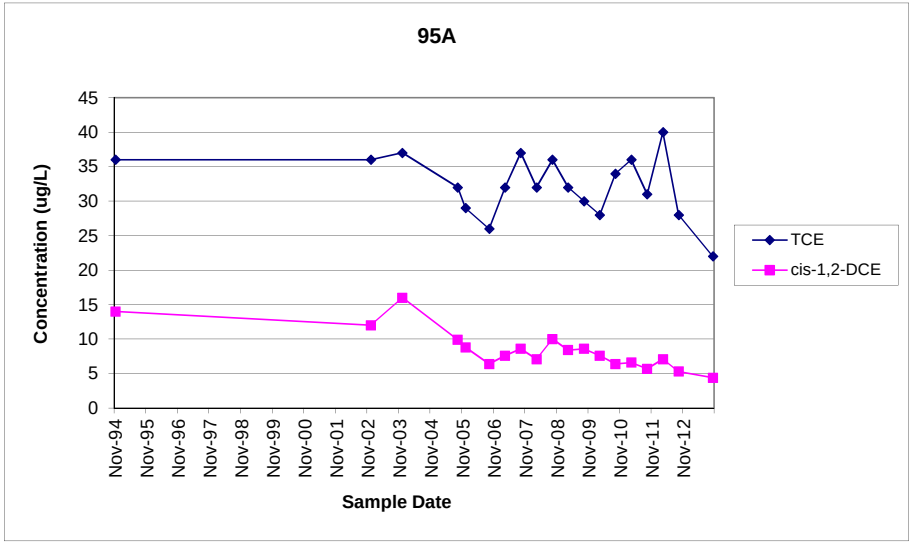

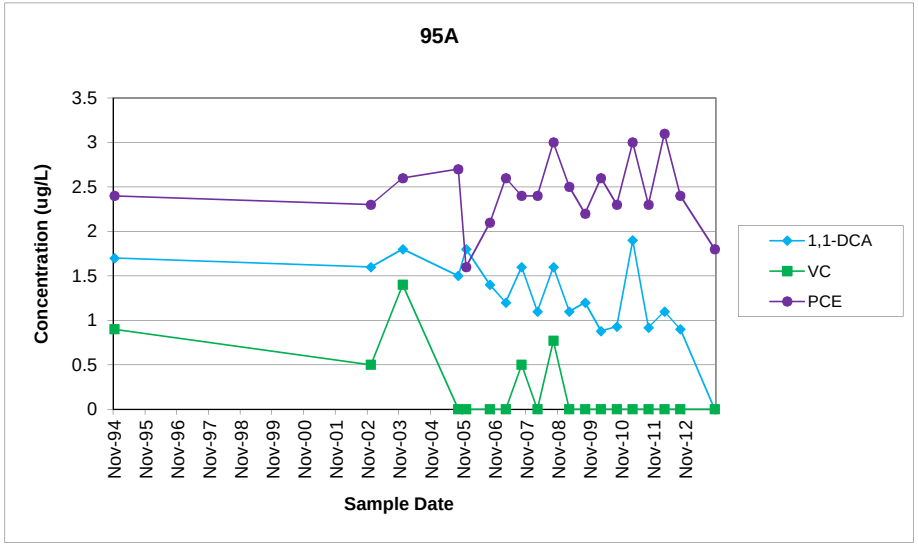

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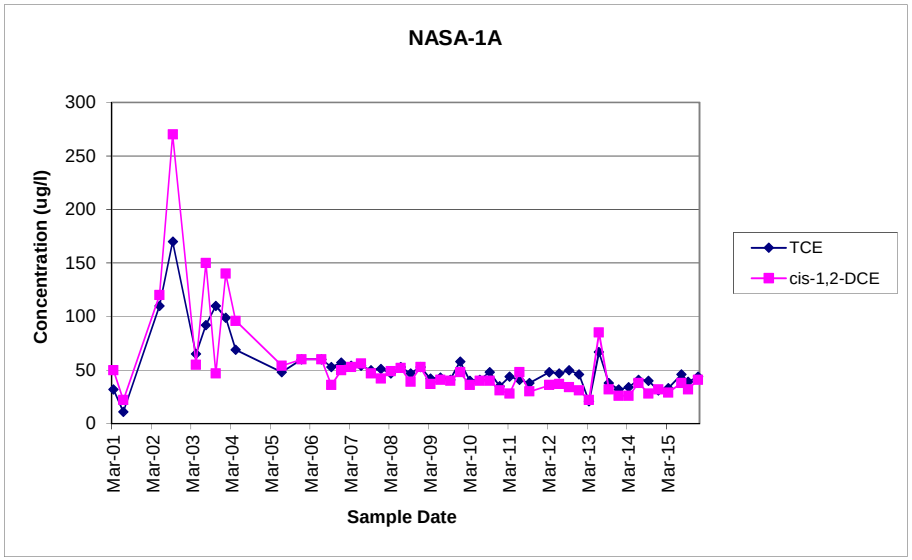

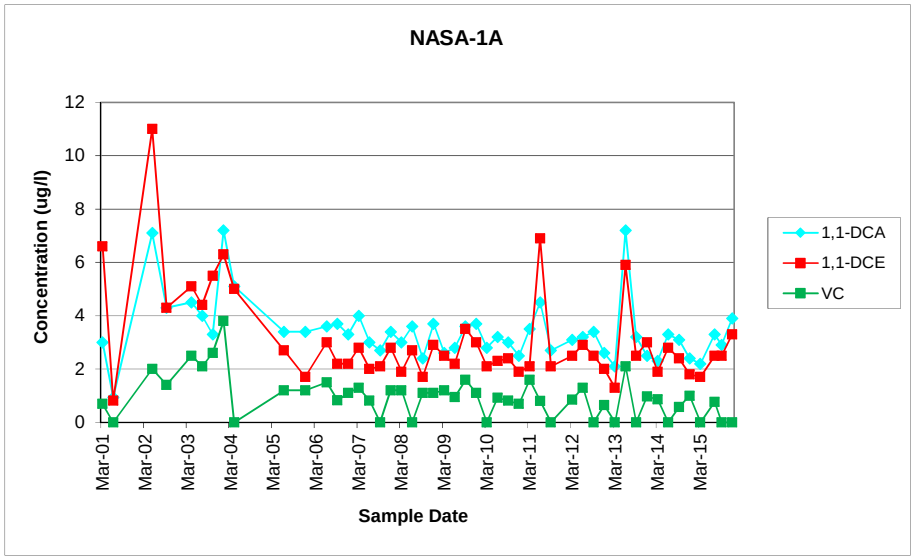

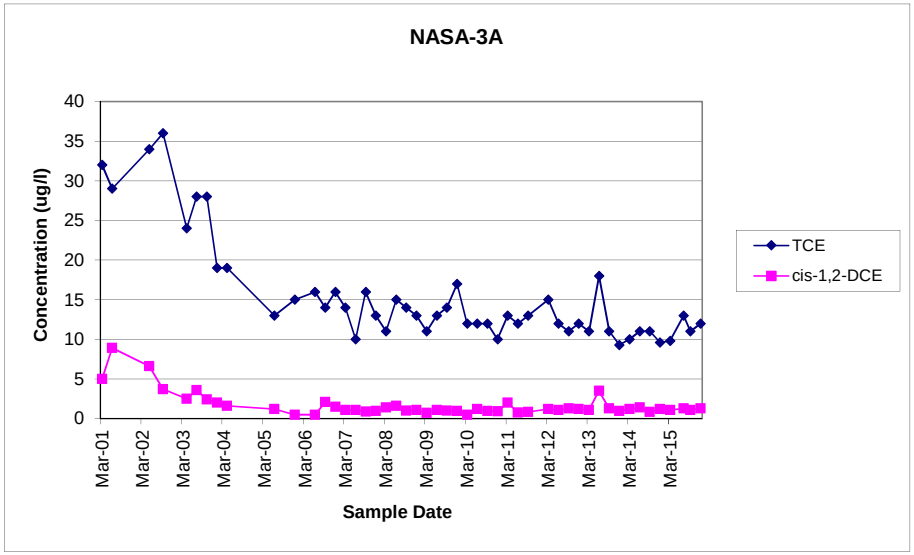

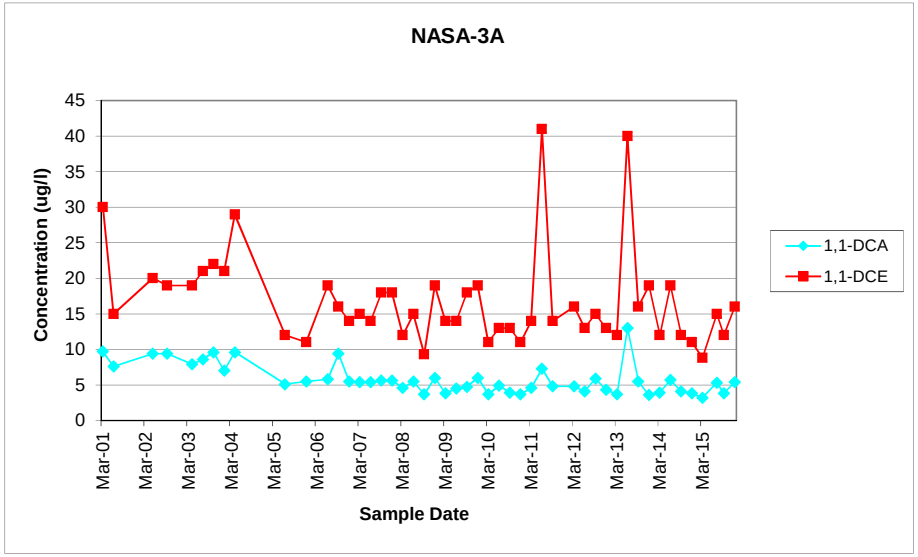

APPENDIX F

CY2015 Laboratory Analytical Reports

NASA RGRP Groundwater Results

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

01 April 2015

CLS Work Order #: CYC1048

COC #:

Brian Reddig

Earth Resource Technologies c/o NASA-Ames

Bldg T20G-4, Room 135

Moffet Field, CA 94053-1000

Project Name: Q1 2015 NASA RGRP Extraction Well Sampling

Enclosed are the results of analyses for samples received by the laboratory on 03/25/15 18:15. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

04/01/15 10:41

Earth Resource Technologies c/o NASA-Ames	Project: Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYC1048-01) Water Sampled: 03/25/15 10:53 Received: 03/25/15 18:15											
Surrogate: o-Terphenyl	ahs	*154 %*		*65-135*	mg/L		*CY02086*	*03/26/15*	*03/27/15*	*EPA 8015M*	*QS-HI*
Diesel	ahs	ND	0.0021	0.050	"	1	"	"	"	"	
JP-5/JP-8	ahs	ND	0.020	0.050	"	1	"	"	"	"	
Motor Oil	ahs	ND	0.0091	0.050	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

04/01/15 10:41

Earth Resource Technologies c/o NASA-Ames	Project: Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYC1048-01) Water Sampled: 03/25/15 10:53 Received: 03/25/15 18:15											
Surrogate: 1,2-Dichloroethane-d4	nt	*103 %*		*65-135*	µg/L		*CY02108*	*03/26/15*	*03/26/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*102 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*97 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	**1.3**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**2.2**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**1.7**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**29**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	**0.92**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

04/01/15 10:41

Earth Resource Technologies c/o NASA-Ames	Project:	Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYC1048-01) Water Sampled: 03/25/15 10:53 Received: 03/25/15 18:15											
Trichloroethene	nt	**33**	0.11	0.50	µg/L	1	CY02108	03/26/15	03/26/15	EPA 624	
Trichlorofluoromethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
NASA-3A (CYC1048-02) Water Sampled: 03/25/15 10:41 Received: 03/25/15 18:15											
Surrogate: 1,2-Dichloroethane-d4	nt	*105 %*		*65-135*	µg/L		*CY02108*	*03/26/15*	*03/26/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*102 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*98 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	**0.89**	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	**1.7**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**3.2**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**8.8**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	**0.30**	0.13	0.50	"	1	"	"	"	"	J
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**1.1**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project:	Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-3A (CYC1048-02) Water Sampled: 03/25/15 10:41 Received: 03/25/15 18:15											
Ethylbenzene	nt	ND	0.090	0.30	µg/L	1	CY02108	03/26/15	03/26/15	EPA 624	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**9.8**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	**0.98**	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project: Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

TPH-Gasoline by GC FID

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYC1048-01) Water Sampled: 03/25/15 10:53 Received: 03/25/15 18:15											
Surrogate: o-Chlorotoluene (Gas)	PT	*103 %*		*65-135*	µg/L		*CY02151*	*03/30/15*	*03/30/15*	*EPA 8015M*	
Gasoline	PT	**45**	10	50	"	1	"	"	"	"	J

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project: Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY02086 - EPA 3510B GCNV											
Blank (CY02086-BLK1)					Prepared: 03/26/15 Analyzed: 03/27/15						
JP-5/JP-8	ND	0.020	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Diesel	ND	0.0021	0.050	"							
Surrogate: o-Terphenyl	*0.0291*			*"*	*0.0250*		*116*	*65-135*			
LCS (CY02086-BS1)					Prepared: 03/26/15 Analyzed: 03/27/15						
Diesel	2.28	0.0021	0.050	mg/L	2.50		91	65-135			
Surrogate: o-Terphenyl	*0.0288*			*"*	*0.0250*		*115*	*65-135*			
LCS Dup (CY02086-BSD1)					Prepared: 03/26/15 Analyzed: 03/27/15						
Diesel	2.57	0.0021	0.050	mg/L	2.50		103	65-135	12	30	
Surrogate: o-Terphenyl	*0.0317*			*"*	*0.0250*		*127*	*65-135*			
Matrix Spike (CY02086-MS1)		**Source: CYC0955-01**			Prepared: 03/26/15 Analyzed: 03/27/15						
Diesel	2.88	0.0021	0.050	mg/L	2.50	ND	115	46-137			
Surrogate: o-Terphenyl	*0.0331*			*"*	*0.0250*		*132*	*65-135*			
Matrix Spike Dup (CY02086-MSD1)		**Source: CYC0955-01**			Prepared: 03/26/15 Analyzed: 03/27/15						
Diesel	2.75	0.0021	0.050	mg/L	2.50	ND	110	46-137	5	30	
Surrogate: o-Terphenyl	*0.0307*			*"*	*0.0250*		*123*	*65-135*			

CALIFORNIA LABORATORY SERVICES

04/01/15 10:41

Earth Resource Technologies c/o NASA-Ames	Project:	Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY02108 - EPA 5030 Water MS											
Blank (CY02108-BLK1)					Prepared & Analyzed: 03/26/15						
Xylenes (total)	ND	0.35	0.50	µg/L							
Vinyl chloride	ND	0.17	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
Trichlorofluoromethane	ND	0.20	0.50	"							
Trichloroethene	ND	0.11	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
1,1,1-Trichloroethane	ND	0.18	0.50	"							
Toluene	ND	0.10	0.30	"							
Tetrachloroethene	ND	0.12	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							
Methylene chloride	ND	0.24	0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
Dibromochloromethane	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
Chloroform	ND	0.13	0.50	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Chloroethane	ND	0.20	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromodichloromethane	ND	0.061	0.50	"							
Benzene	ND	0.057	0.30	"							

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project: Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY02108 - EPA 5030 Water MS											
Blank (CY02108-BLK1)					Prepared & Analyzed: 03/26/15						
Surrogate: 4-Bromofluorobenzene	*10.3*			*µg/L*	*10.0*		*103*	*73-125*			
Surrogate: Toluene-d8	*9.70*			*"*	*10.0*		*97*	*72-125*			
Surrogate: 1,2-Dichloroethane-d4	*10.4*			*"*	*10.0*		*104*	*65-135*			
LCS (CY02108-BS1)					Prepared & Analyzed: 03/26/15						
Vinyl chloride	20.9	0.17	0.50	µg/L	20.0		105	10-251			
Trichlorofluoromethane	20.8	0.20	0.50	"	20.0		104	47-181			
Trichloroethene	20.6	0.11	0.50	"	20.0		103	71-157			
1,1,2-Trichloroethane	20.9	0.098	0.50	"	20.0		104	52-150			
1,1,1-Trichloroethane	23.2	0.18	0.50	"	20.0		116	52-162			
Toluene	20.5	0.10	0.30	"	20.0		102	47-150			
Tetrachloroethene	21.0	0.12	0.50	"	20.0		105	64-148			
1,1,2,2-Tetrachloroethane	21.0	0.13	0.50	"	20.0		105	46-148			
Methylene chloride	19.3	0.24	0.50	"	20.0		97	5-221			
Ethylbenzene	21.4	0.090	0.30	"	20.0		107	37-162			
trans-1,3-Dichloropropene	20.0	0.12	0.50	"	20.0		100	17-183			
cis-1,3-Dichloropropene	20.8	0.097	0.50	"	20.0		104	5-227			
1,2-Dichloropropane	21.0	0.057	0.50	"	20.0		105	5-210			
trans-1,2-Dichloroethene	22.0	0.13	0.50	"	20.0		110	54-156			
1,1-Dichloroethene	21.4	0.092	0.50	"	20.0		107	5-234			
1,2-Dichloroethane	21.0	0.054	0.50	"	20.0		105	49-155			
1,1-Dichloroethane	21.4	0.12	0.50	"	20.0		107	59-155			
Dichlorodifluoromethane (Freon 12)	22.1	0.37	0.50	"	20.0		110	50-150			
1,4-Dichlorobenzene	19.3	0.061	0.30	"	20.0		96	18-190			
1,3-Dichlorobenzene	20.2	0.081	0.30	"	20.0		101	59-156			
1,2-Dichlorobenzene	20.4	0.042	0.30	"	20.0		102	18-190			
Dibromochloromethane	20.0	0.13	0.50	"	20.0		100	53-149			
Chloromethane	21.5	0.29	0.50	"	20.0		107	10-273			
Chloroform	20.8	0.13	0.50	"	20.0		104	51-138			
Chloroethane	20.9	0.20	0.50	"	20.0		105	14-230			
Chlorobenzene	20.0	0.11	0.30	"	20.0		100	37-160			
Carbon tetrachloride	23.9	0.092	0.50	"	20.0		120	70-140			
Bromomethane	19.6	0.20	0.50	"	20.0		98	10-242			
Bromoform	21.6	0.16	0.50	"	20.0		108	45-169			

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project: Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY02108 - EPA 5030 Water MS											
LCS (CY02108-BS1)					Prepared & Analyzed: 03/26/15						
Bromodichloromethane	22.5	0.061	0.50	µg/L	20.0		113	35-155			
Benzene	20.5	0.057	0.30	"	20.0		102	37-151			
Surrogate: 4-Bromofluorobenzene	*9.70*			*"*	*10.0*		*97*	*73-125*			
Surrogate: Toluene-d8	*10.1*			*"*	*10.0*		*101*	*72-125*			
Surrogate: 1,2-Dichloroethane-d4	*10.2*			*"*	*10.0*		*102*	*65-135*			
LCS Dup (CY02108-BSD1)					Prepared & Analyzed: 03/26/15						
Vinyl chloride	20.5	0.17	0.50	µg/L	20.0		103	10-251	2	30	
Trichlorofluoromethane	20.4	0.20	0.50	"	20.0		102	47-181	2	30	
Trichloroethene	20.0	0.11	0.50	"	20.0		100	71-157	3	30	
1,1,2-Trichloroethane	19.1	0.098	0.50	"	20.0		95	52-150	9	30	
1,1,1-Trichloroethane	21.3	0.18	0.50	"	20.0		107	52-162	8	30	
Toluene	20.0	0.10	0.30	"	20.0		100	47-150	2	30	
Tetrachloroethene	20.7	0.12	0.50	"	20.0		103	64-148	2	30	
1,1,2,2-Tetrachloroethane	20.2	0.13	0.50	"	20.0		101	46-148	4	30	
Methylene chloride	18.5	0.24	0.50	"	20.0		93	5-221	4	30	
Ethylbenzene	21.1	0.090	0.30	"	20.0		105	37-162	2	30	
trans-1,3-Dichloropropene	18.9	0.12	0.50	"	20.0		94	17-183	6	30	
cis-1,3-Dichloropropene	19.7	0.097	0.50	"	20.0		99	5-227	5	30	
1,2-Dichloropropane	20.2	0.057	0.50	"	20.0		101	5-210	4	30	
trans-1,2-Dichloroethene	20.8	0.13	0.50	"	20.0		104	54-156	6	30	
1,1-Dichloroethene	21.0	0.092	0.50	"	20.0		105	5-234	2	30	
1,2-Dichloroethane	19.1	0.054	0.50	"	20.0		95	49-155	10	30	
1,1-Dichloroethane	20.1	0.12	0.50	"	20.0		101	59-155	6	30	
Dichlorodifluoromethane (Freon 12)	21.1	0.37	0.50	"	20.0		105	50-150	4	30	
1,4-Dichlorobenzene	20.2	0.061	0.30	"	20.0		101	18-190	5	30	
1,3-Dichlorobenzene	21.4	0.081	0.30	"	20.0		107	59-156	6	30	
1,2-Dichlorobenzene	21.1	0.042	0.30	"	20.0		106	18-190	4	30	
Dibromochloromethane	18.7	0.13	0.50	"	20.0		93	53-149	7	30	
Chloromethane	20.9	0.29	0.50	"	20.0		104	10-273	3	30	
Chloroform	19.8	0.13	0.50	"	20.0		99	51-138	5	30	
Chloroethane	20.4	0.20	0.50	"	20.0		102	14-230	2	30	
Chlorobenzene	19.6	0.11	0.30	"	20.0		98	37-160	2	30	
Carbon tetrachloride	22.0	0.092	0.50	"	20.0		110	70-140	8	30	

CALIFORNIA LABORATORY SERVICES

04/01/15 10:41

Earth Resource Technologies c/o NASA-Ames	Project: Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY02108 - EPA 5030 Water MS											
LCS Dup (CY02108-BSD1)					Prepared & Analyzed: 03/26/15						
Bromomethane	18.7	0.20	0.50	µg/L	20.0		94	10-242	4	30	
Bromoform	19.7	0.16	0.50	"	20.0		98	45-169	9	30	
Bromodichloromethane	21.7	0.061	0.50	"	20.0		108	35-155	4	30	
Benzene	20.0	0.057	0.30	"	20.0		100	37-151	2	30	
Surrogate: 4-Bromofluorobenzene	*10.6*			*"*	*10.0*		*106*	*73-125*			
Surrogate: Toluene-d8	*9.90*			*"*	*10.0*		*99*	*72-125*			
Surrogate: 1,2-Dichloroethane-d4	*9.52*			*"*	*10.0*		*95*	*65-135*			

CALIFORNIA LABORATORY SERVICES

04/01/15 10:41

Earth Resource Technologies c/o NASA-Ames	Project: Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

TPH-Gasoline by GC FID - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY02151 - EPA 5030 Water GC											
Blank (CY02151-BLK1)					Prepared & Analyzed: 03/30/15						
Gasoline	19.7	10	50	µg/L							J
Surrogate: o-Chlorotoluene (Gas)	*19.6*			*"*	*20.0*		*98*	*65-135*			
LCS (CY02151-BS1)					Prepared & Analyzed: 03/30/15						
Gasoline	498	10	50	µg/L	500		100	70-130			
Surrogate: o-Chlorotoluene (Gas)	*20.8*			*"*	*20.0*		*104*	*65-135*			
LCS Dup (CY02151-BSD1)					Prepared & Analyzed: 03/30/15						
Gasoline	473	10	50	µg/L	500		95	70-130	5	30	
Surrogate: o-Chlorotoluene (Gas)	*20.7*			*"*	*20.0*		*104*	*65-135*			

CALIFORNIA LABORATORY SERVICES

04/01/15 10:41

Earth Resource Technologies c/o NASA-Ames	Project:	Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Notes and Definitions

QS-HI	Surrogate recovery was greater than the upper control limit. A reanalysis was not performed since the analytes associated with the surrogate were not detected.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES

04/01/15 10:41

Earth Resource Technologies c/o NASA-Ames	Project: Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. CYC1048 (1 of)

Report To:

Name and Address: Earth Resources Technology, Inc.
NASA Ames Research Center
Moffett Field, CA
Project Manager: Brian Reddig (650) 604-1315
Project Name: Q1 2015 NASA RGRP Extraction Well Sampling
Sampled By: Brian Reddig
Job Description: Q1 2015 NASA RGRP Sampling
Site Location: NASA RGRP

Client Job Number: 3602-750

Destination Laboratory:
☑ CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
☐ OTHER

GEOTRACKER
EDF REPORT ☐ YES ☐ NO
GLOBAL ID.
FIELD CONDITIONS:
COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	VOCs (EPA 624)	TPH-G/BTEX	TPH-D, -JP/5/8, -MO					TURNAROUND TIME IN DAYS 1	2	5	10	SPECIAL INSTRUCTIONS
3/25/15	10:53	NASA-1A		Groundwater	5	mixed	1,3	X	X	X							X		
3/25/15	10:41	NASA-3A		Groundwater	3	VOA	1	X									X		

INVOICE TO:
PO#
QUOTE#

SUSPECTED CONSTITUENTS
SAMPLE RETENTION TIME
PRESERVATIVES (1) HCL (2) HNO_3 (3) - COLD (4)

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
Brian Reddig	Brian Reddig/ERT	3/25/15 14:01		CLS
	CLS	3/25/15 18:50		

RECEIVED AT LAB BY: DATE/TIME: 3/25/15 18:45 CONDITIONS/COMMENTS: 8.5

SHIPPED BY: ☐ FED EX ☐ UPS ☑ OTHER CLS AIR BILL #

CALIFORNIA LABORATORY SERVICES

04/01/15 10:41

Earth Resource Technologies c/o NASA-Ames	Project:	Q1 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYC1048**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

15 July 2015

CLS Work Order #: CYG0346

COC #:

Brian Reddig
Earth Resource Technologies c/o NASA-Ames

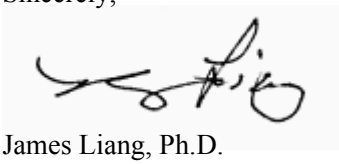
Bldg T20G-4, Room 135
Moffet Field, CA 94053-1000

Project Name: Q2 2015 NASA RGRP Extraction Well Samplin

Enclosed are the results of analyses for samples received by the laboratory on 07/08/15 16:40. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed below as well as under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

07/15/15 12:23

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYG0346-01) Water Sampled: 07/07/15 10:12 Received: 07/08/15 16:40										
Surrogate: o-Terphenyl	*109 %*		*65-135*	mg/L		*CY04648*	07/09/15	*07/10/15*	*EPA 8015M*	
Diesel	ND	0.0021	0.050	"	1	"	"	"	"	
JP-5/JP-8	ND	0.020	0.050	"	1	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

07/15/15 12:23

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYG0346-01) Water Sampled: 07/07/15 10:12 Received: 07/08/15 16:40										
Surrogate: 1,2-Dichloroethane-d4	*90 %*		*65-135*	µg/L		*CY04668*	07/09/15	*07/10/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*108 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	*80 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**1.5**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	**3.3**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	**2.5**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**38**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**0.71**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

07/15/15 12:23

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYG0346-01) Water Sampled: 07/07/15 10:12 Received: 07/08/15 16:40										
Trichloroethene	**46**	0.11	0.50	µg/L	1	CY04668	"	07/10/15	EPA 624	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	**0.77**	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
NASA-3A (CYG0346-02) Water Sampled: 07/07/15 09:58 Received: 07/08/15 16:40										
Surrogate: 1,2-Dichloroethane-d4	*104 %*		*65-135*	µg/L		*CY04668*	07/09/15	*07/10/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*109 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*84 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**2.2**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	**5.3**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	**15**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	**0.51**	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**1.3**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

07/15/15 12:23

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-3A (CYG0346-02) Water Sampled: 07/07/15 09:58 Received: 07/08/15 16:40										
Ethylbenzene	ND	0.090	0.30	µg/L	1	CY04668	"	07/10/15	EPA 624	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**13**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	**1.5**	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

07/15/15 12:23

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYG0346-01) Water Sampled: 07/07/15 10:12 Received: 07/08/15 16:40										
Surrogate: o-Chlorotoluene (Gas)	*97 %*		*65-135*	µg/L		*CY04688*	07/10/15	*07/14/15*	*EPA 8015M*	
Gasoline	**86**	10	50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

07/15/15 12:23

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY04648 - EPA 3510B GCNV											
Blank (CY04648-BLK1)					Prepared: 07/09/15 Analyzed: 07/10/15						
Surrogate: o-Terphenyl	*0.0251*			*mg/L*	*0.0250*		*100*	*65-135*			
Diesel	ND	0.0021	0.050	"							
Motor Oil	ND	0.0091	0.050	"							
LCS (CY04648-BS1)					Prepared: 07/09/15 Analyzed: 07/10/15						
Surrogate: o-Terphenyl	*0.0230*			*mg/L*	*0.0250*		*92*	*65-135*			
Diesel	2.81	0.0021	0.050	"	2.50		113	65-135			
LCS Dup (CY04648-BSD1)					Prepared: 07/09/15 Analyzed: 07/10/15						
Surrogate: o-Terphenyl	*0.0207*			*mg/L*	*0.0250*		*83*	*65-135*			
Diesel	2.77	0.0021	0.050	"	2.50		111	65-135	2	30	
Matrix Spike (CY04648-MS1)		**Source: CYG0243-01**			Prepared: 07/09/15 Analyzed: 07/10/15						
Surrogate: o-Terphenyl	*0.0308*			*mg/L*	*0.0250*		*123*	*65-135*			
Diesel	2.81	0.0021	0.050	"	2.50	ND	112	46-137			
Matrix Spike Dup (CY04648-MSD1)		**Source: CYG0243-01**			Prepared: 07/09/15 Analyzed: 07/10/15						
Surrogate: o-Terphenyl	*0.0316*			*mg/L*	*0.0250*		*126*	*65-135*			
Diesel	2.75	0.0021	0.050	"	2.50	ND	110	46-137	2	30	

CALIFORNIA LABORATORY SERVICES

07/15/15 12:23

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY04668 - EPA 5030 Water MS											
Blank (CY04668-BLK1)					Prepared: 07/09/15 Analyzed: 07/10/15						
Surrogate: 1,2-Dichloroethane-d4	*8.80*			*µg/L*	*10.0*		*88*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*10.6*			*"*	*10.0*		*106*	*73-125*			
Surrogate: Toluene-d8	*8.34*			*"*	*10.0*		*83*	*72-125*			
1,1,1-Trichloroethane	ND	0.18	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Benzene	ND	0.057	0.30	"							
Bromodichloromethane	ND	0.061	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Chloroethane	ND	0.20	0.50	"							
Chloroform	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
Dibromochloromethane	ND	0.13	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
Methylene chloride	ND	0.24	0.50	"							
Tetrachloroethene	ND	0.12	0.50	"							
Toluene	ND	0.10	0.30	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							
Trichloroethene	ND	0.11	0.50	"							

CALIFORNIA LABORATORY SERVICES

07/15/15 12:23

Earth Resource Technologies c/o NASA-Ames	Project: Q2 2015 NASA RGRP Extraction Well Sampling	**CLS Work Order #: CYG0346**
Bldg T20G-4, Room 135	Project Number: 3602-750	COC #:
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY04668 - EPA 5030 Water MS											
Blank (CY04668-BLK1)					Prepared: 07/09/15 Analyzed: 07/10/15						
Trichlorofluoromethane	ND	0.20	0.50	µg/L							
Vinyl chloride	ND	0.17	0.50	"							
Xylenes (total)	ND	0.35	0.50	"							
LCS (CY04668-BS1)					Prepared: 07/09/15 Analyzed: 07/10/15						
Surrogate: 1,2-Dichloroethane-d4	*8.75*			*µg/L*	*10.0*		*88*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*11.9*			*"*	*10.0*		*119*	*73-125*			
Surrogate: Toluene-d8	*10.2*			*"*	*10.0*		*102*	*72-125*			
1,1,1-Trichloroethane	17.8	0.18	0.50	"	20.0		89	52-162			
1,1,2,2-Tetrachloroethane	20.0	0.13	0.50	"	20.0		100	46-148			
1,1,2-Trichloroethane	16.9	0.098	0.50	"	20.0		85	52-150			
1,1-Dichloroethane	17.5	0.12	0.50	"	20.0		88	59-155			
1,1-Dichloroethene	17.1	0.092	0.50	"	20.0		85	5-234			
1,2-Dichlorobenzene	20.3	0.042	0.30	"	20.0		101	18-190			
1,2-Dichloroethane	18.0	0.054	0.50	"	20.0		90	49-155			
1,2-Dichloropropane	18.4	0.057	0.50	"	20.0		92	5-210			
1,3-Dichlorobenzene	21.2	0.081	0.30	"	20.0		106	59-156			
1,4-Dichlorobenzene	19.9	0.061	0.30	"	20.0		99	18-190			
Benzene	17.6	0.057	0.30	"	20.0		88	37-151			
Bromodichloromethane	16.7	0.061	0.50	"	20.0		83	35-155			
Bromoform	21.1	0.16	0.50	"	20.0		105	45-169			
Bromomethane	16.0	0.20	0.50	"	20.0		80	10-242			
Carbon tetrachloride	18.5	0.092	0.50	"	20.0		92	70-140			
Chlorobenzene	22.8	0.11	0.30	"	20.0		114	37-160			
Chloroethane	17.8	0.20	0.50	"	20.0		89	14-230			
Chloroform	17.4	0.13	0.50	"	20.0		87	51-138			
Chloromethane	20.9	0.29	0.50	"	20.0		104	10-273			
cis-1,3-Dichloropropene	15.7	0.097	0.50	"	20.0		78	5-227			
Dibromochloromethane	16.5	0.13	0.50	"	20.0		83	53-149			
Dichlorodifluoromethane (Freon 12)	22.7	0.37	0.50	"	20.0		114	50-150			
Ethylbenzene	19.8	0.090	0.30	"	20.0		99	37-162			
Methylene chloride	17.9	0.24	0.50	"	20.0		90	5-221			
Tetrachloroethene	17.4	0.12	0.50	"	20.0		87	64-148			
Toluene	18.3	0.10	0.30	"	20.0		92	47-150			
trans-1,2-Dichloroethene	17.5	0.13	0.50	"	20.0		87	54-156			
trans-1,3-Dichloropropene	16.0	0.12	0.50	"	20.0		80	17-183			

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY04668 - EPA 5030 Water MS											
LCS (CY04668-BS1)					Prepared: 07/09/15 Analyzed: 07/10/15						
Trichloroethene	17.7	0.11	0.50	µg/L	20.0		88	71-157			
Trichlorofluoromethane	20.8	0.20	0.50	"	20.0		104	47-181			
Vinyl chloride	17.9	0.17	0.50	"	20.0		89	10-251			
LCS Dup (CY04668-BSD1)					Prepared: 07/09/15 Analyzed: 07/10/15						
Surrogate: 1,2-Dichloroethane-d4	*8.54*			*µg/L*	*10.0*		*85*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*11.6*			*"*	*10.0*		*116*	*73-125*			
Surrogate: Toluene-d8	*10.2*			*"*	*10.0*		*102*	*72-125*			
1,1,1-Trichloroethane	16.9	0.18	0.50	"	20.0		85	52-162	5	30	
1,1,2,2-Tetrachloroethane	21.1	0.13	0.50	"	20.0		105	46-148	5	30	
1,1,2-Trichloroethane	17.3	0.098	0.50	"	20.0		87	52-150	2	30	
1,1-Dichloroethane	17.0	0.12	0.50	"	20.0		85	59-155	3	30	
1,1-Dichloroethene	16.1	0.092	0.50	"	20.0		81	5-234	6	30	
1,2-Dichlorobenzene	20.6	0.042	0.30	"	20.0		103	18-190	2	30	
1,2-Dichloroethane	17.4	0.054	0.50	"	20.0		87	49-155	3	30	
1,2-Dichloropropane	18.5	0.057	0.50	"	20.0		93	5-210	0.7	30	
1,3-Dichlorobenzene	21.6	0.081	0.30	"	20.0		108	59-156	2	30	
1,4-Dichlorobenzene	20.3	0.061	0.30	"	20.0		101	18-190	2	30	
Benzene	17.4	0.057	0.30	"	20.0		87	37-151	0.8	30	
Bromodichloromethane	16.8	0.061	0.50	"	20.0		84	35-155	1	30	
Bromoform	16.8	0.16	0.50	"	20.0		84	45-169	22	30	
Bromomethane	17.4	0.20	0.50	"	20.0		87	10-242	9	30	
Carbon tetrachloride	16.2	0.092	0.50	"	20.0		81	70-140	13	30	
Chlorobenzene	17.5	0.11	0.30	"	20.0		87	37-160	27	30	
Chloroethane	17.8	0.20	0.50	"	20.0		89	14-230	0.4	30	
Chloroform	16.3	0.13	0.50	"	20.0		82	51-138	6	30	
Chloromethane	17.8	0.29	0.50	"	20.0		89	10-273	16	30	
cis-1,3-Dichloropropene	16.4	0.097	0.50	"	20.0		82	5-227	5	30	
Dibromochloromethane	17.2	0.13	0.50	"	20.0		86	53-149	4	30	
Dichlorodifluoromethane (Freon 12)	22.2	0.37	0.50	"	20.0		111	50-150	2	30	
Ethylbenzene	15.2	0.090	0.30	"	20.0		76	37-162	26	30	
Methylene chloride	17.4	0.24	0.50	"	20.0		87	5-221	3	30	
Tetrachloroethene	17.3	0.12	0.50	"	20.0		87	64-148	0.5	30	
Toluene	18.3	0.10	0.30	"	20.0		91	47-150	0.4	30	
trans-1,2-Dichloroethene	16.6	0.13	0.50	"	20.0		83	54-156	5	30	
trans-1,3-Dichloropropene	17.6	0.12	0.50	"	20.0		88	17-183	9	30	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY04668 - EPA 5030 Water MS											
LCS Dup (CY04668-BSD1)					Prepared: 07/09/15 Analyzed: 07/10/15						
Trichloroethene	17.4	0.11	0.50	µg/L	20.0		87	71-157	1	30	
Trichlorofluoromethane	18.5	0.20	0.50	"	20.0		92	47-181	12	30	
Vinyl chloride	17.3	0.17	0.50	"	20.0		86	10-251	3	30	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

TPH-Gasoline by GC FID - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY04688 - EPA 5030 Water GC											
Blank (CY04688-BLK1)					Prepared: 07/10/15 Analyzed: 07/14/15						
Surrogate: o-Chlorotoluene (Gas)	*19.4*			*µg/L*	*20.0*		*97*	*65-135*			
Gasoline	40.9	10	50	"							J
LCS (CY04688-BS1)					Prepared: 07/10/15 Analyzed: 07/14/15						
Surrogate: o-Chlorotoluene (Gas)	*18.6*			*µg/L*	*20.0*		*93*	*65-135*			
Gasoline	524	10	50	"	500		105	70-130			
LCS Dup (CY04688-BSD1)					Prepared: 07/10/15 Analyzed: 07/14/15						
Surrogate: o-Chlorotoluene (Gas)	*17.4*			*µg/L*	*20.0*		*87*	*65-135*			
Gasoline	470	10	50	"	500		94	70-130	11	30	

CALIFORNIA LABORATORY SERVICES

07/15/15 12:23

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q2 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYG0346** COC #:

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES

07/15/15 12:23

Earth Resource Technologies c/o NASA-Ames
Bldg T20G-4, Room 135
Moffet Field CA, 94053-1000

Project: Q2 2015 NASA RGRP Extraction Well Sampling
Project Number: 3602-750
Project Manager: Brian Reddig

CLS Work Order #: CYG0346
COC #:

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. CYG0346 (1 of)

Report To:

Name and Address: Earth Resources Technology, Inc.
NASA Ames Research Center
Moffett Field, CA
Project Manager: Brian Reddig (650) 604-1315
Project Name: Q2 2015 NASA RGRP Extraction Well Sampling
Sampled By: Brian Reddig
Job Description: Q2 2015 NASA RGRP Sampling
Site Location: NASA RGRP

Client Job Number: 3602-750

Destination Laboratory:
☑ CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com
☐ OTHER

GEOTRACKER
EDF REPORT ☐ YES ☐ NO
GLOBAL ID.
FIELD CONDITIONS:
COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	VOCs (EPA 624)	TPH-G/BTEX	TPH-D, -JP/5/8, -MO					TURNAROUND TIME IN DAYS 1	2	5	10	SPECIAL INSTRUCTIONS
7/7/15	10:12	NASA-1A		Groundwater	5	mixed	1,3	X	X	X							X		
7/7/15	9:58	NASA-3A		Groundwater	3	VOA	1	X									X		

INVOICE TO:
PO#
QUOTE#

SUSPECTED CONSTITUENTS
SAMPLE RETENTION TIME
PRESERVATIVES (1) HCL (3) = COLD (2) HNO3 (4)

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
Brian Reddig	Brian Reddig/ERT	7/8/15 12:00		
	CLS	7/8/15 1640		

RECEIVED AT LAB BY: DATE/TIME: 7/8/15 1652 CONDITIONS/COMMENTS: 3.0

SHIPPED BY: ☐ FED EX ☐ UPS ☑ OTHER CLS AIR BILL #

CA DOHS ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

30 September 2015

CLS Work Order #: CYI1015

COC #:

Brian Reddig

Earth Resource Technologies c/o NASA-Ames

Bldg T20G-4, Room 135

Moffet Field, CA 94053-1000

Project Name: Q3 2015 NASA RGRP Extraction Well Samplin

Enclosed are the results of analyses for samples received by the laboratory on 09/23/15 16:25. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

09/30/15 12:55

Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYI1015-01) Water Sampled: 09/21/15 09:20 Received: 09/23/15 16:25											
Surrogate: o-Terphenyl	PT	*84 %*		*65-135*	mg/L		*CY06668*	*09/28/15*	*09/29/15*	*EPA 8015M*	
Diesel	PT	ND	0.0021	0.050	"	1	"	"	"	"	
JP-5/JP-8	PT	ND	0.020	0.050	"	1	"	"	"	"	
Motor Oil	PT	ND	0.0091	0.050	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

09/30/15 12:55

Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYI1015-01) Water Sampled: 09/21/15 09:20 Received: 09/23/15 16:25											
Surrogate: 1,2-Dichloroethane-d4	nt	*92 %*		*65-135*	µg/L		*CY06568*	*09/23/15*	*09/24/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*105 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	nt	*92 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	**2.1**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**2.9**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**2.5**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	**0.50**	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**32**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	**0.77**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

09/30/15 12:55

Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYI1015-01) Water Sampled: 09/21/15 09:20 Received: 09/23/15 16:25											
Trichloroethene	nt	**39**	0.11	0.50	µg/L	1	CY06568	09/23/15	09/24/15	EPA 624	
Trichlorofluoromethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
NASA-3A (CYI1015-02) Water Sampled: 09/21/15 09:08 Received: 09/23/15 16:25											
Surrogate: 1,2-Dichloroethane-d4	nt	*88 %*		*65-135*	µg/L		*CY06568*	*09/23/15*	*09/24/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*110 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*92 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	**2.2**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**3.8**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**12**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	**0.34**	0.13	0.50	"	1	"	"	"	"	J
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**1.1**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

09/30/15 12:55

Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-3A (CYI1015-02) Water Sampled: 09/21/15 09:08 Received: 09/23/15 16:25											
Ethylbenzene	nt	ND	0.090	0.30	µg/L	1	CY06568	09/23/15	09/24/15	EPA 624	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**11**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	**1.0**	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
NASA-3K (CYI1015-03) Water Sampled: 09/21/15 09:28 Received: 09/23/15 16:25											
Surrogate: 1,2-Dichloroethane-d4	nt	*98 %*		*65-135*	µg/L		*CY06568*	*09/23/15*	*09/24/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*104 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*92 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	**1.4**	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**4.1**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**12**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames	Project:	Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-3K (CYI1015-03) Water Sampled: 09/21/15 09:28 Received: 09/23/15 16:25											
Chloromethane	nt	ND	0.29	0.50	µg/L	1	CY06568	09/23/15	09/24/15	EPA 624	
cis-1,2-Dichloroethene	nt	**1.2**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**12**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	**1.3**	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

TPH-Gasoline by GC/MS

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYI1015-01) Water Sampled: 09/21/15 09:20 Received: 09/23/15 16:25											
Surrogate: Toluene-d8	nt	*92 %*		*65-135*	µg/L		*CY06606*	*09/24/15*	*09/25/15*	*EPA 8260M*	
Gasoline	nt	ND	10	50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06668 - EPA 3510B GCNV											
Blank (CY06668-BLK1)					Prepared: 09/28/15 Analyzed: 09/29/15						
Motor Oil	ND	0.0091	0.050	mg/L							
Diesel	ND	0.0021	0.050	"							
Surrogate: o-Terphenyl	*0.0195*			*"*	*0.0250*		*78*	*65-135*			
LCS (CY06668-BS1)					Prepared: 09/28/15 Analyzed: 09/29/15						
Diesel	2.96	0.0021	0.050	mg/L	2.50		118	65-135			
Surrogate: o-Terphenyl	*0.0242*			*"*	*0.0250*		*97*	*65-135*			
LCS Dup (CY06668-BSD1)					Prepared: 09/28/15 Analyzed: 09/29/15						
Diesel	3.04	0.0021	0.050	mg/L	2.50		122	65-135	3	30	
Surrogate: o-Terphenyl	*0.0274*			*"*	*0.0250*		*110*	*65-135*			
Matrix Spike (CY06668-MS1)		**Source: CYI1073-02**			Prepared: 09/28/15 Analyzed: 09/29/15						
Diesel	3.22	0.0021	0.050	mg/L	2.50	ND	129	46-137			
Surrogate: o-Terphenyl	*0.0215*			*"*	*0.0250*		*86*	*65-135*			
Matrix Spike Dup (CY06668-MSD1)		**Source: CYI1073-02**			Prepared: 09/28/15 Analyzed: 09/29/15						
Diesel	3.33	0.0021	0.050	mg/L	2.50	ND	133	46-137	3	30	
Surrogate: o-Terphenyl	*0.0227*			*"*	*0.0250*		*91*	*65-135*			

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project:	Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06568 - EPA 5030 Water MS											
Blank (CY06568-BLK1)					Prepared: 09/23/15 Analyzed: 09/24/15						
Xylenes (total)	ND	0.35	0.50	µg/L							
Vinyl chloride	ND	0.17	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
Trichlorofluoromethane	ND	0.20	0.50	"							
Trichloroethene	ND	0.11	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
1,1,1-Trichloroethane	ND	0.18	0.50	"							
Toluene	ND	0.10	0.30	"							
Tetrachloroethene	ND	0.12	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							
Methylene chloride	ND	0.24	0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
Dibromochloromethane	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
Chloroform	ND	0.13	0.50	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Chloroethane	ND	0.20	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromodichloromethane	ND	0.061	0.50	"							
Benzene	ND	0.057	0.30	"							

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Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06568 - EPA 5030 Water MS											
Blank (CY06568-BLK1)					Prepared: 09/23/15 Analyzed: 09/24/15						
tert-Butyl alcohol	ND		5.0	µg/L							
Surrogate: 4-Bromofluorobenzene	*10.4*			*"*	*10.0*		*104*	*73-125*			
Surrogate: Toluene-d8	*8.95*			*"*	*10.0*		*90*	*72-125*			
Surrogate: 1,2-Dichloroethane-d4	*8.92*			*"*	*10.0*		*89*	*65-135*			
LCS (CY06568-BS1)					Prepared: 09/23/15 Analyzed: 09/24/15						
Vinyl chloride	20.3	0.17	0.50	µg/L	20.0		101	10-251			
Trichlorofluoromethane	20.6	0.20	0.50	"	20.0		103	47-181			
Trichloroethene	22.2	0.11	0.50	"	20.0		111	71-157			
1,1,2-Trichloroethane	19.5	0.098	0.50	"	20.0		98	52-150			
1,1,1-Trichloroethane	20.6	0.18	0.50	"	20.0		103	52-162			
Toluene	20.1	0.10	0.30	"	20.0		101	47-150			
Tetrachloroethene	23.3	0.12	0.50	"	20.0		116	64-148			
1,1,2,2-Tetrachloroethane	21.4	0.13	0.50	"	20.0		107	46-148			
Methylene chloride	19.8	0.24	0.50	"	20.0		99	5-221			
Ethylbenzene	19.2	0.090	0.30	"	20.0		96	37-162			
trans-1,3-Dichloropropene	18.5	0.12	0.50	"	20.0		93	17-183			
cis-1,3-Dichloropropene	18.4	0.097	0.50	"	20.0		92	5-227			
1,2-Dichloropropane	18.5	0.057	0.50	"	20.0		92	5-210			
trans-1,2-Dichloroethene	19.9	0.13	0.50	"	20.0		99	54-156			
1,1-Dichloroethene	19.5	0.092	0.50	"	20.0		97	5-234			
1,2-Dichloroethane	17.5	0.054	0.50	"	20.0		88	49-155			
1,1-Dichloroethane	18.9	0.12	0.50	"	20.0		95	59-155			
Dichlorodifluoromethane (Freon 12)	22.5	0.37	0.50	"	20.0		112	50-150			
1,4-Dichlorobenzene	22.7	0.061	0.30	"	20.0		114	18-190			
1,3-Dichlorobenzene	20.7	0.081	0.30	"	20.0		104	59-156			
1,2-Dichlorobenzene	22.1	0.042	0.30	"	20.0		110	18-190			
Dibromochloromethane	20.8	0.13	0.50	"	20.0		104	53-149			
Chloromethane	20.9	0.29	0.50	"	20.0		104	10-273			
Chloroform	18.6	0.13	0.50	"	20.0		93	51-138			
Chloroethane	19.1	0.20	0.50	"	20.0		95	14-230			
Chlorobenzene	19.1	0.11	0.30	"	20.0		96	37-160			
Carbon tetrachloride	21.0	0.092	0.50	"	20.0		105	70-140			
Bromomethane	19.7	0.20	0.50	"	20.0		98	10-242			

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Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06568 - EPA 5030 Water MS											
LCS (CY06568-BS1)					Prepared: 09/23/15 Analyzed: 09/24/15						
Bromoform	20.1	0.16	0.50	µg/L	20.0		101	45-169			
Bromodichloromethane	19.3	0.061	0.50	"	20.0		96	35-155			
Benzene	20.2	0.057	0.30	"	20.0		101	37-151			
Surrogate: 4-Bromofluorobenzene	*8.28*			*"*	*10.0*		*83*	*73-125*			
Surrogate: Toluene-d8	*9.73*			*"*	*10.0*		*97*	*72-125*			
Surrogate: 1,2-Dichloroethane-d4	*8.65*			*"*	*10.0*		*86*	*65-135*			
LCS Dup (CY06568-BSD1)					Prepared: 09/23/15 Analyzed: 09/24/15						
Vinyl chloride	19.2	0.17	0.50	µg/L	20.0		96	10-251	6	30	
Trichlorofluoromethane	19.6	0.20	0.50	"	20.0		98	47-181	5	30	
Trichloroethene	21.8	0.11	0.50	"	20.0		109	71-157	2	30	
1,1,2-Trichloroethane	19.1	0.098	0.50	"	20.0		96	52-150	2	30	
1,1,1-Trichloroethane	20.4	0.18	0.50	"	20.0		102	52-162	0.7	30	
Toluene	20.1	0.10	0.30	"	20.0		100	47-150	0.2	30	
Tetrachloroethene	22.5	0.12	0.50	"	20.0		113	64-148	3	30	
1,1,2,2-Tetrachloroethane	20.5	0.13	0.50	"	20.0		102	46-148	4	30	
Methylene chloride	19.6	0.24	0.50	"	20.0		98	5-221	1	30	
Ethylbenzene	18.7	0.090	0.30	"	20.0		93	37-162	3	30	
trans-1,3-Dichloropropene	18.7	0.12	0.50	"	20.0		93	17-183	0.6	30	
cis-1,3-Dichloropropene	18.3	0.097	0.50	"	20.0		91	5-227	0.7	30	
1,2-Dichloropropane	18.6	0.057	0.50	"	20.0		93	5-210	0.4	30	
trans-1,2-Dichloroethene	19.5	0.13	0.50	"	20.0		97	54-156	2	30	
1,1-Dichloroethene	18.9	0.092	0.50	"	20.0		95	5-234	3	30	
1,2-Dichloroethane	17.3	0.054	0.50	"	20.0		86	49-155	1	30	
1,1-Dichloroethane	18.6	0.12	0.50	"	20.0		93	59-155	2	30	
Dichlorodifluoromethane (Freon 12)	20.9	0.37	0.50	"	20.0		105	50-150	7	30	
1,4-Dichlorobenzene	22.2	0.061	0.30	"	20.0		111	18-190	2	30	
1,3-Dichlorobenzene	20.2	0.081	0.30	"	20.0		101	59-156	3	30	
1,2-Dichlorobenzene	21.6	0.042	0.30	"	20.0		108	18-190	2	30	
Dibromochloromethane	21.1	0.13	0.50	"	20.0		105	53-149	1	30	
Chloromethane	20.9	0.29	0.50	"	20.0		104	10-273	0	30	
Chloroform	18.4	0.13	0.50	"	20.0		92	51-138	0.9	30	
Chloroethane	18.4	0.20	0.50	"	20.0		92	14-230	4	30	
Chlorobenzene	18.7	0.11	0.30	"	20.0		94	37-160	2	30	

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Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06568 - EPA 5030 Water MS											
LCS Dup (CY06568-BSD1)					Prepared: 09/23/15 Analyzed: 09/24/15						
Carbon tetrachloride	20.8	0.092	0.50	µg/L	20.0		104	70-140	1	30	
Bromomethane	22.0	0.20	0.50	"	20.0		110	10-242	11	30	
Bromoform	20.2	0.16	0.50	"	20.0		101	45-169	0.1	30	
Bromodichloromethane	18.6	0.061	0.50	"	20.0		93	35-155	4	30	
Benzene	19.7	0.057	0.30	"	20.0		99	37-151	2	30	
Surrogate: 4-Bromofluorobenzene	*8.05*			*"*	*10.0*		*80*	*73-125*			
Surrogate: Toluene-d8	*9.58*			*"*	*10.0*		*96*	*72-125*			
Surrogate: 1,2-Dichloroethane-d4	*8.45*			*"*	*10.0*		*84*	*65-135*			

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

TPH-Gasoline by GC/MS - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06606 - EPA 5030 Water MS											
Blank (CY06606-BLK1)					Prepared: 09/24/15 Analyzed: 09/25/15						
Gasoline	ND	10	50	µg/L							
Surrogate: Toluene-d8	*9.14*			*"*	*10.0*		*91*	*65-135*			
LCS (CY06606-BS1)					Prepared: 09/24/15 Analyzed: 09/25/15						
Gasoline	522	10	50	µg/L	500		104	70-130			
Surrogate: Toluene-d8	*9.66*			*"*	*10.0*		*97*	*65-135*			
LCS Dup (CY06606-BSD1)					Prepared: 09/24/15 Analyzed: 09/25/15						
Gasoline	550	10	50	µg/L	500		110	70-130	5	30	
Surrogate: Toluene-d8	*9.65*			*"*	*10.0*		*96*	*65-135*			

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project:	Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES

09/30/15 12:55

Earth Resource Technologies c/o NASA-Ames	Project: Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. CYI1015 (1 of)

Report To:

Name and Address: Earth Resources Technology, Inc.

NASA Ames Research Center

Moffett Field, CA

Project Manager: Brian Reddig (650) 604-1315

Project Name: Q3 2015 NASA RGRP Extraction Well Sampling

Sampled By: Brian Reddig

Job Description: Q3 2015 NASA RGRP Sampling

Site Location: NASA RGRP

Client Job Number: 3602-750

Destination Laboratory

☑ CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

☐ OTHER

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT ☐ YES ☐ NO

GLOBAL ID.

FIELD CONDITIONS:

COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	VOCs (EPA 624)	TPH-G/BTEX	TPH-D, -JP/5/8, -MO					TURNAROUND TIME IN DAYS 1	2	5	10	SPECIAL INSTRUCTIONS
9/21/15	9:08	NASA-3A		Groundwater	3	VOA	1	X									X		
9/21/15	9:20	NASA-1A		Groundwater	5	Mixed	1,3	X	X	X							X		
9/21/15	9:28	NASA-3K		Groundwater	3	VOA	1	X									X		

INVOICE TO:

PO#

QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO3 (4)

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
Brian Reddig	Brian Reddig/ERT	9/23/15 1200		CLS
	CLS	9/23/15 1625		

RECEIVED AT LAB BY: DATE/TIME: 9/23/15 1625 CONDITIONS/COMMENTS: 2.0

SHIPPED BY: ☐ FED EX ☐ UPS ☑ OTHER CLS AIR BILL #

CALIFORNIA LABORATORY SERVICES

09/30/15 12:55

Earth Resource Technologies c/o NASA-Ames	Project:	Q3 2015 NASA RGRP Extraction Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1015**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

19 October 2015

CLS Work Order #: CYI1194

COC #:

Brian Reddig

Earth Resource Technologies c/o NASA-Ames

Bldg T20G-4, Room 135

Moffet Field, CA 94053-1000

Project Name: 2015 NASA RGRP Well Sampling

Enclosed are the results of analyses for samples received by the laboratory on 09/28/15 16:50. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

CASE NARRATIVE

CLS Work Order #: CYI1194 **COC #:**

Client: **Earth Resource Technologies c/o N**

Project Name: 2015 NASA RGRP Well Sam

Samples Received: **09/28/15 16:50**

The report for EPA Method 624 has been revised to include the presence of cis-1,2 - dichloroethene & 1,1 - dichloroethane where applicable.

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project: 2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
14D28A (CYI1194-01) Water Sampled: 09/24/15 07:34 Received: 09/28/15 16:50											
Surrogate: o-Terphenyl	nt	*80 %*		*65-135*	mg/L		*CY06728*	*09/29/15*	*09/30/15*	*EPA 8015M*	
Diesel	nt	ND	0.0021	0.050	"	1	"	"	"	"	
JP-5/JP-8	nt	ND	0.020	0.050	"	1	"	"	"	"	
Motor Oil	nt	ND	0.0091	0.050	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
14D28A (CYI1194-01) Water Sampled: 09/24/15 07:34 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*85 %*		*65-135*	µg/L		*CY06718*	*09/29/15*	*09/29/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*109 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*92 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**3.5**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**2.1**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**58**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	**3.3**	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**20**	0.11	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
14D28A (CYI1194-01) Water Sampled: 09/24/15 07:34 Received: 09/28/15 16:50											
Trichlorofluoromethane	nt	ND	0.20	0.50	µg/L	1	CY06718	09/29/15	09/29/15	EPA 624	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
14E14A (CYI1194-02) Water Sampled: 09/24/15 08:01 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*96 %*		*65-135*	µg/L		*CY06718*	*09/29/15*	*09/29/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*106 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*93 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**0.29**	0.15	0.50	"	1	"	"	"	"	J
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project: 2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
14E14A (CYI1194-02) Water Sampled: 09/24/15 08:01 Received: 09/28/15 16:50											
Tetrachloroethene	nt	ND	0.12	0.50	µg/L	1	CY06718	09/29/15	09/29/15	EPA 624	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	ND	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
14D09A (CYI1194-03) Water Sampled: 09/24/15 08:23 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*91 %*		*65-135*	µg/L		*CY06718*	*09/29/15*	*09/29/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*111 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*94 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	nt	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**2.2**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**2.8**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**42**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
14D09A (CYI1194-03) Water Sampled: 09/24/15 08:23 Received: 09/28/15 16:50											
Dibromochloromethane	nt	ND	0.13	0.50	µg/L	1	CY06718	09/29/15	09/29/15	EPA 624	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**50**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
14D25A2 (CYI1194-04) Water Sampled: 09/24/15 08:38 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*90 %*		*65-135*	µg/L		*CY06718*	*09/29/15*	*09/29/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*107 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*95 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	**8.0**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**4.5**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**5.5**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	**1.1**	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project: 2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
14D25A2 (CYI1194-04) Water Sampled: 09/24/15 08:38 Received: 09/28/15 16:50											
Chloroethane	nt	ND	0.20	0.50	µg/L	1	CY06718	09/29/15	09/29/15	EPA 624	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**16**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**110**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
11N22A1 (CYI1194-05) Water Sampled: 09/24/15 08:46 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*98 %*		*65-135*	µg/L		*CY06718*	*09/29/15*	*09/29/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*109 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*96 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	**3.7**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**1.8**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**0.59**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11N22A1 (CYI1194-05) Water Sampled: 09/24/15 08:46 Received: 09/28/15 16:50											
Bromodichloromethane	nt	ND	0.061	0.50	µg/L	1	CY06718	09/29/15	09/29/15	EPA 624	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**20**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	**1.1**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**83**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
11M16A1 (CYI1194-06) Water Sampled: 09/24/15 09:18 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*99 %*		*65-135*	µg/L		*CY06718*	*09/29/15*	*09/29/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*103 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*95 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**0.90**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11M16A1 (CYI1194-06) Water Sampled: 09/24/15 09:18 Received: 09/28/15 16:50											
1,2-Dichloropropane	nt	ND	0.057	0.50	µg/L	1	CY06718	09/29/15	09/29/15	EPA 624	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**1.4**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	**0.52**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**16**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11M25A (CYI1194-07) Water Sampled: 09/24/15 09:30 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*108 %*		*65-135*	µg/L		*CY06758*	*09/30/15*	*09/30/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*103 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*93 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**0.70**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**0.52**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	**0.67**	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**1.1**	0.11	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11M25A (CYI1194-07) Water Sampled: 09/24/15 09:30 Received: 09/28/15 16:50											
Trichlorofluoromethane	nt	ND	0.20	0.50	µg/L	1	CY06758	09/30/15	09/30/15	EPA 624	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
11M03A (CYI1194-08) Water Sampled: 09/24/15 09:35 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*108 %*		*65-135*	µg/L		*CY06758*	*09/30/15*	*09/30/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*106 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*96 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	**3.5**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**3.0**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**8.9**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**1.5**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11M03A (CYI1194-08) Water Sampled: 09/24/15 09:35 Received: 09/28/15 16:50											
Tetrachloroethene	nt	ND	0.12	0.50	µg/L	1	CY06758	09/30/15	09/30/15	EPA 624	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**28**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	**1.2**	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
W08-08A1 (CYI1194-09) Water Sampled: 09/24/15 09:45 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*115 %*		*65-135*	µg/L		*CY06758*	*09/30/15*	*09/30/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*102 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*99 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	nt	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**1.1**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**1.5**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**0.46**	0.15	0.50	"	1	"	"	"	"	J
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
W08-08A1 (CYI1194-09) Water Sampled: 09/24/15 09:45 Received: 09/28/15 16:50											
Dibromochloromethane	nt	ND	0.13	0.50	µg/L	1	CY06758	09/30/15	09/30/15	EPA 624	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**16**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
WSI-4 (CYI1194-10) Water Sampled: 09/24/15 11:36 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*109 %*		*65-135*	µg/L		*CY06758*	*09/30/15*	*09/30/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*108 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*97 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**1.4**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**3.6**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WSI-4 (CYI1194-10) Water Sampled: 09/24/15 11:36 Received: 09/28/15 16:50											
Chloroethane	nt	ND	0.20	0.50	µg/L	1	CY06758	09/30/15	09/30/15	EPA 624	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**0.81**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**74**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
11M21A (CYI1194-11) Water Sampled: 09/24/15 11:47 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*112 %*		*65-135*	µg/L		*CY06758*	*09/30/15*	*09/30/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*103 %*		*73-125*	"		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8	nt	*94 %*		*72-125*	"		*"*	*"*	*"*	*"*	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**4.5**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**17**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	nt	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11M21A (CYI1194-11) Water Sampled: 09/24/15 11:47 Received: 09/28/15 16:50											
Bromodichloromethane	nt	ND	0.061	0.50	µg/L	1	CY06758	09/30/15	09/30/15	EPA 624	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**4.4**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**16**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	**1.2**	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	
11M17A (CYI1194-12) Water Sampled: 09/24/15 11:57 Received: 09/28/15 16:50											
Surrogate: 1,2-Dichloroethane-d4	nt	*127 %*		*65-135*	µg/L		*CY06758*	*09/30/15*	*09/30/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	nt	*105 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	nt	*96 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	nt	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	nt	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	nt	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	nt	**1.9**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	nt	**5.7**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	nt	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	nt	ND	0.054	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11M17A (CYI1194-12) Water Sampled: 09/24/15 11:57 Received: 09/28/15 16:50											
1,2-Dichloropropane	nt	ND	0.057	0.50	µg/L	1	CY06758	09/30/15	09/30/15	EPA 624	
1,3-Dichlorobenzene	nt	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	nt	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	nt	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	nt	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	nt	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	nt	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	nt	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	nt	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	nt	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	nt	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	nt	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	nt	**0.86**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	nt	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	nt	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	nt	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	nt	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	nt	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	nt	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	nt	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	nt	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	nt	**21**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	nt	**0.99**	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	nt	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	nt	ND	0.35	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

TPH-Gasoline by GC FID

Analyte	Analyst	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
14D28A (CYI1194-01) Water Sampled: 09/24/15 07:34 Received: 09/28/15 16:50											
Surrogate: o-Chlorotoluene (Gas)	PT	*112 %*		*65-135*	µg/L		*CY06776*	*10/01/15*	*10/02/15*	*EPA 8015M*	
Gasoline	PT	**60**	10	50	"	1	"	"	"	"	TPH-X

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project: 2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06728 - EPA 3510B GCNV											
Blank (CY06728-BLK1)					Prepared: 09/29/15 Analyzed: 09/30/15						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0200*			*"*	*0.0250*		*80*	*65-135*			
LCS (CY06728-BS1)					Prepared: 09/29/15 Analyzed: 09/30/15						
Diesel	2.72	0.0021	0.050	mg/L	2.50		109	65-135			
Surrogate: o-Terphenyl	*0.0260*			*"*	*0.0250*		*104*	*65-135*			
LCS Dup (CY06728-BSD1)					Prepared: 09/29/15 Analyzed: 09/30/15						
Diesel	2.76	0.0021	0.050	mg/L	2.50		110	65-135	1	30	
Surrogate: o-Terphenyl	*0.0244*			*"*	*0.0250*		*97*	*65-135*			

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Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06718 - EPA 5030 Water MS											
Blank (CY06718-BLK1)					Prepared & Analyzed: 09/29/15						
Naphthalene	ND		0.50	µg/L							
Benzene	ND	0.057	0.30	"							
Bromodichloromethane	ND	0.061	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Chloroethane	ND	0.20	0.50	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Chloroform	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
Dibromochloromethane	ND	0.13	0.50	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
Methylene chloride	ND	0.24	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							
Tetrachloroethene	ND	0.12	0.50	"							
Toluene	ND	0.10	0.30	"							
1,1,1-Trichloroethane	ND	0.18	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
Trichloroethene	ND	0.11	0.50	"							
Trichlorofluoromethane	ND	0.20	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
Vinyl chloride	ND	0.17	0.50	"							
Xylenes (total)	ND	0.35	0.50	"							

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames	Project: 2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06718 - EPA 5030 Water MS											
Blank (CY06718-BLK1)					Prepared & Analyzed: 09/29/15						
Surrogate: 1,2-Dichloroethane-d4	*8.77*			*µg/L*	*10.0*		*88*	*65-135*			
Surrogate: Toluene-d8	*9.34*			*"*	*10.0*		*93*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*11.2*			*"*	*10.0*		*112*	*73-125*			
LCS (CY06718-BS1)					Prepared & Analyzed: 09/29/15						
Benzene	20.0	0.057	0.30	µg/L	20.0		100	37-151			
Bromodichloromethane	19.4	0.061	0.50	"	20.0		97	35-155			
Bromoform	22.2	0.16	0.50	"	20.0		111	45-169			
Bromomethane	19.3	0.20	0.50	"	20.0		96	10-242			
Carbon tetrachloride	20.8	0.092	0.50	"	20.0		104	70-140			
Chlorobenzene	18.5	0.11	0.30	"	20.0		93	37-160			
Chloroethane	17.7	0.20	0.50	"	20.0		88	14-230			
Chloroform	18.6	0.13	0.50	"	20.0		93	51-138			
Chloromethane	21.0	0.29	0.50	"	20.0		105	10-273			
Dibromochloromethane	21.7	0.13	0.50	"	20.0		109	53-149			
1,2-Dichlorobenzene	17.7	0.042	0.30	"	20.0		88	18-190			
1,3-Dichlorobenzene	16.6	0.081	0.30	"	20.0		83	59-156			
1,4-Dichlorobenzene	18.1	0.061	0.30	"	20.0		91	18-190			
Dichlorodifluoromethane (Freon 12)	17.9	0.37	0.50	"	20.0		90	50-150			
1,1-Dichloroethane	18.4	0.12	0.50	"	20.0		92	59-155			
1,2-Dichloroethane	18.8	0.054	0.50	"	20.0		94	49-155			
1,1-Dichloroethene	17.5	0.092	0.50	"	20.0		88	5-234			
trans-1,2-Dichloroethene	19.3	0.13	0.50	"	20.0		97	54-156			
1,2-Dichloropropane	19.4	0.057	0.50	"	20.0		97	5-210			
cis-1,3-Dichloropropene	19.5	0.097	0.50	"	20.0		98	5-227			
trans-1,3-Dichloropropene	19.7	0.12	0.50	"	20.0		99	17-183			
Ethylbenzene	18.8	0.090	0.30	"	20.0		94	37-162			
Methylene chloride	19.0	0.24	0.50	"	20.0		95	5-221			
1,1,2,2-Tetrachloroethane	17.8	0.13	0.50	"	20.0		89	46-148			
Tetrachloroethene	23.4	0.12	0.50	"	20.0		117	64-148			
Toluene	20.9	0.10	0.30	"	20.0		105	47-150			
1,1,1-Trichloroethane	20.9	0.18	0.50	"	20.0		104	52-162			
1,1,2-Trichloroethane	20.4	0.098	0.50	"	20.0		102	52-150			
Trichloroethene	22.0	0.11	0.50	"	20.0		110	71-157			
Trichlorofluoromethane	20.0	0.20	0.50	"	20.0		100	47-181			

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06718 - EPA 5030 Water MS											
LCS (CY06718-BS1)					Prepared & Analyzed: 09/29/15						
Vinyl chloride	19.1	0.17	0.50	µg/L	20.0		95	10-251			
Surrogate: 1,2-Dichloroethane-d4	*9.01*			*"*	*10.0*		*90*	*65-135*			
Surrogate: Toluene-d8	*9.84*			*"*	*10.0*		*98*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*9.32*			*"*	*10.0*		*93*	*73-125*			
LCS Dup (CY06718-BSD1)					Prepared & Analyzed: 09/29/15						
Benzene	20.5	0.057	0.30	µg/L	20.0		103	37-151	3	30	
Bromodichloromethane	19.6	0.061	0.50	"	20.0		98	35-155	1	30	
Bromoform	21.6	0.16	0.50	"	20.0		108	45-169	2	30	
Bromomethane	19.6	0.20	0.50	"	20.0		98	10-242	2	30	
Carbon tetrachloride	20.5	0.092	0.50	"	20.0		103	70-140	1	30	
Chlorobenzene	18.9	0.11	0.30	"	20.0		94	37-160	2	30	
Chloroethane	16.8	0.20	0.50	"	20.0		84	14-230	6	30	
Chloroform	18.2	0.13	0.50	"	20.0		91	51-138	2	30	
Chloromethane	21.5	0.29	0.50	"	20.0		107	10-273	2	30	
Dibromochloromethane	21.8	0.13	0.50	"	20.0		109	53-149	0.2	30	
1,2-Dichlorobenzene	17.6	0.042	0.30	"	20.0		88	18-190	0.3	30	
1,3-Dichlorobenzene	16.4	0.081	0.30	"	20.0		82	59-156	1	30	
1,4-Dichlorobenzene	18.1	0.061	0.30	"	20.0		90	18-190	0.3	30	
Dichlorodifluoromethane (Freon 12)	15.4	0.37	0.50	"	20.0		77	50-150	15	30	
1,1-Dichloroethane	18.2	0.12	0.50	"	20.0		91	59-155	1	30	
1,2-Dichloroethane	17.9	0.054	0.50	"	20.0		90	49-155	5	30	
1,1-Dichloroethene	17.7	0.092	0.50	"	20.0		89	5-234	1	30	
trans-1,2-Dichloroethene	19.1	0.13	0.50	"	20.0		95	54-156	1	30	
1,2-Dichloropropane	19.8	0.057	0.50	"	20.0		99	5-210	2	30	
cis-1,3-Dichloropropene	19.9	0.097	0.50	"	20.0		99	5-227	2	30	
trans-1,3-Dichloropropene	19.9	0.12	0.50	"	20.0		100	17-183	1	30	
Ethylbenzene	19.0	0.090	0.30	"	20.0		95	37-162	1	30	
Methylene chloride	18.6	0.24	0.50	"	20.0		93	5-221	2	30	
1,1,2,2-Tetrachloroethane	16.9	0.13	0.50	"	20.0		85	46-148	5	30	
Tetrachloroethene	24.8	0.12	0.50	"	20.0		124	64-148	6	30	
Toluene	21.8	0.10	0.30	"	20.0		109	47-150	4	30	
1,1,1-Trichloroethane	20.6	0.18	0.50	"	20.0		103	52-162	1	30	
1,1,2-Trichloroethane	20.5	0.098	0.50	"	20.0		103	52-150	0.7	30	
Trichloroethene	23.2	0.11	0.50	"	20.0		116	71-157	5	30	

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06718 - EPA 5030 Water MS											
LCS Dup (CY06718-BSD1)					Prepared & Analyzed: 09/29/15						
Trichlorofluoromethane	19.2	0.20	0.50	µg/L	20.0		96	47-181	4	30	
Vinyl chloride	17.9	0.17	0.50	"	20.0		89	10-251	6	30	
Surrogate: 1,2-Dichloroethane-d4	*8.87*			*"*	*10.0*		*89*	*65-135*			
Surrogate: Toluene-d8	*9.95*			*"*	*10.0*		*100*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*10.3*			*"*	*10.0*		*103*	*73-125*			
Batch CY06758 - EPA 5030 Water MS											
Blank (CY06758-BLK1)					Prepared & Analyzed: 09/30/15						
Benzene	ND	0.057	0.30	µg/L							
Bromodichloromethane	ND	0.061	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Chloroethane	ND	0.20	0.50	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Chloroform	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
Dibromochloromethane	ND	0.13	0.50	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
Methylene chloride	ND	0.24	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06758 - EPA 5030 Water MS											
Blank (CY06758-BLK1)					Prepared & Analyzed: 09/30/15						
Tetrachloroethene	ND	0.12	0.50	µg/L							
Toluene	ND	0.10	0.30	"							
1,1,1-Trichloroethane	ND	0.18	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
Trichloroethene	ND	0.11	0.50	"							
Trichlorofluoromethane	ND	0.20	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
Vinyl chloride	ND	0.17	0.50	"							
Xylenes (total)	ND	0.35	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	*9.31*			*"*	*10.0*		*93*	*65-135*			
Surrogate: Toluene-d8	*9.40*			*"*	*10.0*		*94*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*10.5*			*"*	*10.0*		*105*	*73-125*			
LCS (CY06758-BS1)					Prepared & Analyzed: 09/30/15						
Benzene	20.7	0.057	0.30	µg/L	20.0		103	37-151			
Bromodichloromethane	20.1	0.061	0.50	"	20.0		100	35-155			
Bromoform	21.3	0.16	0.50	"	20.0		106	45-169			
Bromomethane	21.9	0.20	0.50	"	20.0		110	10-242			
Carbon tetrachloride	23.2	0.092	0.50	"	20.0		116	70-140			
Chlorobenzene	20.1	0.11	0.30	"	20.0		100	37-160			
Chloroethane	20.8	0.20	0.50	"	20.0		104	14-230			
Chloroform	20.7	0.13	0.50	"	20.0		103	51-138			
Chloromethane	19.4	0.29	0.50	"	20.0		97	10-273			
Dibromochloromethane	21.9	0.13	0.50	"	20.0		110	53-149			
1,2-Dichlorobenzene	18.4	0.042	0.30	"	20.0		92	18-190			
1,3-Dichlorobenzene	17.4	0.081	0.30	"	20.0		87	59-156			
1,4-Dichlorobenzene	19.0	0.061	0.30	"	20.0		95	18-190			
Dichlorodifluoromethane (Freon 12)	17.2	0.37	0.50	"	20.0		86	50-150			
1,1-Dichloroethane	20.5	0.12	0.50	"	20.0		103	59-155			
1,2-Dichloroethane	19.6	0.054	0.50	"	20.0		98	49-155			
1,1-Dichloroethene	20.3	0.092	0.50	"	20.0		102	5-234			
trans-1,2-Dichloroethene	20.9	0.13	0.50	"	20.0		104	54-156			
1,2-Dichloropropane	19.2	0.057	0.50	"	20.0		96	5-210			
cis-1,3-Dichloropropene	19.1	0.097	0.50	"	20.0		95	5-227			

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06758 - EPA 5030 Water MS											
LCS (CY06758-BS1)					Prepared & Analyzed: 09/30/15						
trans-1,3-Dichloropropene	19.4	0.12	0.50	µg/L	20.0		97	17-183			
Ethylbenzene	20.2	0.090	0.30	"	20.0		101	37-162			
Methylene chloride	20.9	0.24	0.50	"	20.0		104	5-221			
1,1,2,2-Tetrachloroethane	17.0	0.13	0.50	"	20.0		85	46-148			
Tetrachloroethene	24.1	0.12	0.50	"	20.0		121	64-148			
Toluene	21.3	0.10	0.30	"	20.0		107	47-150			
1,1,1-Trichloroethane	23.1	0.18	0.50	"	20.0		115	52-162			
1,1,2-Trichloroethane	20.4	0.098	0.50	"	20.0		102	52-150			
Trichloroethene	22.7	0.11	0.50	"	20.0		114	71-157			
Trichlorofluoromethane	21.3	0.20	0.50	"	20.0		107	47-181			
Vinyl chloride	19.2	0.17	0.50	"	20.0		96	10-251			
Surrogate: 1,2-Dichloroethane-d4	*9.67*			*"*	*10.0*		*97*	*65-135*			
Surrogate: Toluene-d8	*9.40*			*"*	*10.0*		*94*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*8.33*			*"*	*10.0*		*83*	*73-125*			
LCS Dup (CY06758-BSD1)					Prepared & Analyzed: 09/30/15						
Benzene	20.9	0.057	0.30	µg/L	20.0		105	37-151	1	30	
Bromodichloromethane	20.2	0.061	0.50	"	20.0		101	35-155	0.9	30	
Bromoform	20.0	0.16	0.50	"	20.0		100	45-169	6	30	
Bromomethane	24.9	0.20	0.50	"	20.0		125	10-242	13	30	
Carbon tetrachloride	23.3	0.092	0.50	"	20.0		117	70-140	0.7	30	
Chlorobenzene	18.3	0.11	0.30	"	20.0		92	37-160	9	30	
Chloroethane	21.7	0.20	0.50	"	20.0		109	14-230	4	30	
Chloroform	20.9	0.13	0.50	"	20.0		104	51-138	1	30	
Chloromethane	22.5	0.29	0.50	"	20.0		112	10-273	15	30	
Dibromochloromethane	22.2	0.13	0.50	"	20.0		111	53-149	1	30	
1,2-Dichlorobenzene	23.1	0.042	0.30	"	20.0		116	18-190	23	30	
1,3-Dichlorobenzene	21.7	0.081	0.30	"	20.0		108	59-156	22	30	
1,4-Dichlorobenzene	24.1	0.061	0.30	"	20.0		121	18-190	24	30	
Dichlorodifluoromethane (Freon 12)	22.3	0.37	0.50	"	20.0		111	50-150	26	30	
1,1-Dichloroethane	20.3	0.12	0.50	"	20.0		102	59-155	1	30	
1,2-Dichloroethane	19.2	0.054	0.50	"	20.0		96	49-155	2	30	
1,1-Dichloroethene	19.7	0.092	0.50	"	20.0		99	5-234	3	30	
trans-1,2-Dichloroethene	20.7	0.13	0.50	"	20.0		103	54-156	1	30	
1,2-Dichloropropane	19.5	0.057	0.50	"	20.0		97	5-210	2	30	

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project:	2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number:	3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager:	Brian Reddig	COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06758 - EPA 5030 Water MS											
LCS Dup (CY06758-BSD1)					Prepared & Analyzed: 09/30/15						
cis-1,3-Dichloropropene	19.2	0.097	0.50	µg/L	20.0		96	5-227	0.8	30	
trans-1,3-Dichloropropene	19.3	0.12	0.50	"	20.0		96	17-183	0.7	30	
Ethylbenzene	18.9	0.090	0.30	"	20.0		94	37-162	7	30	
Methylene chloride	20.5	0.24	0.50	"	20.0		102	5-221	2	30	
1,1,2,2-Tetrachloroethane	21.9	0.13	0.50	"	20.0		109	46-148	25	30	
Tetrachloroethene	24.4	0.12	0.50	"	20.0		122	64-148	1	30	
Toluene	21.2	0.10	0.30	"	20.0		106	47-150	0.6	30	
1,1,1-Trichloroethane	22.5	0.18	0.50	"	20.0		113	52-162	2	30	
1,1,2-Trichloroethane	20.3	0.098	0.50	"	20.0		102	52-150	0.5	30	
Trichloroethene	23.2	0.11	0.50	"	20.0		116	71-157	2	30	
Trichlorofluoromethane	22.2	0.20	0.50	"	20.0		111	47-181	4	30	
Vinyl chloride	21.3	0.17	0.50	"	20.0		106	10-251	10	30	
Surrogate: 1,2-Dichloroethane-d4	*9.03*			*"*	*10.0*		*90*	*65-135*			
Surrogate: Toluene-d8	*10.0*			*"*	*10.0*		*100*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*9.20*			*"*	*10.0*		*92*	*73-125*			

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project: 2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

TPH-Gasoline by GC FID - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06776 - EPA 5030 Water GC											
Blank (CY06776-BLK1)					Prepared: 10/01/15 Analyzed: 10/02/15						
Gasoline	36.6	10	50	µg/L							J
Surrogate: o-Chlorotoluene (Gas)	*21.9*			*"*	*20.0*		*110*	*65-135*			
LCS (CY06776-BS1)					Prepared: 10/01/15 Analyzed: 10/02/15						
Gasoline	559	10	50	µg/L	500		112	70-130			
Surrogate: o-Chlorotoluene (Gas)	*21.6*			*"*	*20.0*		*108*	*65-135*			
LCS Dup (CY06776-BSD1)					Prepared: 10/01/15 Analyzed: 10/02/15						
Gasoline	542	10	50	µg/L	500		108	70-130	3	30	
Surrogate: o-Chlorotoluene (Gas)	*21.8*			*"*	*20.0*		*109*	*65-135*			

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project: 2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

Notes and Definitions

TPH-X	Although the sample contains compounds in the retention time range of target parameter, the chromatogram was not consistent with the expected chromatographic pattern or "fingerprint". However, the reported concentration is based on the target parameter.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES

10/19/15 10:38

Earth Resource Technologies c/o NASA-Ames	Project: 2015 NASA RGRP Well Sampling	
Bldg T20G-4, Room 135	Project Number: 3602-750	**CLS Work Order #: CYI1194**
Moffet Field CA, 94053-1000	Project Manager: Brian Reddig	COC #:

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. CYI1194 (1 of)

Report To:

Name and Address: Earth Resources Technology, Inc.
NASA Ames Research Center
Moffett Field, CA
Project Manager: Brian Reddig (650) 604-1315
Project Name: 2015 NASA RGRP Well Sampling
Sampled By: Brian Reddig
Job Description: 2015 NASA RGRP Sampling
Site Location: NASA RGRP

Client Job Number: 3602-750

Destination Laboratory:
☑ CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
☐ OTHER

GEOTRACKER
EDF REPORT ☐ YES ☐ NO
GLOBAL ID.
FIELD CONDITIONS:
COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	VOCs (EPA 624)	TPH-G/BTEX	TPH-D, -JP/5/8, -MO					TURNAROUND TIME IN DAYS 1	2	5	10	SPECIAL INSTRUCTIONS
9/24/15	7:34	14D28A		Groundwater	5	mixed	1,3	X	X	X							X		
9/24/15	8:01	14E14A		Groundwater	3	VOA	1	X									X		
9/24/15	8:23	14D09A		Groundwater	3	VOA	1	X									X		
9/24/15	8:38	14D25A2		Groundwater	3	VOA	1	X									X		
9/24/15	8:46	11N22A1		Groundwater	3	VOA	1	X									X		
9/24/15	9:18	11M16A1		Groundwater	3	VOA	1	X									X		
9/24/15	9:30	11M25A		Groundwater	3	VOA	1	X									X		INVOICE TO:
9/24/15	9:35	11M03A		Groundwater	3	VOA	1	X									X		
9/24/15	9:45	W09-08A1		Groundwater	3	VOA	1	X									X		
9/24/15	11:36	WSI-4		Groundwater	3	VOA	1	X									X		
9/24/15	11:47	11M21A		Groundwater	3	VOA	1	X									X		PO#
9/24/15	11:57	11M17A		Groundwater	3	VOA	1	X									X		QUOTE#

SUSPECTED CONSTITUENTS | SAMPLE RETENTION TIME | PRESERVATIVES (1) HCL (2) HNO3 (3) = COLD (4)

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
Brian Reddig	Brian Reddig/ERT CLS	9/24/15 3:00		CLS
		9/28/15 1600		

RECEIVED AT LAB BY: DATE/TIME: 9/28/15 1650 CONDITIONS/COMMENTS: 4B

SHIPPED BY: ☐ FED EX ☐ UPS ☑ OTHER CLS AIR BILL #

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

16 December 2015

CLS Work Order #: CYL0484

COC #:

Brian Reddig

Earth Resource Technologies c/o NASA-Ames

Bldg T20G-4, Room 135

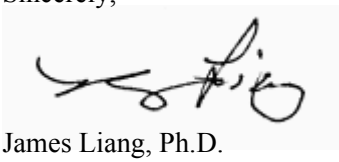
Moffet Field, CA 94053-1000

Project Name: Q4 2015 NASA RGRP Extraction Well Samplin

Enclosed are the results of analyses for samples received by the laboratory on 12/09/15 16:50. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed below as well as under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

12/16/15 12:19

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYL0484-01) Water Sampled: 12/09/15 09:33 Received: 12/09/15 16:50										
Surrogate: o-Terphenyl	*102 %*		*65-135*	mg/L		*CY08577*	12/10/15	*12/10/15*	*EPA 8015M*	
Diesel	ND	0.0021	0.050	"	1	"	"	"	"	
JP-5/JP-8	ND	0.020	0.050	"	1	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

12/16/15 12:19

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYL0484-01) Water Sampled: 12/09/15 09:33 Received: 12/09/15 16:50										
Surrogate: 1,2-Dichloroethane-d4	*126 %*		*65-135*	µg/L		*CY08572*	12/10/15	*12/10/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*115 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	*105 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**1.7**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	**3.9**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	**3.3**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	**0.58**	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**41**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**1.0**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

12/16/15 12:19

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYL0484-01) Water Sampled: 12/09/15 09:33 Received: 12/09/15 16:50										
Trichloroethene	**44**	0.11	0.50	µg/L	1	CY08572	"	12/10/15	EPA 624	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
NASA-3A (CYL0484-02) Water Sampled: 12/09/15 09:44 Received: 12/09/15 16:50										
Surrogate: 1,2-Dichloroethane-d4	*132 %*		*65-135*	µg/L		*CY08572*	12/10/15	*12/10/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*115 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*108 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**2.0**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	**5.4**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	**16**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	**0.37**	0.13	0.50	"	1	"	"	"	"	J
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**1.3**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-3A (CYL0484-02) Water Sampled: 12/09/15 09:44 Received: 12/09/15 16:50										
Ethylbenzene	ND	0.090	0.30	µg/L	1	CY08572	"	12/10/15	EPA 624	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**12**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	**1.3**	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NASA-1A (CYL0484-01) Water Sampled: 12/09/15 09:33 Received: 12/09/15 16:50										
Surrogate: o-Chlorotoluene (Gas)	*97 %*		*65-135*	µg/L		*CY08702*	12/14/15	*12/16/15*	*EPA 8015M*	
Gasoline	**46**	10	50	"	1	"	"	"	"	J

CALIFORNIA LABORATORY SERVICES

12/16/15 12:19

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY08577 - EPA 3510B GCNV											
Blank (CY08577-BLK1)					Prepared & Analyzed: 12/10/15						
Surrogate: o-Terphenyl	*0.0289*			*mg/L*	*0.0250*		*115*	*65-135*			
Diesel	ND	0.0021	0.050	"							
Diesel Range Organics (C10-C28)	ND	0.020	0.050	"							
JP-5/JP-8	ND	0.020	0.050	"							
Motor Oil	ND	0.0091	0.050	"							
LCS (CY08577-BS1)					Prepared & Analyzed: 12/10/15						
Surrogate: o-Terphenyl	*0.0257*			*mg/L*	*0.0250*		*103*	*65-135*			
Diesel	2.47	0.0021	0.050	"	2.50		99	65-135			
LCS Dup (CY08577-BSD1)					Prepared & Analyzed: 12/10/15						
Surrogate: o-Terphenyl	*0.0274*			*mg/L*	*0.0250*		*110*	*65-135*			
Diesel	2.47	0.0021	0.050	"	2.50		99	65-135	0.05	30	
Matrix Spike (CY08577-MS1)		**Source: CYL0439-01**			Prepared & Analyzed: 12/10/15						
Surrogate: o-Terphenyl	*0.0262*			*mg/L*	*0.0250*		*105*	*65-135*			
Diesel	2.34	0.0021	0.050	"	2.50	ND	93	46-137			
Matrix Spike Dup (CY08577-MSD1)		**Source: CYL0439-01**			Prepared & Analyzed: 12/10/15						
Surrogate: o-Terphenyl	*0.0257*			*mg/L*	*0.0250*		*103*	*65-135*			
Diesel	2.39	0.0021	0.050	"	2.50	ND	96	46-137	2	30	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY08572 - EPA 5030 Water MS											
Blank (CY08572-BLK1)					Prepared & Analyzed: 12/09/15						
Surrogate: 1,2-Dichloroethane-d4	*12.6*			*µg/L*	*10.0*		*126*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*11.8*			*"*	*10.0*		*118*	*73-125*			
Surrogate: Toluene-d8	*10.3*			*"*	*10.0*		*103*	*72-125*			
1,1,1-Trichloroethane	ND	0.18	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Benzene	ND	0.057	0.30	"							
Bromodichloromethane	ND	0.061	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Chloroethane	ND	0.20	0.50	"							
Chloroform	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
Dibromochloromethane	ND	0.13	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							
Di-isopropyl ether	ND		0.50	"							
Ethyl tert-butyl ether	ND		0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
Methyl tert-butyl ether	ND		0.50	"							
Methylene chloride	ND	0.24	0.50	"							
Naphthalene	ND		0.50	"							
tert-Amyl methyl ether	ND		0.50	"							

CALIFORNIA LABORATORY SERVICES

12/16/15 12:19

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY08572 - EPA 5030 Water MS											
Blank (CY08572-BLK1)					Prepared & Analyzed: 12/09/15						
tert-Butyl alcohol	ND		5.0	µg/L							
Tetrachloroethene	ND	0.12	0.50	"							
Toluene	ND	0.10	0.30	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							
Trichloroethene	ND	0.11	0.50	"							
Trichlorofluoromethane	ND	0.20	0.50	"							
Vinyl chloride	ND	0.17	0.50	"							
Xylenes (total)	ND	0.35	0.50	"							
LCS (CY08572-BS1)					Prepared & Analyzed: 12/09/15						
Surrogate: 1,2-Dichloroethane-d4	*10.8*			*µg/L*	*10.0*		*108*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*8.62*			*"*	*10.0*		*86*	*73-125*			
Surrogate: Toluene-d8	*10.3*			*"*	*10.0*		*103*	*72-125*			
1,1,1-Trichloroethane	25.5	0.18	0.50	"	20.0		128	52-162			
1,1,2,2-Tetrachloroethane	20.6	0.13	0.50	"	20.0		103	46-148			
1,1,2-Trichloroethane	21.7	0.098	0.50	"	20.0		109	52-150			
1,1-Dichloroethane	26.7	0.12	0.50	"	20.0		133	59-155			
1,1-Dichloroethene	22.9	0.092	0.50	"	20.0		114	5-234			
1,2-Dichlorobenzene	19.6	0.042	0.30	"	20.0		98	18-190			
1,2-Dichloroethane	24.5	0.054	0.50	"	20.0		122	49-155			
1,2-Dichloropropane	23.5	0.057	0.50	"	20.0		117	5-210			
1,3-Dichlorobenzene	20.0	0.081	0.30	"	20.0		100	59-156			
1,4-Dichlorobenzene	19.9	0.061	0.30	"	20.0		99	18-190			
Benzene	22.3	0.057	0.30	"	20.0		112	37-151			
Bromodichloromethane	22.5	0.061	0.50	"	20.0		113	35-155			
Bromoform	18.4	0.16	0.50	"	20.0		92	45-169			
Bromomethane	17.7	0.20	0.50	"	20.0		89	10-242			
Carbon tetrachloride	26.3	0.092	0.50	"	20.0		131	70-140			
Chlorobenzene	18.8	0.11	0.30	"	20.0		94	37-160			
Chloroethane	24.9	0.20	0.50	"	20.0		125	14-230			
Chloroform	23.6	0.13	0.50	"	20.0		118	51-138			
Chloromethane	21.2	0.29	0.50	"	20.0		106	10-273			
cis-1,3-Dichloropropene	22.9	0.097	0.50	"	20.0		115	5-227			
Dibromochloromethane	22.7	0.13	0.50	"	20.0		113	53-149			
Dichlorodifluoromethane (Freon 12)	32.3	0.37	0.50	"	20.0		162	50-150			QC-2H

CALIFORNIA LABORATORY SERVICES

12/16/15 12:19

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY08572 - EPA 5030 Water MS											
LCS (CY08572-BS1)					Prepared & Analyzed: 12/09/15						
Ethylbenzene	20.1	0.090	0.30	µg/L	20.0		100	37-162			
Methylene chloride	24.6	0.24	0.50	"	20.0		123	5-221			
Tetrachloroethene	22.1	0.12	0.50	"	20.0		110	64-148			
Toluene	22.5	0.10	0.30	"	20.0		112	47-150			
trans-1,2-Dichloroethene	25.8	0.13	0.50	"	20.0		129	54-156			
trans-1,3-Dichloropropene	21.6	0.12	0.50	"	20.0		108	17-183			
Trichloroethene	21.4	0.11	0.50	"	20.0		107	71-157			
Trichlorofluoromethane	24.3	0.20	0.50	"	20.0		121	47-181			
Vinyl chloride	23.8	0.17	0.50	"	20.0		119	10-251			
LCS Dup (CY08572-BSD1)					Prepared & Analyzed: 12/09/15						
Surrogate: 1,2-Dichloroethane-d4	*10.0*			*µg/L*	*10.0*		*100*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*7.87*			*"*	*10.0*		*79*	*73-125*			
Surrogate: Toluene-d8	*10.6*			*"*	*10.0*		*106*	*72-125*			
1,1,1-Trichloroethane	25.5	0.18	0.50	"	20.0		128	52-162	0.08	30	
1,1,2,2-Tetrachloroethane	20.7	0.13	0.50	"	20.0		104	46-148	0.7	30	
1,1,2-Trichloroethane	24.6	0.098	0.50	"	20.0		123	52-150	12	30	
1,1-Dichloroethane	26.7	0.12	0.50	"	20.0		133	59-155	0.08	30	
1,1-Dichloroethene	21.2	0.092	0.50	"	20.0		106	5-234	7	30	
1,2-Dichlorobenzene	19.2	0.042	0.30	"	20.0		96	18-190	2	30	
1,2-Dichloroethane	24.7	0.054	0.50	"	20.0		123	49-155	0.9	30	
1,2-Dichloropropane	26.3	0.057	0.50	"	20.0		132	5-210	11	30	
1,3-Dichlorobenzene	19.4	0.081	0.30	"	20.0		97	59-156	3	30	
1,4-Dichlorobenzene	18.7	0.061	0.30	"	20.0		94	18-190	6	30	
Benzene	25.1	0.057	0.30	"	20.0		126	37-151	12	30	
Bromodichloromethane	25.1	0.061	0.50	"	20.0		125	35-155	11	30	
Bromoform	20.5	0.16	0.50	"	20.0		103	45-169	11	30	
Bromomethane	20.0	0.20	0.50	"	20.0		100	10-242	12	30	
Carbon tetrachloride	25.9	0.092	0.50	"	20.0		129	70-140	2	30	
Chlorobenzene	20.0	0.11	0.30	"	20.0		100	37-160	6	30	
Chloroethane	21.5	0.20	0.50	"	20.0		108	14-230	15	30	
Chloroform	25.7	0.13	0.50	"	20.0		128	51-138	9	30	
Chloromethane	18.3	0.29	0.50	"	20.0		91	10-273	15	30	
cis-1,3-Dichloropropene	25.9	0.097	0.50	"	20.0		130	5-227	12	30	
Dibromochloromethane	25.8	0.13	0.50	"	20.0		129	53-149	13	30	
Dichlorodifluoromethane (Freon 12)	27.3	0.37	0.50	"	20.0		137	50-150	17	30	

CALIFORNIA LABORATORY SERVICES

12/16/15 12:19

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY08572 - EPA 5030 Water MS											
LCS Dup (CY08572-BSD1)					Prepared & Analyzed: 12/09/15						
Ethylbenzene	21.6	0.090	0.30	µg/L	20.0		108	37-162	7	30	
Methylene chloride	24.5	0.24	0.50	"	20.0		123	5-221	0.4	30	
Tetrachloroethene	24.6	0.12	0.50	"	20.0		123	64-148	11	30	
Toluene	25.3	0.10	0.30	"	20.0		126	47-150	12	30	
trans-1,2-Dichloroethene	25.7	0.13	0.50	"	20.0		128	54-156	0.6	30	
trans-1,3-Dichloropropene	24.4	0.12	0.50	"	20.0		122	17-183	12	30	
Trichloroethene	24.1	0.11	0.50	"	20.0		120	71-157	12	30	
Trichlorofluoromethane	21.4	0.20	0.50	"	20.0		107	47-181	12	30	
Vinyl chloride	21.5	0.17	0.50	"	20.0		107	10-251	10	30	

CALIFORNIA LABORATORY SERVICES

12/16/15 12:19

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

TPH-Gasoline by GC FID - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY08702 - EPA 5030 Water GC											
Blank (CY08702-BLK1)					Prepared: 12/14/15 Analyzed: 12/16/15						
Surrogate: o-Chlorotoluene (Gas)	*19.4*			*µg/L*	*20.0*		*97*	*65-135*			
Gasoline	37.4	10	50	"							J
JP-4	ND		50	"							
LCS (CY08702-BS1)					Prepared: 12/14/15 Analyzed: 12/16/15						
Surrogate: o-Chlorotoluene (Gas)	*17.6*			*µg/L*	*20.0*		*88*	*65-135*			
Gasoline	570	10	50	"	500		114	70-130			
LCS Dup (CY08702-BSD1)					Prepared: 12/14/15 Analyzed: 12/16/15						
Surrogate: o-Chlorotoluene (Gas)	*19.6*			*µg/L*	*20.0*		*98*	*65-135*			
Gasoline	575	10	50	"	500		115	70-130	0.8	30	

CALIFORNIA LABORATORY SERVICES

12/16/15 12:19

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Q4 2015 NASA RGRP Extraction Well Sampling Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYL0484** COC #:

Notes and Definitions

QC-2H	The recovery of one CCV was greater than the acceptance limit. However, all analytes in the associated samples were ND; therefore a reanalysis was not performed.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES

12/16/15 12:19

Earth Resource Technologies c/o NASA-Ames
Bldg T20G-4, Room 135
Moffet Field CA, 94053-1000

Project: Q4 2015 NASA RGRP Extraction Well Sampling
Project Number: 3602-750
Project Manager: Brian Reddig

CLS Work Order #: CYL0484
COC #:

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. CYL0484 (1 of)

Report To:

Name and Address: Earth Resources Technology, Inc.
NASA Ames Research Center
Moffett Field, CA
Project Manager: Brian Reddig (650) 604-1315
Project Name: Q4 2015 NASA RGRP Extraction Well Sampling
Sampled By: Brian Reddig
Job Description: Q4 2015 NASA RGRP Sampling
Site Location: NASA RGRP

Client Job Number: 3602-750

Destination Laboratory:
☑ CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com
☐ OTHER

GEOTRACKER
EDF REPORT ☐ YES ☐ NO
GLOBAL ID.

FIELD CONDITIONS:
COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	VOCs (EPA 624)	TPH-G/BTEX	TPH-D, -JP/5/8, -MO					TURNAROUND TIME IN DAYS 1	2	5	10	SPECIAL INSTRUCTIONS
12/9/15	9:33	NASA-1A		Groundwater	5	Mixed	1,3	X	X	X							X		
12/9/15	9:44	NASA-3A		Groundwater	3	VOA	1	X									X		

INVOICE TO:
PO#
QUOTE#

SUSPECTED CONSTITUENTS
SAMPLE RETENTION TIME
PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
Brian Reddig	Brian Reddig/ERT	12/9/15 1245PM		CCL
	CCL	12/9/15 1650PM		

RECEIVED AT LAB BY: CJS DATE/TIME: 12/9/15 1650 CONDITIONS/COMMENTS: 2.0°C

SHIPPED BY: ☐ FED EX ☐ UPS ☑ OTHER CCL AIR BILL #

Orion Park Plume Groundwater Results

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

05 October 2015

CLS Work Order #: CYI1201

COC #:

Brian Reddig
Earth Resource Technologies c/o NASA-Ames

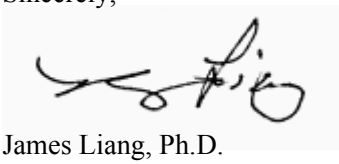
Bldg T20G-4, Room 135
Moffet Field, CA 94053-1000

Project Name: AOI 17 Growndwater Sampling

Enclosed are the results of analyses for samples received by the laboratory on 09/28/15 16:50. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed below as well as under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

10/05/15 10:47

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Growndwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1201** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
15A06A (CYI1201-01) Water Sampled: 09/26/15 07:30 Received: 09/28/15 16:50										
Surrogate: 1,2-Dichloroethane-d4	*91 %*		*65-135*	µg/L		*CY06718*	09/29/15	*09/29/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*110 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	*93 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**1.5**	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/05/15 10:47

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Growndwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1201** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
15A06A (CYI1201-01) Water Sampled: 09/26/15 07:30 Received: 09/28/15 16:50										
Trichloroethene	**1.2**	0.11	0.50	µg/L	1	CY06718	"	09/29/15	EPA 624	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
TB092615 (CYI1201-02) Water Sampled: 09/26/15 12:52 Received: 09/28/15 16:50										
Surrogate: 1,2-Dichloroethane-d4	*92 %*		*65-135*	µg/L		*CY06718*	09/29/15	*09/29/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*108 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*91 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/05/15 10:47

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Growndwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1201** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB092615 (CYI1201-02) Water Sampled: 09/26/15 12:52 Received: 09/28/15 16:50										
Ethylbenzene	ND	0.090	0.30	µg/L	1	CY06718	"	09/29/15	EPA 624	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	ND	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/05/15 10:47

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Growndwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1201** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06718 - EPA 5030 Water MS											
Blank (CY06718-BLK1)					Prepared & Analyzed: 09/29/15						
Surrogate: 1,2-Dichloroethane-d4	*8.77*			*µg/L*	*10.0*		*88*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*11.2*			*"*	*10.0*		*112*	*73-125*			
Surrogate: Toluene-d8	*9.34*			*"*	*10.0*		*93*	*72-125*			
1,1,1-Trichloroethane	ND	0.18	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Benzene	ND	0.057	0.30	"							
Bromodichloromethane	ND	0.061	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Chloroethane	ND	0.20	0.50	"							
Chloroform	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
Dibromochloromethane	ND	0.13	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
Methylene chloride	ND	0.24	0.50	"							
Naphthalene	ND		0.50	"							
Tetrachloroethene	ND	0.12	0.50	"							
Toluene	ND	0.10	0.30	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							

CALIFORNIA LABORATORY SERVICES

10/05/15 10:47

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Growndwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1201** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06718 - EPA 5030 Water MS											
Blank (CY06718-BLK1)					Prepared & Analyzed: 09/29/15						
Trichloroethene	ND	0.11	0.50	µg/L							
Trichlorofluoromethane	ND	0.20	0.50	"							
Vinyl chloride	ND	0.17	0.50	"							
Xylenes (total)	ND	0.35	0.50	"							
LCS (CY06718-BS1)					Prepared & Analyzed: 09/29/15						
Surrogate: 1,2-Dichloroethane-d4	*9.01*			*µg/L*	*10.0*		*90*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*9.32*			*"*	*10.0*		*93*	*73-125*			
Surrogate: Toluene-d8	*9.84*			*"*	*10.0*		*98*	*72-125*			
1,1,1-Trichloroethane	20.9	0.18	0.50	"	20.0		104	52-162			
1,1,2,2-Tetrachloroethane	17.8	0.13	0.50	"	20.0		89	46-148			
1,1,2-Trichloroethane	20.4	0.098	0.50	"	20.0		102	52-150			
1,1-Dichloroethane	18.4	0.12	0.50	"	20.0		92	59-155			
1,1-Dichloroethene	17.5	0.092	0.50	"	20.0		88	5-234			
1,2-Dichlorobenzene	17.7	0.042	0.30	"	20.0		88	18-190			
1,2-Dichloroethane	18.8	0.054	0.50	"	20.0		94	49-155			
1,2-Dichloropropane	19.4	0.057	0.50	"	20.0		97	5-210			
1,3-Dichlorobenzene	16.6	0.081	0.30	"	20.0		83	59-156			
1,4-Dichlorobenzene	18.1	0.061	0.30	"	20.0		91	18-190			
Benzene	20.0	0.057	0.30	"	20.0		100	37-151			
Bromodichloromethane	19.4	0.061	0.50	"	20.0		97	35-155			
Bromoform	22.2	0.16	0.50	"	20.0		111	45-169			
Bromomethane	19.3	0.20	0.50	"	20.0		96	10-242			
Carbon tetrachloride	20.8	0.092	0.50	"	20.0		104	70-140			
Chlorobenzene	18.5	0.11	0.30	"	20.0		93	37-160			
Chloroethane	17.7	0.20	0.50	"	20.0		88	14-230			
Chloroform	18.6	0.13	0.50	"	20.0		93	51-138			
Chloromethane	21.0	0.29	0.50	"	20.0		105	10-273			
cis-1,3-Dichloropropene	19.5	0.097	0.50	"	20.0		98	5-227			
Dibromochloromethane	21.7	0.13	0.50	"	20.0		109	53-149			
Dichlorodifluoromethane (Freon 12)	17.9	0.37	0.50	"	20.0		90	50-150			
Ethylbenzene	18.8	0.090	0.30	"	20.0		94	37-162			
Methylene chloride	19.0	0.24	0.50	"	20.0		95	5-221			
Tetrachloroethene	23.4	0.12	0.50	"	20.0		117	64-148			
Toluene	20.9	0.10	0.30	"	20.0		105	47-150			
trans-1,2-Dichloroethene	19.3	0.13	0.50	"	20.0		97	54-156			

CALIFORNIA LABORATORY SERVICES

10/05/15 10:47

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Growndwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1201** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06718 - EPA 5030 Water MS											
LCS (CY06718-BS1)					Prepared & Analyzed: 09/29/15						
trans-1,3-Dichloropropene	19.7	0.12	0.50	µg/L	20.0		99	17-183			
Trichloroethene	22.0	0.11	0.50	"	20.0		110	71-157			
Trichlorofluoromethane	20.0	0.20	0.50	"	20.0		100	47-181			
Vinyl chloride	19.1	0.17	0.50	"	20.0		95	10-251			
LCS Dup (CY06718-BSD1)					Prepared & Analyzed: 09/29/15						
Surrogate: 1,2-Dichloroethane-d4	*8.87*			*µg/L*	*10.0*		*89*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*10.3*			*"*	*10.0*		*103*	*73-125*			
Surrogate: Toluene-d8	*9.95*			*"*	*10.0*		*100*	*72-125*			
1,1,1-Trichloroethane	20.6	0.18	0.50	"	20.0		103	52-162	1	30	
1,1,2,2-Tetrachloroethane	16.9	0.13	0.50	"	20.0		85	46-148	5	30	
1,1,2-Trichloroethane	20.5	0.098	0.50	"	20.0		103	52-150	0.7	30	
1,1-Dichloroethane	18.2	0.12	0.50	"	20.0		91	59-155	1	30	
1,1-Dichloroethene	17.7	0.092	0.50	"	20.0		89	5-234	1	30	
1,2-Dichlorobenzene	17.6	0.042	0.30	"	20.0		88	18-190	0.3	30	
1,2-Dichloroethane	17.9	0.054	0.50	"	20.0		90	49-155	5	30	
1,2-Dichloropropane	19.8	0.057	0.50	"	20.0		99	5-210	2	30	
1,3-Dichlorobenzene	16.4	0.081	0.30	"	20.0		82	59-156	1	30	
1,4-Dichlorobenzene	18.1	0.061	0.30	"	20.0		90	18-190	0.3	30	
Benzene	20.5	0.057	0.30	"	20.0		103	37-151	3	30	
Bromodichloromethane	19.6	0.061	0.50	"	20.0		98	35-155	1	30	
Bromoform	21.6	0.16	0.50	"	20.0		108	45-169	2	30	
Bromomethane	19.6	0.20	0.50	"	20.0		98	10-242	2	30	
Carbon tetrachloride	20.5	0.092	0.50	"	20.0		103	70-140	1	30	
Chlorobenzene	18.9	0.11	0.30	"	20.0		94	37-160	2	30	
Chloroethane	16.8	0.20	0.50	"	20.0		84	14-230	6	30	
Chloroform	18.2	0.13	0.50	"	20.0		91	51-138	2	30	
Chloromethane	21.5	0.29	0.50	"	20.0		107	10-273	2	30	
cis-1,3-Dichloropropene	19.9	0.097	0.50	"	20.0		99	5-227	2	30	
Dibromochloromethane	21.8	0.13	0.50	"	20.0		109	53-149	0.2	30	
Dichlorodifluoromethane (Freon 12)	15.4	0.37	0.50	"	20.0		77	50-150	15	30	
Ethylbenzene	19.0	0.090	0.30	"	20.0		95	37-162	1	30	
Methylene chloride	18.6	0.24	0.50	"	20.0		93	5-221	2	30	
Tetrachloroethene	24.8	0.12	0.50	"	20.0		124	64-148	6	30	
Toluene	21.8	0.10	0.30	"	20.0		109	47-150	4	30	
trans-1,2-Dichloroethene	19.1	0.13	0.50	"	20.0		95	54-156	1	30	

CALIFORNIA LABORATORY SERVICES

10/05/15 10:47

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Growndwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1201** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06718 - EPA 5030 Water MS											
LCS Dup (CY06718-BSD1)					Prepared & Analyzed: 09/29/15						
trans-1,3-Dichloropropene	19.9	0.12	0.50	µg/L	20.0		100	17-183	1	30	
Trichloroethene	23.2	0.11	0.50	"	20.0		116	71-157	5	30	
Trichlorofluoromethane	19.2	0.20	0.50	"	20.0		96	47-181	4	30	
Vinyl chloride	17.9	0.17	0.50	"	20.0		89	10-251	6	30	

CALIFORNIA LABORATORY SERVICES

10/05/15 10:47

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Growndwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1201** COC #:

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES

10/05/15 10:47

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Growndwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1201** COC #:

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. CYI1201 (1 of)

Report To:

Name and Address: Earth Resources Technology, Inc.
NASA Ames Research Center
Moffett Field, CA
Project Manager: Brian Reddig (650) 604-1315
Project Name: AOI 17 Annual Groundwater Sampling
Sampled By: Brian Reddig
Job Description: AOI 17 Annual Groundwater Sampling
Site Location: AOI 17 – Air Sparge

Client Job Number: 3602-730

Destination Laboratory:
☑ CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
☐ OTHER

ANALYSIS REQUESTED: VOCs (EPA 624)

GEOTRACKER
EDF REPORT ☐ YES ☐ NO
GLOBAL ID.

FIELD CONDITIONS:
COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	VOCs (EPA 624)	TURNAROUND TIME IN DAYS 1	2	5	10	SPECIAL INSTRUCTIONS
9/26/15	7:30	15A06A		Groundwater	3	VOA	1	X			X		
9/26/15	12:52	TB092615		Groundwater	3	VOA	1	X			X		

INVOICE TO:
PO#
QUOTE#

SUSPECTED CONSTITUENTS | SAMPLE RETENTION TIME | PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Brian Reddig/ERT	9/28/15 1300		CLS
	CLS	9/28/15 1650		

RECEIVED AT LAB BY: DATE/TIME: 9/28/15 1650 CONDITIONS/COMMENTS: (90)

SHIPPED BY: ☐ FED EX ☐ UPS ☑ OTHER CU AIR BILL #

CA DOHS ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

07 October 2015

CLS Work Order #: CYI1299

COC #:

Brian Reddig
Earth Resource Technologies c/o NASA-Ames

Bldg T20G-4, Room 135
Moffet Field, CA 94053-1000

Project Name: AOI 17 Annual Groundwater Sampling

Enclosed are the results of analyses for samples received by the laboratory on 09/30/15 15:30. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed below as well as under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-AS1 (CYI1299-01) Water Sampled: 09/29/15 08:25 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*108 %*		*65-135*	µg/L		*CY06822*	10/01/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*104 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	*96 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**2.2**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-AS1 (CYI1299-01) Water Sampled: 09/29/15 08:25 Received: 09/30/15 15:30										
Trichloroethene	**11**	0.11	0.50	µg/L	1	CY06822	"	10/02/15	EPA 624	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
MW-AS3 (CYI1299-02) Water Sampled: 09/29/15 08:39 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*106 %*		*65-135*	µg/L		*CY06822*	10/01/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*103 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*96 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**15**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-AS3 (CYI1299-02) Water Sampled: 09/29/15 08:39 Received: 09/30/15 15:30										
Ethylbenzene	ND	0.090	0.30	µg/L	1	CY06822	"	10/02/15	EPA 624	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**42**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
MW-AS13 (CYI1299-03) Water Sampled: 09/29/15 08:58 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*109 %*		*65-135*	µg/L		*CY06822*	10/01/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*102 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*101 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-AS13 (CYI1299-03) Water Sampled: 09/29/15 08:58 Received: 09/30/15 15:30										
Chloromethane	ND	0.29	0.50	µg/L	1	CY06822	"	10/02/15	EPA 624	
cis-1,2-Dichloroethene	**15**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**72**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
PRB-29 (CYI1299-04) Water Sampled: 09/29/15 09:15 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*87 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*88 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*105 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PRB-29 (CYI1299-04) Water Sampled: 09/29/15 09:15 Received: 09/30/15 15:30										
Bromoform	ND	0.16	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**13**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**0.87**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**39**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
PRB-30 (CYI1299-05) Water Sampled: 09/29/15 09:30 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*86 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*88 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*103 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PRB-30 (CYI1299-05) Water Sampled: 09/29/15 09:30 Received: 09/30/15 15:30										
1,2-Dichloropropane	ND	0.057	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**48**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**0.61**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**130**	0.54	2.5	"	5	"	"	10/06/15	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	10/02/15	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PRB-31 (CYI1299-06) Water Sampled: 09/29/15 09:43 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*93 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*90 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	*104 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**24**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**0.83**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PRB-31 (CYI1299-06) Water Sampled: 09/29/15 09:43 Received: 09/30/15 15:30										
Trichloroethene	**73**	0.11	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
15B03A (CYI1299-07) Water Sampled: 09/29/15 10:03 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*81 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*101 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*104 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**12**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
15B03A (CYI1299-07) Water Sampled: 09/29/15 10:03 Received: 09/30/15 15:30										
Ethylbenzene	ND	0.090	0.30	µg/L	1	CY06829	"	10/02/15	EPA 624	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**0.51**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**56**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
15B02A (CYI1299-08) Water Sampled: 09/29/15 10:19 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*89 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*89 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*105 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
15B02A (CYI1299-08) Water Sampled: 09/29/15 10:19 Received: 09/30/15 15:30										
Chloromethane	ND	0.29	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
cis-1,2-Dichloroethene	**6.7**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**0.40**	0.13	0.50	"	1	"	"	"	"	J
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**68**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
15B06A (CYI1299-09) Water Sampled: 09/29/15 10:38 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*88 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*90 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*103 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
15B06A (CYI1299-09) Water Sampled: 09/29/15 10:38 Received: 09/30/15 15:30										
Bromoform	ND	0.16	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**13**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**1.5**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**100**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
10Q07A (CYI1299-10) Water Sampled: 09/29/15 10:55 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*85 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*88 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*104 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
10Q07A (CYI1299-10) Water Sampled: 09/29/15 10:55 Received: 09/30/15 15:30										
1,2-Dichloropropane	ND	0.057	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**15**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**1.1**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**22**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-AS11 (CYI1299-11) Water Sampled: 09/29/15 13:04 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*86 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*91 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	*108 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**11**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**0.43**	0.13	0.50	"	1	"	"	"	"	J
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-AS11 (CYI1299-11) Water Sampled: 09/29/15 13:04 Received: 09/30/15 15:30										
Trichloroethene	**51**	0.11	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
PRB-25 (CYI1299-12) Water Sampled: 09/29/15 13:12 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*92 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*88 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*103 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	**0.52**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**38**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PRB-25 (CYI1299-12) Water Sampled: 09/29/15 13:12 Received: 09/30/15 15:30										
Ethylbenzene	ND	0.090	0.30	µg/L	1	CY06829	"	10/02/15	EPA 624	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**2.9**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**28**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	**0.78**	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
MW-AS4 (CYI1299-13) Water Sampled: 09/29/15 13:26 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*87 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*92 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*101 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	**0.43**	0.092	0.50	"	1	"	"	"	"	J
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-AS4 (CYI1299-13) Water Sampled: 09/29/15 13:26 Received: 09/30/15 15:30										
Chloromethane	ND	0.29	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
cis-1,2-Dichloroethene	**69**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**3.9**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**120**	0.54	2.5	"	5	"	"	10/06/15	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	10/02/15	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
MW-AS8 (CYI1299-14) Water Sampled: 09/29/15 13:37 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*88 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*88 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*103 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-AS8 (CYI1299-14) Water Sampled: 09/29/15 13:37 Received: 09/30/15 15:30										
Bromoform	ND	0.16	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**47**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**3.4**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**180**	0.54	2.5	"	5	"	"	10/06/15	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	10/02/15	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
MW-AS6 (CYI1299-15) Water Sampled: 09/29/15 13:49 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*84 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*91 %*		*73-125*	"		*"*	"	*"*	*"*	
Surrogate: Toluene-d8	*105 %*		*72-125*	"		*"*	"	*"*	*"*	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-AS6 (CYI1299-15) Water Sampled: 09/29/15 13:49 Received: 09/30/15 15:30										
1,2-Dichloropropane	ND	0.057	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**33**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**1.6**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	**88**	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
12L01A (CYI1299-16) Water Sampled: 09/30/15 08:10 Received: 09/30/15 15:30										
Surrogate: 1,2-Dichloroethane-d4	*86 %*		*65-135*	µg/L		*CY06829*	10/02/15	*10/02/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*92 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	*102 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroetha ne (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**5.0**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	**0.72**	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
12L01A (CYI1299-16) Water Sampled: 09/30/15 08:10 Received: 09/30/15 15:30										
Trichloroethene	**32**	0.11	0.50	µg/L	1	CY06829	"	10/02/15	EPA 624	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06822 - EPA 5030 Water MS											
Blank (CY06822-BLK1)					Prepared & Analyzed: 10/01/15						
Surrogate: 1,2-Dichloroethane-d4	*11.7*			*µg/L*	*10.0*		*117*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*11.0*			*"*	*10.0*		*110*	*73-125*			
Surrogate: Toluene-d8	*9.41*			*"*	*10.0*		*94*	*72-125*			
1,1,1-Trichloroethane	ND	0.18	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Benzene	ND	0.057	0.30	"							
Bromodichloromethane	ND	0.061	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Chloroethane	ND	0.20	0.50	"							
Chloroform	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
Dibromochloromethane	ND	0.13	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
Methylene chloride	ND	0.24	0.50	"							
Tetrachloroethene	ND	0.12	0.50	"							
Toluene	ND	0.10	0.30	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							
Trichloroethene	ND	0.11	0.50	"							

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06822 - EPA 5030 Water MS											
Blank (CY06822-BLK1)					Prepared & Analyzed: 10/01/15						
Trichlorofluoromethane	ND	0.20	0.50	µg/L							
Vinyl chloride	ND	0.17	0.50	"							
Xylenes (total)	ND	0.35	0.50	"							
LCS (CY06822-BS1)					Prepared & Analyzed: 10/01/15						
Surrogate: 1,2-Dichloroethane-d4	*9.14*			*µg/L*	*10.0*		*91*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*8.50*			*"*	*10.0*		*85*	*73-125*			
Surrogate: Toluene-d8	*10.2*			*"*	*10.0*		*102*	*72-125*			
1,1,1-Trichloroethane	23.6	0.18	0.50	"	20.0		118	52-162			
1,1,2,2-Tetrachloroethane	16.3	0.13	0.50	"	20.0		82	46-148			
1,1,2-Trichloroethane	21.2	0.098	0.50	"	20.0		106	52-150			
1,1-Dichloroethane	19.1	0.12	0.50	"	20.0		96	59-155			
1,1-Dichloroethene	19.3	0.092	0.50	"	20.0		96	5-234			
1,2-Dichlorobenzene	17.7	0.042	0.30	"	20.0		88	18-190			
1,2-Dichloroethane	20.0	0.054	0.50	"	20.0		100	49-155			
1,2-Dichloropropane	20.2	0.057	0.50	"	20.0		101	5-210			
1,3-Dichlorobenzene	16.4	0.081	0.30	"	20.0		82	59-156			
1,4-Dichlorobenzene	18.2	0.061	0.30	"	20.0		91	18-190			
Benzene	21.3	0.057	0.30	"	20.0		106	37-151			
Bromodichloromethane	21.7	0.061	0.50	"	20.0		108	35-155			
Bromoform	21.5	0.16	0.50	"	20.0		108	45-169			
Bromomethane	22.7	0.20	0.50	"	20.0		114	10-242			
Carbon tetrachloride	23.2	0.092	0.50	"	20.0		116	70-140			
Chlorobenzene	19.4	0.11	0.30	"	20.0		97	37-160			
Chloroethane	21.4	0.20	0.50	"	20.0		107	14-230			
Chloroform	20.4	0.13	0.50	"	20.0		102	51-138			
Chloromethane	19.1	0.29	0.50	"	20.0		95	10-273			
cis-1,3-Dichloropropene	19.8	0.097	0.50	"	20.0		99	5-227			
Dibromochloromethane	23.5	0.13	0.50	"	20.0		117	53-149			
Dichlorodifluoromethane (Freon 12)	19.3	0.37	0.50	"	20.0		96	50-150			
Ethylbenzene	19.8	0.090	0.30	"	20.0		99	37-162			
Methylene chloride	21.0	0.24	0.50	"	20.0		105	5-221			
Tetrachloroethene	25.1	0.12	0.50	"	20.0		125	64-148			
Toluene	21.9	0.10	0.30	"	20.0		109	47-150			
trans-1,2-Dichloroethene	20.2	0.13	0.50	"	20.0		101	54-156			
trans-1,3-Dichloropropene	20.2	0.12	0.50	"	20.0		101	17-183			

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06822 - EPA 5030 Water MS											
LCS (CY06822-BS1)					Prepared & Analyzed: 10/01/15						
Trichloroethene	23.7	0.11	0.50	µg/L	20.0		119	71-157			
Trichlorofluoromethane	24.5	0.20	0.50	"	20.0		122	47-181			
Vinyl chloride	20.8	0.17	0.50	"	20.0		104	10-251			
LCS Dup (CY06822-BSD1)					Prepared & Analyzed: 10/01/15						
Surrogate: 1,2-Dichloroethane-d4	*10.6*			*µg/L*	*10.0*		*106*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*9.60*			*"*	*10.0*		*96*	*73-125*			
Surrogate: Toluene-d8	*9.98*			*"*	*10.0*		*100*	*72-125*			
1,1,1-Trichloroethane	26.7	0.18	0.50	"	20.0		134	52-162	12	30	
1,1,2,2-Tetrachloroethane	16.9	0.13	0.50	"	20.0		84	46-148	3	30	
1,1,2-Trichloroethane	21.6	0.098	0.50	"	20.0		108	52-150	2	30	
1,1-Dichloroethane	22.2	0.12	0.50	"	20.0		111	59-155	15	30	
1,1-Dichloroethene	22.1	0.092	0.50	"	20.0		110	5-234	14	30	
1,2-Dichlorobenzene	17.5	0.042	0.30	"	20.0		88	18-190	0.6	30	
1,2-Dichloroethane	23.1	0.054	0.50	"	20.0		116	49-155	15	30	
1,2-Dichloropropane	20.4	0.057	0.50	"	20.0		102	5-210	1	30	
1,3-Dichlorobenzene	16.7	0.081	0.30	"	20.0		84	59-156	2	30	
1,4-Dichlorobenzene	18.2	0.061	0.30	"	20.0		91	18-190	0.05	30	
Benzene	21.8	0.057	0.30	"	20.0		109	37-151	2	30	
Bromodichloromethane	20.9	0.061	0.50	"	20.0		104	35-155	4	30	
Bromoform	21.6	0.16	0.50	"	20.0		108	45-169	0.4	30	
Bromomethane	25.8	0.20	0.50	"	20.0		129	10-242	13	30	
Carbon tetrachloride	26.7	0.092	0.50	"	20.0		133	70-140	14	30	
Chlorobenzene	19.3	0.11	0.30	"	20.0		96	37-160	0.8	30	
Chloroethane	22.5	0.20	0.50	"	20.0		113	14-230	5	30	
Chloroform	23.3	0.13	0.50	"	20.0		116	51-138	13	30	
Chloromethane	20.9	0.29	0.50	"	20.0		105	10-273	9	30	
cis-1,3-Dichloropropene	20.0	0.097	0.50	"	20.0		100	5-227	0.9	30	
Dibromochloromethane	23.9	0.13	0.50	"	20.0		119	53-149	2	30	
Dichlorodifluoromethane (Freon 12)	20.3	0.37	0.50	"	20.0		101	50-150	5	30	
Ethylbenzene	19.3	0.090	0.30	"	20.0		97	37-162	2	30	
Methylene chloride	23.6	0.24	0.50	"	20.0		118	5-221	12	30	
Tetrachloroethene	25.0	0.12	0.50	"	20.0		125	64-148	0.3	30	
Toluene	22.0	0.10	0.30	"	20.0		110	47-150	0.8	30	
trans-1,2-Dichloroethene	23.1	0.13	0.50	"	20.0		116	54-156	14	30	
trans-1,3-Dichloropropene	20.3	0.12	0.50	"	20.0		102	17-183	0.5	30	

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06822 - EPA 5030 Water MS											
LCS Dup (CY06822-BSD1)					Prepared & Analyzed: 10/01/15						
Trichloroethene	24.1	0.11	0.50	µg/L	20.0		120	71-157	2	30	
Trichlorofluoromethane	26.5	0.20	0.50	"	20.0		132	47-181	8	30	
Vinyl chloride	23.7	0.17	0.50	"	20.0		119	10-251	13	30	
Batch CY06829 - EPA 5030 Water MS											
Blank (CY06829-BLK1)					Prepared & Analyzed: 10/02/15						
Surrogate: 1,2-Dichloroethane-d4	*9.09*			*µg/L*	*10.0*		*91*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*8.85*			*"*	*10.0*		*88*	*73-125*			
Surrogate: Toluene-d8	*10.2*			*"*	*10.0*		*102*	*72-125*			
1,1,1-Trichloroethane	ND	0.18	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
1,2-Dibromoethane (EDB)	ND		0.50	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Benzene	ND	0.057	0.30	"							
Bromodichloromethane	ND	0.061	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Chloroethane	ND	0.20	0.50	"							
Chloroform	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
Dibromochloromethane	ND	0.13	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06829 - EPA 5030 Water MS											
Blank (CY06829-BLK1)					Prepared & Analyzed: 10/02/15						
Di-isopropyl ether	ND		0.50	µg/L							
Ethyl tert-butyl ether	ND		0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
Methyl tert-butyl ether	ND		0.50	"							
Methylene chloride	ND	0.24	0.50	"							
tert-Amyl methyl ether	ND		0.50	"							
tert-Butyl alcohol	ND		5.0	"							
Tetrachloroethene	ND	0.12	0.50	"							
Toluene	ND	0.10	0.30	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							
Trichloroethene	ND	0.11	0.50	"							
Trichlorofluoromethane	ND	0.20	0.50	"							
Vinyl chloride	ND	0.17	0.50	"							
Xylenes (total)	ND	0.35	0.50	"							
LCS (CY06829-BS1)					Prepared & Analyzed: 10/02/15						
Surrogate: 1,2-Dichloroethane-d4	*9.73*			*µg/L*	*10.0*		*97*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*10.0*			*"*	*10.0*		*100*	*73-125*			
Surrogate: Toluene-d8	*10.3*			*"*	*10.0*		*103*	*72-125*			
1,1,1-Trichloroethane	23.7	0.18	0.50	"	20.0		119	52-162			
1,1,2,2-Tetrachloroethane	17.9	0.13	0.50	"	20.0		90	46-148			
1,1,2-Trichloroethane	20.0	0.098	0.50	"	20.0		100	52-150			
1,1-Dichloroethane	26.0	0.12	0.50	"	20.0		130	59-155			
1,1-Dichloroethene	21.5	0.092	0.50	"	20.0		108	5-234			
1,2-Dichlorobenzene	18.8	0.042	0.30	"	20.0		94	18-190			
1,2-Dichloroethane	22.2	0.054	0.50	"	20.0		111	49-155			
1,2-Dichloropropane	21.6	0.057	0.50	"	20.0		108	5-210			
1,3-Dichlorobenzene	18.9	0.081	0.30	"	20.0		95	59-156			
1,4-Dichlorobenzene	18.4	0.061	0.30	"	20.0		92	18-190			
Benzene	21.4	0.057	0.30	"	20.0		107	37-151			
Bromodichloromethane	21.3	0.061	0.50	"	20.0		107	35-155			
Bromoform	20.3	0.16	0.50	"	20.0		102	45-169			
Bromomethane	20.9	0.20	0.50	"	20.0		105	10-242			
Carbon tetrachloride	25.7	0.092	0.50	"	20.0		128	70-140			
Chlorobenzene	17.5	0.11	0.30	"	20.0		88	37-160			

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06829 - EPA 5030 Water MS											
LCS (CY06829-BS1)					Prepared & Analyzed: 10/02/15						
Chloroethane	23.0	0.20	0.50	µg/L	20.0		115	14-230			
Chloroform	21.8	0.13	0.50	"	20.0		109	51-138			
Chloromethane	21.8	0.29	0.50	"	20.0		109	10-273			
cis-1,3-Dichloropropene	22.6	0.097	0.50	"	20.0		113	5-227			
Dibromochloromethane	20.7	0.13	0.50	"	20.0		104	53-149			
Dichlorodifluoromethane (Freon 12)	19.7	0.37	0.50	"	20.0		98	50-150			
Ethylbenzene	18.8	0.090	0.30	"	20.0		94	37-162			
Methylene chloride	23.8	0.24	0.50	"	20.0		119	5-221			
Tetrachloroethene	20.7	0.12	0.50	"	20.0		104	64-148			
Toluene	21.0	0.10	0.30	"	20.0		105	47-150			
trans-1,2-Dichloroethene	24.4	0.13	0.50	"	20.0		122	54-156			
trans-1,3-Dichloropropene	20.3	0.12	0.50	"	20.0		102	17-183			
Trichloroethene	20.1	0.11	0.50	"	20.0		101	71-157			
Trichlorofluoromethane	20.7	0.20	0.50	"	20.0		103	47-181			
Vinyl chloride	21.8	0.17	0.50	"	20.0		109	10-251			
LCS Dup (CY06829-BSD1)					Prepared & Analyzed: 10/02/15						
Surrogate: 1,2-Dichloroethane-d4	*9.79*			*µg/L*	*10.0*		*98*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*10.1*			*"*	*10.0*		*101*	*73-125*			
Surrogate: Toluene-d8	*11.0*			*"*	*10.0*		*110*	*72-125*			
1,1,1-Trichloroethane	26.6	0.18	0.50	"	20.0		133	52-162	11	30	
1,1,2,2-Tetrachloroethane	19.6	0.13	0.50	"	20.0		98	46-148	9	30	
1,1,2-Trichloroethane	23.2	0.098	0.50	"	20.0		116	52-150	15	30	
1,1-Dichloroethane	29.0	0.12	0.50	"	20.0		145	59-155	11	30	
1,1-Dichloroethene	26.8	0.092	0.50	"	20.0		134	5-234	22	30	
1,2-Dichlorobenzene	20.8	0.042	0.30	"	20.0		104	18-190	10	30	
1,2-Dichloroethane	24.5	0.054	0.50	"	20.0		123	49-155	10	30	
1,2-Dichloropropane	25.5	0.057	0.50	"	20.0		127	5-210	17	30	
1,3-Dichlorobenzene	21.4	0.081	0.30	"	20.0		107	59-156	12	30	
1,4-Dichlorobenzene	20.7	0.061	0.30	"	20.0		103	18-190	11	30	
Benzene	25.4	0.057	0.30	"	20.0		127	37-151	17	30	
Bromodichloromethane	25.2	0.061	0.50	"	20.0		126	35-155	17	30	
Bromoform	21.5	0.16	0.50	"	20.0		108	45-169	6	30	
Bromomethane	21.3	0.20	0.50	"	20.0		106	10-242	2	30	
Carbon tetrachloride	29.0	0.092	0.50	"	20.0		145	70-140	12	30	QC-4H
Chlorobenzene	19.0	0.11	0.30	"	20.0		95	37-160	8	30	

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY06829 - EPA 5030 Water MS											
LCS Dup (CY06829-BSD1)					Prepared & Analyzed: 10/02/15						
Chloroethane	23.5	0.20	0.50	µg/L	20.0		118	14-230	2	30	
Chloroform	24.0	0.13	0.50	"	20.0		120	51-138	10	30	
Chloromethane	24.8	0.29	0.50	"	20.0		124	10-273	13	30	
cis-1,3-Dichloropropene	27.2	0.097	0.50	"	20.0		136	5-227	18	30	
Dibromochloromethane	24.3	0.13	0.50	"	20.0		121	53-149	16	30	
Dichlorodifluoromethane (Freon 12)	20.7	0.37	0.50	"	20.0		103	50-150	5	30	
Ethylbenzene	20.3	0.090	0.30	"	20.0		101	37-162	8	30	
Methylene chloride	26.2	0.24	0.50	"	20.0		131	5-221	10	30	
Tetrachloroethene	24.5	0.12	0.50	"	20.0		123	64-148	17	30	
Toluene	25.2	0.10	0.30	"	20.0		126	47-150	18	30	
trans-1,2-Dichloroethene	27.1	0.13	0.50	"	20.0		136	54-156	11	30	
trans-1,3-Dichloropropene	23.4	0.12	0.50	"	20.0		117	17-183	14	30	
Trichloroethene	24.3	0.11	0.50	"	20.0		122	71-157	19	30	
Trichlorofluoromethane	22.4	0.20	0.50	"	20.0		112	47-181	8	30	
Vinyl chloride	25.9	0.17	0.50	"	20.0		129	10-251	17	30	

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

Notes and Definitions

QC-4H	The percent recovery of LCS or LCSD was above the upper control limit; however, all analytes in the associated sample were ND; therefore, a reanalysis was not performed.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. CYI1299-1 (1 of)

Report To:

Name and Address: Earth Resources Technology, Inc.
NASA Ames Research Center
Moffett Field, CA
Project Manager: Brian Reddig (650) 604-1315
Project Name: AOI 17 Annual Groundwater Sampling
Sampled By: Brian Reddig
Job Description: AOI 17 Annual Groundwater Sampling
Site Location: AOI 17 – Air Sparge

Client Job Number: 3602-730

Destination Laboratory:
☑ CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com
☐ OTHER

GEOTRACKER
EDF REPORT ☐ YES ☐ NO
GLOBAL ID.
FIELD CONDITIONS:
COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	VOCs (EPA 624)	TURNAROUND TIME IN DAYS 1	2	5	10	SPECIAL INSTRUCTIONS
9/29/15	8:25	MW-AS1		Groundwater	3	VOA	1	X			X		
9/29/15	8:39	MW-AS3		Groundwater	3	VOA	1	X			X		
9/29/15	8:58	MW-AS13		Groundwater	3	VOA	1	X			X		
9/29/15	9:15	PRB-29		Groundwater	3	VOA	1	X			X		
9/29/15	9:30	PRB-30		Groundwater	3	VOA	1	X			X		
9/29/15	9:43	PRB-31		Groundwater	3	VOA	1	X			X		
9/29/15	10:03	15B03A		Groundwater	3	VOA	1	X			X		INVOICE TO:
9/29/15	10:19	15B02A		Groundwater	3	VOA	1	X			X		
9/29/15	10:38	15B06A		Groundwater	3	VOA	1	X			X		
9/29/15	10:55	10Q07A		Groundwater	3	VOA	1	X			X		
													PO#
													QUOTE#

SUSPECTED CONSTITUENTS | SAMPLE RETENTION TIME | PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
Brian Reddig	Brian Reddig/ERT	9/30/15 1200		CLS
	CLS	9/30/15 1530		

RECEIVED AT LAB BY: DATE/TIME: 9/30/15 1530 CONDITIONS/COMMENTS:

SHIPPED BY: ☑ FED EX ☐ UPS ☑ OTHER CLS (1.5) AIR BILL #

CALIFORNIA LABORATORY SERVICES

10/07/15 10:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: AOI 17 Annual Groundwater Sampling Project Number: 3602-730 Project Manager: Brian Reddig	**CLS Work Order #: CYI1299** COC #:

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. CYI1299-2 (1 of)

Report To:

Name and Address: Earth Resources Technology, Inc.

NASA Ames Research Center

Moffett Field, CA

Project Manager: Brian Reddig (650) 604-1315

Project Name: AOI 17 Annual Groundwater Sampling

Sampled By: Brian Reddig

Job Description: AOI 17 Annual Groundwater Sampling

Site Location: AOI 17 – Air Sparge

Client Job Number: 3602-730

Destination Laboratory

☑ CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

☐ OTHER

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT ☐ YES ☐ NO

GLOBAL ID.

FIELD CONDITIONS:

COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	VOCs (EPA 624)							TURNAROUND TIME IN DAYS 1	2	5	10	SPECIAL INSTRUCTIONS
9/29/15	1:04	MW-AS11		Groundwater	3	VOA	1	X									X		
9/29/15	1:12	PRB-25		Groundwater	3	VOA	1	X									X		
9/29/15	1:26	MW-AS4		Groundwater	3	VOA	1	X									X		
9/29/15	1:37	MW-AS8		Groundwater	3	VOA	1	X									X		
9/29/15	1:49	MW-AS6		Groundwater	3	VOA	1	X									X		
9/30/15	8:10	12L01A		Groundwater	3	VOA	1	X									X		
																			INVOICE TO:
																			PO#
																			QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
Brian Reddig	Brian Reddig/ERT	9/30/15 1200		CLS
	CLS	9/30/15 1530		

RECEIVED AT LAB BY: DM DATE/TIME: 9/30/15 1520 CONDITIONS/COMMENTS:

SHIPPED BY: ☐ FED EX ☐ UPS ☑ OTHER CLS (1.5) AIR BILL #

A2/B1 Aquifer Groundwater Results

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

10 June 2015

CLS Work Order #: CYF0206

COC #:

Brian Reddig
Earth Resource Technologies c/o NASA-Ames

Bldg T20G-4, Room 135
Moffet Field, CA 94053-1000

Project Name: Northern Navy A2 Wells

Enclosed are the results of analyses for samples received by the laboratory on 06/03/15 16:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed below as well as under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

06/10/15 10:37

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northern Navy A2 Wells Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYF0206** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
W08-11A2 (CYF0206-01) Water Sampled: 06/02/15 10:45 Received: 06/03/15 16:20										
Surrogate: 1,2-Dichloroethane-d4	*135 %*		*65-135*	µg/L		*CY03843*	06/04/15	*06/05/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*109 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	*87 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	**0.76**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	**0.64**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	**0.66**	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	**0.94**	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

06/10/15 10:37

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northern Navy A2 Wells Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYF0206** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
W08-11A2 (CYF0206-01) Water Sampled: 06/02/15 10:45 Received: 06/03/15 16:20										
Trichloroethene	**2.8**	0.11	0.50	µg/L	1	CY03843	"	06/05/15	EPA 624	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	
W08-02A2 (CYF0206-02) Water Sampled: 06/02/15 11:34 Received: 06/03/15 16:20										
Surrogate: 1,2-Dichloroethane-d4	*128 %*		*65-135*	µg/L		*CY03843*	06/04/15	*06/05/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*117 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	*87 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	**0.81**	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	**1.8**	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	**1.9**	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	**1.5**	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

06/10/15 10:37

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northern Navy A2 Wells Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYF0206** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
W08-02A2 (CYF0206-02) Water Sampled: 06/02/15 11:34 Received: 06/03/15 16:20										
Ethylbenzene	ND	0.090	0.30	µg/L	1	CY03843	"	06/05/15	EPA 624	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	
Trichloroethene	ND	0.11	0.50	"	1	"	"	"	"	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

06/10/15 10:37

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northern Navy A2 Wells Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYF0206** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY03843 - EPA 5030 Water MS											
Blank (CY03843-BLK1)					Prepared & Analyzed: 06/04/15						
Surrogate: 1,2-Dichloroethane-d4	*11.8*			*µg/L*	*10.0*		*118*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*11.0*			*"*	*10.0*		*110*	*73-125*			
Surrogate: Toluene-d8	*8.82*			*"*	*10.0*		*88*	*72-125*			
1,1,1-Trichloroethane	ND	0.18	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Benzene	ND	0.057	0.30	"							
Bromodichloromethane	ND	0.061	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Chloroethane	ND	0.20	0.50	"							
Chloroform	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
Dibromochloromethane	ND	0.13	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
Methylene chloride	ND	0.24	0.50	"							
Tetrachloroethene	ND	0.12	0.50	"							
Toluene	ND	0.10	0.30	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							
Trichloroethene	ND	0.11	0.50	"							

CALIFORNIA LABORATORY SERVICES

06/10/15 10:37

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northern Navy A2 Wells Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYF0206** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY03843 - EPA 5030 Water MS											
Blank (CY03843-BLK1)					Prepared & Analyzed: 06/04/15						
Trichlorofluoromethane	ND	0.20	0.50	µg/L							
Vinyl chloride	ND	0.17	0.50	"							
Xylenes (total)	ND	0.35	0.50	"							
LCS (CY03843-BS1)					Prepared & Analyzed: 06/04/15						
Surrogate: 1,2-Dichloroethane-d4	*8.59*			*µg/L*	*10.0*		*86*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*10.0*			*"*	*10.0*		*100*	*73-125*			
Surrogate: Toluene-d8	*11.1*			*"*	*10.0*		*111*	*72-125*			
1,1,1-Trichloroethane	19.3	0.18	0.50	"	20.0		97	52-162			
1,1,2,2-Tetrachloroethane	21.5	0.13	0.50	"	20.0		107	46-148			
1,1,2-Trichloroethane	22.3	0.098	0.50	"	20.0		111	52-150			
1,1-Dichloroethane	20.3	0.12	0.50	"	20.0		102	59-155			
1,1-Dichloroethene	17.9	0.092	0.50	"	20.0		89	5-234			
1,2-Dichlorobenzene	21.7	0.042	0.30	"	20.0		108	18-190			
1,2-Dichloroethane	22.4	0.054	0.50	"	20.0		112	49-155			
1,2-Dichloropropane	22.9	0.057	0.50	"	20.0		115	5-210			
1,3-Dichlorobenzene	21.2	0.081	0.30	"	20.0		106	59-156			
1,4-Dichlorobenzene	20.0	0.061	0.30	"	20.0		100	18-190			
Benzene	22.1	0.057	0.30	"	20.0		110	37-151			
Bromodichloromethane	21.2	0.061	0.50	"	20.0		106	35-155			
Bromoform	20.2	0.16	0.50	"	20.0		101	45-169			
Bromomethane	17.0	0.20	0.50	"	20.0		85	10-242			
Carbon tetrachloride	19.0	0.092	0.50	"	20.0		95	70-140			
Chlorobenzene	21.2	0.11	0.30	"	20.0		106	37-160			
Chloroethane	17.7	0.20	0.50	"	20.0		88	14-230			
Chloroform	19.1	0.13	0.50	"	20.0		95	51-138			
Chloromethane	30.7	0.29	0.50	"	20.0		153	10-273			
cis-1,3-Dichloropropene	22.2	0.097	0.50	"	20.0		111	5-227			
Dibromochloromethane	21.6	0.13	0.50	"	20.0		108	53-149			
Dichlorodifluoromethane (Freon 12)	35.8	0.37	0.50	"	20.0		179	50-150			QC-2H
Ethylbenzene	20.0	0.090	0.30	"	20.0		100	37-162			
Methylene chloride	21.7	0.24	0.50	"	20.0		109	5-221			
Tetrachloroethene	21.8	0.12	0.50	"	20.0		109	64-148			
Toluene	23.2	0.10	0.30	"	20.0		116	47-150			
trans-1,2-Dichloroethene	19.1	0.13	0.50	"	20.0		95	54-156			
trans-1,3-Dichloropropene	26.5	0.12	0.50	"	20.0		132	17-183			

CALIFORNIA LABORATORY SERVICES

06/10/15 10:37

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northern Navy A2 Wells Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYF0206** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY03843 - EPA 5030 Water MS											
LCS (CY03843-BS1)					Prepared & Analyzed: 06/04/15						
Trichloroethene	22.0	0.11	0.50	µg/L	20.0		110	71-157			
Trichlorofluoromethane	15.7	0.20	0.50	"	20.0		79	47-181			
Vinyl chloride	21.8	0.17	0.50	"	20.0		109	10-251			
LCS Dup (CY03843-BSD1)					Prepared & Analyzed: 06/04/15						
Surrogate: 1,2-Dichloroethane-d4	*8.45*			*µg/L*	*10.0*		*84*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*10.2*			*"*	*10.0*		*102*	*73-125*			
Surrogate: Toluene-d8	*10.7*			*"*	*10.0*		*107*	*72-125*			
1,1,1-Trichloroethane	19.2	0.18	0.50	"	20.0		96	52-162	0.4	30	
1,1,2,2-Tetrachloroethane	21.4	0.13	0.50	"	20.0		107	46-148	0.09	30	
1,1,2-Trichloroethane	21.4	0.098	0.50	"	20.0		107	52-150	4	30	
1,1-Dichloroethane	20.2	0.12	0.50	"	20.0		101	59-155	0.7	30	
1,1-Dichloroethene	17.9	0.092	0.50	"	20.0		90	5-234	0.2	30	
1,2-Dichlorobenzene	21.9	0.042	0.30	"	20.0		109	18-190	1	30	
1,2-Dichloroethane	21.7	0.054	0.50	"	20.0		109	49-155	3	30	
1,2-Dichloropropane	22.2	0.057	0.50	"	20.0		111	5-210	3	30	
1,3-Dichlorobenzene	21.2	0.081	0.30	"	20.0		106	59-156	0	30	
1,4-Dichlorobenzene	20.1	0.061	0.30	"	20.0		101	18-190	0.8	30	
Benzene	21.2	0.057	0.30	"	20.0		106	37-151	4	30	
Bromodichloromethane	20.5	0.061	0.50	"	20.0		103	35-155	3	30	
Bromoform	20.1	0.16	0.50	"	20.0		101	45-169	0.3	30	
Bromomethane	18.8	0.20	0.50	"	20.0		94	10-242	10	30	
Carbon tetrachloride	18.8	0.092	0.50	"	20.0		94	70-140	1	30	
Chlorobenzene	21.2	0.11	0.30	"	20.0		106	37-160	0.1	30	
Chloroethane	17.6	0.20	0.50	"	20.0		88	14-230	0.7	30	
Chloroform	18.9	0.13	0.50	"	20.0		94	51-138	1	30	
Chloromethane	29.9	0.29	0.50	"	20.0		150	10-273	3	30	
cis-1,3-Dichloropropene	21.6	0.097	0.50	"	20.0		108	5-227	3	30	
Dibromochloromethane	20.7	0.13	0.50	"	20.0		103	53-149	4	30	
Dichlorodifluoromethane (Freon 12)	34.5	0.37	0.50	"	20.0		173	50-150	4	30	QC-4H
Ethylbenzene	19.8	0.090	0.30	"	20.0		99	37-162	1	30	
Methylene chloride	21.4	0.24	0.50	"	20.0		107	5-221	1	30	
Tetrachloroethene	21.1	0.12	0.50	"	20.0		106	64-148	3	30	
Toluene	22.2	0.10	0.30	"	20.0		111	47-150	4	30	
trans-1,2-Dichloroethene	18.9	0.13	0.50	"	20.0		94	54-156	1	30	
trans-1,3-Dichloropropene	26.2	0.12	0.50	"	20.0		131	17-183	1	30	

CALIFORNIA LABORATORY SERVICES

06/10/15 10:37

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northern Navy A2 Wells Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYF0206** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY03843 - EPA 5030 Water MS											
LCS Dup (CY03843-BSD1)					Prepared & Analyzed: 06/04/15						
Trichloroethene	21.3	0.11	0.50	µg/L	20.0		106	71-157	3	30	
Trichlorofluoromethane	15.2	0.20	0.50	"	20.0		76	47-181	3	30	
Vinyl chloride	21.5	0.17	0.50	"	20.0		107	10-251	2	30	

CALIFORNIA LABORATORY SERVICES

06/10/15 10:37

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northern Navy A2 Wells Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYF0206** COC #:

Notes and Definitions

QC-4H	The percent recovery of LCS or LCSD was above the upper control limit; however, all analytes in the associated sample were ND; therefore, a reanalysis was not performed.
QC-2H	The recovery of one CCV was greater than the acceptance limit. However, all analytes in the associated samples were ND; therefore a reanalysis was not performed.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES

06/10/15 10:37

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northern Navy A2 Wells Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYF0206** COC #:

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. CYF0205 (1 of 1)

Report To:

Name and Address: Earth Resources Technology, Inc.
NASA Ames Research Center
Moffett Field, CA
Project Manager: Brian Reddig (650) 604-1315
Project Name: Northern Navy A2 Wells
Sampled By: Brian Reddig
Job Description: Northern Navy A2 Wells
Site Location: NASA RGRP

Client Job Number: 3602-750

Destination Laboratory:
☑ CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com
☐ OTHER

GEOTRACKER
EDF REPORT ☐ YES ☐ NO
GLOBAL ID.

FIELD CONDITIONS:
COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	VOCs (EPA 624)							TURNAROUND TIME IN DAYS 1	2	5	10	SPECIAL INSTRUCTIONS
6/2/15	10:45	W08-11A2		Groundwater	3	VOA	1	X									X		
6/2/15	11:34	W08-02A2		Groundwater	3	VOA	1	X									X		

INVOICE TO:
PO#
QUOTE#

SUSPECTED CONSTITUENTS
SAMPLE RETENTION TIME
PRESERVATIVES (1) HCL (2) HNO3 (3) = COLD (4)

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
Brian Reddig	Brian Reddig/ERT	6/3/15 1345		CLS
	CLS	6/3/15 1620		

RECEIVED AT LAB BY: DATE/TIME: 6/3/15 1620 CONDITIONS/COMMENTS: 1.5

SHIPPED BY: ☐ FED EX ☐ UPS ☑ OTHER CLS AIR BILL #

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

12 August 2015

CLS Work Order #: CYH0188

COC #:

Brian Reddig

Earth Resource Technologies c/o NASA-Ames

Bldg T20G-4, Room 135

Moffet Field, CA 94053-1000

Project Name: Northernmost A2 Aquifer

Enclosed are the results of analyses for samples received by the laboratory on 08/05/15 18:50. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed below as well as under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

08/12/15 13:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northernmost A2 Aquifer Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYH0188** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
85B1 (CYH0188-01) Water Sampled: 08/04/15 08:10 Received: 08/05/15 18:50										
Surrogate: 1,2-Dichloroethane-d4	*119 %*		*65-135*	µg/L		*CY05370*	08/06/15	*08/06/15*	*EPA 624*	
Surrogate: 4-Bromofluorobenzene	*109 %*		*73-125*	"		"	"	"	"	
Surrogate: Toluene-d8	*98 %*		*72-125*	"		"	"	"	"	
1,1,1-Trichloroethane	ND	0.18	0.50	"	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"	1	"	"	"	"	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"	1	"	"	"	"	
1,1,2-Trichloroethane	ND	0.098	0.50	"	1	"	"	"	"	
1,1-Dichloroethane	ND	0.12	0.50	"	1	"	"	"	"	
1,1-Dichloroethene	ND	0.092	0.50	"	1	"	"	"	"	
1,2-Dichlorobenzene	ND	0.042	0.30	"	1	"	"	"	"	
1,2-Dichloroethane	ND	0.054	0.50	"	1	"	"	"	"	
1,2-Dichloropropane	ND	0.057	0.50	"	1	"	"	"	"	
1,3-Dichlorobenzene	ND	0.081	0.30	"	1	"	"	"	"	
1,4-Dichlorobenzene	ND	0.061	0.30	"	1	"	"	"	"	
2-Chloroethylvinyl ether	ND	0.11	2.0	"	1	"	"	"	"	
Benzene	ND	0.057	0.30	"	1	"	"	"	"	
Bromodichloromethane	ND	0.061	0.50	"	1	"	"	"	"	
Bromoform	ND	0.16	0.50	"	1	"	"	"	"	
Bromomethane	ND	0.20	0.50	"	1	"	"	"	"	
Carbon tetrachloride	ND	0.092	0.50	"	1	"	"	"	"	
Chlorobenzene	ND	0.11	0.30	"	1	"	"	"	"	
Chloroethane	ND	0.20	0.50	"	1	"	"	"	"	
Chloroform	ND	0.13	0.50	"	1	"	"	"	"	
Chloromethane	ND	0.29	0.50	"	1	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.15	0.50	"	1	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.097	0.50	"	1	"	"	"	"	
Dibromochloromethane	ND	0.13	0.50	"	1	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"	1	"	"	"	"	
Ethylbenzene	ND	0.090	0.30	"	1	"	"	"	"	
Methylene chloride	ND	0.24	0.50	"	1	"	"	"	"	
Tetrachloroethene	ND	0.12	0.50	"	1	"	"	"	"	
Toluene	ND	0.10	0.30	"	1	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.13	0.50	"	1	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.12	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

08/12/15 13:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northernmost A2 Aquifer Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYH0188** COC #:

Purgeables by EPA Method 624

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
85B1 (CYH0188-01) Water Sampled: 08/04/15 08:10 Received: 08/05/15 18:50										
Trichloroethene	ND	0.11	0.50	µg/L	1	CY05370	"	08/06/15	EPA 624	
Trichlorofluoromethane	ND	0.20	0.50	"	1	"	"	"	"	
Vinyl chloride	ND	0.17	0.50	"	1	"	"	"	"	
Xylenes (total)	ND	0.35	0.50	"	1	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northernmost A2 Aquifer Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYH0188** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY05370 - EPA 5030 Water MS											
Blank (CY05370-BLK1)					Prepared & Analyzed: 08/06/15						
Surrogate: 1,2-Dichloroethane-d4	*10.6*			*µg/L*	*10.0*		*106*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*11.4*			*"*	*10.0*		*114*	*73-125*			
Surrogate: Toluene-d8	*9.72*			*"*	*10.0*		*97*	*72-125*			
1,1,1-Trichloroethane	ND	0.18	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.13	0.50	"							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.15	0.50	"							
1,1,2-Trichloroethane	ND	0.098	0.50	"							
1,1-Dichloroethane	ND	0.12	0.50	"							
1,1-Dichloroethene	ND	0.092	0.50	"							
1,2-Dichlorobenzene	ND	0.042	0.30	"							
1,2-Dichloroethane	ND	0.054	0.50	"							
1,2-Dichloropropane	ND	0.057	0.50	"							
1,3-Dichlorobenzene	ND	0.081	0.30	"							
1,4-Dichlorobenzene	ND	0.061	0.30	"							
2-Chloroethylvinyl ether	ND	0.11	2.0	"							
Benzene	ND	0.057	0.30	"							
Bromodichloromethane	ND	0.061	0.50	"							
Bromoform	ND	0.16	0.50	"							
Bromomethane	ND	0.20	0.50	"							
Carbon tetrachloride	ND	0.092	0.50	"							
Chlorobenzene	ND	0.11	0.30	"							
Chloroethane	ND	0.20	0.50	"							
Chloroform	ND	0.13	0.50	"							
Chloromethane	ND	0.29	0.50	"							
cis-1,2-Dichloroethene	ND	0.15	0.50	"							
cis-1,3-Dichloropropene	ND	0.097	0.50	"							
Dibromochloromethane	ND	0.13	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	0.37	0.50	"							
Ethylbenzene	ND	0.090	0.30	"							
Methylene chloride	ND	0.24	0.50	"							
Tetrachloroethene	ND	0.12	0.50	"							
Toluene	ND	0.10	0.30	"							
Total Trihalomethanes (THM)	ND		0.50	"							
trans-1,2-Dichloroethene	ND	0.13	0.50	"							
trans-1,3-Dichloropropene	ND	0.12	0.50	"							

CALIFORNIA LABORATORY SERVICES

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Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northernmost A2 Aquifer Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYH0188** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY05370 - EPA 5030 Water MS											
Blank (CY05370-BLK1)					Prepared & Analyzed: 08/06/15						
Trichloroethene	ND	0.11	0.50	µg/L							
Trichlorofluoromethane	ND	0.20	0.50	"							
Vinyl chloride	ND	0.17	0.50	"							
Xylenes (total)	ND	0.35	0.50	"							
LCS (CY05370-BS1)					Prepared & Analyzed: 08/06/15						
Surrogate: 1,2-Dichloroethane-d4	*9.64*			*µg/L*	*10.0*		*96*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*9.88*			*"*	*10.0*		*99*	*73-125*			
Surrogate: Toluene-d8	*10.2*			*"*	*10.0*		*102*	*72-125*			
1,1,1-Trichloroethane	19.6	0.18	0.50	"	20.0		98	52-162			
1,1,2,2-Tetrachloroethane	19.7	0.13	0.50	"	20.0		99	46-148			
1,1,2-Trichloroethane	20.3	0.098	0.50	"	20.0		102	52-150			
1,1-Dichloroethane	19.0	0.12	0.50	"	20.0		95	59-155			
1,1-Dichloroethene	17.6	0.092	0.50	"	20.0		88	5-234			
1,2-Dichlorobenzene	19.7	0.042	0.30	"	20.0		99	18-190			
1,2-Dichloroethane	18.7	0.054	0.50	"	20.0		94	49-155			
1,2-Dichloropropane	19.9	0.057	0.50	"	20.0		99	5-210			
1,3-Dichlorobenzene	20.4	0.081	0.30	"	20.0		102	59-156			
1,4-Dichlorobenzene	19.4	0.061	0.30	"	20.0		97	18-190			
Benzene	18.9	0.057	0.30	"	20.0		94	37-151			
Bromodichloromethane	20.5	0.061	0.50	"	20.0		102	35-155			
Bromoform	22.2	0.16	0.50	"	20.0		111	45-169			
Bromomethane	19.9	0.20	0.50	"	20.0		100	10-242			
Carbon tetrachloride	19.3	0.092	0.50	"	20.0		96	70-140			
Chlorobenzene	20.4	0.11	0.30	"	20.0		102	37-160			
Chloroethane	17.8	0.20	0.50	"	20.0		89	14-230			
Chloroform	18.6	0.13	0.50	"	20.0		93	51-138			
Chloromethane	21.7	0.29	0.50	"	20.0		109	10-273			
cis-1,3-Dichloropropene	21.4	0.097	0.50	"	20.0		107	5-227			
Dibromochloromethane	21.4	0.13	0.50	"	20.0		107	53-149			
Dichlorodifluoromethane (Freon 12)	25.5	0.37	0.50	"	20.0		128	50-150			
Ethylbenzene	20.6	0.090	0.30	"	20.0		103	37-162			
Methylene chloride	18.5	0.24	0.50	"	20.0		93	5-221			
Tetrachloroethene	20.9	0.12	0.50	"	20.0		104	64-148			
Toluene	19.7	0.10	0.30	"	20.0		98	47-150			
trans-1,2-Dichloroethene	17.1	0.13	0.50	"	20.0		86	54-156			

CALIFORNIA LABORATORY SERVICES

08/12/15 13:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northernmost A2 Aquifer Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYH0188** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY05370 - EPA 5030 Water MS											
LCS (CY05370-BS1)					Prepared & Analyzed: 08/06/15						
trans-1,3-Dichloropropene	22.8	0.12	0.50	µg/L	20.0		114	17-183			
Trichloroethene	20.2	0.11	0.50	"	20.0		101	71-157			
Trichlorofluoromethane	20.1	0.20	0.50	"	20.0		100	47-181			
Vinyl chloride	21.2	0.17	0.50	"	20.0		106	10-251			
LCS Dup (CY05370-BSD1)					Prepared & Analyzed: 08/06/15						
Surrogate: 1,2-Dichloroethane-d4	*9.76*			*µg/L*	*10.0*		*98*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*9.56*			*"*	*10.0*		*96*	*73-125*			
Surrogate: Toluene-d8	*10.0*			*"*	*10.0*		*100*	*72-125*			
1,1,1-Trichloroethane	19.8	0.18	0.50	"	20.0		99	52-162	1	30	
1,1,2,2-Tetrachloroethane	18.4	0.13	0.50	"	20.0		92	46-148	7	30	
1,1,2-Trichloroethane	20.0	0.098	0.50	"	20.0		100	52-150	2	30	
1,1-Dichloroethane	19.6	0.12	0.50	"	20.0		98	59-155	3	30	
1,1-Dichloroethene	18.0	0.092	0.50	"	20.0		90	5-234	2	30	
1,2-Dichlorobenzene	19.0	0.042	0.30	"	20.0		95	18-190	4	30	
1,2-Dichloroethane	19.0	0.054	0.50	"	20.0		95	49-155	1	30	
1,2-Dichloropropane	20.4	0.057	0.50	"	20.0		102	5-210	3	30	
1,3-Dichlorobenzene	19.8	0.081	0.30	"	20.0		99	59-156	3	30	
1,4-Dichlorobenzene	18.8	0.061	0.30	"	20.0		94	18-190	3	30	
Benzene	19.1	0.057	0.30	"	20.0		96	37-151	1	30	
Bromodichloromethane	20.9	0.061	0.50	"	20.0		105	35-155	2	30	
Bromoform	22.3	0.16	0.50	"	20.0		111	45-169	0.6	30	
Bromomethane	20.5	0.20	0.50	"	20.0		103	10-242	3	30	
Carbon tetrachloride	19.8	0.092	0.50	"	20.0		99	70-140	2	30	
Chlorobenzene	20.6	0.11	0.30	"	20.0		103	37-160	1	30	
Chloroethane	18.0	0.20	0.50	"	20.0		90	14-230	0.8	30	
Chloroform	19.2	0.13	0.50	"	20.0		96	51-138	3	30	
Chloromethane	21.4	0.29	0.50	"	20.0		107	10-273	1	30	
cis-1,3-Dichloropropene	21.5	0.097	0.50	"	20.0		108	5-227	0.7	30	
Dibromochloromethane	21.4	0.13	0.50	"	20.0		107	53-149	0.2	30	
Dichlorodifluoromethane (Freon 12)	25.4	0.37	0.50	"	20.0		127	50-150	0.5	30	
Ethylbenzene	21.0	0.090	0.30	"	20.0		105	37-162	2	30	
Methylene chloride	19.0	0.24	0.50	"	20.0		95	5-221	3	30	
Tetrachloroethene	20.8	0.12	0.50	"	20.0		104	64-148	0.3	30	
Toluene	20.0	0.10	0.30	"	20.0		100	47-150	1	30	
trans-1,2-Dichloroethene	17.7	0.13	0.50	"	20.0		89	54-156	4	30	

CALIFORNIA LABORATORY SERVICES

08/12/15 13:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northernmost A2 Aquifer Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYH0188** COC #:

Purgeables by EPA Method 624 - Quality Control

CLS Labs

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY05370 - EPA 5030 Water MS											
LCS Dup (CY05370-BSD1)					Prepared & Analyzed: 08/06/15						
trans-1,3-Dichloropropene	22.9	0.12	0.50	µg/L	20.0		114	17-183	0.3	30	
Trichloroethene	20.7	0.11	0.50	"	20.0		103	71-157	2	30	
Trichlorofluoromethane	20.3	0.20	0.50	"	20.0		101	47-181	0.8	30	
Vinyl chloride	21.6	0.17	0.50	"	20.0		108	10-251	2	30	

CALIFORNIA LABORATORY SERVICES

08/12/15 13:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northernmost A2 Aquifer Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYH0188** COC #:

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES

08/12/15 13:35

Earth Resource Technologies c/o NASA-Ames Bldg T20G-4, Room 135 Moffet Field CA, 94053-1000	Project: Northernmost A2 Aquifer Project Number: 3602-750 Project Manager: Brian Reddig	**CLS Work Order #: CYH0188** COC #:

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. CYH0188 (1 of)

Report To:

Name and Address: Earth Resources Technology, Inc.
NASA Ames Research Center
Moffett Field, CA
Project Manager: Brian Reddig (650) 604-1315
Project Name: Northernmost A2 Aquifer
Sampled By: Brian Reddig
Job Description: Northernmost A2 Aquifer – MEW Well
Site Location: NASA RGRP

Client Job Number: 3602-750

Destination Laboratory:
☑ CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com
☐ OTHER

ANALYSIS REQUESTED

GEOTRACKER
EDF REPORT ☐ YES ☐ NO
GLOBAL ID.

FIELD CONDITIONS:
COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	VOCs (EPA 624)								TURNAROUND TIME IN DAYS 1	2	5	10	SPECIAL INSTRUCTIONS
8/4/15	8:10	85B1		Groundwater	3	VOA	1	X										X		

INVOICE TO:
PO#
QUOTE#

SUSPECTED CONSTITUENTS
SAMPLE RETENTION TIME
PRESERVATIVES (1) HCL (3) = COLD (2) HNO3 (4)

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
Brian Reddig	Brian Reddig/ERT	8/5/15 1405H		CONRAD JR/CL
	OLS	8/5/15 1850H		

RECEIVED AT LAB BY: DATE/TIME: 8/5/15 1850 CONDITIONS/COMMENTS:

SHIPPED BY: ☐ FED EX ☐ UPS ☑ OTHER OLS (1.8) AIR BILL #