URS

March 7, 2014

Mr. Scott Miller
Remedial Project Manager
Superfund Remedial and Technical Services Branch
U.S. Environmental Protection Agency, Region 4
Atlanta Federal Center
61 Forsyth Street
Atlanta, Georgia 30303-8960

Subject: **2013 Annual Report**
OU-1 and OU-2 Agrico Site
Pensacola, Florida
EPA ID: FLD 98022 1857

Dear Mr. Miller:

URS Corporation (URS) on behalf of Phillips 66 (Phillips), successor to ConocoPhillips and Williams representing Agrico Chemical Company is submitting this 2013 Annual Report for the Agrico site in Pensacola, Florida. This report presents the results of O&M activities conducted during 2013 for the site. The sampling event and reporting as well as other activities are conducted in accordance with the U.S. Environmental Protection Agency (EPA) approved OU-1 and OU-2 Operation and Maintenance Plans (September 1996, November 1998, respectively). These plans have been modified and approved by EPA based on report recommendations or other correspondences as follows: Recommendations presented in the November 30, 2006 Evaluation of Long-Term Groundwater Monitoring Network Technical Memorandum Report and the subsequent January 22, 2007 EPA comment letter concurring with the listed recommendations. Additionally, as per your letter dated September 2, 2008, the semi-annual groundwater sampling was discontinued as of the May 2008 event. All OU-1 wells are now a part of the site-wide groundwater monitoring program. Also, EPA approved O&M recommendations (January 25, 2010) were implemented in 2010. URS also implemented in 2010 approved recommendations (February 2, 2010) related to Monitored Natural Attenuation and approved recommendations (September 20, 2010) as stated in the June 2010 Five-Year Review Report (2005-2010) Third Five-Year Review Report for Agrico Chemical Company site, regarding the Bayou Texar surface water sampling.

As requested, a copy of the report will be sent directly to the site document repository, the West Florida Regional Library, Genealogy Branch in Pensacola.

URS will be uploading the electronic data for 2013 to the EPA DART system as per the guidance memorandum from EPA Region 4's Superfund Division Director requiring that environmental sampling data be submitted to EPA in a Region 4 electronic format.

Should you have any questions or require additional information regarding this report, please contact Ms. Terry D. Vandell (Phillips) at (580) 767-6561 or Mr. John Carey (Agrico Chemical Company Representative) at (918) 573-8215.

Sincerely,

Jeffry R. Wagner

Jeffry R. Wagner, P.G., V.P.
Principal Hydrogeologist

JRW:lc

Enclosure: 1 CD

cc: Walsta Jean-Baptiste – FDEP, Hazardous Waste Cleanup Section, Tallahassee
Alex Webster– FDEP, Northwest District, Pensacola
John Carey– Agrico Chemical Company Representative
Terry Vandell-Bell – Phillips 66
Bill Nelson – West Florida Public Library, Genealogy Branch, Pensacola

R E P O R T

2013 ANNUAL REPORT

AGRICO SITE
PENSACOLA, FLORIDA
OPERABLE UNITS ONE (OU-1) AND TWO (OU-2)

EPA ID: FLD 980221857

Submitted to

US Environmental Protection Agency, Region 4
Atlanta, Georgia

Prepared for

Phillips 66
Ponca City, Oklahoma
and
Williams, Inc. on behalf of
Agrico Chemical Company
Tulsa, Oklahoma

March 7, 2014

URS

URS Corporation
1625 Summit Lake Drive
Tallahassee, Florida 32317
850.574.3197
12806318.00000

URS

Certification By
Florida Registered Professional Geologist

In accordance with Chapter 492, Florida Statutes, the geologic aspects of this *2013 Annual Report for the Agrico Chemical Site, Operable Unit One (OU-1) and Operable Unit Two (OU-2)* located in Pensacola, Florida has been prepared by or supervised by the undersigned registered Florida Professional Geologist. URS Corporation (URS) has prepared the geologic information presented in this Annual Report in a manner consistent with sound geologic practices and the customary level of care and skill exercised by members of the profession currently practicing in the same locality under similar circumstances.

Information developed and presented by others was used by URS in good faith as representative of the site conditions. The work performed by URS is in conformance with the current standards of practice.

JEFFRY R. WAGNER LICENSE No. 156 STATE OF FLORIDA PROFESSIONAL GEOLOGIST

Jeffry R. Wagner, P.G. V.P.
Registered Professional Geologist
Florida License No. 156

3/7/14
(Date)

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The activities being conducted for the Agrico Site in Pensacola, Florida are under the oversight of the U.S. Environmental Protection Agency (EPA), as outlined by the Consent Decrees (1994 and 1997) and the EPA Records of Decision (ROD) (1992 and 1994). The Site has been divided into two operable units (OU). The first operable unit (OU-1) addressed the cleanup of on-site source material. The second operable unit (OU-2) addresses groundwater under the Site and downgradient of the Site. In 1995, remedial actions began for OU-1. Impacted soils and all sludge materials were collected and treated by solidification/stabilization. Additional fluoride-impacted soils were excavated. These soils, as well as the treated soils and sludges, were stabilized by placing them into an engineered excavated unlined area above the water-table and covering them with a multi-layered cap designed to prevent rainfall infiltration from contacting the materials. By keeping the underlying soil dry, the soils remain stabilized. The OU-1 remedial actions were certified complete by EPA in April 1997. With the source area controlled, EPA addressed OU-2, the groundwater, by selecting a monitored natural attenuation (MNA) remedy. The selected remedy involves actions aimed at limiting exposure while natural attenuation processes remediate the groundwater. The remedy includes groundwater sampling, surface water sampling in Bayou Texar, an irrigation well survey, institutional controls, and an advisory program.

After extensive sampling of many constituents during the assessment phase (1990-1993), a risk evaluation was performed. The EPA selected seven constituents of concern (COC) for initial long-term groundwater and surface water monitoring. For OU-1, these COCs included lead, arsenic, and fluoride. These were soil COCs and since the soils were stabilized on-site, monitoring of these constituents in the groundwater provided for assessing the integrity of the OU-1 remedy over time. For OU-2, these constituents include arsenic, fluoride, combined radium 226 plus radium 228, chloride, sulfate, and nitrate plus nitrite. The groundwater performance standards established by each of the RODs for OU-1 and OU-2 are as follows:

- Total Lead — 0.015 milligrams per liter (mg/L)
- Total Arsenic — 0.050 mg/L
- Fluoride — 4.0 mg/L
- Radium 226 +228 — 5.0 pico Curies per liter (pCi/L)
- Chloride — 250 mg/L
- Sulfate — 250 mg/L
- Nitrate + nitrite — 10 mg/L (analysis of nitrite indicates results at all groundwater monitoring locations are less than detection limit and a higher performance standard is appropriate; nitrite analysis discontinued as per EPA approval, January 22, 2007)

Beginning in November 2005, changes were approved for the long-term monitoring network. In 2005, an upgradient groundwater monitoring well (PIP-D) was added to the network. In 2007, the OU-1 monitoring well network was merged with the OU-2 monitoring network to form the long-term site-wide network. Initially all constituents were monitored in the OU-1 wells. In 2007, nitrite was eliminated as a constituent since it was determined that the nitrogen detected was only nitrate. Also in 2007, surficial zone monitoring wells AC-5S, AC-24S, AC-26S, NWD-2S, and NWD-4S were changed from long-term monitoring to periodic monitoring. In 2009, periodic monitoring wells, AD-9D2, AC-24D, and AC-28D were changed to annual sampling locations. In 2010, arsenic and lead were discontinued from the list of analytes for the long-term network including monitoring wells located in OU-1. The exception was for AC-2S and AC-3S where arsenic remains as one of the sampling constituents. In 2010, the surface water long-term monitoring network changes included the deletion of the upstream monitoring of Carpenter's Creek (ACSW-BL). Other changes for 2010 included three additional monitoring stations in Bayou Texar. These stations included near-bottom surface water sampling for fluoride only.

The Site is currently in the long-term Operations and Maintenance (O&M) phase, with monitored natural attenuation as the selected groundwater remedy.

This 2013 Annual Report presents the results of groundwater activities conducted for both OU-1 and OU-2. The annual O&M tasks are as follows:

- Annual groundwater sampling for the defined COCs (fluoride, radium 226, radium 228, chloride, sulfate, and nitrate) for all the surficial and main producing zones long-term monitoring wells within OU-1 and OU-2. As per the EPA approved (February 5, 2010) recommendation from the *Evaluation of Monitored Natural Attenuation in Groundwater Report* (August 19, 2009), arsenic has been deleted from the list of analytes for the long-term monitoring well network except at AC-2S and AC-3S. Data collected during the annual sampling events are used to evaluate the effectiveness of the monitored natural attenuation remedy for groundwater.

- Additional groundwater sampling of monitoring wells AC-9D2, AC-24D, and AC-28D. Following EPA's request in a letter dated October 15, 2009, the status of these wells has been changed from periodic (every five years) to annual until sufficient sampling results have been collected.

- Annual surface water sampling in Bayou Texar for the same COCs identified for groundwater. This sampling is to assess the surface water quality for potential effects from the groundwater discharge. Sampling of Carpenter's Creek (ACSW-BL) has been discontinued as per EPA approval (January 25, 2010) of November 18, 2009 recommendations to the O&M Plan. Three additional surface water sampling sites within Bayou Texar were added as per the June 2010 Five-Year Review. These three samples will be analyzed for fluoride.

- Annual advisory notices are distributed to water well contractors, irrigation system installers, and pool contractors to inform these contractors of the area where groundwater impacts related to the Agrico plume are located. The annual advisory also informs them of the well construction moratorium in effect by the Northwest Florida Water Management District (NWFWMD).

- Irrigation well identification and voluntary sampling and abandonment by irrigation well owners (voluntary program). Includes reviewing the Northwest Florida Water Management District well construction permit records to confirm that no wells have been inadvertently installed within the OU-2 area. Because of the existing well construction moratorium, the expectation is that no new wells will be permitted in this area.

- Activities related to coordination and dissemination of site information to local, regional, and state agencies.
- Site inspection reporting and site maintenance activity.

OPERABLE UNIT ONE REMEDY

The source area remedy was certified complete by EPA in April 1997. The 2013 sampling results compare favorably to past sampling results, which indicate that the source area remains controlled. The limited extent of the surficial zone plume is caused by the significant downward vertical component to the contaminant transport. The decreasing trends in the surficial zone are a result of the OU-1 source control measures. The source area remedy remains an effective measure in eliminating migration of COCs from the OU-1 area to the groundwater.

OPERABLE UNIT TWO REMEDY

The remedy chosen by EPA for the impacted groundwater associated with the Agrico Site is monitored natural attenuation. The 2013 results indicate that the Agrico plume continues to be adequately defined. Groundwater monitoring continues to be an effective means of evaluating and confirming the effectiveness of the natural attenuation remedy. The EPA approved August 19, 2009 report, *"Evaluation of Monitored Natural Attenuation in Groundwater, Agrico Site, Pensacola, Florida"*, indicates natural attenuation is working at the Site. The data show that mechanisms for attenuation are in place throughout the area and the positive effects of the source remedy (i.e. on-site remediation) are becoming effective downgradient, as projected and expected.

On October 31, 2013, a second report, *"Evaluation of Monitored Natural Attenuation in Groundwater, Report #2, October 23, 2013, Agrico Site, Pensacola, Florida by Quantitative Decisions – William A. Huber, Ph.D."* This report is a follow-up to the August 19, 2009 Huber Report and follows the same methods and method recommendations conveyed in the 2009 report. The 2013 report continues to show that the MNA remedy for the Agrico site is effective and functioning as expected. The projected ranges of cleanup dates remain similar to previous projections. Combined radium activities have stabilized during the past four years of monitoring. Although the Huber evaluation recommended a reduction in sampling frequency for select monitoring wells, both Phillips 66 and Williams have chosen to maintain the existing monitoring plan. As more data becomes available in the future, the appropriateness of the monitoring frequencies will continue to be evaluated and future recommendations may be made. For reference the report is presented in **Appendix F**.

Groundwater Sampling Results

Groundwater results for November 2013 continue to compare favorably to past results. The selected long-term network has proven to provide an accurate representation of the groundwater conditions within OU-1 and OU-2. Overall decreases in concentrations have been observed in most upgradient groundwater closer to the Site. It is expected that decreases will continue to be observed in upgradient monitoring wells. The plume discharge area remains well defined and limited in areal extent. Although an increase in concentrations is occurring in some downgradient monitoring locations (more than 1,800 feet east from the Site), the increases are within the range of expected concentrations for a natural attenuation remedy where source control has been implemented. Within the main producing zone plume, historical concentrations show that the Agrico plume has detached from the former Agrico source area. For most monitoring well locations, peak concentrations have been attained in the past and all new results are less than the peak concentration. The 2013 results continue to indicate that concentrations within this zone are lower immediately downgradient of the Site and higher farther downgradient within the axis of the plume and near the discharge boundary.

Overall concentration trends within the surficial zone are downward and the impact extent is shrinking. Impacts are limited for this zone. This is a direct result of effective source control and the local hydrogeologic conditions.

For the main producing zone, the overall flattening of trends is what has been predicted. This flattening should be expected to continue for some time and eventually evolve into a slowly decreasing trend that accelerates with time.

Slight upward or downward ticks in the trends for the COCs are to be expected over time. It is the long-term trend for each of the COC that is important.

As with previous results, the 2013 results confirm that the groundwater surrounding the Agrico plume is defined by groundwater with concentrations less than the established Agrico COC's maximum contaminant level. Non-Agrico impacts to groundwater remain in the vicinity of Site 348 (Kaiser Site, to the south) and downgradient of the Escambia Treating Company (ETC, to the northwest) Site. Both of these sites are shown on **Figure 1**.

Groundwater Levels

Results of water level measurements collected in November 2013 indicate that groundwater flow remains toward Bayou Texar for both the surficial zone and main producing zone. In 2013, groundwater flow patterns closely followed historical patterns.

Bayou Texar Sampling Results

The long-term surface water results indicate that Bayou Texar is not adversely affected by impacted groundwater from the Agrico Site discharge to the bayou. All near-bottom surface water samples collected during the sampling event of November 2013 indicated that fluoride concentrations were 1.2 milligrams per Liter (mg/L) or less which is below the surface water standard of 5 mg/L.

A recent evaluation (URS, September 4, 2009) of the primary discharge area for the Agrico plume in Bayou Texar indicates there is no significant risk to populations of demersal fish or to benthic macroinvertebrate communities that inhabit the reach due to fluoride concentrations. This study showed that fluoride in the near-bottom surface water (the primary exposure regime for demersal fish) was consistently less than the Florida Water Quality Criterion for Class III Marine waters for fluoride (5 milligrams per liter). In fact, the concentration of fluoride in a majority of surface water samples was less than 1mg/L. Fluoride in the top 10 centimeters of sediment (the bioactive zone) ranged from 32 to 339 micrograms per gram. Fluoride in the sediment pore water in the bioactive zone (the primary exposure regime for benthic macroinvertebrates) was less than 3 milligrams per liter in 30 of the 40 stations sampled. Fluoride in pore water exceeded the 5 milligrams per liter standard at only 3 of 40 stations.

Spatial analysis for the area of the 40 stations indicated that the surface area weighted average concentration of fluoride in the bioactive zone was less than the 5 milligram per liter standard. The three stations where pore water exceeded the 5 mg/L for fluoride were added to the long-term surface water network beginning in November 2010. Furthermore, results indicate the fluoride solubility in the majority of surface sediments and in all pore waters within the primary discharge area for the Agrico plume is controlled by mineral precipitation reactions. This reaction causes dissolved fluoride concentrations to be buffered in near surface sediment pore water and in surface water in this primary discharge reach of Bayou Texar. The report *Conceptual Site Model Ecological Impact Evaluation of Bayou Texar Downgradient of Agrico's Groundwater Fluoride Plume (URS, September 4, 2009)* was approved by EPA on September 20, 2010.

Voluntary Program

During 2013, no additional irrigation wells were identified from the Northwest Florida Water Management District (NWFWMD) well construction permit records. The well construction moratorium initiated in February 2001 is still in effect and has no termination date. Well prohibition for the defined area which includes the Agrico area is part of NWFWMD's Rule 40A-3.

To date, 59 irrigation wells have been identified within the OU-2 area. These wells were identified from NWFWMD construction permit records, an irrigation well survey distributed to homeowners within the OU-2 area, field observation, and information supplied by residents in the area.

To date, 21 of the 59 irrigation wells identified have been sampled. The analyses consisted of volatile organic compounds, semi-volatile organic compounds, eight RCRA metals, and the Agrico site-related constituents. All results were reported to the well owners and to the Escambia County Health Department.

To date, two well owners have granted permission to plug and abandon their irrigation wells under the voluntary program.

Advisory Notice

The annual advisory notice was distributed by URS to water well contractors, irrigation system installers, and pool contractors to inform them of the groundwater conditions and the existence of a well construction moratorium within the OU-2 area.

Institutional Controls Coordination

A memorandum was distributed to the local, regional, and state agencies listed below, soliciting information for any changes or proposed new regulatory rules or policies that may affect the institutional controls currently in place for the area. The agencies include:

- Florida Department of Environmental Protection (FDEP), Tallahassee and Pensacola
- Emerald Coast Utilities Authority (ECUA) (formerly Escambia County Utilities Authority)
- Northwest Florida Water Management District (NWFWMD)

City of Pensacola
Escambia County Health Department (ECHD)
Escambia County Neighborhood and Environmental Services Department
Florida Department of Transportation (FDOT), District Three (Chipley)

Other Contamination Sources

Pumping from public supply wells located either upgradient or sidegradient and outside of the OU-2 area is not significantly affecting the plume flow direction, and no impacts to any public supply wells can be attributed to the Agrico plume. Discontinued pumping at the East Plant Well, Well No. 8, and Well No. 9 further reduces any potential for the Agrico plume to be pulled farther south by pumping activities. Other sites identified by the Florida Department of Environmental Protection (FDEP) are currently being assessed under FDEP's direction for each site's contribution in the closing of the above Emerald Coast Utilities Authority (ECUA) supply wells. Investigations by FDEP have identified other non-Agrico sources impacting groundwater south of the Agrico Site. Assessment results in this area indicate impacts with constituents similar to those associated with the Agrico Site, including combined radium 226 + 228, nitrate, chloride, and sulfate. The general area of the source area is identified by FDEP as Site 348. Site 348 consists of historical fertilizer manufacturing or storage operations from possibly as early as 1926 to the mid-1980s.

FIVE-YEAR REVIEWS

Three Five-Year Reviews have been conducted by EPA for the Agrico Site. The First Five-Year Review occurred in 2000, the Second Five-Year Review occurred in 2004-2005, and the Third Five-Year Review occurred in 2010. Each review concluded that the remedy at the Site is functioning as intended by the RODs for OU-1 and OU-2, and remains protective of human health and the environment. The O&M activities were to be continued and conducted as approved. The next Five-Year Review, which will be the fourth for the site, is scheduled for 2015, with additional sampling conducted in quarter 4 of 2014.

SCHEDULE

The next scheduled sampling activities for the Agrico Site will be performed in November 2014, with a report to follow in March 2015. All groundwater and surface water results, as well as results of other required tasks, for both OU-1 and OU-2, will be reported in the annual report for the Site.

RECOMMENDATIONS

The former Agrico source area remains controlled. Groundwater monitoring continues to be an effective means of evaluating and demonstrating the effectiveness of the Agrico natural attenuation remedy. Groundwater data collected for 2013 supports a continuation of the existing O&M/Monitoring Program for the Agrico Site. Should future MNA evaluations indicate modifications to the monitoring program are appropriate, such recommendations will be submitted for review.

Accordingly, no changes to the O&M Plan or the Monitoring Plan are proposed.

URS Corporation (URS) has prepared this 2013 Annual Report on behalf of Phillips 66 Company and Agrico Chemical Company represented by Williams Companies, Inc. (Williams). In mid-2012, ConocoPhillips separated into two standalone companies. The environmental remediation activities conducted at the Agrico Site in the past by ConocoPhillips is now managed by Phillips 66. This annual report was prepared in accordance with the following:

- United States Environmental Protection Agency (EPA) Consent Decree (CD) dated May 4, 1994 and the March 10, 1997 amended Consent Decree for the Agrico Site (Agrico);
- The Record of Decision (ROD) for Operable Unit One (OU-1) issued on September 29, 1992;
- The Operation and Maintenance (O&M) Plan for OU-1 dated September 1996 including Appendix I – Groundwater Monitoring Plan by Woodward-Clyde Consultants (currently URS Corporation [URS]);
- The ROD for Operable Unit Two (OU-2) issued August 25, 1994;
- The SOW which outlines the work to be performed as the remedy for OU-2;
- The EPA-approved (April 26, 1999) Remedial Action Work Plan and related plans;
- The O&M Plan dated November 1998.
- The Evaluation of Long-Term Groundwater Monitoring Network – Section 12 - Recommendations, Technical Memorandum Report dated November 30, 2006 and subsequent EPA approval of recommendations in EPA comment letter dated January 22, 2007 **(Appendix D)**.
- The EPA approval dated September 2, 2008 to discontinue OU-1 semi-annual sampling and to perform annual sampling **(Appendix D)**. The last OU-1 semi-annual sampling event was conducted in May 2008.
- Minor O&M recommendations dated November 18, 2009 were approved by EPA on January 25, 2010 **(Appendix D)**
- Recommendations in the report, *Evaluation of Monitored Natural Attenuation in Groundwater (August 19, 2009)* and approved by EPA on February 5, 2010 **(Appendix D)**.
- EPA's Third Five-Year Review (June 2010) recommendations related to surface water sampling locations for Bayou Texar.

This is the fifteenth comprehensive annual report since the initial one in 1999. The report documents both OU-1 and OU-2 activities performed at the site for 2013. The annual report was preceded by OU-1 semi-annual sampling results reported annually from 1997-1999. These OU-1 annual reports continued through 2005. The annual report for OU-2 was submitted separately from the OU-1 report from 1999 through 2005. One of the recommendations of the evaluation of the long-term monitoring network (URS, November 30, 2006) was to combine these networks. Beginning with the 2007 Annual Report, the groundwater requirements were integrated so that OU-1 (on-site) and OU-2 (off-site) groundwater impacts could be readily evaluated. Since November 2007, groundwater from the OU-1 monitoring wells has been analyzed for the same constituents of concern as the OU-2 monitoring wells, as per EPA's request.

EPA approved (September 2, 2008) **(Appendix D)** the integration of the groundwater monitoring requirements for OU-1 and OU-2 so that the monitoring satisfies the original OU-2 monitoring objective - monitoring of the surficial zone and main producing zone, on-site and off-site - downgradient of the Site for the purpose of evaluating the monitored natural attenuation remedy. The original monitoring objective for OU-1 was to only evaluate the effectiveness of the RCRA cap remedy. The effectiveness was demonstrated by a statistical evaluation that confirmed the integrity of the containment system with data collected from 1997 to 2001. Additionally, it has been further confirmed by data collected since 2001.

The major components of the OU-1 and OU-2 activities performed at the Site for 2013 included:

- Maintenance of a long-term groundwater monitoring program within the OU-1 and OU-2 areas. This includes annual sampling and analysis of groundwater from 23 monitoring wells for the Agrico Site **(Table 1)**. During November 2013, groundwater from monitoring wells was sampled and analyzed for fluoride, nitrate, sulfate, chloride, and radium 226 + 228.
- Maintenance of a long-term surface water monitoring program for Bayou Texar. This consists of annual sampling and analysis of surface water from two locations within the brackish waters of Bayou Texar, and three additional locations for sampling fluoride only. For 2013, the analyte list for the two long-term surface water monitoring stations was the same as for the groundwater sampling program except arsenic analysis has been discontinued.
- Continuing the effort to identify irrigation wells within the OU-2 area and determine how water from the irrigation wells is being used. This includes continuing the offer to irrigation well owners to participate in the voluntary well abandonment program. When permission is granted by a well owner, groundwater from the irrigation well is sampled and analyzed for Agrico-related constituents. In addition, the well is sampled and analyzed for volatile organics, semi-volatile organics, and eight RCRA metals, so that potential impacts from other nearby sites may be identified.
- Mailing an advisory notice to water well contractors, irrigation system installers, and pool contractors, informing them of groundwater conditions in the OU-2 area and restrictions that are in place for the area.
- Soliciting information on rules and policies to maintain institutional controls within the OU-2 area from regulatory agencies, including the Northwest Florida Water Management District (NWFWMD); Florida Department of Environmental Protection (FDEP) (Northwest District); FDEP (Tallahassee); Emerald Coast Utilities Authority (ECUA); Escambia County Environmental Health Department (ECHD); Escambia County Neighborhood and Environmental Services Department; City of Pensacola; Florida Department of Transportation (FDOT); and the U.S. Environmental Protection Agency (EPA).
- Providing copies of site documents that give the status of groundwater-related conditions to local, regional, and state agencies (including the City of Pensacola, Escambia County, ECHD, ECUA, NWFWMD, and FDOT).

The groundwater remedial action objectives for protection of public health and the environment, as related to the Agrico groundwater plume and the current status of these objectives, are as follows:

- Prevent degradation of groundwater from on-site Agrico sources.

  This objective has been satisfied through source control. OU-1 soils and sludge material were consolidated or treated by solidification in the unsaturated (above the water table) portions of the subsurface and covered with an impervious Resource Conservation and Recovery Act (RCRA) - approved cap. This action was completed in April 1997. Groundwater monitoring over the past ten years has proven that the OU-1 remedy is effective.

- Prevent or minimize degradation of the groundwater resource resulting from the selected remedy, such as the spreading of off-site plumes, including the organics' plume emanating from the Escambia Treating Company Site to the north, the fertilizer constituent plume emanating from Site 348, and saltwater intrusion along Bayou Texar.

  This objective was satisfied for the Agrico Site by EPA's selection of monitored natural attenuation as the remedy. The remedy limits the commingling of adjacent plumes into the Agrico plume.

- Prevent or minimize future exposure to contaminated groundwater.

  This objective is an ongoing activity and involves the continued well construction permitting moratorium by the NWFWMD and implementation of the voluntary program in place for irrigation wells within the OU-2 area.

- Prevent or minimize future impacts to surface water due to discharge of impacted groundwater to Bayou Texar.

  This objective is being satisfied by the monitored natural attenuation remedy. Since the on-site source area is remediated, no additional concentrations are expected to enter the groundwater at the Agrico Site. Off-site, it is expected that concentrations in the surficial zone groundwater will infiltrate vertically downward into the main producing zone, thereby limiting the lateral extent in the upper zone of the aquifer. Infiltration is accomplished by rainfall percolating through the surface soils and moving vertically to recharge the deeper portions of the aquifer (the main producing zone). The August 19, 2009 evaluation of monitored natural attenuation found that the mechanisms for attenuation in groundwater are in place throughout the area and the effects of the source remedy are being observed downgradient as expected. Conditions continue to be favorable for attenuation of concentrations in groundwater as reported in the October 23, 2013 evaluation (URS,2013b). Decreases in concentrations for the Agrico COCs have now been observed in the most upgradient groundwater and are imminent in the furthest downgradient wells.

  Groundwater and surface water samples collected in 2013 indicate that the objective of preventing or minimizing impacts to Bayou Texar is being achieved. Sampling results for nitrate + nitrite in groundwater indicate there is no nitrite component, and the values represent nitrate only. Nitrate is expected to disperse in the groundwater and surface water sampling related to the Agrico network indicates that water quality standards for Bayou Texar are not exceeded. Chloride and sulfate concentrations naturally occur in Bayou Texar waters at concentrations at least an order of magnitude higher than the highest concentration detected for these constituents in the groundwater within the OU-2 area. Although lead and arsenic are Agrico COCs, they attenuate and are not components in the groundwater adjacent to and discharging to the bayou. These constituents do occur in the *bayou sediments; but they are likely present from storm water runoff into the bayou via outfalls. Regarding fluoride, findings of the September 4, 2009 assessment of biotic zone pore water and near bottom surface water indicate that there is no significant risk to populations of demersal fish or to benthic macroinvertebrate communities that inhibit the reach of Bayou Texar where Agrico groundwater discharges to the bayou. As the 2009 study indicated, it is likely that dissolved concentrations of fluoride in near surface sediment pore water and surface waters in Bayou Texar are controlled by mineral precipitation reactions.*

1.1 FIVE-YEAR REVIEWS

The EPA has conducted three Five-Year Reviews for the Agrico Site. The results of these reviews were presented in the February 2000, July 2005, and June 2010 EPA reports. Each of the three reviews concluded that (1) all areas were in compliance and (2) the remedy at the Site is functioning as intended by the RODs for OU-1 and OU-2, and remains protective of human health and the environment. The next five-year review and report will be issued by EPA in 2015.

The first Five-Year Review Report (URS Greiner Woodward-Clyde, 2000b) was prepared by URS Greiner Woodward-Clyde and submitted in February 2000 to EPA. Action items recommended by EPA for the first Five-Year Review were as follows: (1) continue to monitor the groundwater as described in the O&M plans until Remedial Action Objectives are achieved as specified in the ROD; and (2) Once the statistical evaluation of the OU-1 monitoring wells has been completed, those wells should be considered for inclusion in the overall groundwater monitoring system, i.e., OU-2. The latter recommendation was formally concluded with the EPA approval dated September 2, 2008.

EPA conducted the second statutory Five-Year Review of the Agrico Site during 2004-2005, and the results were contained in their July 21, 2005 report. The Second Five-Year Review Report (U.S. Army Corps of Engineers, 2005) was prepared by the U.S. Army Corps of Engineers (Mobile District) for EPA.

As part of the second Five-Year Review, in 2005 EPA requested that six action items be conducted. These included (1) identify and select for monitoring an existing groundwater monitoring well that is screened within the main producing zone and that is located upgradient of the Agrico Site; (2) re-sample groundwater monitoring wells AC-27S and AC-27D located on the east side of Bayou Texar to validate combined radium 226+228 results; (3) re-sample upgradient groundwater monitoring well, ETC MW 12DP to validate combined radium 226+228 results; (4) conduct an evaluation of the long-term groundwater monitoring network for the Agrico Site; (5) update contact information for EPA's Community Relations Plan; and (6) conduct an evaluation of previously conducted Studies on Benthic Community Analysis and Sediment Toxicity Testing for Bayou Texar. Completion of these action items was initiated in 2005 and the final action item was completed with the September 20, 2010 EPA approval of the Bayou Texar evaluation report (**Appendix D).**

As part of the Third Five-Year review, EPA included four recommendations in the June 2010 Five-Year Report. These recommendations were as follows:

1. Continue annual groundwater monitoring.

2 Continue annual near-bottom Bayou Texar surface water monitoring at multiple stations including the 3 locations with pore water fluoride concentrations greater than 5 milligrams per liter as reported in the September 4, 2009 "*Conceptual Site Model Ecological Impact Evaluation of Bayou Texar Downgradient of Agrico's Groundwater Fluoride Plume*" (Phase II results).

3. If the levels of fluoride in near-bottom surface water or in adjacent Bayou Texar groundwater monitoring well, AC-35D, increase to levels significantly greater than that measured historically, submit a work plan to evaluate the increase.

4. Conduct further risk evaluation studies if the surface area weighted average for pore water is predicted to be greater than 5 milligrams per liter.

These first two recommendations are continuing tasks of the on-going long-term monitoring program for the Site. As of the November 2010 sampling event, the three locations where pore water results were greater than 5 mg/L were added to the long-term monitoring.

The last two recommendations will be acted upon only if significant concentrations of fluoride are detected as part of the near-bottom surface water sampling.

2.1 SITE DESCRIPTION

The Agrico Site is located at 118 East Fairfield Drive, which is at the northwest corner of Fairfield Drive and Interstate I-110 in Pensacola, Escambia County, Florida. The Site consists of 29.84 acres in Township 2 South, Range 30 West of Section 5 and the latitude and longitude at the center of this area is 302709.8914 degrees west and 871318.9648 degrees north, respectively. The Site is bordered by I-110 to the east, Fairfield Drive to the south, CSX railroad to the west, and a construction aggregate business (Vulcan Materials/Conrad Yelvington Distribution) to the north. An approximately 100-foot wide Gulf Power Company easement and overhead electrical lines are near the eastern boundary of the Site. Site access is from the north side of Fairfield Drive, approximately 600 feet (ft) west of the I-110 overpass. Uncle Bob's Self Storage operates storage warehouses on an Agrico Site out-parcel in the south-central area. The Site location is illustrated on **Figure 1**.

For the purposes of administrating the environmental remedies, the Agrico Site encompasses two areas, referred to as operable units. Operable Unit One (OU-1) covers the impacted area within the boundaries of the former Agrico Chemical Company property. **Figure 2** shows the on-site area of OU-1 and associated features. Operable Unit Two (OU-2) coincides with the area downgradient of the Site where the groundwater is impacted or potentially impacted by EPA-specified site-related constituents of concern (COCs).

The boundaries defined for OU-2 on many figures in past annual reports are in reference to the irrigation well survey limits and are not intended to represent the extent of the Agrico plume either currently or in the future. Therefore, the OU-2 area represented on figures within this report is much larger than the actual area impacted by the Agrico groundwater plume. **Figure 3** shows the boundaries used for the irrigation well survey.

The EPA approved remedy for OU-1 (on-site impacted soils and sludges) consisted of excavation, consolidation, and stabilization of impacted material under a 12 acre RCRA cap constructed on-site. The source control was certified by EPA to be complete in April 1997.

The EPA approved remedy for OU-2 (impacted groundwater) is monitored natural attenuation.

Initial modeling results indicated a period of approximately 70 years (from 1997) would be required to transport the plume from the main producing zone. Source control was complete as of April 1997. Long-term groundwater monitoring was initiated in September 1997 for OU-1 and in November 1999 for OU-2. Findings of a statistical evaluation of the monitored natural attenuation of groundwater (URS, August 19, 2009 and URS, October 31, 2013) concluded that much of the groundwater will reach the target Remedial Objectives within two or three decades. Within the groundwater discharge zone near Bayou Texar, the time to meet the targets could be longer. In this discharge area, precise estimates for meeting targets cannot be made at this time, but will become possible as more monitoring data is collected.

2.2 SITE ACCESS AND DEED RESTRICTIONS

Access to the Agrico Site is restricted. The property is secured by a perimeter chain link security fence with locked gates, and the Site is regularly inspected. Restrictive and Site informational signs are posted advising the public of the on-site conditions, and a contact phone number is also posted for inquiries. Posted signs are present at the entry gates of the fenced OU-1 property. The wording on the signs is as follows:

Authorized Personnel Only

Please Do Not Disturb Soil Cover

Impacted Waste Material May Be Present Below the Ground Surface

For Information Call 850-251-7208

The Site is routinely inspected on a monthly basis by authorized personnel and inspection reports documenting on-site conditions are completed twice a year. Additionally, the Site is inspected after each major storm event. Any damages found are repaired.

A Restrictive Covenant (**Appendix D**) for the Site was filed against the property deed with the Escambia County Clerk of the Circuit Court and is dated July 11, 1997. The Restrictive Covenant states in summary that Construction or related activities that would interfere with maintaining the Site remedial measures are prohibited by the legal deed restrictions. Any use of the property contrary to the Record of Decision is prohibited, as per the covenant filed for the property.

2.3 DOCUMENT REPOSITORY

The EPA maintains Site information at the West Florida Regional Library, Genealogy Branch. This repository contains project documents, fact sheets, and reference material. EPA encourages the public to review these documents to gain a more thorough understanding of the Site. The address of the library is as follows:

West Florida Regional Library, Genealogy Branch
5740 N. 9th Ave
Pensacola, Florida 32505
850-494-7373

Through 2011, the West Florida Regional Library on West Gregory Street was the repository for the Agrico documents. Since 2011 and currently, these documents are found at the Genealogy Branch on North 9th Avenue.

EPA also has Site information located at the following web site:
http://www.epa.gov/region04/superfund/sites/npl/florida/agricchemfl.html

A specific web site was developed for the Agrico Pensacola Site and is located at:
www.agricopensacola.com

This web site contains general information about the Agrico Site, contains the Site fact sheets, and provides contact information for EPA. The web site has been modified and a documents page has been added. Electronic files for four reports were uploaded to this page. The reports that are now accessible via this web site include (1) Evaluation of Monitored Natural Attenuation in Groundwater (URS, 2009), (2) The Third Five-Year Review Report (E2 Inc., 2010), (3) 2011 Annual Report (URS, 2012) and (4) 2012 Annual Report (URS 2013).

2.4 SITE HISTORY

The former facility at the Agrico Site was a superphosphate process facility as opposed to a continuous wet-process phosphoric acid facility that became dominant with phosphoric fertilizer industry starting in the 1960s and 1970s and continued during the modern era. According to the U.S. Department of Agriculture and Tennessee Valley Authority document titled *Superphosphate: Its History, Chemistry, and Manufacturing* (December 1964), the Irish firm known as W. & H. M. Goulding, Ltd. of Dublin, Ireland opened the Goulding Fertilizer Company, Pensacola, Florida factory in 1891 at the current Agrico Site location. The Goulding Fertilizer Company plant had an annual fertilizer production capacity of 45,000 tons. A sulfuric acid manufacturing plant co-existed on the Site. The source of sulfur was pyrite ore. The source of the phosphate for manufacturing the fertilizer was Central Florida mines. The Pensacola plant started operations by manufacturing normal superphosphate, and then operated as a concentrated superphosphate plant (the second of its kind in the United States at the time) from 1898 to 1901. Operations by the Goulding Fertilizer Company continued until 1911, when the factory was sold to an American interest, The American Agricultural Chemical Company (TAACC).

TAACC manufactured normal superphosphate and also continued the manufacturing of sulfuric acid using pyrite ore until 1920, when the source of sulfur dioxide was changed to elemental sulfur. TAACC operated the plant through 1963, when Continental Oil Company purchased the assets of TAACC (U.S. Department of Agriculture, 1964).

After the acquisition of TAACC, Continental Oil Company operated the agrichemical business as the Agrico Chemical Company, a wholly owned subsidiary. During the time period from 1963 to 1972, the same manufacturing process was used as during the TAACC period (U.S. Department of Agriculture, 1964). From 1967 to 1968, in addition to producing virgin acid from sulfur, the plant purchased and utilized an unknown volume of spent sulfuric acid (Geraghty & Miller, 1993a and 1993b). Continental Oil Company operated the plant until 1972.

In April 1972, Agrico Chemical Company, a newly formed Delaware corporation and subsidiary of The Williams Companies, Inc. (Tulsa, Oklahoma) purchased the assets of Continental Oil's Agrico Chemical Division. Agrico Chemical Company was one of the country's largest chemical fertilizer companies at the time. In 1972, the Pensacola plant began manufacturing monoammonium phosphate in addition to superphosphate, and continued this manufacturing from 1972 to 1975. Normal superphosphate was combined with ammonia to produce monoammonium phosphate. The ammonification process produced nitrate. The macronutrient potassium was blended into the ammoniated phosphate product in various blends. The potassium source was potash, mostly potassium chloride, stored on-site, inside the plant, on concrete floors. In later years, two micronutrients, zinc and magnesium, were added to the ammoniated phosphate product blends at the plant. According to the plant manager and Agrico corporate purchasing agent, the macronutrient and micronutrient sources were purchased as pure products and not as by-products. The peak season for production at the Pensacola plant was March through June. Agrico Chemical Company operated the plant continuously until June 1975, when the plant was shut down (Geraghty & Miller 1993a and 1993b). Subsequently, the Agrico Chemical assets were sold to Freeport-McMoRan Resources Partners (Freeport McMoRan) in 1987.

The property was sold to Margod, a Florida partnership, and F.A. Baird, Jr. in August 1977. The former plant buildings and process equipment were demolished in late 1979. After demolition, only the concrete foundations remained in place. A storage warehouse was constructed on the southern portion of the property adjacent to Fairfield Drive between 1979 and 1981, with additional warehouse construction taking place between 1981 and 1986. The warehouse area is considered an out parcel of the original property. The Site property was sold to Conoco, Inc. in 1997 to implement deed restrictions as per the OU-1 remedial action. The majority of Site debris and concrete foundations was later consolidated and placed with the waste material under the RCRA cap during the OU-1 Remedial Action (RA) activities. There are no permanent buildings from the original operations remaining on the Site. One foundation from an original Site building remains in the southwest portion of the property.

EPA conducted a hazardous waste site investigation at the facility in October 1983. The results of the study indicated that the on-site soils and on-site surface water impoundment were impacted with elevated levels of fluoride and lead. Groundwater was not sampled during that investigation. However, an effort was made to locate private shallow wells in the vicinity of the Site, and none were located.

The Florida Department of Environmental Regulation (FDER) (now FDEP) conducted a groundwater assessment at the Site in January 1987 (Watts, et.al., July 1988) followed by a supplementary assessment in January and February 1989 (Watts, et.al., August 1989). The study concluded that the Site contaminants, primarily fluoride and sulfate, had impacted the area groundwater.

EPA listed the Site on the National Priorities List (NPL) on October 4, 1989. Conoco, Inc. and Freeport McMoRan (parents of the Agrico Chemical Company) entered into an Administrative Order on Consent (AOC) on September 29, 1989. According to the terms of the AOC, the companies agreed to conduct source (soils) and groundwater investigations at the Site. The Site was remediated starting in 1995, and remediation of impacted soils and sludges was certified complete by EPA in April 1997. Currently, Williams (on behalf of Agrico Chemical Company) and ConocoPhillips, Inc. are responsible for implementing the activities associated with the O&M Plans for OU-1 and OU-2.

2.5 OPERABLE UNIT ONE REMEDY

The first operable unit (OU-1) addressed the cleanup of the source on-site. **Figure 2** shows a 2013 aerial photograph of the Site and the current features associated with OU-1. A Record of Decision (ROD) for OU-1 issued by EPA Region 4 on September 29, 1992 selected the remedy to be implemented for on-site soils and sludges. The selected remedy was based on a site remedial investigation and feasibility study, including a human health and environmental risk assessment, and soil and groundwater characteristics for the Site. Following the ROD issuance, actions by Conoco were initiated to re-acquire ownership of the property so that the remedy could be implemented.

In 1995, remedial construction activities began. Lead and arsenic-impacted soils and all sludge materials were collected and treated by solidification/stabilization using cement. Other fluoride-impacted soils were collected for consolidation. These consolidated soils and treated soils and sludges were installed in lifts and compacted in the excavation based on engineering designs and standards. The material was placed approximately 20 ft above the saturated groundwater level within the unsaturated, dry portion of the sediments underlying the Site.

On the surface, the material was covered with a 4-ft thick multi-layered engineered cap designed to prevent rainfall from contacting the underlying stabilized soils. The cap covers an area of 12 acres. The impervious nature of the cap causes storm water runoff volumes to be significantly greater than the volume generated before the construction of the remedy. For this reason, an elaborate system of piping and runoff collection devices was installed at the Site. The storm water collection system significantly minimizes runoff from flowing off the Site. Runoff generated on-site is collected and contained on-site by returning runoff to one of two storm water management impoundments constructed as part of the OU-1 remedial action. Because the north storm water impoundment is located upgradient from the stabilized soils, EPA required that a slurry wall be constructed between the north storm water impoundment and the stabilized containment area. The purpose of the slurry wall is to prevent infiltrating storm water from contacting the stabilized materials that are contained within the unsaturated subsurface containment area.

The following actions were performed as part of the OU-1 remedial action completed in April 1997:

- Excavated and solidified approximately 45,000 cubic yards of arsenic- and lead-impacted soil and contaminated sludge and soils from Site sludge ponds.
- Consolidated approximately 110,000 cubic yards of fluoride-impacted soils.
- Within excavation areas, rubble from building foundations and consolidated soils were placed in a layered fashion, with the uppermost portion of the excavation filled with solidified/stabilized soils and sludges.
- An engineered 4-ft thick, seven-layer cap, consisting in part of impervious fabric, High Density Polyethylene (HDPE) liner, and geotextile materials, was constructed over the stabilized soils within the containment area.
- Constructed a 700-ft long, 2-ft thick slurry wall upgradient of the containment area to prevent infiltrating storm water from contacting consolidated/stabilized soils.
- Installed a drainage collection system so that storm water generated on-site is contained on-Site in one of two storm water impoundments, preventing off-site runoff.
- Deed restrictions were attached to the property controlling future uses of the property, assuring protection of the containment structure.
- Security fencing with locked gates was installed to limit access to the property.
- Five monitoring wells were constructed to serve as long-term groundwater sampling locations to evaluate the effectiveness of the implemented OU-1 remedial action. These five monitoring wells were monitored to demonstrate the effectiveness through 2007. After 2007, the wells were integrated and combined with the OU-2 wells to form a site-wide groundwater monitoring network. The purpose of this site-wide network is to demonstrate the effectiveness of the monitored natural attenuation remedy for groundwater.

2.5.1 Operation and Maintenance

In accordance with the EPA-approved Operations & Maintenance (O&M) Plan for OU-1, biannual inspections, and inspections following major storm events, are conducted at the Site.

Elements of the O&M for OU-1 are as follows:

- General facility inspection and regular lawn care service for the Site. Weekly security service, drive by inspections, were discontinued as per EPA's approved change (January 25, 2010) **(Appendix D).** The Site is inspected at least twice annually, and after major storm events. The grass is cut on at least a monthly basis between October and April and on at least a biweekly basis between May and September.
- Cover system inspection.
- Topographic survey (as needed); a topographic survey was previously completed in April 2002. No visual changes have occurred to the cap area; therefore an additional survey has not been completed
- Storm water collection system inspection and cleaning of the under drain system every 3 years or as needed as per EPA's approved change (January 25, 2010) (**Appendix D**). Visual inspections of the drain inlet and outlet system during storm events indicate that the system is functioning properly.

Prior to November 2009, the operation and maintenance activities for OU-1 listed above were documented in semi-annual Inspection Report Letters that were submitted to EPA after each May and November site inspection. Beginning in November 2009, the site inspection reports were no longer distributed as individual letters. Instead, the inspection information is incorporated into the Annual Report (**Appendix E**).

There have been no significant erosion issues affecting the integrity of the cap since the cap was constructed in the mid-1990s. Significant storm events occurred in 2004 and 2005. Additionally, above normal rainfall occurred for 2009. On June 7, 2012 through June 9, 2012, the NOAA Hydrometeorological Prediction Center reported 15 to 27 inches of rainfall was recorded in the Pensacola area. On June 9, 2012, it was reported that 13.11 inches of rain occurred as a daily total. A site inspection was conducted during the monthly O&M visit. Stormwater drainage to the on-site stormwater ponds functioned as designed. Accumulation was noted in the south pond which is normally dry. No erosional issues occurred for the cap area as a result of this storm. No significant storm events occurred during 2013.

The inspection reports for May and November 2013 are presented in **Appendix E**.

2.5.2 Groundwater Monitoring

The surficial zone of the Sand-and-Gravel aquifer is monitored upgradient and immediately downgradient of the cap area. Groundwater monitoring provides for an effective means of evaluating the OU-1 remedy. Long-term groundwater monitoring was initiated in September 1997 for OU-1. Two-background monitoring locations lie upgradient of the containment area, and three monitoring locations lie immediately downgradient of the area (**Figure 2**). These monitoring wells were sampled twice a year from 1997 until May 2008. EPA approved discontinuing the semi-annual sampling as per their letter dated September 2, 2008 (**Appendix D**). EPA requested that all future groundwater monitoring associated with OU-1 be incorporated into the Agrico site-wide monitoring program.

The groundwater performance standards relevant to OU-1 (ROD, September 29, 1992) are as follows:

Constituent of Concern	Groundwater Performance Standard
Fluoride	4 mg/L*
Arsenic	0.05 mg/L**
Lead	0.015 mg/L
* The primary drinking water standard of 4 mg/L for fluoride is the level for groundwater. The Florida secondary MCL of 2 mg/L set forth by Rule 62-550.320, Florida Administrative Code (FAC) applies at nearby municipal potable supply wells, as specified in the contingency remedy. ** All groundwater analytical results for arsenic have a reporting limit of 0.010 mg/L to meet the new MCL of 0.010 mg/L for arsenic.mg/L = milligrams per liter MCL = maximum contaminant level	

2.5.3 Annual Contact with Florida Department of Transportation (FDOT)

As per the September 20, 1996 O&M Plan for OU-1, annual communication with the FDOT is required. The purpose of this inquiry is to determine any significant intrusive FDOT activity or plans for such, at the south boundary of the Site along Fairfield Drive (SR-727).

2.6 OPERABLE UNIT TWO REMEDY

The ROD for OU-2 was issued by EPA Region 4 on August 25, 1994. The OU-2 ROD presents EPA's selected remedial action for treatment of groundwater. The following discussion is based on the August 1994 ROD and includes the rationale for the selected OU-2 remedy. The OU-2 area is shown on **Figure 3** which also corresponds to the previously completed irrigation well survey area. This area encompasses a larger area than the defined groundwater impact area. The OU-2 area is roughly bound by Palafox Street to the west, E. Cross Street to the south, Fairfield Drive to the north and Bayou Texar to the east.

The EPA selected remedy of monitored natural attenuation meets all EPA and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) criteria. The remedy is protective of human health and the environment and complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. The reduction of toxicity, mobility, and volume of the Site groundwater contamination has been controlled through source control (OU-1) and monitored natural attenuation (OU-2).

EPA views the monitored natural attenuation remedy as being at least, more protective of human health and the environment than the pump-and-treat technology alternatives that were previously considered for this Site. This remedy avoids potentially adverse impacts associated with the groundwater extraction and treatment alternatives. Potential impacts from the pump and treat alternative include saltwater intrusion and spreading of impacts from other impacted sites, including the Escambia Treating Company (ETC) Site (source control was completed in 2009; groundwater remediation is on-going), multiple sites in the Palafox industrial corridor, various retail gasoline stations, multiple dry cleaner locations, and other sources of contamination in the proximity of the Agrico Site. Assessments are being conducted by local, state, and federal agencies on these region-wide impacts.

Based on current hydrogeologic conditions and the fact that many of the downtown ECUA municipal supply wells have been deactivated due to non-Agrico impacts, it is highly unlikely that nearby water supply wells will be impacted by the Agrico site-related constituents. However, if the Agrico site-related constituents adversely impact groundwater withdrawn from public supply wells in the area, a contingency remedy will become necessary, as outlined in the ROD. The contingency remedy includes wellhead treatment or well replacement.

The selected remedial alternative for OU-2 involves actions aimed at limiting exposure while natural attenuation processes remediate the groundwater impacts.

The remedial alternative actions for OU-2 consist of the following:

1) Groundwater sampling, and the installation of two additional monitoring wells adjacent to Bayou Texar (AC-35D and AC-36D) completed in 1999;
2) Bayou Texar surface water sampling (on-going);
3) An irrigation well survey (completed 2001);
4) Institutional controls to include on-site deed restrictions (completed in 1997), groundwater use restrictions (well construction moratorium since 2001), and a request that private landowners allow the plugging and abandoning of impacted irrigation wells (on-going); and
5) An advisory program (on-going).

2.6.1 Operations and Maintenance

In accordance with the EPA-approved O&M Plan for OU-2 dated November 1998 and in accordance with approved (via email from EPA on September 11, 2007) changes resulting from the November 30, 2006 Long-term Monitoring Well Network Evaluation and other approved changes (**Appendix D),** the following elements of the O&M are implemented annually as follows:

- Groundwater sampling of designated long-term monitoring wells **(Figure 1)** during November each year.
- Bayou Texar surface water sampling at two locations (adjacent to groundwater plume discharge area and a location downstream). Three additional sampling locations within the Agrico primary discharge reach of Bayou Texar were added as of 2010 (**Figure 1**). Sampling of Carpenter's Creek upstream of where the creek empties into Bayou Texar, was discontinued as an approved EPA change effective January 25, 2010 (**Appendix D**).
- Irrigation well survey – a survey was completed that identified 59 irrigation wells within the OU-2 area.
- Institutional Controls – currently a moratorium has been placed on the construction of new wells within the OU-2 area.
- Advisory Program – annually the water well contractors, irrigation system contractors, and swimming pool contractors doing business in the Escambia County vicinity are notified of

the existing groundwater impacts and the NWFWMD moratorium for construction of new wells. The contractor list is reviewed annually and modified as needed.

2.6.2 Groundwater Monitoring

The surficial and main producing zones of the sand-and-gravel aquifer are monitored in long-term monitoring wells distributed in locations downgradient of the OU-1 Site both inside and outside of the existing Agrico plume. Long-term groundwater monitoring was initiated in November 1999 for OU-2. The groundwater monitoring is intended to evaluate characteristics and trends associated with the plume. The monitoring results to date indicate that the monitoring well network serves this purpose. During Five-Year Review periods, sampling is conducted for all long-term and periodic monitoring wells.

The groundwater performance standards relevant to OU-2 (ROD, August 25, 1994) are as follows:

Constituent of Concern	Groundwater Performance Standard
Fluoride	4 mg/L*
Arsenic	0.05 mg/L
Chloride **	250 mg/L
Sulfate **	250 mg/L
Nitrate + nitrite	10 mg/L
Radionuclides Radium 226 Radium 228	5 pCi/L (Radium 226 + 228 combined)

* The primary drinking water standard of 4 mg/L for fluoride is the level for groundwater. The Florida secondary MCL of 2 mg/L set forth by Rule 62-550.320, Florida Administrative Code (FAC) applies at nearby municipal potable supply wells, as specified in the contingency remedy.
** Chloride and sulfate were not included in the baseline risk assessment because no toxicity values exist. The remedial goals presented for chloride and sulfates are the Florida standards.

mg/L = milligrams per liter
pCi/L = pico Curies per liter
MCL = maximum contaminant level

2.6.3 Annual Notifications

In addition to the contractor annual advisory notice, selected local city, county and regional agencies are notified regarding the on-going activities related to the Agrico Site and are asked about known or potential changes to local laws or policies and procedures that may impact existing institutional controls for the OU-2 area. Additionally, all major reports completed for the Agrico Site are distributed to these agencies.

2.7 OTHER CONTAMINATION SOURCES IN THE VICINITY OF THE AGRICO SITE

Contamination from sources other than Agrico was one of the many factors considered in the EPA's preparation of the OU-2 ROD. The OU-2 selected remedy did not include a pump and treat component because of the technology's potentially negative impacts. The potential impacts included: 1) spreading of plumes from other sources and 2) uncontrolled aquifer degradation due to the alteration of groundwater flow, which could impact private irrigation wells and public supply wells. Several FDEP-identified groundwater contamination sources are located in the vicinity of the Agrico Site. Contaminants from these sources either originate from Sites located within the defined area of OU-2 or originate upgradient of the OU-2 area and, due to the direction of groundwater flow, move into the OU-2 area. It should be noted that some of the constituents from these sites are the same as the Agrico constituents, and include chloride, sulfate, nitrate, and combined radium 226 + 228. These constituents associated with these other sources may be found at concentrations above the drinking water standard and are affecting portions of the southwestern area of OU-2. The reported sampling results from the ongoing FDEP investigations provide evidence of the groundwater impacts. This area is in the vicinity of the existing ECUA public supply well identified as F and Scott Street Well (**Figure 1**).

A U.S. Geological Survey Report (Trapp, 1975) on the hydrology of the Sand-and-Gravel aquifer in southern Escambia County described non-point source nitrate contamination in the vicinity of the Agrico Site. According to the report, non-point source nitrate contamination in the Sand-and-Gravel aquifer has been documented since the 1920s throughout the southern half of Escambia County. Nitrate concentrations of 5 mg/L or higher were generally found in groundwater throughout the City of Pensacola and the urban areas of Bayou Chico, northeast of the junction of I-110 and Brent Lane, along Mobile Highway, and around the junction of Pine Forest Road (SR 297) and I-10, and in the vicinity of Gonzalez and Cantonment. Watts, et al. (1988) reported that elevated nitrates in the vicinity of the ECUA well at "F" and Scott Streets were from sources other than the Agrico Site (e.g., highway runoff, leaking sewer pipes, and septic tanks).

In addition, several point sources of contamination are in close proximity to the Agrico Site (NWFWMD, 1984). The site most likely to impact a portion of the area downgradient of the Agrico Site is the Escambia Treating Company (ETC) Site (**Figure 1**), which is located immediately north/northwest of the Agrico Site. Constituents of concern for the ETC Site are present in groundwater at monitoring well locations that are part of the Agrico long-term groundwater monitoring network. Many of the Agrico monitoring wells are also sampled as part of the ETC groundwater monitoring. The ETC Site is a former wood preserving facility located on Palafox Street between Fairfield Drive and Brent Lane. The facility conducted wood treatment operations from approximately 1942 to 1982 that have resulted in extensive creosote and pentachlorophenol (PCP) contamination in soil and groundwater. In 1996, EPA approved a permanent relocation program for people living in neighborhoods affected by the ETC Site. The homes were purchased by the federal government and have been demolished. This area is expected to be redeveloped as an industrial park. The basis for the relocation is stated in ETC's Interim ROD dated February 12, 1997. The EPA approved soil remedy for ETC (February 13, 2006) included a previous interim action with approximately 255,000 cubic yards of contaminated soils having been excavated and stockpiled at the Site and an interim action including residential relocation. The major components of the final remedy for the ETC Site for soil are: residential relocation and excavation of on-site and off-site contaminated soils; with on-site containment, solidification/stabilization and capping; and O&M with long-term monitoring and institutional controls. The ETC Site is a Superfund site whose overall remedial actions are being funded by the federal government.

The contamination of groundwater resulting from the ETC Site has been assessed. In 1999 and 2000, groundwater data and surface water data for Bayou Texar were collected as part of the ETC investigation. The results indicate that a groundwater plume emanates from the ETC Site and is transported by groundwater flow into the northern portion of the OU-2 area. The Remedial Investigation/Feasibility Study was completed as of February 13, 2006. On December 14, 2007, options and concerns over proposed remedy selection for the ETC Site were discussed with EPA and EPA's consultants. The ETC groundwater remedy was approved by EPA in mid-2008. The source controls were completed for ETC in 2009. Implementation of the groundwater remedy is on-going.

The CSX Railroad (Goulding Yard) (**Figure 1**) is located upgradient (northwest and west) of the Agrico Site. A consent order issued by FDEP initiated an assessment of arsenic impacts within the CSX property. Remediation of the impacted soils area was completed during 2008.

In March 1999, FDEP identified two properties collectively referred to as Site 348 for assessment activities. Site 348 is located about 3,000 ft due south of OU-1 (see **Figure 1).** FDEP's Site 348 (also referred to as the Kaiser site) consists of an area-wide investigation that has focused on at least two property parcels with a history of fertilizer production. The assessment of these properties and others in the Palafox Street corridor is part of FDEP's on-going project No. 348 to identify sources of impacts to ECUA water supply wells (No. 9, East Plant, F & Scott) (**Figure 1)**.

Information from the Escambia County Court Records and Escambia County Property Appraisers Office indicate that Site 348 is composed of two parcels. The north parcel is defined by property parcel number 5201. The south parcel is parcel number 5401. These parcels are separated from each other by parcel number 5301 and various sub-parcels which are reportedly not part of the Site 348 assessment. The ownership for the Site 348 parcels is as follows:

PARCEL 5201

00/1932 to 00/1965	The Southern Cotton Oil Company (a Division of Hunt Foods)
00/1965 to 12/1977	Kerr-McGee Chemical Corporation
12/1977 to 03/1981	Agrico Farm Center Fertilizer
03/1981 to 10/1986	Carolina Eastern, Inc. (Division 2 Fertilizer)
10/1986 to 12/1989	Rosenbaum Family
12/1989 to current	Browning, Ferris Industries of Florida, Inc. (BFI)

PARCEL 5401

08/1943 to 07/1958	Merchant's Fertilizer & Phosphate Company
07/1958 to 05/1967	Merchant's Fertilizer Company
05/1967 to 03/1985	Kaiser Aluminum Chemical Corporation (Kaiser Aluminum & Chemical Sales, Inc.)
03/1985 to 03/1985	Quit Claim Deed to Kaiser Agricultural Chemicals Corporation
03/1985 to 02/1994	S & P Investments Corp. (merger of Kaiser Agricultural Chemicals Corporation and S & P Investments Corp.)

02/1994 to 12/1994	Vigoro Industries, Inc. (merger of S&P Investments Corp. into Vigoro Industries, Inc.) (Vigoro Industries, Inc. is merger of Estech Branded Fertilizers, Inc. with and into Kaiser Agricultural Chemicals, Inc. under the name of Vigoro Industries, Inc.)
12/1994 to current	James W. Bradley and Donald W. Moore (Death Certificate for James W. Bradley recorded 01/2007.)

Assessment results indicate several constituents exceeding standards including ammonia, chloride, combined radium 226 + 228, and nitrate. The identified sites (parcels) noted above are located south of the Agrico Site and upgradient of Agrico monitoring wells AC-6S and AC-6D. FDEP study results indicate that these monitoring wells have been impacted by the Kaiser site. Project No. 348 is currently continuing to assess the identified sites, as well as other potential source areas. URS' research regarding these former operations associated with Site 348 is based on aerial photography (1940, 1951, 1958, 1961, 1970, 1981, 2004, and 2007), records from the Escambia County Property Assessor's Office, and Sanborn Maps (1932 and 1950). The Sanborn maps indicate that the operations were present at the site as early as 1932. **Appendix C** presents aerial photographs related to the two focal properties being investigated as Site 348. Corporate filings with the Florida Department of State indicate that one of the focal parcels was formerly the Merchants Fertilizer & Phosphate Company and may have operated as early as 1926. The other focal parcel is associated with the former Southern Cotton Oil Company, which according to the Sanborn Maps operated a fertilizer manufacturing business as part of its operation. As of 1981, the aerial photography indicates that the operations may have ceased at the Southern Cotton Oil Company. However, in 1981 a business appears to be operational on the Merchants Fertilizer & Phosphate Company property with trucks and railcars parked on-site. It appears from the 2004 aerial photograph that buildings on both properties were removed by that year.

Sanborn maps (1932 and 1950) indicate the following features associated with each property. It should be noted that the Southern Cotton Oil Company is located north of the Merchants Fertilizer & Phosphate Company, and the two properties are separated by an unknown business property parcel.

> ***Southern Cotton Oil Company*** **–** Fertilizer Storage Warehouse (shown on 1932 map but not on 1950 map); Fertilizer Mixing and Storage Warehouse; Fertilizer Factory and Dry Mixing Warehouse (shown on 1950 map but not 1932 map); nitrate of soda storage (1932 only); ammonia tank (1950 only); railroad spur adjacent to Fertilizer Factory; Water supplied by City as early as 1932.
>
> ***Merchants Fertilizer & Phosphate Company***- Fertilizer Mixing Building (1932); Fertilizer Mixing Building called Dry Mixing Building in 1950 map; Ammonia Tank (1950 only); Nitrate of Soda Storage (1932 only; different location in 1950); Insecticide Storage Area (1932 only); railroad spur adjacent to mixing building; water supplied by City as early as 1932; overall size of mixing building smaller in 1950.

According to an ECUA 2010 Drinking Water Quality Report (www.ecua.fl.gov), a 2008 sample result indicated the combined radium 226 + 228 concentration in groundwater from the F & Scott well was 5 pCi/L. The drinking water standard for this constituent is 5 pCi/L. This well is located about 0.5 mi west of Site 348.

In 2002, another source of radium contamination was identified by FDEP near an active public supply water well (Hagler) (**Figure 1)** located east of Bayou Texar near the Pensacola Airport. Reportedly, the source is an abandoned construction debris dump site. The Mactec report (2010) later confirmed that the Hagler well is not in the same recharge and flow path setting as the Agrico facility. The Hagler well was subsequently temporarily inactivated. This location is on the east side of Bayou Texar, and impacts have the potential to move westerly into Bayou Texar or easterly into Pensacola Bay. Preliminary assessments are expected to be conducted by FDEP in the future. The Hagler well is currently (2013) active.

The assessment of Site 348 is on-going and to additional reports were reviewed in 2011 and include the following:

- *Summary of Phase VIII Groundwater Investigation Findings Report, ECUA Well Field Site, Pensacola, Escambia County, Florida; prepared for FDEP (Site 348) by Mactec Engineering & Consulting, Tallahassee, Florida (February 2010)*
- *Site Assessment Report, Former Kaiser Agricultural Chemical Company, 2710 North Palafox Street, Pensacola, Florida; prepared for Mr. James W. Bradley and Mr. Donald W. Moore by Cameron-Cole, LLC, Pensacola, Florida (September 15, 2011)*

Conclusion excerpts from the Phase VIII Mactec report (February 2010) include:

- "Interpretation of the capture zone and flow path simulations suggest that the ECUA #6 {Hagler Well}water supply well does not appear to be in the same recharge and flow path setting as the Agrico facility and therefore, is not likely to have any hydraulic connection."
- "Under typical aquifer conditions the aquifer simulation suggests that groundwater flow from the former Kaiser Fertilizer Plant appears to be in a general southeastern direction towards Bayou Texar and Escambia Bay, this is consistent with the measure(d) water levels and calculated potentiometric surface."
- "Interpretation of the capture zone, flow path and water supply well pumping simulations suggest that water supply wells ECUA #3 {formerly No.9}, ECUA #4 {East Plant Well}and potentially ECUA #1 {formerly No.6} are hydraulically downgradient from the former Kaiser Fertilizer Plant."
- "Interpretation of the capture zone, flow path and water supply well pumping simulations suggest that water supply wells ECUA #9 {F & Scott Well} and ECUA #5 {West Plant Well} appear to be hydraulically sidegradient to the former Kaiser Fertilizer Plant."
- "The concentrations of ammonia nitrogen detected at and hydraulically downgradient from the former fertilizer distributor site {Southern Cotton Oil} and the Former Kaiser Fertilizer Plant may be considered site {Site 348} related based on the groundwater modeling results and historical data evaluation."
- "The concentration of Radium 226/228 detected in groundwater samples collected from monitoring wells located at and hydraulically downgradient from the former Kaiser Fertilizer Plant suggest that they may be attributed to the site {Site 348}, however, they may also be related to natural occurrences based on the groundwater modeling results and historical data evaluation."

Conclusion excerpts from the Cameron-Cole report (September 2010) include:

- "A review of the previous area-wide investigation {for Site 348} shows that radium 226/228 was detected in multiple wells in the area during the Phase III field event, with all but two exceeding the CTL. Documentation in the FDEP"s OCULUS database indicates a consultant for the former BFI property {Southern Cotton Oil} also reported ammonia and radium 226/228 present in monitoring wells at their site, located approximately 500' north of the former Kaiser property."
- "Subsequent Phase VI sampling results for radium 226/228 revealed that concentrations were within the "naturally-occurring" background range for north and central Florida. The FDEP concurred with this statement in their deliverable review letter. The September 23, 2003 FDEP summary memorandum for the Phase VII investigation stated that, of the wells sampled that exceeded the CTL for radium 226/228, several were located upgradient of the former Kaiser property {on Southern Cotton Oil property}."

"The Agency for Toxic Substances and Disease Registry (ATSDR), an agency of the U.S. Department of Health and Human Services, also recognizes that north and central Florida may exhibit "high" background levels of uranium and radium." On October 1, 2010, EPA entered Site 348 into the CERCLIS database. The site reference has been changed from Site 348 to AOC A through H. The letter identifier refers to the various parcels within the designated former Site 348 area.

AMEC (formerly MacTec) conducted additional sampling for Site 348 during July 2012. The EPA Athens Laboratory analyzed all samples. The results of this assessment were included in the Expanded Site Inspection Report – Palafox Street and Texar Dr., Ammonia Site, Pensacola, Escambia County, Florida, June 2013 (AMEC, 2013). A summary of the conclusions and recommendations from this report is as follows:

- "Based on the July 2012 evaluation, the soil and groundwater migration pathways warrant further evaluation. However, given the lack of identified soil contamination sources and the persistent groundwater contamination by nutrients and some metals, it is recommended that this site be referred to the Department's Northwest District for further enforcement, evaluation, and remediation."

2.8 BAYOU TEXAR STUDIES

Bayou Texar has historically experienced non-point source storm water impacts from development in the bayou watershed. Stone and Morgan (1990) reported the leading causes of impacts as:

- Construction of roads and bridges that interfere with normal circulation and tidal flow patterns and thus have augmented the detrimental effects of siltation and nutrification from various non-point and point sources within the watershed.
- Overloading of wastewater and treatment facilities in the watershed, resulting in ruptures and spills to the bayou.
- Major alterations of the watershed, which have increased the storm water runoff, resulting in increased organic and inorganic nutrient load, as well as sediment loading.

- Runoff affected by fertilizing residential lawns.

In addition to water and sediment entering the Bayou Texar system from Carpenter Creek, there are numerous culverts, storm water drains, and road ends throughout the length of the bayou which serve to direct non-point source storm water contamination to it. More than 60 outfalls have been identified that discharge storm water to Bayou Texar. All of these factors contribute to contaminant loading of the bayou system. Based on numerous studies over the past 40 years and based on the most recent EPA funded study by the University of West Florida (UWF) (Mohrherr et al., 2005), Bayou Texar is an urban body that is impacted by a variety of pollutants and pollution sources. This UWF study corroborated the Agrico reports that fluoride and radium are discharged to Bayou Texar via groundwater discharge, but concentrations in the bayou surface water and bottom sediments are low enough that adverse effects on biota are not likely to occur.

Bayou Texar is a coastal brackish water estuary connected to Pensacola Bay. The bayou empties into the bay system approximately at the point where Escambia Bay and Pensacola Bay converge, which in turn is connected to the Gulf of Mexico. **Figure 1** shows the location of Bayou Texar and its relationship to the Agrico Site. The uppermost (northern) boundary of the bayou is marked by the 12th Avenue Bridge. The bayou is tidally influenced along its entire length. The normal tide range for the bayou seldom exceeds 2 ft (Stone and Morgan, 1990). The bottom water salinity ranges from about 5 to 20 parts per thousand (ppt) (Stone and Morgan, 1990). Surface salinities increase from upstream to downstream, and a bottom saltwater wedge is present. At mean tide, the average volume of water in Bayou Texar is about 100.4 million cubic ft, and the average volume exchange is 23.8 million cubic ft per day or about 24 percent of the average volume (Stone and Morgan, 1990). The daily exchange ranges from 11 to 34 percent. The average depth is about 6 ft.

The bayou trends north to south, and is approximately 4 miles in length. The shoreline is highly developed, bordered almost its entire length by suburban residential housing. It is a “residential” bayou, with lawns maintained to the water edge for most of its shoreline. Many piers extend into the bayou. The environmental quality of the bayou is affected by extensive urbanization in its watershed. Storm water runoff enters the bayou from culverts and storm drains, and Carpenter’s Creek. It has been reported that between 50 and 80 storm water outfalls discharge storm water runoff from the urban streets of the watershed into Bayou Texar (Stone et al., 1990). Bayou Texar is classified as a Class III Marine body of water by the State of Florida. Under this classification the bayou is suitable for recreational uses and the propagation of fish and wildlife. However, shellfish propagation and harvesting is not supported by the water quality of the bayou. It serves as a popular recreational water body.

The water quality of Bayou Texar is typical of a brackish water environment, exhibiting characteristics of a saline environment due to tidal influences from Pensacola Bay, with some freshwater input from Carpenter’s Creek. In general, the saltwater marine environment dominates over the freshwater input.

Carpenter’s Creek, the only freshwater tributary that flows into Bayou Texar, discharges to the bayou at the 12th Avenue Bridge. The creek extends about 6 miles north of the 12th Avenue Bridge and drains a fairly extensive watershed into the bayou. The creek drains suburban, commercial, and industrial neighborhoods to the north.

2.8.1 Effects of Urbanization on Bayou Texar

As discussed in Mohrherr et al. (2005), Bayou Texar has experienced substantial environmental degradation over at least the last half century. This has resulted from a number of factors. Because it is an urban estuary, it is subject to a number of industrial and domestic point and non-point discharges, including storm water drains, industrial releases, sewage spills, septic system leakage and uncontrolled urban runoff of domestic fertilizers from the homes that line the shore. In addition, the physical characteristics of the bayou have been substantially modified by filling, channelization, and construction of bridges, homes, and other shoreline structures. As a result, turbidity and sedimentation have significantly increased and sediments are contaminated. Biological and chemical oxygen demand is high, resulting in decreases in dissolved oxygen in surface water; and sediments are contaminated. To a large extent, Bayou Texar is functioning as a poorly designed and inadequately flushed catch basin. These factors have caused a fairly substantial impact to estuarine biota. The health and diversity of both the benthic community and the fish community have been significantly impacted. Fish kills have occurred on a number of occasions, and the health and diversity of both the benthic community and the fish community have been significantly impacted. Although there is no recent documentation of anoxic conditions in the upper Bayou Texar, it is likely that oxygen levels in upper portions of the bayou decrease to levels that are stressful to benthic invertebrates and fish.

2.8.2 The Nature of Fluoride

Fluoride is an ion of the element fluorine and is a component of most natural waters. The primary factors that control the concentration of fluoride in natural waters include mineral precipitation and dissolution reactions, and ion exchange with clay minerals. Common fluoride-bearing minerals include fluorite (CaF), and a group of phosphate-bearing minerals called apatite. The general formula for apatite is Ca5 (PO4)3(OH,F,Cl), or Calcium (Fluoro, Chloro, Hydroxyl) Phosphate. Apatite is actually three different minerals, depending on whether fluorine, chlorine, or the hydroxyl group is predominant. These ions freely substitute in the crystal lattice, and all three are usually present in natural minerals, although some natural minerals may be nearly 100 percent of one ion. The names of the three pure phase minerals are fluorapatite, chlorapatite, and hydroxylapatite.

The minerals fluorite and apatite are present in many natural systems, and these minerals are known to control the concentration of fluoride in water through equilibrium reactions. In its simplest form, this type of reaction is similar to that of dissolving salt (the mineral halite) in a glass of water—the salt will readily dissolve until the water reaches saturation with halite (NaCl), and at that point the concentration of dissolved Na+ and Cl- is said to be at equilibrium with the mineral. More halite can be added to the system, but the concentration of Na+ and Cl- in water will not change. If more dilute water is added to the saturated system, more halite will dissolve; conversely, if the water is allowed to evaporate, halite will precipitate out of solution. Natural mineral systems work in a similar manner, and the concentrations of dissolved ions in these systems are controlled through predictable geochemical relationships.

2.8.3 Fluoride within the Bayou Texar System

In many systems (e.g., groundwater from the Agrico Site), fluoride appears to act as a conservative ion, meaning it travels without much change in concentration with the advective flow of groundwater in the dissolved state. However, the solubility of fluoride is significantly influenced by changes in pH, alkalinity, salinity, and the availability of phosphate and calcium. Transition zones between groundwater and surface waters, such as is the case in Bayou Texar, typically produce significant changes in all of these variables, and it is possible that the solubility of fluoride changes as a result of interactions between the two water sources.

Fluoride and other natural elements that are complexed in solid mineral phases, such as fluorite or fluorapatite, are generally not considered to be bioaccessible, so the focus of any ecological risk evaluation is typically on understanding the availability of the dissolved fraction of fluoride at potential exposure points. The biologically active zones, or potential exposure points, for fluoride in Bayou Texar include surface sediments via the pore water and surface water.

Fluoride in Bayou Texar Surface Water

Elevated concentrations of fluoride have been detected in the sediment and pore water in the bayou, however, fluoride in the bayou surface water is not elevated. Near-bottom surface water in Bayou Texar contains fluoride concentrations ranging from ambient levels to 1.5 mg/L, as measured during annual sampling associated with the Agrico Site (URS 2007a) and during the Bayou Texar evaluation (URS, 2009c). The Florida Surface Water Quality Criterion (62-302.530 Florida Administrative Code [FAC]) for Class III Marine waters for fluoride is 5 mg/L.

Fluoride in Bayou Texar Sediments and Pore Water

Fluoride in bayou sediments ranges as high as 930 mg/kg (Mohrherr et al. 2005) in the area where the deep groundwater plume from the Site discharges into the bayou. In this limited area, Mohrherr et al. (2005) observed that the highest fluoride concentrations in surface sediment were generally found nearer the sediment surface. It should be noted, however, that the surface sediment samples that were collected in this study were from either the top 30 cm or top meter, but not from the shallow biotic zone (0-10 cm).

Fluoride in sediment pore water has been detected at concentrations over 200 mg/L (Entrix 1993); although in the more recent Mohrherr et al. (2005) study the highest concentration was 112.7 mg/L. These results from the above studies indicate that elevated concentrations of fluoride in the sediment pore water are occurring in a segment of the bayou that has a length of approximately 160 meters. The depths of the maximum fluoride recorded in this 160 meter segment concentrations varied. Although there is some evidence fluoride in pore water increases with depth in this discharge zone, this trend is not consistent. In the Entrix (1993) study vertically stratified measurements of fluoride in sediment pore water were obtained. The results of this study indicated that the highest concentration of fluoride in pore water near the sediment surface (20-26 cm) was 240 mg/L. However, in this study only one other measurement of fluoride in pore water near the sediment surface exceeded 12 mg/L. In the Mohrherr et al. (2005) study the highest concentration measured in the 0-1m interval was 14.2 mg/L. It should be noted that none of the Entrix (1993) or Mohrherr et al. (2005) pore water samples specifically measured the pore water in the uppermost 10 cm, the biotic zone. The intervals closest to the sediment surface were generally in the range of 10 to 30 cm below the sediment surface.

Groundwater Discharge to Bayou Texar

Surficial zone groundwater reaching Bayou Texar from the west is not impacted by the Agrico plume. Typically, fluoride concentrations in the surficial zone near the bayou historically have been less than 1 mg/L **(Figure 8).** The deeper main producing zone groundwater impacted by the Agrico plume immediately west and adjacent to the bayou contains fluoride. Specifically, the groundwater discharging to Bayou Texar shows current (November 2013) concentrations of fluoride of up to 120 mg/L from the main producing zone aquifer at monitoring well AC-35D near Bayou Texar. This compares to the observed (1999-2013) average concentrations of fluoride in surface waters of 1.11 mg/L at ACSW-1 (a station in the area where the groundwater plume discharges the highest concentrations of fluoride into the bayou). There are several distinct chemical differences in the two waters (i.e. surface water and groundwater) that can affect the fate and transport characteristics of fluoride. Those differences include the following:

- The pH of the receiving water in Bayou Texar is much higher than the adjacent groundwater (6.95 versus 4.05, respectively).
- The alkalinity of the groundwater is near zero because of the low pH; however, the surface water in Bayou Texar has an alkalinity of 58 mg/L.
- The overall ionic strength of the surface water in Bayou Texar is significantly higher than the adjacent groundwater because of the saltwater influence of Pensacola Bay.

These changes indicate that the saturation states of several minerals, including fluoride-bearing minerals, may change as groundwater and surface waters in the Bayou Texar area interact.

Conclusions on Fluoride and Bayou Texar

Field data from the Bayou Texar evaluation (URS, September 4, 2009) indicate that the surface water and shallow pore water in Bayou Texar sediments have a source of phosphate and alkalinity required to induce fluorapatite precipitation (as does almost all seawater). The change in chemical conditions of the groundwater plume as it interacts with the overlying pore and surface waters in Bayou Texar causes a fundamental change in the equilibrium state of the system. As the system works its way back toward chemical equilibrium, it is likely that fluorapatite is precipitating out of groundwater as it moves vertically upward along its flow path. The precipitation of fluoride as fluorapatite is indirectly evident from the higher concentrations of fluoride in surface sediments as reported by Mohrherr et al. (2005). The apparent decrease of fluoride in near-surface pore water is also likely related to removal of dissolved fluoride in this zone by mineral precipitation, and is not necessarily solely due to dilution.

3.1 HYDROGEOLOGIC FRAMEWORK OF THE SAND-AND-GRAVEL AQUIFER

The vertical profile of the Sand-and-Gravel aquifer consists of beds of sand and gravel interbedded with beds of silt, clay, and fine sand sediments (**Figure 4**). The permeability of these beds is variable, both laterally and vertically. However, the subsurface sequence can be divided into three distinct zones. These zones vary greatly in thickness and lithology throughout Escambia County. In addition, individual beds of sand or clay within these zones are highly discontinuous, resulting in considerable heterogeneity within the zones. The major zones are the surficial zone, the low-permeability zone, and the main producing zone (Roaza, et al., 1991).

3.1.1 Surficial Zone

The surficial zone consists of the uppermost layer of sediments. It contains the unsaturated zone and the shallow surficial water table. The surficial zone varies in thickness, but is generally less than 100 ft thick beneath the OU-2 monitoring area. The surficial zone consists primarily of quartz sand ranging in size from fine sand to gravel. Thin beds of limonite-cemented sandstone also occur. The zone contains thin beds of clay and silt that are highly discontinuous. These low-permeability beds occur both in the unsaturated and the saturated portions of the zone. Groundwater within the surficial zone primarily moves downward through the underlying lower-permeability zone to recharge the main producing zone of the aquifer.

3.1.2 Low-Permeability Zone

The low-permeability zone underlies the surficial zone and is composed of sediments with overall lower permeability characteristics than sediments above or below the zone. This zone forms a semi-confining layer and acts to restrict the vertical flow of groundwater between the overlying surficial zone and the underlying main producing zone. The actual lithology of this zone is variable, ranging from poorly sorted sand and silt to sandy clay to clay beds. Locally, well-sorted, water-bearing sands can also occur within this zone. Poor sorting and a higher percentage of clays and silts distinguish this zone from the other zones. The thickness of this zone in the subsurface underlying the facility ranges from about 20 to 50 ft (Roaza, et al., 1993).

The thickness and lithology of this zone is important because of its effect on vertical permeability. The low vertical permeability of this zone maintains the hydraulic head difference between the surficial and main producing zones in certain areas. This head difference imparts the vertical gradient responsible for the transport of dissolved constituents downward from the surficial zone to the main producing zone beneath the OU-1 Site (see **Figures 5 and 6**).

3.1.3 Main Producing Zone

The main producing zone is the most productive portion of the Sand-and-Gravel aquifer and is the zone tapped by most water supply wells. The main producing zone is the deepest portion of the aquifer. The groundwater within this zone exists under semi-confined conditions. The main producing zone consists of moderate to well-sorted sand and gravel, along with minor interbedded layers of sandy clay and clay. Locally and regionally, variations occur in the lithology of the main producing zone. Changes with depth tend to be gradual and include varying grain size distribution and changes in the degree of sorting.

The clay beds interbedded within this zone generally constitute 10 to 40 percent of the thickness. In some areas, the productive intervals can be correlated and appear to be continuous over a distance of many miles. The saturated thickness of the main producing zone near the Site is approximately 100 ft.

The main producing zone is recharged by leakage through the low-permeability zone. The actual amount of recharge is determined by the hydraulic head difference between the surficial zone and the main producing zone, the vertical permeability of the low-permeability zone, and the presence of any pumping wells. Groundwater from this zone discharges into Bayou Texar from east and west directions, which represents a discharge boundary for groundwater in OU-2.

3.2 HYDRAULIC HEAD DIFFERENCES AND GROUNDWATER FLOW BOUNDARIES

Within the former Site boundary (OU-1), the hydraulic head for the surficial zone is higher than the hydraulic head in the main producing zone, which causes the surficial zone to infiltrate and recharge the main producing zone. This causes the plume emanating from the Site to be transported and diverted to the main producing zone within about 0.4 mile of the Site. For this reason, the surficial zone plume has limited areal extent; and since source control has been completed, significant trends toward decreasing concentrations within the plume have occurred in the surficial zone. Near the bayou, the main producing zone hydraulic head is slightly higher than the surficial zone, causing the main producing zone to discharge into the bayou (see **Figures 4, 5, and 6**). The bayou is a discharge boundary; therefore, groundwater from the west and east directions of Bayou Texar discharge into the bayou. This creates a boundary condition for the groundwater flow and plume transport. The Agrico plume discharges from the west into Bayou Texar along with the westerly groundwater component. Groundwater from the east (at least as far away as the Pensacola Airport) also discharges to the bayou. **Figure 4** shows the hydrogeologic conceptual model from the Agrico Site to Bayou Texar.

Within OU-2, groundwater generally flows laterally and vertically (both upward near the discharge boundary and downward in recharge areas) within the Sand-and-Gravel aquifer. The overall direction of groundwater flow is easterly toward Bayou Texar. Head variations between zones are important in controlling the vertical direction of groundwater flow. **Figures 5** and **6** show the potentiometric surfaces on November 4, 2013 for the surficial zone and main producing zone, respectively. These surfaces are similar to those measured historically.

The flow direction downgradient of the Agrico Site is primarily controlled by the Bayou Texar discharge boundary conditions. Near the bayou, vertical head differences between aquifer zones cause groundwater to flow vertically from the main producing zone upwards, and groundwater discharges to the bayou. There is evidence that the bayou is a discharge boundary for both the surficial and main producing zones of the aquifer, and that groundwater does not pass under the bayou as underflow. Water levels within both zones to the north, east, and west of Bayou Texar indicate a groundwater flow direction toward the bayou boundary. Conditions for Bayou Texar have been substantiated by comprehensive groundwater modeling using actual water level data for modeling calibration. The work has primarily been conducted by the NWFWMD. Information concerning the discharge boundary for Bayou Texar is found in the following references:

- NWFWMD. (Roaza, Pratt, Richards). June 1993. Numerical Modeling of Ground Water Flow and Contaminant Transport in the Sand-and-Gravel Aquifer, Escambia County, Florida. Water Resources Special Report 93-4.
- NWFWMD. April 1996. Analysis of Ground Water Availability in the Cordova Park Area, Southeastern Escambia County, Florida.
- NWFWMD. (Richards, Pratt, and Milla). December 1997. Wellhead Protection Area Delineation in Southern Escambia County, Florida. Water Resources Special Report 97-4.
- NWFWMD. (Countryman, Baker, Pratt, and Miller). October/November 2000. Potentiometric Surface of the Surficial Zone of the Sand-and-Gravel Aquifer, Escambia County, Florida. Water Resources Map Series 01-1.
- NWFWMD. (Countryman, Baker, Pratt, and Miller). October/November 2000. Potentiometric Surface of the Main Producing Zone of the Sand-and-Gravel Aquifer, Escambia County, Florida. Water Resources Map Series 01-2.

3.3 CURRENT GROUNDWATER PUMPING CONDITIONS

The only wells present within the immediate vicinity of the Agrico plume are residential irrigation wells. No public supply wells are operating within the plume vicinity. Active public supply wells within 2 miles of the Agrico Site include the ECUA’s F and Scott Street Well (approximately 1 mile southwest), Royce Street Well (approximately 1.1 miles northeast), and Well No. 6 (approximately 1.9 miles south) (see **Figure 1**). Based on the potentiometric surface data for the past 11 years, the pumping from the active supply wells and the irrigation wells does not adversely affect the groundwater flow direction in the area of the Agrico plume. This is also evident in the groundwater level trends for both the surficial zone and the main producing zones presented in **Appendix B**. These trends are closely related to rainfall conditions and show no evidence of pumping influences.

ECUA supply wells No. 8 (1995), No. 9 (1998), and East Plant (2000) have all become inactive as per the date noted in parentheses (**Figure 1**). ECUA's closure of these wells was not associated with the Agrico plume. Other sources have been identified by FDEP and are currently being investigated as potential sources that caused impacts to these closed wells.

The locations of the active and inactive public supply well sites in the vicinity of the Agrico Site are shown on **Figure 1**.

3.4 RAINFALL CONDITIONS

Rainfall records collected at the Pensacola Airport indicate that 2013 was characterized by above average normal rainfall (61.69 inches based on 1900-2013 period of rainfall record), with a total accumulation of 74.61 inches. For the past 10 years, extremes in rainfall are represent by abundant rainfall in 2005 followed by a drought in 2006. During 2006, the total rainfall was 45.26 inches, or 16.27 inches below normal. The hurricanes during 2005 produced a very wet year, with an annual total of 87.32 inches, or 25.79 inches above normal.

Figure 7 presents the annual rainfall data for the period of record from the NOAA Pensacola station. Also included on **Figure 7** is a graph showing the cumulative departure from normal rainfall. This graph, in general, mimics groundwater level trends. For 2003-2005, the cumulative departure from normal data indicates that groundwater levels were on the rise, reaching a high in 2005. Since 2005, the annual accumulation has been less so the departure from normal has declined but the overall rainfall for the past 5 years has been above normal. The pattern is reflective more of a wet cycle than a dry trend.

The field activities associated with this 2013 Annual Report included O&M tasks as outlined in the approved O&M Plans, September 1996 and November 1998 and as modified by implementation of EPA-approved long-term monitoring evaluation recommendations (URS, 2006d). On September 5, 2008, EPA approved discontinuing the semi-annual sampling program for OU-1 and instead these wells are incorporated into the long-term monitoring program as described below. The annual O&M tasks conducted in 2012 are as follows:

- Annual groundwater sampling (November 2013) of 23 long-term groundwater monitoring wells (for both OU-1 and OU-2)
- Annual surface water sampling at two long-term locations in Bayou Texar.
- Annual surface water sampling at three surface water sampling locations within the primary groundwater discharge reach of Bayou Texar (annual monitoring started in 2010).
- Irrigation well identification (an annual well permit search) and voluntary sampling and voluntary abandonment (by Phillips 66 and Williams Companies, Inc.) for irrigation well owners (Voluntary Program).
- Annual advisory notices distributed to water well contractors, irrigation system installers, and pool contractors. This list of contractors was compiled from the NWFWMD list of licensed water well contractors, from Escambia County construction permit records, and from the telephone directory.
- Coordination and dissemination of site information to local, regional, and state agencies.
- Annual Florida Department of Transportation inquiry of construction activities scheduled for Fairfield Drive between the CSX overpass and the I-110 interchange.
- Annual review of NWFWMD well construction permits records to identify any potential new well construction downgradient of the Agrico Site. Also annual inquiry on status of NWFWMD well construction moratorium in the vicinity of the ETC and Agrico sites.
- Regular maintenance of property associated with the former Agrico Chemical Company (OU-1).

The Advisory Notice, Voluntary Program, Institutional Controls Coordination, and findings of the sampling results are further detailed in **Sections 5, 6, 7,** and **8**, respectively.

4.1 GROUNDWATER SAMPLING

Annual groundwater samples were collected from the long-term monitoring network in November 2013. The total number of monitoring wells sampled for November 2013 includes 7 surficial zone wells and 16 main producing zone wells.

Groundwater samples were collected in accordance with the FDEP's SOPs for Field Sampling (Revision – March 31, 2008; effective December 3, 2008). Sample collection techniques, sample documentation, preservation requirements, sampling equipment decontamination procedures, the types and number of quality assurance/quality control (QA/QC) samples collected, and specifications that allow for the verification of the precision, accuracy, and completeness of data collected are all detailed in the SAP (O&M Plan, November 1998).

4.1.1 Monitoring Well Network

Monitoring Locations

Monitoring locations for wells installed either in the surficial or main producing zones of the Sand-and-Gravel aquifer are shown on **Figure 1**. **Table 1** lists the wells in the Agrico monitoring network, including long-term monitoring wells which are sampled annually (includes measuring groundwater levels) and periodic monitoring wells where groundwater levels are measured annually and wells are sampled during the Five-Year Review. **Table 2** presents the well construction details for all monitoring wells associated with the groundwater monitoring program for the Agrico Site.

Sampling Constituents

The following constituents of concern are currently included as part of the long-term groundwater monitoring associated with the monitored natural attenuation remedy in both the surficial and deep zones:

- Fluoride
- Arsenic, Total (only in monitoring wells,AC-2S and AC-3S)
- Chloride
- Sulfate
- Nitrate
- Radium 226 and Radium 228 (naturally occurring); also reported as the sum of combined radium 226 + 228 results

Lead and arsenic are no longer included as analytical parameters for all groundwater samples. Arsenic is only analyzed in AC-2S and AC-3S wells. These modifications were by the EPA (**Appendix D**). Reasons for these changes to the monitoring program are explained along with other recent modifications in Sections 4.1.2 through 4.1.4 below.

4.1.2 Summary of Sampling Modifications Initiated in November 2007

- Semi-annual sampling of OU-1 groundwater monitoring wells was discontinued and changed to annual sampling as part of the November sampling event. The OU-1 surficial zone monitoring wells, ACB-31S, ACB-32S, AC-33S, AC-34S, and AC-7SR, were integrated into a site-wide groundwater monitoring network. The analyte list for these wells was changed to include the OU-2 analyte list. In addition to total lead, total arsenic and fluoride (COCs in the OU-1 ROD), the groundwater samples from these wells were analyzed for chloride, sulfate, nitrate, radium 226, and radium 228(COCs in the OU-2 ROD) **(Appendix D).**
- All Agrico long-term sampling of groundwater and surface water included nitrate. Nitrite has been deleted from the site's analyte list as modified by implementation of EPA-approved long-term monitoring evaluation recommendations (URS, 2006d).

- Surficial zone monitoring wells AC-5S, AC-24S, AC-26S, NWD-2S, and NWD-4S were changed from long-term to periodic monitoring wells. Additionally, monitoring well NWD-3S was removed from the monitoring network because it was destroyed as a result of off-site construction.
- The groundwater sampling purging procedure was changed from extracting a minimum of three well volumes to a low-flow purge procedure that allows for collecting water quality field parameters after one well volume is purged, and then one-quarter well volume thereafter until three stable water quality parameter readings are collected. This procedure is in accordance with the FDEP SOP for sampling monitoring wells.
- Prior to November 2006, annual reports were prepared for OU-1 and OU-2. Annual reporting for these areas has been combined into one annual report.

4.1.3 Summary of Sampling Modifications Initiated in November 2009

- Additional groundwater sampling was requested by EPA in their comment letter dated October 15, 2009 regarding the Evaluation of Monitored Natural Attenuation in Groundwater Report. The additional wells included periodic monitoring wells AC-9D2, AC-24D, and AC-28D. Constituents to be analyzed from the groundwater from these monitoring wells are the same as the long-term network constituents. The status of these wells was changed from to long-term until sufficient sampling results have been collected on an annual basis.

4.1.4 Summary of Sampling Modifications Initiated in November 2010

- Analysis of lead and arsenic were discontinued from the long-term network groundwater analyses for monitoring wells based on the EPA approval (February 5, 2010) of recommendations in the August 19, 2009, "*Evaluation of Monitored Natural Attenuation in Groundwater*" **(Appendix D)**. In that report, the absence of arsenic and lead in groundwater samples collected from the monitoring well network was reported. The exception is for AC-2S and AC-3S. Total arsenic will continue to be analyzed for these wells to verify the continued effectiveness of the OU-1 cap.
- Sampling of Carpenter's Creek at the Ninth Avenue Bridge (ACSW-BL) was discontinued as per January 25, 2010 approval of the November 18, 2009 Recommendations to Operations and Maintenance Plans for OU-1 and OU-2 (**Appendix D)**.
- Three surface water sampling locations were added to sampling program and include BT-02, BT-107 and BT-127. These near-bottom surface water samples are analyzed for fluoride only (EPA recommendation in June 2010, Third Five-Year Review Report).

4.1.5 Well Purging

Each monitoring well associated with the monitoring network was purged and sampled with an electric, 2-inch, stainless steel, low-flow submersible pump and polyethylene tubing. All wells were purged a minimum of one and a half well volumes before sampling. When a well was purged dry, it was allowed to recover before sampling. Field parameters, including pH, specific conductivity, turbidity, temperature, dissolved oxygen, and oxidation reduction potential were collected from all wells during purging. A summary of groundwater field parameters is presented in **Table 3**.

4.1.6 Investigation Derived Waste

Development and purge water pumped from each well was collected in a temporary storage tank installed on a field trailer. When the mobile storage tank was filled to capacity, the recovered water was transferred to a larger temporary storage tank located on the Agrico OU-1 site. In accordance with the FDEP guidelines, the wastewater is managed as industrial waste.

The IDW (non-hazardous groundwater purge water) is transported by Liquid Environmental Solutions (LES) to their Mobile, Alabama facility (EPA ID Number ALO 000 859 421). There it is treated and disposed of in accordance with state and federal regulations. The purge water, 2,700 gallons, was picked up and transported for disposal on November 25,, 2013.

4.1.7 Water Level Measurements

In November 2013, groundwater levels were measured in all Agrico monitoring wells for OU-1 and OU-2 (26 main producing zone wells and 14 surficial zone wells). Water levels were collected prior to purging in wells scheduled for sampling. These water level measurements were used to evaluate water level fluctuations and groundwater flow direction. All measurements were used to prepare potentiometric surface maps for the surficial and main producing zones of the Sand-and-Gravel aquifer

Static groundwater levels from all identified monitoring wells associated with the Agrico Site (**Figure 1**) were measured to within ± 0.01 ft on November 4, 2013. Measurements were collected with an electronic water level tape using the top of casing (TOC) as the measuring point. The measurements were subsequently referenced to the TOC elevations and used to calculate groundwater elevations. This information was used to confirm that groundwater flow directions remain similar to previous years. Groundwater elevations are presented in **Table 4**.

4.2 BAYOU TEXAR SAMPLING

Five surface water sampling locations were selected in specific areas of Bayou Texar based on the following information: (1) concentration pattern of the Agrico groundwater constituents moving downgradient toward Bayou Texar; (2) previous results of work performed in the bayou (Entrix, 1993a, 1993b, and 1993c); and (3), results of sampling during August 2008 and May 2009.Four of the sampling locations were within the primary groundwater discharge reach of Bayou Texar. One sampling location was downstream of the Agrico plume discharge area (**Figure 1**).

Surface Water Sampling

Two near-bottom surface water samples (ACSW-1 and ACSW-2 (**Figure 1**) are annually collected as part of the long-term monitoring O&M network to assess the quality of surface water in Bayou Texar. Surface water sample ACSW-1 is collected within the segment of the brackish bayou known to receive groundwater discharge from the plume and surface water sample ACSW-2 is also collected in the brackish bayou downstream of the identified impacted discharge segment.

Three near-bottom surface water samples (BT-02, BT-107, and BT-127) are located within the vicinity of ACSW-1 (**Figure 1**). These locations became part of the surface water network in November 2010.

All sampling points are in brackish water locations that are tidally influenced. Saline water from Pensacola Bay is drawn into the bayou during high tide. The locations of the surface water sampling are shown on **Figure 1**. All surface water samples are collected at low tide.

Surface water sampling is conducted in accordance with the November 1998 Sampling and Analysis Plan (SAP). The samples are collected from a boat. A discrete sample is collected at the deepest section of each transect. Samples are collected using a peristaltic pump and disposable polyethylene tubing attached to PVC pipe, which is lowered to the appropriate depth. The depth of each sample collected is approximately 6 inches above the floor of the bayou. Field parameters, including pH, specific conductivity, turbidity, and temperature, are collected in conjunction with the surface water samples.

A summary of the 2013 surface water field parameters is presented in **Table 5**.

Sampling Constituents

The following constituents were analyzed for in surface water samples ACSW-1 and ACSW-2 in November 2013:

- Fluoride
- Chloride
- Sulfate
- Nitrate
- Radium 226 and Radium 228 (naturally occurring); reported also as the sum of combined radium 226 + 228 results.

For sampling locations BT-02, BT-107, and BT-127, fluoride was the only constituent analyzed.

4.3 CHEMICAL ANALYSES

Groundwater and surface water samples collected for the 2013 (November) event were submitted to TestAmerica Laboratories, Inc. (TA), Tallahassee, Florida. All analyses were performed by the Tallahassee and Pensacola laboratories (Certification No. E81005 and E81010, respectively), except radium 226 and radium 228 which was analyzed by TA Richland (Certification No. E87829). All analyses were performed pursuant to NELAP requirements. TA is a certified analytical laboratory by EPA, and the State of Florida. All analytical reports were prepared in accordance with TA's Level III report format. The following analytical methods were used to analyze the specific media in accordance with SW-846.

CONSTITUENT	ANALYTICAL METHOD
Fluoride	340.2
Chloride	300.0 (Ion Chromatography)
Sulfate	300.0 (Ion Chromatography)
Nitrate	353.2 Nitrate by calculation
Arsenic	6010B
Radium 226	903.1 Mod (RL-RA—001)(Alpha Scintillation)
Radium 228	904 Mod (RL-RA—001)(Gas Proportional Counters)

The laboratory reports are contained in **Appendix A.** The analytical results are further detailed in **Section 8**. For the 2013 fluoride samples, TestAmerica analyzed using Method 300.0 instead of 340.2. High concentrations of chloride and sulfate in several samples especially the Bayou Texar samples caused dilutions by Method 300.0 that elevated the reporting limit above the action limit for fluoride. For those samples where the reporting level was too high, the samples were rerun using the correct Method of 340.2. Details are further discussed in **Section 8.4 – QA/QC Review**. TestAmerica now understands the purpose for using Method 340.2 for all future analyses.

4.4 VOLUNTARY IRRIGATION WELL ABANDONMENT PROGRAM

In July 1999, an irrigation well survey was mailed to the residences downgradient of the Agrico Site area in accordance with the Remedial Action Work Plan. The surveyed area is defined on **Figure 3.** A total of 1,638 surveys were distributed, and 338 responses were received from July 1999 through December 1999. Thirty-three irrigation wells were identified from the survey.

The survey also attempted to solicit information to identify the types of uses of the irrigation wells. For the irrigation wells identified, one well was reported to be used occasionally to fill a swimming pool. This well was sampled in August 1999 for a list of analytes including volatile organic compounds, semi-volatile organic compounds, eight RCRA metals, and the Agrico site-related constituents. The results indicated that all constituent concentrations were less than the detection limit or below maximum contaminant levels. All other wells were reported to be used for irrigation. The entire OU-2 area is served by the ECUA public water system. Irrigation well owners can request the sampling or abandonment of their irrigation wells through FDEP's District Office in Pensacola or the Escambia County Health Department. These requests are forwarded to the PRP's consultant for action.

During 2000, continued efforts were made to identify additional irrigation well locations. Additionally, where well owners granted permission, sampling and analysis of well water was conducted. Three locations identified by the original survey were determined not to have wells. One additional irrigation well was identified during the field visits. Based on the 2000 information and the 1999 survey results, a total of 58 wells were identified within the OU-2 area. During 2000, 11 irrigation wells were sampled. The analyses, in addition to Agrico site-related constituents, included volatile organic compounds (Method 8260), semi-volatile organic compounds (Method 8270), and eight RCRA metals. The results for irrigation wells sampled during 2000 are presented in the 2000 Annual Report for OU-2 (URS Greiner Woodward-Clyde, 2000a).

During 2001, efforts continued to identify additional irrigation wells, sample identified wells, and allow well owners to participate in the voluntary well abandonment program. One additional well was identified within the defined irrigation well survey area. Also during 2001, nine additional irrigation wells were sampled. The wells were sampled for the voluntary program analyte list as in previous years. Two irrigation wells were plugged and abandoned with the owners' permission during 2001.

During 2002, efforts continued to identify new or existing irrigation wells. One additional well was identified.

During 2003 through 2013, efforts continued to identify new irrigation wells. No additional new wells were identified by searching the NWFWMD's well construction permit file. Also, no irrigation well owners requested their wells to be sampled or abandoned.

Section 6 further details the irrigation well abandonment program.

4.5 ADVISORY PROGRAM

An annual advisory notice is sent to contractors conducting work in southern Escambia County. The advisory notice is sent to water well contractors, irrigation system installers, and pool contractors, informing them of groundwater conditions in the vicinity of the Agrico Site. The contractor listing is updated annually from yellow pages listing, well contractor licenses listing, and returned "not deliverable – no forwarding address" notices. For the purposes of the advisory notice, the area identified is approximately bounded on the north by Fairfield Drive, on the west side by Palafox Street, on the south side by Bobe Street, and on the east side by Bayou Texar. The notice states that the construction of wells in this area, including lawn irrigation wells, may be restricted due to the occurrence of impacted groundwater. The contractors were advised to contact the NWFWMD, the Northwest District of FDEP, or the Escambia County Health Department for further information. **Section 5** further details the advisory notice distributed.

4.6 INSTITUTIONAL CONTROLS COORDINATION

As part of the O&M activities, a memorandum is annually distributed to local, regional, and state agencies. The memorandum is intended to solicit information on any changes in regulatory rules or policies that may affect the institutional controls currently in place for the former Agrico Site and downgradient area where impacts caused by the Agrico plume are defined. The annual memorandum is sent to the agencies listed below:

- Florida Department of Environmental Protection (FDEP) (Northwest District)
- Florida Department of Environmental Protection (FDEP) (Tallahassee)
- Emerald Coast Utilities Authority (ECUA) (formerly Escambia County Utilities Authority)
- Northwest Florida Water Management District (NWFWMD)
- City of Pensacola
- Escambia County Health Department (ECHD)
- Escambia County Neighborhood and Environmental Services Department

- Florida Department of Transportation, District Three (FDOT) (Chipley)
- United States Environmental Protection Agency (EPA), Region 4

In addition to the annual memorandum, all major reports generated as a result of data collected for the Agrico Site are distributed to these agencies following review and approval by EPA to distribute reports. **Section 7** further details the Institutional Controls Coordination.

As part of the advisory program, vicinity water well contractors, irrigation system installers, and pool contractors were sent a notice informing them of certain restrictions that may exist within the OU-2 area. The annual advisory notice was distributed on November 12, 2013 to the contractors listed in **Table 6**. **Table 6** was revised to reflect new contractors and changes in information since last year. The notice was as follows:

Water Well Contractors

Irrigation System Contractors And

Pool Contractors

Please be advised that additional well construction requirements may be specified for wells constructed in the following localized area of Pensacola, Florida.

- South of Fairfield Drive
- East of Palafox Street
- West of Bayou Texar
- North of Bobe Street

Areas outside of the area described above may also be affected. Please contact Northwest Florida Water Management District (NWFWMD), the Florida Department of Environmental Protection (FDEP), or the Escambia County Health Department (ECHD) for further information.

Per Chapter 62-524, Florida Administrative Code, New Potable Water Well Permitting in Delineated Areas and Chapter 40A-3, Florida Administrative Code, Regulation of Wells, water well construction permits issued by the NWFWMD, including wells used for lawn irrigation, may have certain specific conditions or limitations attached.

On February 22, 2001 the NWFWMD governing board passed a well construction moratorium that includes the area specified above. This moratorium applies to all wells except monitoring wells. The moratorium is currently in effect and prohibits new wells in the designated area.

Also, additional requirements for irrigation systems may be required by the Escambia County Health Department.

For further information contact:

Northwest Florida Water Management District

Tallahassee Office: 850-539-5999

Or

Florida Department of Environmental Protection, Northwest District

850-595-8300

Or

Escambia County Health Department

850-595-6700

During each year, efforts are made to identify additional irrigation wells within the area shown on **Figure 3**. For each well identified, permission from the well owners is sought to sample the wells and have the wells plugged and abandoned. Experience to date indicates that irrigation well owners generally allow wells to be sampled, but do not want their wells to be abandoned. If irrigation wells are sampled, all results are submitted to the well owner and the Escambia County Health Department.

6.1 IRRIGATION WELL SURVEY

No additional irrigation wells were identified during 2013. NWFWMD well construction permit records became available on-line in 2007 and a search/query is performed on the records each year. The Escambia County permitting data were queried for data in Townships 1S and 2S and Ranges 29W and 30W. The OU-2 defined area lies within these townships and ranges. These data were then address matched to determine if the address is in or out of the defined search area. As part of the process, addresses are converted to points on a map via a geo-coding function in ESRI's ArcGIS using Street Map data as a reference layer. No new well construction (any type) was identified from the NWFWMD permitting records for 2013. Details for previously identified wells are provided in **Table 7**, and the irrigation well locations are shown on **Figure 3**.

6.2 IRRIGATION WELL SAMPLING RESULTS

No irrigation well sampling occurred during 2013.

6.3 IRRIGATION WELL ABANDONMENT LOCATIONS

No irrigation wells were abandoned during 2013.

Currently, institutional controls are in place that provides protection to the public drinking water supply. As part of the OU-2 remedy, periodic checking is performed to determine the status of institutional controls established by local, regional, and state agencies. In order to verify that controls remain in place, annual letters are sent to the various agencies requesting information on any changes or proposed changes. Since these agencies also receive reports regarding groundwater conditions, the purpose of the communications are: 1) to address any questions the agencies have concerning groundwater conditions and 2) to receive a status report from the agencies concerning the existing regulations, planned rule changes, or new regulations which control groundwater use in the Agrico OU-2 area.

Institutional controls include the following:

1. Well construction and consumptive use approval (NWFWMD)

   On February 22, 2001, the NWFWMD Board passed a moratorium on drilling new wells, including irrigation wells, in the Agrico and Escambia Treating Company areas. The moratorium remained in effect during 2013 and is expected to continue for 2014.

   The moratorium affects the west side of the bayou only because the Agrico plume does not extend across the bayou due to hydrogeologic boundary flow conditions (the bayou is a discharge boundary, receiving groundwater recharge from both the east and west).

   This moratorium is governed by the NWFWMD Rule 40A-3 which is incorporated into the rule as 40A-3.055 Prohibitions:

   (1) The construction of certain, specified types of water wells shall be prohibited in the following areas:

   (a) Escambia Treating and Agrico Superfund Sites, South Escambia County – permitting of all water wells other than monitor wells or aquifer restoration wells shall be prohibited with the area inside and bounded on the west by CSX railroad corridor, on the east by Bayou Texar, on the south by East Cross Street projected in a straight line until it intersects Bayou Texar, and on the north by Hyatt Street, North Davis Highway, Wynnehurst Street, Kenneth Street, Boxwood Drive, Ash Drive, Ninth Avenue, and Hillbrook Way projected in a straight line until it intersects Bayou Texar.

2. Irrigation systems approval (ECHD)**:**

   A letter dated February 2, 2005 was received from the Director of the Environmental Health Services, Escambia County Health Department, indicating that the ECHD no longer approves or disapproves irrigation systems. The coordination with the City of Pensacola Building Inspection office for installation of irrigation systems is no longer a function performed by ECHD.

   Based on this information, the only regulatory control as it relates to groundwater within the OU-2 area is managed by the Northwest Florida Water Management District in their well construction permit program.

3. The location of the Agrico plume is well defined, and ECUA is on the distribution list for reports related to the Agrico plume. Because of this information, a future well location in the vicinity of the Site is highly improbable.

4. Existing wells are regularly sampled by ECUA, which reports these data as part of their permits to FDEP. Therefore, any potential impacts to the supply wells caused by existing plumes can be assessed. For example, existing impacts from Site 348 are currently under assessment by FDEP as a result of analytical results from ECUA wells (F & Scott Well, East Plant Well, Well No. 8, and Well No. 9).
5. The Northwest District for the Florida Department of Environmental Protection has designated the area that encompasses both the Agrico plume area and the ETC plume area as a contaminated area under Chapter 62-524, Florida Administrative Code (FAC). The area is the same as the OU-2 area defined on **Figure 3**. The FDEP designated area also includes a portion to the north of the Agrico OU-2 area that is associated with the ETC plume. Chapter 62-524 FAC is closely tied to the NWFWMD well construction permit program since the designated area requires more stringent processes by the permit applicant before a well construction permit can be issued by the NWFWMD. Since there is a moratorium on the issuance of a well construction permits within the designated area, the moratorium provides more stringent restrictions than Chapter 62-254.
6. Deed restrictions on Agrico Property provide for certain future land use and subsurface limitations.

On November 15, 2013, a memorandum (see following page) was distributed to:

- Karen Shea– FDEP, Northwest District, Pensacola; as of February 2014, Alex Webster replaces Karen Shea.
- Walsta Jean-Baptiste - FDEP, Tallahassee
- Danny Majors and Tim Haag - Emerald Coast Utilities Authority
- Tom Brown– NWFWMD
- Thaddeus Cohen - City of Pensacola
- Mark Spitznagel and Robert Merritt - Escambia County Health Department
- Keith Wilkens – Escambia County, Neighborhood and Environmental Services
- Alan Hagans – Florida Department of Transportation, District Three (Chipley)

A copy of the memorandum was also distributed to Scott Miller, Project Manager, EPA, Region 4.

On November 14, 2013, FDOT was sent an annual inquiry regarding construction activities. On November 14, 2013, Alan Hagans (FDOT-Chipley), District 3 Contamination Impacts Coordinator, responded to the inquiry by indicating that all the planned 2014 projects were non-intrusive activities (**Appendix D).**

To:	Karen Shea (FDEP NW District) Alex Webster (FDEP NW District) Walsta Jean-Baptiste (FDEP, Tallahassee) Tim Haag (ECUA) Danny Majors (ECUA) Tom Brown (NWFWMD) Thaddeus Cohen (City of Pensacola) Mark Spitznagel (ECHD) Robert Merritt (ECHD) Keith Wilkins (Escambia County) Alan Hagans (FDOT Chipley)	From: Office: Date:	Jeffry R. Wagner, P.G. URS - Tallahassee November 15, 2013

Subject: **Institutional Controls Coordination**
Agrico Site, Pensacola, Florida

As part of the U.S. Environmental Protection Agency (EPA) approved Remedial Action Work Plan for Operating Unit Two (OU-2) (November 1998), periodic communications are planned with the agencies in order to ensure and verify that existing institutional controls remain in place. The purpose of this Memorandum is to solicit, in writing, information on any changes in existing or any proposed new regulatory requirements that may affect the existing institutional controls pertaining to the Agrico Site.

INSTITUTIONAL CONTROLS

Several rules, regulations and policies already exist which control the use of groundwater within the OU-2 area. These serve as institutional controls, and include:

1. Well construction and consumptive use is approved by Northwest Florida Water Management District (NWFWMD). On February 22, 2001 the Northwest Florida Water Management District (NWFWMD) Governing Board passed a well construction moratorium for the area bounded to the north by Hyatt Street, Wynnehurst Street, Kenneth Street, Boxwood Drive and Brookside Place; to the west by the CSX Railroad; to the south by East Cross Street; and to the east by Bayou Texar. This moratorium applies to all new well construction within the designated area except monitoring wells and encompasses both the Agrico and Escambia Treating Company areas. The moratorium remains in effect during 2013.

2. Access is restricted on the Agrico site. The property is secured by a perimeter chain link security fence and locked gates. Restrictive and site information signs are posted advising the public of the on-site conditions, and a contact phone number is also posted for inquiries. The site is routinely inspected by authorized personnel and inspection reports on the site conditions are completed twice a year. Additionally, the site is inspected after each major storm event. Any damages found are repaired. Construction or related activities which would interfere with maintaining the site remedial measures are prohibited by the legal deed restrictions. Any use of the property contrary to the Record of Decision is prohibited, as per covenants filed for the property.

3. The location of the Agrico plume is well characterized and documented. Because this information is submitted to the ECUA and other agencies in an annual report, and because of the NWFWMD well moratorium, it is highly improbable that future municipal wells will be located in the vicinity of the site. It should also be noted that non-Agrico groundwater impacts are present outside of the Agrico plume. To the north of the Agrico site, groundwater impacts have been caused by the Escambia Treating Company (ETC) site. This plume intrudes into the Agrico area to the south. Also south of the Agrico plume, Florida Department of Environmental Protection (FDEP) is assessing a site referred to as Site 348. This site has reportedly contributed to groundwater impacts to the south of the Agrico plume. The Site 348 plume has the potential to intrude into the Agrico area, and Site 348 has similar COCs to those of Agrico. This site is being assessed for possible impacts to ECUA wells, including F& Scott Streets well, No. 9 well, and East Plant well. Groundwater from Site 348 moves easterly and may discharge into Bayou Texar, if not affected by pumping from F & Scott Streets Well. Additionally, other sources of groundwater impacts exist within and in the near proximity of the Agrico plume and include releases from petroleum and dry cleaning related sites as documented by FDEP.

4. The ECUA regularly samples and analyzes water being pumped from public supply wells. ECUA controls the pumpage from these wells. The cause of current impacts to ECUA wells, as noted above, is the subject of an ongoing assessment by FDEP. Pumping of both East Plant and well No.9 has been discontinued. The F& Scott Street well is still active and within a distance from Site 348 impacts that pumping influences could potentially draw the Site 348 plume toward this active well.

5. In 1997, the Northwest Florida Water Management District (NWFWMD) established 7-year and 20-year capture zones around each ECUA water supply well. These captures zones constitute the wellhead protection area for each well (Richards, Pratt, and Milla, December 1997, Wellhead Protection Area Delineation in Southern Escambia County, Florida; Water Resources Special Report 97-4, NWFWMD). The Agrico plume remains outside of the 20-year capture zone for all supply wells. Site 348 lies within the 20- year capture zone for inactive ECUA Well No. 9. And Site 348 lies in close proximity to the designated capture zone for active ECUA Well F & Scott.

6. The Designated Area has been established by the FDEP and regulated by Florida Administrative Code, Chapter 62-524, FDEP rules. New potable well permitting requirements must be met in order to install a new potable water well. This designated area is the same as the area defined in item number 1. At this time, the NWFWMD moratorium is a more stringent restriction than that related to the Chapter 62-524 designation.

Beginning with the 2006 Annual Report, the OU-1 and OU-2 annual reports have been combined into a single report. The 2012 Annual Report is being distributed to you with this correspondence. The 2013 Annual Report is currently in preparation and will not be submitted until at least the second quarter of 2014. This report will be distributed following review and approval by EPA.

Site information is available at the local EPA repository, the West Florida Regional Library. Information includes various project documents. Additionally, a site specific internet web site has been established at: http://agricopensacola.com. The web site contains general information and includes all Fact Sheets for the site.

Three Five-Year Reviews of the Agrico Site have been completed by EPA. Each Review has concluded that the remedy at the Agrico Site is functioning as intended by the Records of Decision for OU-1 and OU-2, and remains protective of human health and the environment. The next Five-Year Review will be conducted in 2015.

As part of the 2010 Five-Year Review, an evaluation of monitored natural attenuation (MNA) in groundwater was conducted for the Agrico site. The results of this evaluation provided a quantifiable evaluation of the effectiveness of the MNA remedy and were submitted to EPA and FDEP in the report *"Evaluation of Monitored Natural Attenuation in Groundwater, Agrico Site, Pensacola, Florida, August 19, 2009"*. The data show that mechanisms for attenuation are in place throughout the area and the effects of the source remedy (implemented in 1997) are propagating downgradient, as expected. The report was approved by EPA on February 5, 2010. Recently, a follow-up evaluation was conducted and the results were provided to EPA on October 31, 2013 in the report "*Evaluation of Monitored Natural Attenuation in Groundwater Report #2 – October 23, 2013, Agrico Site, Pensacola, Florida by William A. Huber, Ph.D., Quantitative Decisions (Rosemont, Pennsylvania).*

In addition to this evaluation, an assessment of potential impacts downgradient of the Agrico groundwater plume was presented to EPA and FDEP on September 4, 2009 in the report, "*Conceptual Site Model, Ecological Impact Evaluation of Bayou Texar Downgradient of Agrico's Groundwater Fluoride Plume, September 14, 2009." The report* concluded that there is no completed exposure pathway between populations of demersal fish and benthic receptors in the Bayou downgradient of the Site, and concentrations of fluoride in pore water and near-bottom surface water that potentially would cause adverse effects to the populations of dermersal fish and benthic receptors. The report also concluded that the fluoride solubility in the majority of surface sediments and in all pore waters within the groundwater plume discharge area is controlled by mineral precipitation reactions that are responsible for buffering dissolved concentrations of fluoride. This report was approved by EPA on September 20, 2010. The approval modified the report recommendations to include three additional surface water sampling locations to be added as part of the annual sampling for the site.

Annual groundwater/surface water monitoring continues for the Agrico site. Fifteen years of annual monitoring have been conducted since 1999. The most recent was conducted in November 2013.

Please respond in writing concerning any contemplated changes in existing or any proposed new regulatory requirements that may affect the existing institutional controls pertaining to the Agrico Site to Jeffry R. Wagner, URS Corporation, 1625 Summit Lake Drive, Suite 200, Tallahassee, Florida 32317, or send an e-mail to Jeffry.Wagner@urs.com. Your assistance in this cooperative effort is greatly appreciated.

If you have any questions, please contact me at (850) 402-6409.

JRW/lc

cc: Scott Miller, EPA Region 4

8.1 SAMPLING RESULTS

The November 2013 sampling activities completed the annual sampling requirement for the Agrico Site. A total of 23 long-term monitoring wells were sampled for the Agrico Site.

Groundwater field parameters results are discussed in Section 8.2 Details from the November 2013 sampling event are shown in **Table 3** and historical trends are shown on graphs within the section discussion.

The surface water sampling results for Bayou Texar are discussed in Section 8.3. Details of results are presented in **Table 9** and **Figure 32**.

The groundwater sampling results for the identified COCs detected in the surficial and main producing zones for the site-wide monitoring wells are discussed Section 8.5. Details of results are provided in **Table 8. Figures 8, 14, 20 and 26** show the locations of monitoring wells for each grouping of trend plots. **Figures 9 through 31** (excluding the location figures) show the concentration trends for fluoride, chloride, sulfate, nitrate, and combined radium 226+228 for each of the long-term monitoring locations.

Appendix A contains all laboratory analytical reports from the November 2013 sampling event.

8.2 GROUNDWATER FIELD PARAMETERS

In addition to the Agrico COCs, several field parameters are collected as part of the groundwater sampling program (**Table 3**). These parameters include water temperature, pH, dissolved oxygen, turbidity, specific conductance, and the oxidation-reduction potential. An understanding of these parameters can be important in understanding the relationships between COC concentrations and field parameter ranges in values, in defining and understanding ranges of background concentrations, and in evaluating overall COC concentration trends. A more detailed discussion of selected field parameters, including specific conductance, pH, dissolved oxygen and the oxidation-reduction potential follows.

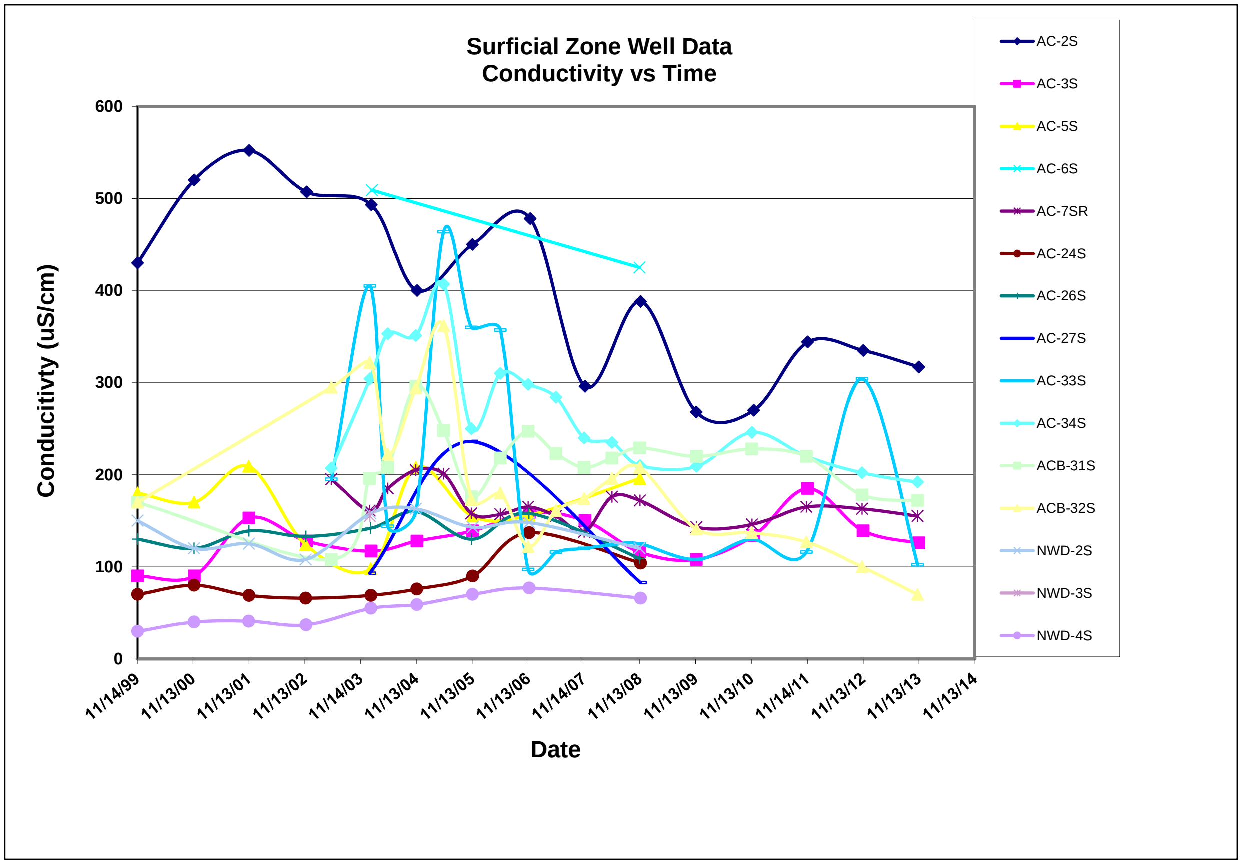
8.2.1 Specific Conductance

Specific conductance is a measure of how well a water sample conducts an electrical current. It is a straightforward measurement that can be made with reasonable accuracy in the field. It is, therefore, often used as a proxy for the total dissolved solids (TDS) analysis.

Within the main producing zone plume, the specific conductance values were generally greater than 250 micro Siemens per centimeter (uS/cm) and currently ranges as high as 1,495 uS/cm. Outside of the plume, conductance ranged from a low of 70 to less than 250 uS/cm, which are within in the range of background values. As groundwater recharges the Sand-and-Gravel aquifer in Escambia County, it encounters relatively little soluble material, and the water has characteristically low hardness (soft) and is relatively unmineralized. The aquifer is composed of mostly quartz sand, which is not very soluble. The abundant rainfall and the aquifer's high permeability keep the groundwater moving, and the residence time is such that the water does not tend to contain a significant quantity of dissolved mineral matter. Specific conductivity within the surficial zone of the sand-and-gravel aquifer appears to be within the range of background for all shallow well samples.

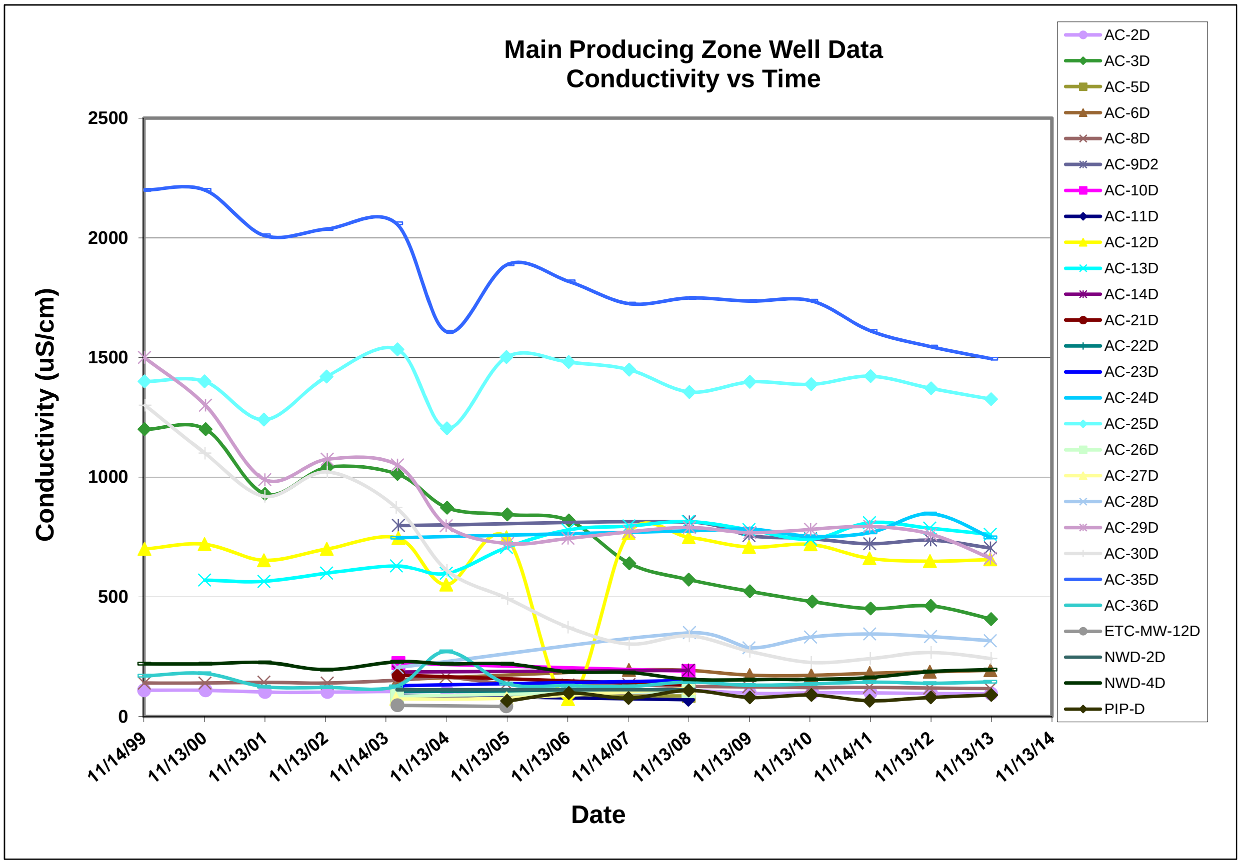
Surficial Zone Groundwater:

The shallow groundwater conductivity vs. time chart is shown below.



Main Producing Zone Groundwater:

The deep groundwater conductivity vs. time chart is shown below.



8.2.2 pH

Groundwater pH within the Sand-and-Gravel aquifer underlying Escambia County reflects generally acidic conditions (less than 7.0 standard units, su). The reason for the acidic conditions is that rainwater has a pH generally less than 5.5 su in the Escambia County area (Trapp, 1973). This low rainfall pH, coupled with the high recharge from rainfall to the aquifer and the relatively inert nature of the sandy sediments that comprise the aquifer, yields a groundwater pH that is acidic.

Information from the U. S. Geological Survey (USGS) collected in Escambia County was reviewed for groundwater pH data. The period 1968 to 1980 was an extensive data collection time in Escambia County by the USGS. A total of 222 observations of pH (Coffin, 1982) were collected from 69 sites distributed throughout southern Escambia County. The sites were located to characterize general groundwater conditions and were not associated with any assessment of known contamination sites. The range of pH for the 222 observations was 3.4 to 8.9 su. The average pH for the 12 year period was 5.28 su. Background pH conditions are variable and are controlled by local recharge conditions, seasonal rainfall patterns, and whether the groundwater is from a shallow or deep source. Generally, the groundwater occurring at shallow depths (less than 100 ft below land surface) is more acidic than deeper occurring groundwater that tends to approach neutral conditions.

In addition to the above pH data for groundwater, a review was conducted of long-term pH data for a surface water gaging station on the Perdido River at Barrineau Park. The Perdido River is the westernmost boundary for Escambia County. The station is located about the middle portion of the county and shows that base flow streamflow conditions have pH values generally less than 5 su. Since the base flow of this stream, as well as, other streams in the county is derived from groundwater, this is another line of evidence that groundwater pH conditions are acidic.

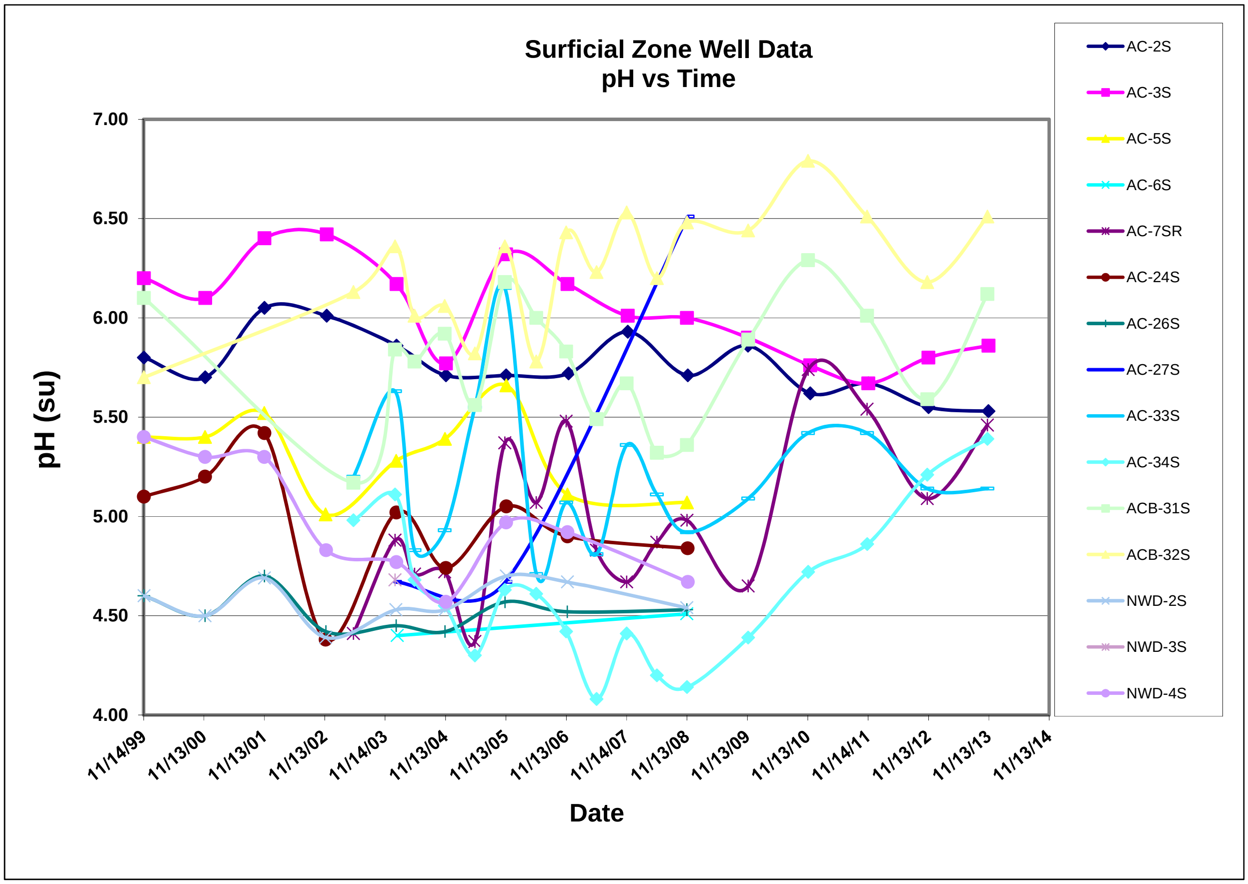
Geochemically, pH is an important factor in understanding the occurrence of radium in the groundwater beneath Escambia County. Historically, the impacts from radium are well documented within the county and many of these exceedances are not associated with known contaminated sites. As the USGS data indicates, the groundwater can have a naturally occurring background value as low as 3.4 su. Likewise, the data showed that 101 of the 222 observations of pH were less than 5 su. This indicates acidic background conditions existing for the groundwater in southern Escambia County.

Exceedances of radium in Escambia County are believed to be associated with naturally occurring thorium minerals in the subsurface. USGS research (Zapecza and Szabo, 1988) at sites throughout the eastern United States indicate that when groundwater pH is approaching 4.5 to 5 su or lower and thorium is present, a process known as recoil mobilization is possible. This recoil process allows radium 228 to be released to the groundwater from the minerals containing thorium. For Escambia County as a whole, it is possible to activate this release with what is considered background groundwater conditions.

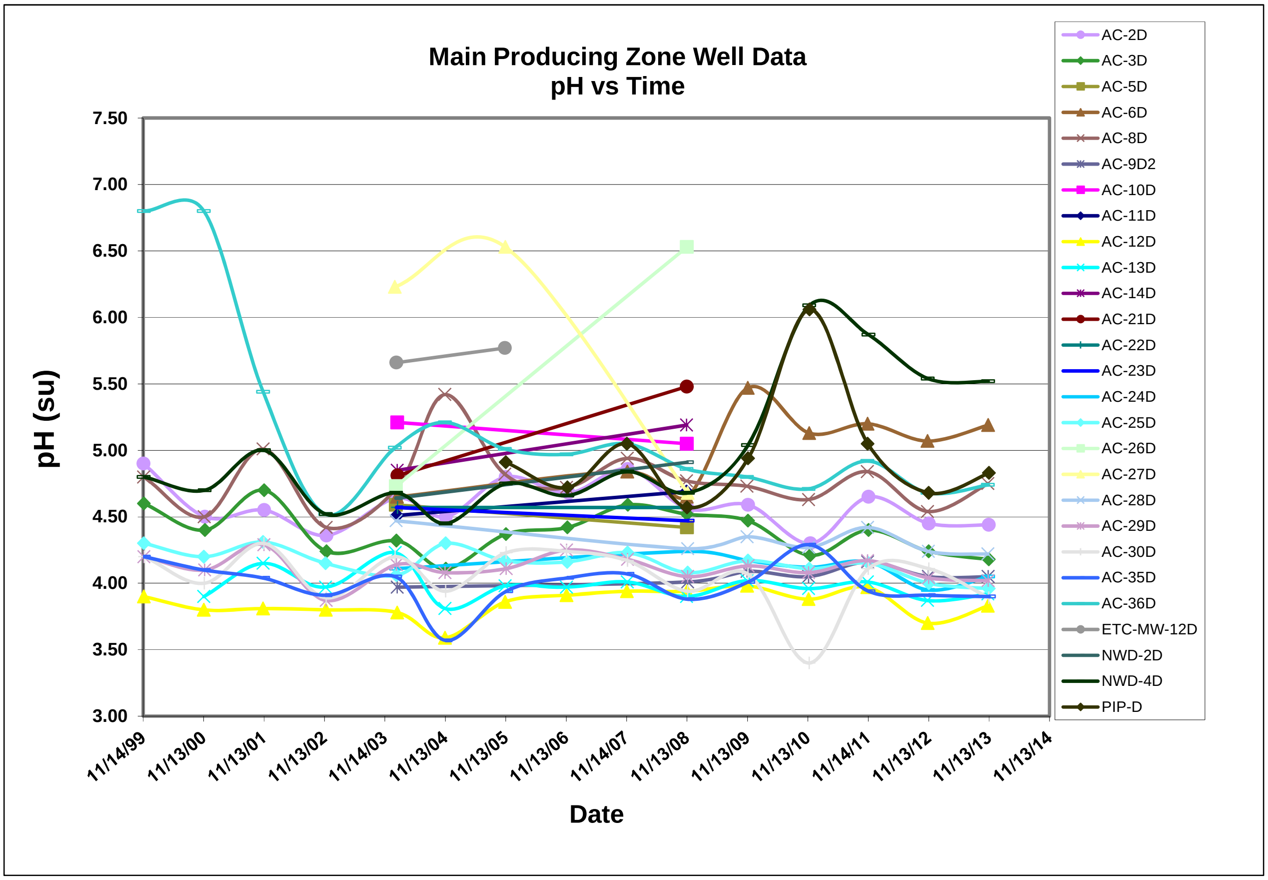
The acidity reflected by low pH in groundwater within the Agrico plume is most likely the result of former operational processes whereby wastewater was disposed in the former on-site impoundments at the former Agrico facility (Watts, et al, 1988). Since the completion of the OU-1 Remedial Action, the pH of shallow groundwater conditions within the plume has improved and currently is between 5.14 and 6.51 su. The current range of pH values within the main producing zone plume is 3.83 to 4.44 su. Upgradient of the former Site, the designated off-site upgradient monitoring well, PIP-D shows a current groundwater pH of 4.83 su.

The trends in groundwater pH from the Agrico network monitoring wells are reflected in the following graphs for the surficial and main producing zones of the aquifer.

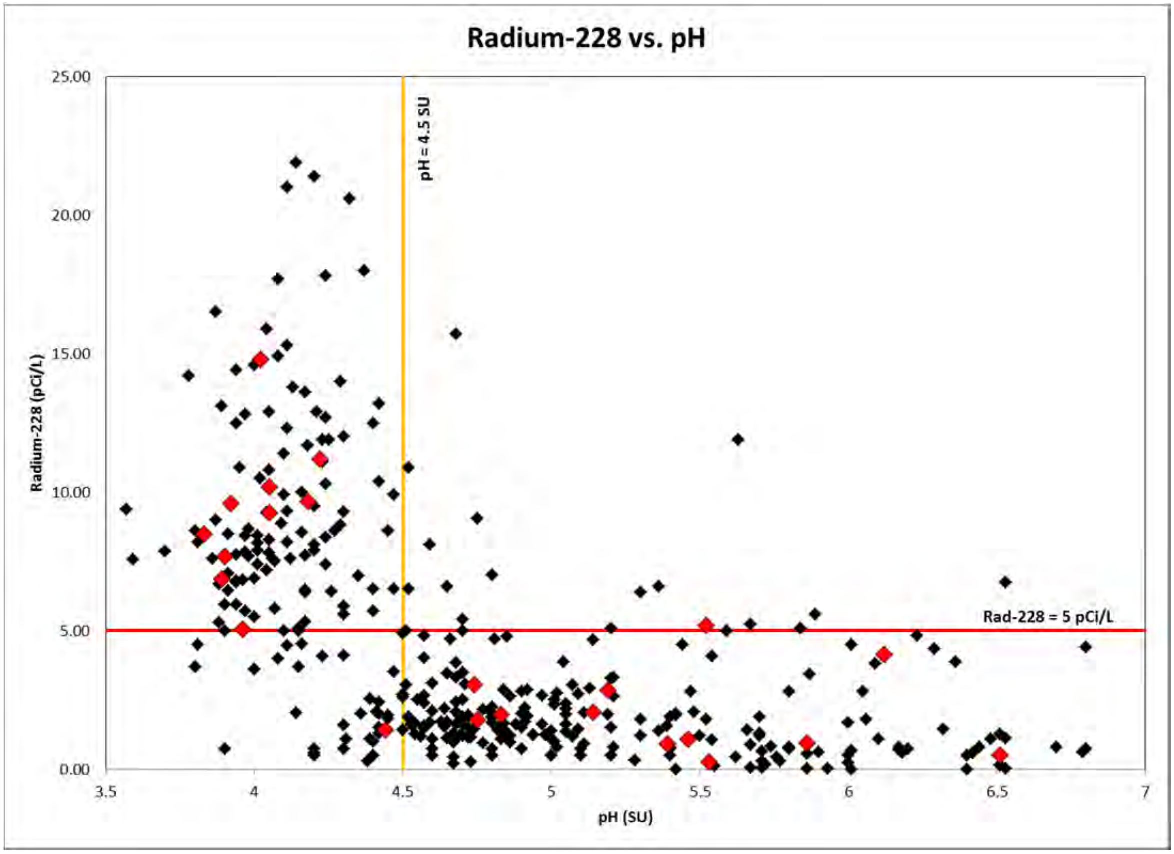
The surficial zone groundwater pH vs. time chart is shown below.



The main producing zone groundwater pH vs. time chart is shown below.



The following graph is updated from the original graph (URS, 2007) to show data from all sampling events conducted for the Agrico Site. The data points marked as red diamonds represent results from the November 2013 sampling event. The graph shows the relationship between pH and radium 228 concentrations whereby as the groundwater pH approaches about 5 to 4.5 su or lower, the radium 228 concentration generally exceeds the 5 pCi/L drinking water standard for combined radium 226 + radium 228. It should be noted that the use of a pH of 4.5 su to demonstrate this relationship is within the range of pH that the recoil process generally is activated. The recoil activation range is plus or minus a pH of 4.5 su (Zapecza and Szabo, 1988).



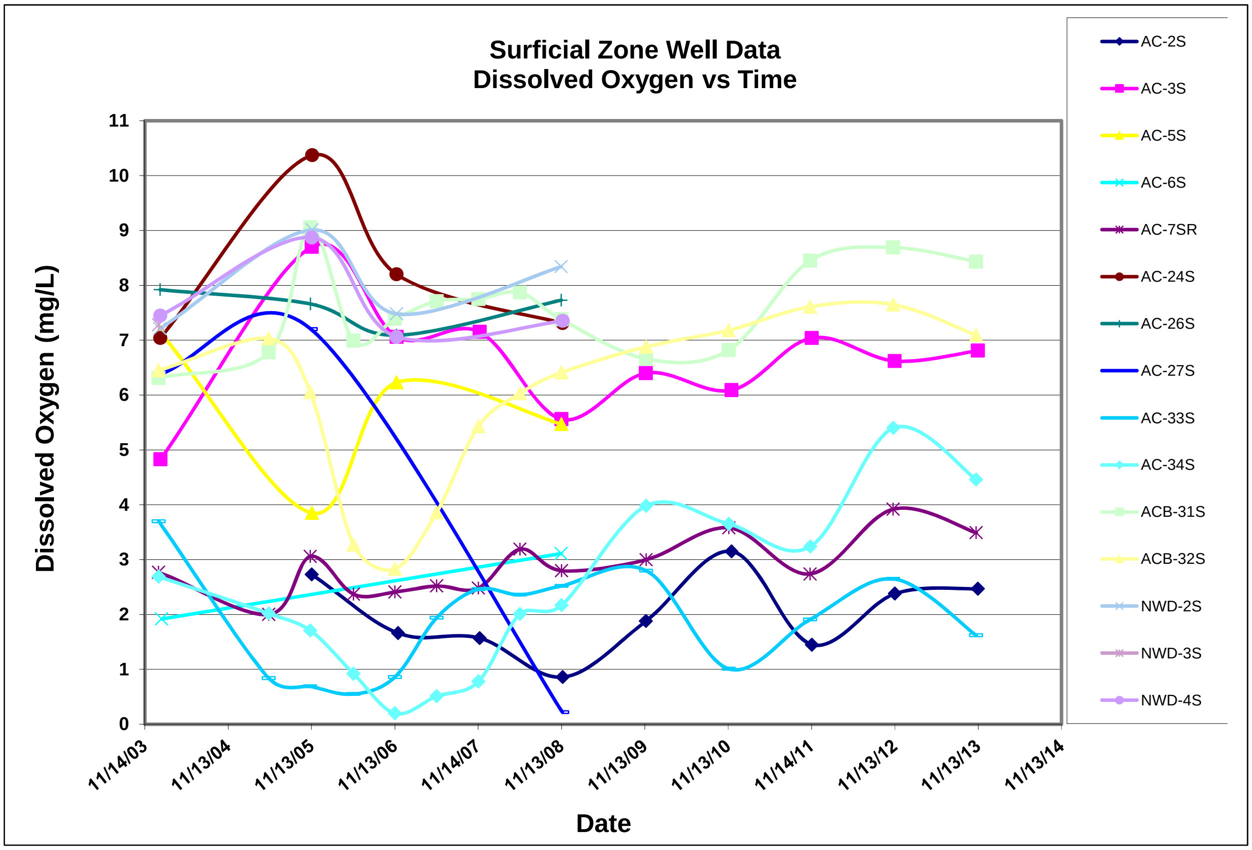
Acidic groundwater conditions are also associated with Site 348. This site is located approximately 3,000 feet south of the Agrico Site. Assessment reports for Site 348 (MACTEC, 2010) present pH and radium 228 data which show that low pH conditions result in exceedances of the radium standard of 5 pCi/L for combined radium 226 and radium 228. Data from Site 348 indicates that radium 228 is the predominant isotope present in the groundwater beneath the Site 348. Site 348 is located in close proximity to nearby former municipal water supply wells. A 2008 sample collected by ECUA from the F & Scott well reported a combined radium 226 + 228 concentration of 5 pCi/L (www.ecua.fl.org – 2010 Water Quality Report).

8.2.3 Dissolved Oxygen

The solubility limit (saturation concentration) of oxygen in water (in equilibrium with air) at the temperatures, pressures, and salinities encountered in shallow groundwater at the Site is on the order of 8.5 mg/L (ppm). Oxygen's solubility limit increases as temperature decreases. Dissolved oxygen concentrations greater than 1 mg/L (aerobic conditions) are considered to support aerobic microbial metabolism, and conversely, DO concentrations less than 1 mg/L (anaerobic conditions) support anaerobic microbial systems.

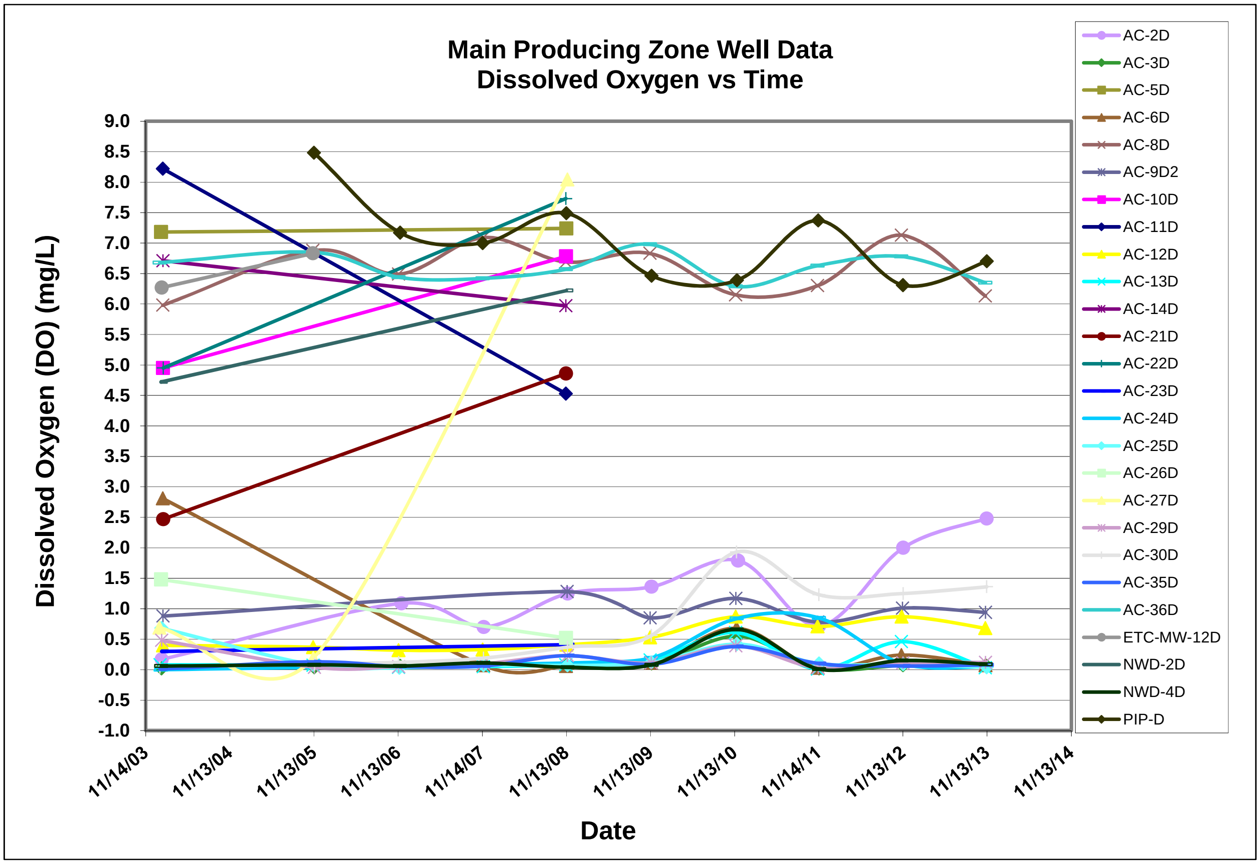
Surficial Zone Groundwater:

The shallow groundwater DO vs. time chart is shown below.



Main Producing Zone Groundwater:

The deep groundwater DO vs. time chart is shown below.



8.2.4 Oxidation-Reduction Potential

Oxidation-reduction potential (ORP) reactions control the behavior of many chemical constituents in groundwater. ORP refers to the electric potential required to transfer electrons from one compound or element (the oxidant) to another compound (the reductant). The process of oxidation involves losing electrons, while reduction involves gaining electrons. ORP is used as a qualitative measure of the state of oxidation in aqueous solutions. ORP (and Eh) are typically given in terms of millivolts (mV).

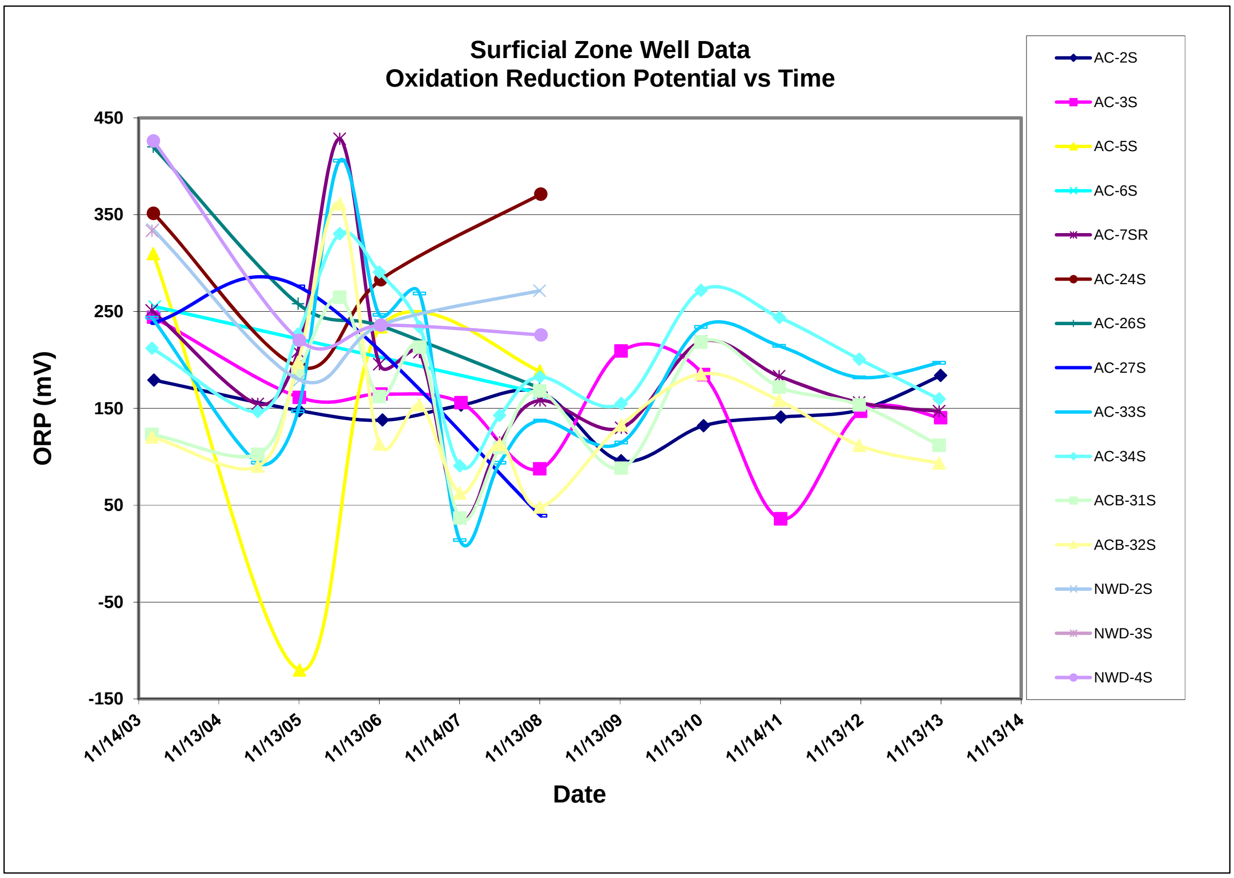
Although similar to ORP, Eh is reserved for consideration where the redox potential is measured with a relatively fragile standard hydrogen electrode (SHE). Positive Eh values indicate an oxidizing environment, while negative Eh values indicate a reducing environment. For field applications, ORP is typically measured using Ag/AgCl reference electrodes.

Field ORP readings can be converted to Eh values by adding the offset value provided by the manufacturer of the ORP calibration solution used (or by experimentation). ORP has been measured at the Site with an YSI (brand) instrument equipped with an Ag/AgCl electrode and calibrated against a Zobell 4M KCl solution where the offset to Eh is 200 mV. To convert the Site's field ORP readings to Eh, the offset value of 200 mV is added to the Site's ORP readings. For example, ORP readings of +150 and -172 mV translate to Eh values of +350 and +28 mV, respectively. It is common for natural groundwater to present ORP between +300 mV to -400 mV (Eh between +500 mV to -200 mV).

Generally, oxygen-rich water is expected to exhibit positive ORP values (reflecting oxidizing conditions); and, conversely, anaerobic water often presents negative ORP values (reflecting reducing conditions). However, oxidation-reduction reaction couples are numerous and often competitive, so that natural environments affected by anthropogenic constituents can induce ORP behavior atypical of the otherwise classic correlation with dissolved oxygen. ORP is expected to reach equilibrium in groundwater that is at or approaching steady state. Changes in ORP can indicate a system that is out of equilibrium.

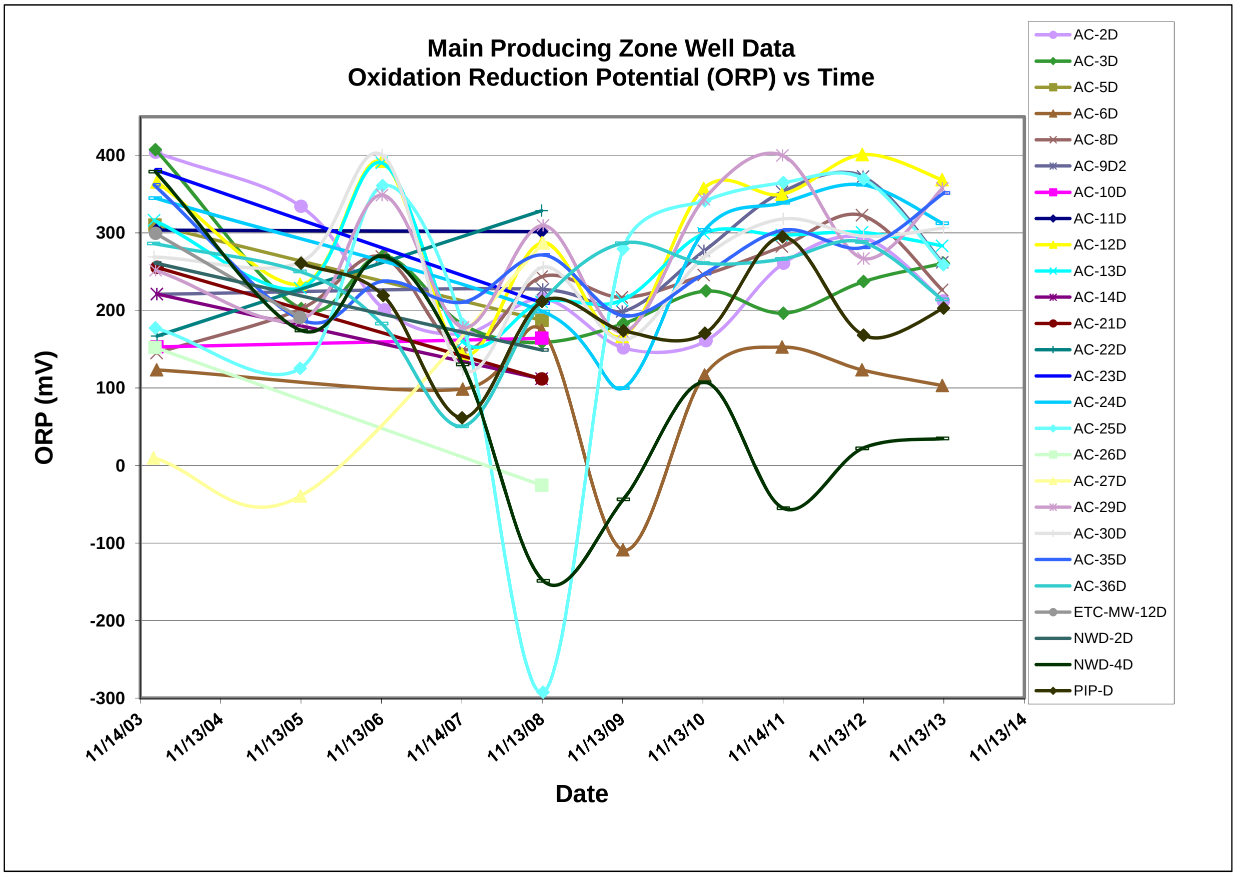
<u>Surficial Zone Groundwater:</u>

The shallow groundwater ORP vs. time chart is shown below.



Main Producing Zone Groundwater:

The deep groundwater ORP vs. time chart is shown below.



8.3 BAYOU TEXAR SAMPLING RESULTS

The long-term surface water monitoring network is composed of five sampling locations within Bayou Texar. Freshwater from Carpenter's Creek flows into the saline estuary, Bayou Texar. **Figure 1** shows the locations of the surface water sampling sites. Sampling for the standard annual list of COCs corresponding to those analyzed for groundwater was performed for surface water samples ACSW 1 and ACSW 2 during November 2013. Beginning in 2010, three new surface water stations were located in close proximity to ACSW-1 and were analyzed for fluoride only. These additional stations include BT-02, BT-107, and BT-127. These latter stations and ACSW-1 are located within the Agrico primary groundwater discharge reach of the bayou. ACSW-2 is located downstream of the primary discharge area and is considered a background station with regard to the Agrico constituents.

The surface water sampling results for Agrico COCs at the five stations are shown in **Table 5** (field parameters) and **Table 9** (sampling results), and on **Figure 32**. The COC results did not vary significantly from the previous four years of data. No COCs in surface water exceeded the surface water criteria. Laboratory analytical reports are contained in **Appendix A**.

8.4 QA/QC REVIEW

TestAmerica job numbers for this annual report include the following:

640-45696-1, 640-45718-1, 640-45732-1, 640-45742-1, 640-45756-1, 640-45777-1, and 640-45802-1. The following laboratory narratives describe the sample conditions and associated analytical QA/QC issues.

640-45696-1: All samples were received in good condition within temperature requirements. No issues regarding general chemistry or radiological analyses. No other analytical or quality issues noted.

640-45718-1: All samples were received in good condition within temperature requirements. No issues regarding general chemistry or radiological analyses. No other analytical or quality issues noted.

640-45732-1: All samples were received in good condition within temperature requirements. No issues regarding general chemistry or radiological analyses. No other analytical or quality issues noted.

640-45742-1: All samples were received in good condition within temperature requirements. No issues regarding general chemistry or radiological analyses. No other analytical or quality issues noted.

640-45756-1: All samples were received in good condition within temperature requirements. Method 300.0: The following samples were diluted due to the abundance of chloride analyte: ACSW-1, ACSW-2, BT-02, BT-107, and BT-127. Elevated reporting limits (RLs) were originally provided. Recognizing that the samples were brackish water, the samples were re-analyzed using Method 340.2 outside of holding time in order to achieve project required reporting limits. The samples listed previously have been qualified with an “H” flag denoting out of hold. The associated laboratory control sample (LCS) met acceptance criteria. No issues regarding radiological analyses. No other analytical or quality issues noted.

640-45777-1: All samples were received in good condition within temperature requirements. No issues regarding metals analyses. Regarding general chemistry, Method 300, the matrix spike (MS) and matrix spike duplicate (MSD) associated with batch 305706 recovered above the calibration range for fluoride due to an abundance of chloride and sulfate present at greater than 4 times the matrix spike concentration in the parent sample. Control limits are not applicable. The associated laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) met acceptance criteri;. Radiological analyses results are within acceptance limits. No other analytical or quality issues noted.

640-45802-1: All samples were received in good condition within temperature requirements. No issues regarding metals analyses. Regarding general chemistry, Method 300, the matrix spike (MS) and matrix spike duplicate (MSD) associated with batch 305706 recovered above the calibration range for fluoride due to an abundance of chloride and sulfate present at greater than 4 times the matrix spike concentration in the parent sample. Control limits are not applicable. The associated laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) met acceptance criteria. Radiological analyses results are within acceptance limits. No other analytical or quality issues noted.

Four QA/QC samples (two duplicates, two equipment blanks) were collected during the November 2013 sampling event. Field duplicate 1 (DUP-1) and field duplicate 2 (DUP-2) showed acceptable agreement with their respective results, indicating adequate field and laboratory precision. Target analytes were reported below laboratory detection limits in equipment blank samples.

The locations where QA/QC samples were collected are listed below. Results of the QA/QC samples are included with the laboratory reports in **Appendix A**.

QA/QC Sample	Collection Location
DUP-1	NWD-4D
DUP-2	AC-2S
EQ BLNK1	NWD-4D
EQ BLNK-2	AC-35D

8.5 GROUNDWATER SAMPLING RESULTS

The 2013 annual results continue to support that source control actions at the former Agrico site were effective and the MNA remedy is functioning as expected with Agrico COCs attenuating in groundwater under the former site and down gradient of the site. Source control was completed as of April 1997. Long-term groundwater monitoring for the natural attenuation groundwater remedy was initiated in May 1997 for the OU-1 monitoring network and in November 1999 for the OU-2 network. In 2007, both the OU-1 and OU-2 networks were combined to form the site-wide network.

Within the surficial zone, the overall trend is downward and there is an overall shrinking of the area of impacts for this zone. The downward trend in concentrations is the direct result of effective source control. The surficial zone plume is captured by the vertical hydraulic component of the contaminant transport within less than one-half mile downgradient of the former site. Due to these conditions, the areal extent of impacts in the surficial zone is limited.

Within the main producing zone, the overall flattening of the trends is what was predicted in the Evaluation of Monitored Natural Attenuation by William Huber, Ph.D. (URS, 2009) and further confirmed by the evaluations by Huber in the October 23, 2012, Report #2 (URS, 2013b). This flattening should be expected to continue for some time and eventually evolve into a slowly decreasing trend, accelerating as time goes on. Slight upward or downward ticks in the trend for individual monitoring well results are to be expected. It is the long-term trend for each COC that is important.

In order to evaluate concentration trends, a regression analysis was performed for the Agrico monitoring well data. This analysis assesses trends in the data and estimates future concentrations. The analysis was conducted in accordance with EPA guidance (EPA, 2011, An Approach for Evaluating the Progress of Natural Attenuation in Groundwater and the presentation by John T. Wilson-EPA, July 9, 2008, An Approach for Five Year Review to see if MNA is on track for the clean-up goal).

First of all, the monitoring well locations for the long-term monitoring network were subdivided into 4 groupings.

Group 1 represents the surficial zone results in the area of the former site, OU-1 (**Figure 8)**

Group 2 represents the main producing zone results in the upgradient area (**Figure 14**)

Group 3 represents the main producing zone results inside of the plume area (**Figure 20**)

Group 4 represents the main producing zone results south of the OU-2 area (**Figure 26**)

Each of the above figures show the locations of wells within each group, the 2013 sampling results, the peak concentration result for each analyte, and the direction of groundwater flow. **Figures 9 through 13, 15 through 19, 21 through 25 and 27 through 31** present the graphs showing the regression trend analysis results for each monitoring well within each group.

The regression for each compound for each well within each group was calculated on the all of the data starting after the source removal was complete. EPA certified the OU-1 Remedial Actions complete in April 1997. This time period is noted on all of the plots. Since the purpose of the analyses is to assess the progress of MNA since the source was removed, only the data results after April 1997 are included in the trend analysis plots. The first sampling event after the source was controlled was May 1997. The analysis provides a best-fit curve for all data results from 1997 to present. In order to assess progress for the past 5 years, a secondary curve matching is superimposed on the plots. All trend results are compared to the performance standard specified on the plots for each COC. For the compounds fluoride, chloride, sulfate, nitrate-N and combined radium 226+228, the regression is based on the equation:

$$C = Ae^{-\lambda t}$$

where C is the compound concentration, t is time in years, A is the initial concentration at time zero (initial year of data) and λ is the rate coefficient. The regression is applied to the natural logarithm of the data:

$$LnC = LnA - \lambda t$$

where the coefficients LnA and λ are determined from the linear regression. For calculation purposes, the regression line is extended approximately 20 years into the future to estimate the future concentrations. It should be noted that future estimates calculated as of present, will change over time as the number of data results are added to the record. Therefore, the regression line is depicted on the plots shown on **Figure 9 through 13, 15 through 19, 21 through 25,** and **27 through 31** for only a period of 5 years into the future. To access uncertainty, the 90% confidence interval is also calculated. Both the upper and lower limits are depicted on the plots. The equation for the confidence interval is:

$$\hat{C} = C + t_{\alpha/2}\, s\sqrt{\frac{1}{n} + \frac{(t-\hat{t})^2}{S_{xx}}}$$

where $\hat{C}$ is the y-ordinate of the confidence interval, $\hat{t}$ is the average time of all the measured data, n is the total number of measured data, $t_{\alpha/2}$is the value of the t-distribution with n-2 degrees of freedom, s is the mean squared error of the regression, and Sxx is

$$Sxx = \sum_{i=1}^{n}(t_i - \hat{t})^2$$

where t_i is the time of the i^{th} measured data.

The wider the space is between the regression (curve fit) and the confidence interval, results in a future forecast of the concentration that is less certain. The closer these two matches are the future forecast is more certain.

The results of the regression analysis are discussed in the following sections.

Surficial Zone Results in the OU-1 Area

- Groundwater sampling results for 2013 are consistent with previous results, which indicates that the source area (OU-1) is and remains controlled. Decreasing trends in COCs in the surficial zone are a result of the OU-1 source control measures. The source area remedy remains an effective remedy in eliminating migration of COCs from the former Site area to the groundwater. The locations of the monitoring wells used for this area are shown on **Figure 8**.
- Trend plots for five of the Agrico COCs (fluoride, chloride, sulfate, nitrate, and combined radium 226+228) are presented as **Figures 9 through 13**, respectively. The results presented for each figure represent surficial zone monitoring wells located within OU-1, the former source area, or wells that are located immediately downgradient of the former source area. Detailed concentration information for each monitoring well is presented in **Table 8** and the 2013 results are also shown on **Figure 8..**
- The fluoride trend plots (**Figure 9**) show that all results for all well locations meet the remedial performance goal of being less than 4 mg/L. The exception is location AC-2S that is immediate downgradient of the former source area. Fluoride concentrations have peaked at this location and there has been a steady decline in concentrations since 2003 (**Figure 9**). Monitoring well AC-3S is downgradient from the AC-2S location and fluoride concentrations are less than the detection limit of 0.1 mg/L in groundwater within the surficial zone.. As described in Section 3, the hydraulic gradient between the surficial zone and the main producing zone causes the impacted surficial zone ground water to move vertically into the main producing zone before the surficial zone flow reaches the AC-3S location. Due to the conditions described herein, the surficial zone plume does not extend more than 0.25 miles from the Site and the surficial zone plume is absent at the AC-3S location.
- The surficial zone plume is very limited in extent caused by the significant downward vertical component to contaminant transport and confined to an area that includes a portion of the former Site and the area immediately downgradient of the Site. The AC-2S fluoride concentrations are trending downward from a historical high of 210 mg/L to a current value of 36 mg/L. This value represents a decrease from the 2012 results.
- The surficial zone trend plots for chloride, sulfate, nitrate, and combined radium 226+228 (**Figures 10 through 13**) show decreasing trends for all the monitoring well locations for the data results since 1997. Currently, all concentrations for these COCs are below the respective performance standard. Any slight upward ticks in concentration are

considered within the normal random variations of concentrations representing background conditions.

Main Producing Zone Results in the Upgradient Area

- The upgradient area of the main producing zone is being monitored by monitoring wells, PIP-D, AC-2D, and NWD-4D. These locations are upgradient of the current Agrico plume area (**Figure 14**). Although monitoring well NWD-4D is actually side-gradient on the north side of the plume area, the well functions as a sentry point for monitoring any changes in flow direction or concentrations to the north. Fluoride, chloride, sulfate, nitrate, and combined radium 226+228 trend plots (**Figures 15 through 19**) indicate all concentrations are less than the respective COC performance standards and trends are all within background concentration ranges except as discussed below. Detailed concentration for each monitoring well is presented in **Table 8**.
- The exception occurs at monitoring well location, NWD-4D. The combined radium 226+228 trend (**Figure 19**) for NWD-4D shows an upward trending plot. However, the concentrations appear to have peaked in the 2002 to 2005 time period. For the past 7 years, the trend has been relatively flat and holding near the 5.0 pCi/L performance standard. The November 2013 value was 7.25 pCi/L which indicates a slight increase over 2012 results of 6.00 pCi/L. The maximum combined radium concentration at this location was 20.05 pCi/L in 2004 (**Table 8**). The exceedance of the performance standard for combined radium at NWD-4D is considered a non-Agrico impact of the groundwater. Monitoring well NWD-4D is within the ETC plume that has affected the pH balance in the groundwater downgradient of the ETC Site. The acidic impacts caused by the ETC plume are the source of the release of predominately radium 228 to groundwater (the process is described in Section 8.2.2). Fluoride concentrations are within background range for the NWD-4D location indicating that the Agrico plume within the main producing zone does not extend this far north. The exceedance of the performance standard for combined radium at NWD-4D is considered a non-Agrico impact of the groundwater. Monitoring well NWD-4D is within the ETC plume that has affected the pH balance in the groundwater downgradient of the ETC Site. The acidic impacts caused by the ETC plume are the source of the release of predominately radium 228 to groundwater (the process is described in Section 8.2.2). Fluoride concentrations are within background range for the NWD-4D location indicating that the Agrico plume within the main producing zone does not extend this far north.

Main Producing Zone Results Inside Agrico Plume Area

- Monitoring wells within the Agrico plume are shown on **Figure 20**. The 2013 COC concentrations for the main producing zone within the interior of the plume are less than or equal to historical concentrations for all COCs. The main producing zone plume does not appear to be growing in extent, and the area of occurrence is adequately defined and surrounded by concentrations representing the range of background for Agrico-related COCs. The main portion of the plume is detached from the former source area. Normally, the concentrations are highest nearest the source area especially if the source has not been remediated. Because the concentrations near the former source are less than concentrations downgradient, this is another indication that the remediation of the former source is effective and controlled. The concentrations for each COC within the plume vary in concentration, but are generally lower on the upgradient and side-gradient areas of the plume. The highest concentrations are centered on the groundwater discharge boundary where concentrations appear to have reached equilibrium. All of these plume factors are characteristic of a controlled source and natural attenuation progressing as expected.

- Radium 228 remains the dominant radium isotope. The radium 228 concentrations are significantly greater than the radium 226 concentrations. This continued finding supports the case that the former Agrico waste stream is not the principal source of the observed radium. Data indicate that the radium is naturally occurring. If the phosphate ore was the source, radium 226 would be the dominant isotope. According to the website, http://www.tenorm.com/, phosphate fertilizer contains on average 8.3 pico Curies per gram (pCi/g) of radium 226 and 1 pCi/g of radium 228. Likewise, phosphate fertilizer waste contains on average 33 pCi/g of radium 226 and 0.27 pCi/g of radium 228. This website is primarily composed of information compiled from EPA publications.
- The highest COC concentrations in the Agrico plume for November 2013 remain downgradient from the former Agrico site. At monitoring well AC-35D, fluoride is the highest concentration in the plume at 120 mg/L. At monitoring well AC-25D, chloride is the highest concentration in the plume at 370 mg/L. At monitoring well AC-13D, sulfate is the highest concentration in the plume at 310 mg/L. At monitoring well AC-13D nitrate is the highest concentration in the plume at 11 mg/L. The highest concentration of combined radium 226+228 in the plume was found at AC-29D (15.636 pCi/L). Each of the current concentrations for each COC in the plume is less than historical concentrations for each COC.
- The wells listed above are the same locations that have had similar elevated concentrations over the past 5 years. Concentrations at each of the monitorig locations within the plume area have stabilized and trends are relatively flat for the past five years. Trend plots for monitoring well locations considered to be inside the Agrico plume are presented as **Figures 21 through 25**. The results for this group are arranged on each of the selected COC figures by location from upgradient to downgradient locations in the plume. Detailed concentration information is presented in **Table 8** and 2013 concentration results are shown on **Figure 20.**
- **Figure 21** shows the trend plots for fluoride concentrations inside the Agrico plume area. Fluoride concentrations remain above the performance standard of 4 mg/L at all locations within the Agrico plume. The upgradient results (AC-3D, AC-29D and AC-30D) are showing decreasing trends in fluoride concentrations. For these three wells, results show that the peak appears to have move through the locations of these wells in the 2002 – 2004 time frame. For the remaining well locations, if the entire record is considered, the trends appear to be increasing. However, an alternative curve fitting of the data for the past 5 years indicates that overall trends are flattening. Also, the past 5 years of record indicate more steady state conditions are present and plume conditions are stable.
- **Figure 22** shows the trend plots for chloride concentrations inside the Agrico plume area. Chloride concentrations are less than the performance standard of 250 mg/L inside the plume area at all monitoring locations except at locations, AC-25D and AC-35D. Both of these locations are at the far downgradient extent of the plume near the discharge boundary. Chloride concentrations at these locations are 370 and 360 mg/L, respectively. Again, if the alternative curve fitting of data for the past 5 years is applied, the trends are relatively flat or

decreasing. This also indicates that chloride concentrations may have attained peak concentrations within the plume area.

- **Figure 23** shows the trend plots for sulfate concentrations inside the Agrico plume area. Sulfate concentrations are less than the performance standard of 250 mg/L inside the plume area at all monitoring locations except AC-9D2, AC-12D, and AC-13D. Again, if the alternative curve fitting of data for the past 5 years is applied, the trends are relatively flat or decreasing. This also indicates that sulfate concentrations may have attained peak concentrations within the plume area.
- **Figure 24** shows the trend plots for nitrate concentrations inside the Agrico plume area. Nitrate concentrations are less than the performance standard of 10 mg/L inside the plume area at all monitoring locations except AC-13D. Again, if the alternative curve fitting of data for the past 5 years is applied, the trends are relatively flat or decreasing. This also indicates that nitrate concentrations may have attained peak concentrations within the plume area.
- **Figure 25** shows the trend plots for combined radium 226 + 228 concentrations inside the Agrico plume area. The trend plots throughout the area are fairly similar. At all locations, the combined radium concentration is above the performance standard of 5 pCi/L. At all locations, it appears that the combined radium concentration peaked in the early 2000s except at location, AC-28D. This, however, could be an artifact of the number of sampling events. This location was sampled less in the early 2000s so perhaps the peak was missed. If nearby well, AC-30D, is considered, it is evident that concentrations peaked around 2003 and like AC-28D slight increases have occurred from 2007 through 2012. Based on this, it is presumed that missing values in the historical record for AC-28D would have shown a similar peak. For all locations if the entire record is considered, the trends appears to be increasing. However, if just the past 5 years of record is considered, the trends flatten overall and indicate more steady state conditions are being attained. This indicates that the plume conditions are currently stable. As with historical record for radium 228, the November 2013 results continue to show that radium 228 is the dominant isotope found in the groundwater at all monitoring locations.

Main Producing Zone South of the OU-2 Area

- The Agrico plume remains adequately defined, and has limited areal extent. It is surrounded by groundwater considered representative of background conditions for the Agrico COCs. Groundwater south of the Agrico plume is monitored by three monitoring wells (AC-6D, AC-8D, and AC-36D) as shown on **Figure 26**. All locations show the Agrico COCs are less than the established drinking water criteria. The exception is at location AC-6D where combined radium remains about the drinking water criteria of 5 pCi/L. This location is immediately downgradient of the Kaiser Site (Site 348) where known radium impacts to the groundwater are documented (Mactec, 2010). The AC-6D combined radium exceedances are not related to the Agrico plume. Records indicate that historically a low pH (less than 4.5 su) is also associated with the data collected for Site 348. Low pH is related to radium releases from the subsurface aquifer sediments. The 2013 concentrations are shown on **Figure 26**.

Primary Discharge Area – Bayou Texar

- Due to Bayou Texar natural groundwater discharge divide (groundwater discharges into the bayou from the west and east, it is a gaining and not a losing stream), the Agrico groundwater plume does not pass through to the east side of the Bayou. The 2004 assessment by the University of West Florida of the bayou (Mohrherr, et al 2005) indicated the impacted groundwater discharge from the Agrico plume is not causing the bayou surface water to exceed State standards. This finding corresponds with results of historical sampling conducted for the Agrico Site and the August 2008 and May 2009 Bayou Texar assessments (URS, September 2009) which indicate that all surface water samples collected within in the primary Agrico discharge area were less than the 5 mg/L surface water standard for fluoride. Fluoride results for surface water samples collected for 2013 were all less than 1.2 mg/L.

Areas in Close Proximity to Non-Agrico Impacted Groundwater

- Other contaminant sources in close proximity continue to impinge on the Agrico plume. The ETC plume to the north and Site 348 (Kaiser Site) to the south have impacted the Agrico plume area as well as areas outside of the Agrico plume area. Monitoring well locations NWD-4D and AC-6D are examples of impacts. Site 348 displays similar COCs to the Agrico Site, with radium 228 being a dominant isotope from Site 348. Agrico wells AC-6S and AC-6D appear to be impacted by Site 348 (Mactec, 2010). The downgradient impacts (ammonia concentrations and other Site 348 COCs) to other Agrico monitoring wells is unknown at this time because the assessment for Site 348 is on-going.
- Documentation (USEPA, 2008) from groundwater sampling results for the former Escambia Treating Company Site show that the ETC plume is interspersed with the Agrico plume especially near the discharge area of Bayou Texar. Acidic conditions found for the ETC plume also contribute to the release of radium to the groundwater. This is evident at location NWD-4D that lies north of the Agrico plume but within the ETC plume. Combined radium concentrations exceed the combined radium performance standard of 5 pCi/L at this location most likely due to the acidic conditions associated with the ETC plume. Additionally, elevated naphthalene concentrations are present at this location as well as inside the Agrico plume area. This constituent is unique to the ETC plume. It is reported by EPA that remedial actions regarding the ETC groundwater plume are currently on hold due to the lack of federal funding.

9.1 OU-1 REMEDY

The source area remedy was completed in 1997. Since that time, the property has remained secured; the integrity of the constructed cap has not been compromised by erosion or settlement; the grass cover on the cap has stabilized the soils; and the storm water controls remain intact, preventing storm water runoff from leaving the Site except through infiltration to groundwater in the North and South Ponds. Results of the water and sediment sampling in the infiltration ponds during January 2004 indicated that soils on-site are not affecting the quality of water infiltrating these ponds. Concentrations of fluoride in groundwater of the surficial zone immediately downgradient of the cap have decreased significantly since the remedial actions were completed. Based on all of the groundwater sampling results, the source area is controlled, and the remaining COC impacts are from residual impacts caused prior to the remedial action. Results from the 2013 sampling of monitoring wells downgradient of the cap area indicate that the OU-1 remedy remains effective.

9.2 OU-2 REMEDY

Annual groundwater and surface water monitoring has been performed at established long-term monitoring locations since 1999. The groundwater monitoring continues to be an effective means of evaluating the natural attenuation remedy. The evaluation of the long-term groundwater monitoring network (URS, 2006d), approved by EPA on September 11, 2007, provides further information regarding the defined plume area and downgradient progression. The recent evaluations of monitored natural attenuation associated with the Agrico plume (URS, August 2009 and October 2013) further supports that the mechanisms for attenuation are in place throughout the area and the effects of the source remedy are evident in the surficial zone of the former source area (OU-1) and are also being observed downgradient (OU-2), as expected. Decreases in concentrations have now been observed in the most upgradient groundwater and are imminent in the further downgradient wells. Trend plots presented in this Annual Report show that the Agrico plume is stable and well defined.

9.2.1 Advisory Notice

A standard notice (see **Section 5**) was distributed to contractors (see **Table 6**) who potentially might be performing work related to new well installations in the area of OU-2. This notice informs the contractor of the boundaries of the existing moratorium on well construction. It also directs them to the NWFWMD, FDEP, or the Escambia County Health Department for more information.

9.2.2 IRRIGATION WELL PROGRAM

According to NWFWMD permit records, no new irrigation wells were installed within the monitoring area during 2013 (**Table 7** and **Figure 3**). To date, 59 irrigation wells have been identified within the OU-2 area. To date, 21 of the 59 wells have been sampled, and 6 of those 21 wells have contained Agrico site-related constituents above performance standards. One of the 59 wells identified was reported as being used to fill a swimming pool. No Agrico COCs were found in this irrigation well used to fill the pool. Two well owners have volunteered to have their wells plugged and abandoned. No requests were received in 2012 to sample or abandon any existing irrigation well within the OU-2 area.

9.2.3 INSTITUTIONAL CONTROLS COORDINATION

On February 22, 2001, the NWFWMD Board passed a moratorium (**Appendix D**) on drilling wells, including irrigation wells, in the Agrico OU-2 and the ETC groundwater plume areas. The moratorium remains in effect and provides the most stringent institutional controls for the area impacted by the plume. The moratorium has no termination date and is part of the Prohibitions in Rule 40A-3.

Past sampling results conducted by ECUA for supply wells south of the Agrico area have indicated impacts to ECUA supply wells, which initiated an assessment by FDEP in the late 1990s. This assessment identified two areas, collectively referred to as Site 348. Both areas are located less than 0.5 miles south of the Agrico Site. One is the former fertilizer manufacturing operations known as Kaiser Fertilizer plant. The second is known as the former Southern Cotton Oil Company. This site was a fertilizer mixing and storage facility.

Reportedly, the sources which may have contributed to impacted groundwater affecting the F & Scott Streets Well, the East Plant Well, Well No. 6, Well No. 8, and Well No. 9 are still under investigation by FDEP. Three of these ECUA wells have been shut down and pumping discontinued (East Plant, Well No. 8, and Well No. 9) due to groundwater impacts. The COCs identified by FDEP at Site 348 are similar to the Agrico COCs, including radium 228 and ammonia. The Agrico plume was not implicated as a source or a factor in the impacts to these wells (Mactec, 2010). Additionally, the former Agrico plant was not associated with the either operations identified by FDEP that are related to Site 348.

No pumping effects are occurring within the current Agrico plume boundary that will cause the plume to move outside the natural groundwater flow path. This is verified by the past 16 years of water level measurements and potentiometric surfaces that show the natural groundwater flow direction remains consistently to the east, toward Bayou Texar. Consistency of groundwater flow patterns is also demonstrated by the individual water level trend data (**Appendix B**). The discontinued municipal pumping in the downtown area due to impacts from non-Agrico sources, also significantly decreases the potential of the Agrico plume to migrate from its current plume boundary. These conditions and other groundwater flow conditions negate the potential for future Agrico plume migration that could affect any public water supply well.

Water level measurements collected during the past 16 years indicate that the remaining irrigation pumpage occurring within the OU-2 area is not significantly affecting the direction of groundwater flow. The primary groundwater flow controls are natural, including Bayou Texar, which functions as the eastern discharge boundary for the Agrico plume.

9.2.4 GROUNDWATER

The natural attenuation remedy is proceeding as anticipated, with 16 of the estimated 70 years elapsed (remediation of OU-1 was certified complete in April 1997). Conclusions from the monitored natural attenuation evaluations (URS, August 2009 and October 2013) indicate that much of the groundwater is expected to reach the target concentrations within two to three decades. Within the area of the Bayou Texar discharge boundary, the time to reach the targets may be longer. Fluoride results continue to exemplify cleanup progress for the Agrico Site. Additionally, it appears that the plume discharge area remains well defined and limited in areal extent. Groundwater results for November 2013 closely compared to historical results for both aquifer zones. Although slight increases in concentrations were detected at some monitoring well locations for some COCs, the increases are within the range of expected concentrations for a natural attenuation remedy where source control has been implemented.

Surficial Zone

The surficial zone plume does not migrate to Bayou Texar. The plume in this zone infiltrates to the main producing zone within less than 0.4 mile downgradient of the Site (**Figure 4**). Monitoring of the groundwater within the surficial zone is limited to the OU-1 area and the vicinity of the vertical diversion area between AC-2S and AC-3S. The highest concentrations remaining for the surficial zone plume are in close proximity of monitoring well AC-2S. Within the surficial zone, the overall trend in COC concentrations is downward and the overall area of impacts is shrinking. Due to the existing hydrogeologic/hydraulic conditions the zone has limited areal impacts. For most of the OU-2 area, background conditions exist for the Agrico COCs within the surficial zone since the potential for downgradient impacts beyond the surficial zone diversion area are absent. Any exceptions to background concentrations in these downgradient surficial zone wells are due to non-Agrico sources.

Main Producing Zone

Arsenic and lead plumes are not present for the Agrico Site. The primary indicator of the Agrico plume continues to be fluoride where concentrations exceed the performance standard of 4 mg/L. Also, elevated chloride, sulfate, and radium 228 concentrations coexist with elevated fluoride concentrations. The main producing zone plume remains well defined, as the detailed evaluation (URS, 2006d, URS, August 2009, and URS, October 2013) confirmed, and exceedances of contaminant-specific performance standards only cover limited areal extents. Within the main producing zone, the overall flattening of trends is what has been predicted. The flattening is expected to continue for some time. This trend will eventually evolve into a slowly decreasing trend, accelerating with time. Slight upward or downward ticks in trend for individual monitoring well results are to be expected. It is the long-term trends for each COC for the impacted area that is important.

9.2.5 Bayou Texar

The 1993 Bayou Texar Assessment (Entrix, 1993a, 1993b, and 1993c) presented fluoride data that indicated groundwater originating from the Agrico Site was discharging to the bayou. The data also indicated that the discharge zone appeared to be well defined and limited in areal extent. EPA’s review of the data concluded that fluoride would have to be discharging at a concentration of 4,050 mg/L or greater in order to exceed the surface water standard of 5 mg/L in the bayou. Furthermore, in the OU-2 ROD, EPA (1994) concluded that it is unlikely that the discharge of the groundwater plume into Bayou Texar would result in impacts to fish or wildlife.

There are more than 60 storm water outfalls into Bayou Texar. Several studies have identified impacts caused by storm water from other locations contributing contaminants to the bayou. Mohrherr, et al. (2005) concluded that Bayou Texar is an urban water body that is impacted by a variety of pollutants and pollution sources. Mohrherr, et al. (2005) further concluded that their results corroborate the studies conducted for the Agrico Site indicating that fluoride levels are highest and increase with depth in the northern portion of the bayou where the Agrico plume discharges to the bayou. Mohrherr, et al. (2005) also concluded, as the long-term monitoring data for the bayou confirm, that the fluoride concentrations in the waters of Bayou Texar are below the Chapter 62-302, Class III Marine standard of 5 mg/L.

Surface Water

Surface water concentrations remain less than Chapter 62-302, Class III Marine Surface Water Standards for Agrico COCs, indicating that sufficient precipitation for the case of fluoride concentrations exists within the bayou. For other Agrico constituents, advection-dispersion is significantly affecting the COCs before and/or after it is discharged to the bayou so that the Agrico plume potential impacts are minimized with no significant risk to the bayou.

Summary of Ecological Impact Evaluation of Bayou Texar Downgradient of Agrico's Groundwater Fluoride Plume

On September 4, 2009, the results of the Phase I and Phase II Bayou Texar sampling for August 2008 and May 2009 were submitted to EPA. The results of the investigations indicated the following:

- Fluoride in the top 10 cm of sediment (the bioactive zone) within the groundwater plume discharge zone ranged from about 32 to 339 micrograms per gram (ug/g).
- Fluoride in the near-bottom surface water (the primary exposure regime for demersal fish) within the groundwater plume discharge zone was consistently less than the Florida Surface Water Quality Criterion for Class II Marine waters for fluoride, 5 mg/L. The concentration of fluoride in the majority of surface water samples was less than 1 mg/L.
- Fluoride in the sediment pore water in the bioactive zone (the primary exposure regime for benthic macro-invertebrates) within the groundwater plume discharge zone was less than 3 mg/L in 30 of the 40 stations sampled. Fluoride in pore water exceeded the 5 mg/L standard at only 3 of 40 stations. Spatial analysis determined that the surface area weighted average concentration of fluoride in the bioactive zone pore water was less than the 5 mg/L standard.

The conclusions of this assessment indicated that there is no significant risk to populations of demersal fish or to benthic macro-invertebrate communities that inhibit the reach of Bayou Texar where the Agrico groundwater discharges. Furthermore, the fluoride solubility in the majority of surface sediments and in all pore waters within the primary groundwater plume discharge reach is controlled by mineral precipitation reactions. These reactions are likely responsible for buffering dissolved concentrations of fluoride in near surface sediment pore water and the surface water in this reach of the bayou.

EPA has approved the ecological impact evaluation that was conducted for Bayou Texar (URS, 2009C). As part of the Third Five-Year review, EPA included four recommendations in the June 2010 Five-Year Report. These recommendations were as follows:

1. Continue annual groundwater monitoring.

2. Continue annual near-bottom Bayou Texar surface water monitoring at multiple stations including the 3 locations with pore water greater than 5 milligrams per liter as reported in the September 4, 2009 "Conceptual Site Model Ecological Impact Evaluation of Bayou Texar Downgradient of Agrico's Groundwater Fluoride Plume" (Phase II results).
3. If the levels of fluoride in near-bottom surface water or in adjacent Bayou Texar groundwater monitoring well, AC-35D, increase to levels significantly greater than that measured historically, submit a work plan to evaluate the increase.
4. Conduct further risk evaluation studies will be conducted if the surface area weighted average for pore water is predicted to be greater than 5 milligrams per liter.

These first two recommendations are continuing tasks of the on-going long-term monitoring program for the Site. As of the November 2010 sampling event, the three locations where pore water results were greater than 5 mg/L were added to the long-term monitoring.

The last two recommendations will be acted upon only if significant concentrations of fluoride are detected as part of the near-bottom surface water sampling. For 2013, the fluoride concentrations ranged from 0. 0.91 mg/L to -1.20 mg/L indicating no significant change and thus not requiring any work plans be developed or studies conducted.

9.3 RECOMMENDATIONS

- Continue annual groundwater monitoring of Agrico COCs (fluoride, chloride, sulfate, nitrate, and combined radium 226+228) at the current designated long-term groundwater monitoring wells (seven surficial and 16 main producing zone wells). Should future MNA evaluations indicate modifications to the monitoring, such recommendations will be submitted for review. Groundwater monitoring is an effective means of evaluating the effectiveness of the Agrico natural attenuation remedy and should continue as designed.
- Continue annual issuance of Contractor Advisory Notice.
- Continue annual issuance of Institutional Controls Memorandum and distribution of approved reports to identified agencies.
- Continue annual checking for new well construction permits issued for the OU-2 area.
- Continue cooperation at owners request, the abandoning or sampling of irrigation wells within the OU-2 area.
- Continue annual surface water monitoring at designated surface water monitoring locations in Bayou Texar as modified and approved in 2010.
- Continue operations and maintenance related to OU-1 in accordance with the OU-1 O&M Plan as amended November 18, 2009 and approved by EPA on January 25, 2010.
- Continue to work with EPA regarding the groundwater remediation for the ETC Site.
- Continue to work to understand the impacts associated with Site 348 (a FDEP site) and work with EPA on gathering information pertaining to Site 348.

AMEC. 2013. Expanded Site Inspection Report – Palafox Street and Texar Dr. Ammonia Site, Pensacola, Escambia County, Florida; prepared for FDEP, Tallahassee, FL; FDEP Comet Site ID # 155367, EPA ID No. FLN000410706; June 2013.

Bortone, Stephen A. 1996. Biophysical Monitoring at Bayou Texar: Bathymetric, Sedimentologic and Macroinvertebrate Evaluation at Twelve Outfalls, University of West Florida.

Carmargo, J.A. 2003. Fluoride Toxicity to Aquatic Organisms: A Review. Chemosphere 50 (2003):251-264.

Cameron-Cole, LLC, 2011. Site Assessment Report, Former Kaiser Agricultural Chemical Company, 2710 North Palafox Street, Pensacola, Florida; prepared for Mr. James W. Bradley and Mr. Donald W. Moore; September 15, 2011.CDM Federal Programs Corp. 1998. Remedial Investigation/Feasibility Study for Source Soils for the Escambia Treating Company Site, Pensacola, Florida. February 9, 1998.

Camp, Dresser & McKee, Inc. (CDM) 1998. Final Remedial Investigation Feasibility Study for Source Soils for the Escambia Treating Company Site, Pensacola, Florida.

Camp, Dresser & McKee, Inc. (CDM) 2004 Data Summary Report For OU1 Additional Soil Investigation Remedial Investigation/Feasibility Study for the Escambia Treating Company Site, Pensacola, Florida.

Camp, Dresser & McKee, Inc. (CDM) 2005a. Final Feasibility Study Report for Source Soils, Operable Unit 1, Escambia Treating Company Site, Pensacola, Florida.

Coffin, John E. 1982. Summary of Ground-Water and Surface-Water Data For City of Pensacola and Escambia County, Florida: U.S. Geological Survey Open-File Report 82-361.

E^2 Inc. 2010. Five-Year Review Report (2005-2009) Third Five-Year Review Report for Agrico Chemical Company, FLD 980221857, Pensacola, Escambia County, Florida, June 2010. Prepared for United States Environmental Protection Agency, Region 4, Atlanta, Georgia.

Entrix, Inc. 1993a. Final Bayou Study Work Plan: Phase 1a and 1b Sediment Sampling Program.

Entrix, Inc. 1993b. Bayou Texar Study Phase I Report: Sediment and Pore water Sampling and Analysis. May 6, 1993.

Entrix, Inc. 1993c. Bayou Texar Study Phase I Addendum Report: Bulk Metals Analyses with Additional Interpretation of Pore water Analyses. May 26, 1993.

Florida Institute of Phosphate Research. 2004. Phosphate Primer.

Geraghty & Miller, Inc. 1990. Remedial Investigation and Feasibility Study Work Plan. Pensacola Fertilizer Site. Pensacola, Florida. June 1, 1990.

Geraghty & Miller, Inc. 1991a. Draft Remedial Investigation Additional Work Plan. Agrico Chemical Site. Pensacola, Florida. July 24, 1991.

Geraghty & Miller, Inc. 1991b. Draft Remedial Investigation. Pensacola Fertilizer Site. Pensacola, Florida. March 28, 1991.

Geraghty & Miller, Inc. 1992a. Final Phase I Remedial Investigation, Agrico Chemical Site, Pensacola, Florida. March 12, 1992.

Geraghty & Miller, Inc. 1992b. Phase II Remedial Investigation, Agrico Chemical Site, Pensacola, Florida. September 18, 1992.

Geraghty & Miller, Inc. 1993a. Final Feasibility Study. Agrico Chemical Site. Pensacola, Florida. June 23, 1993.

Geraghty & Miller, Inc. 1993b. Final Phase 2 Remedial Investigation. Agrico Chemical Site. Pensacola, Florida. November 26, 1993.

Gibbons, Robert D., 1994. Statistical Methods for Ground Water Monitoring, John Wiley & Sons, Inc.

Henningson, Durham, and Richardson. 1974. Bayou Texar Restoration Study.

Mactec Engineering & Consulting. 2010. Summary of Phase VIII Groundwater Investigation Findings Report, ECUA Well Field Site, Pensacola, Escambia County, Florida; prepared for FDEP (Site 348); February 2010.

Mohrherr, Dr. Carl J., Dr. Johan Liebens, Dr. J. Eugene Lepo, and Dr. K. Ranga Rao. 2005. Profiles of Selected Pollutants in Bayou Texar, Pensacola, FL; a component of the "Assessment of Environmental Pollution and Community Health in Northwest Florida"; EPA Cooperative Agreement Award X-9745502; University of West Florida. May 10, 2005.

Moshiri, Gerald A. and Salman Elawad. 1990. Physical, Biological, and Environmental Studies of Bayou Texar, Escambia County, Florida: Physical, Chemical and Biological Characteristics of the Water Column and Sediments; The Institute for Coastal and Estuarine Research, University of West Florida; Vol. II.

Northwest Florida Water Management District. 1978. Evaluation of the Sedimentation and Hydraulic Characteristics of Bayou Texar and Carpenter's Creek. Escambia County, Florida: Technical File #78-3.

Northwest Florida Water Management District. 1988. Storm water Evaluation for the Restoration of Bayou Texar. WRSR #88-3.

Northwest Florida Water Management District. 1989. Ambient Ground Water Quality in Northwest Florida: Water Resources Special Report 87-1 (Revised edition).

Northwest Florida Water Management District. 1996. Analysis of Ground Water Availability in the Cordova Park Area, Southeastern Escambia County, Florida. April 1996.

Northwest Florida Water Management District. December 1999. Susceptibility of Public Supply Wells to Ground Water Contamination in Southern Escambia County, Florida.

Northwest Florida Water Management District. (Countryman, Baker, Pratt, and Miller). October/November 2000. Potentiometric Surface of the Surficial Zone of the Sand-and-Gravel Aquifer, Escambia County, Florida. Water Resources Map Series 01-1.

Northwest Florida Water Management District. (Countryman, Baker, Pratt, and Miller). October/November 2000. Potentiometric Surface of the Main Producing Zone of the Sand-and-Gravel Aquifer, Escambia County, Florida. Water Resources Map Series 01-2.

Roaza, Honesto P., Thomas R. Pratt, Christopher J. Richards, Jay L. Johnson, and Jeffry R. Wagner. 1991. Conceptual Model of the Sand-and-Gravel Aquifer, Escambia County: Northwest Florida Water Management District, Water Resources Special Report 91-6.

Roaza, Honesto P., Thomas R. Pratt, and Christopher J. Richards. 1993. Numerical Modeling of Ground Water Flow and Contaminant Transport in the Sand-and-Gravel Aquifer, Escambia County, Florida: Northwest Florida Water Management District, Water Resources Special Report 93-4.

Richards, Christopher J., Thomas R. Pratt, and Katherine A. Milla. 1997. Wellhead Protection Area Delineation in Southern Escambia County, Florida: Northwest Florida Water Management District, Water Resource Special Report 97-4.

Stone, Gregory W. and James P. Morgan. 1990. Physical, Biological, and Environmental Studies of Bayou Texar, Escambia County, Florida: Sedimentation, Bathymetric Changes and Tidal Variability in Bayou Texar. The Institute for Coastal and Estuarine Research. University of West Florida.

Stone, Gregory W., Morgan, James P., Moshiri, Gerald A., and Elawad Salman. 1990. Physical, Biological, and Environmental Studies of Bayou Texar, Escambia County, Florida: Conclusions and Recommendations for Environmental Quality Improvement in Bayou Texar; The Institute for Coastal and Estuarine Research, University of West Florida. Vol. V.

Trapp, H., Jr. 1975. Hydrology of the Sand-and-Gravel Aquifer in Central and Southern Escambia County, Florida. U.S. Geological Survey Open-File Report FL 74027.

URS. January 2001. Annual Report. Ground Water Sampling Results –May and November 2000. Operable Unit One, Agrico Site, Pensacola, Florida.

URS. March 9, 2001. Annual Report for 2000. Operable Unit Two (OU-2), Agrico Site, Pensacola, Florida.

URS. March 1, 2002. Annual Report for 2001, Operable Unit Two (OU-2), Agrico Site, Pensacola, Florida.

URS. March 1, 2002. Ground Water Sampling Results – May and November 2001. Operable Unit One, Agrico Site, Pensacola, Florida.

URS. April 2, 2003. Annual Report for 2002. Operable Unit Two (OU-2), Agrico Site, Pensacola, Florida.

URS. April 2, 2003. Annual Report for 2002. Operable Unit One (OU-1), Agrico Site, Pensacola, Florida.

URS. April 2, 2004. Annual Report for 2003, Operable Unit One (OU-1), Agrico Site, Pensacola, Florida.

URS. June 25, 2004. Annual Report for 2003, Operable Unit Two (OU-2), Agrico Site, Pensacola, Florida.

URS. 2005a. Annual Report for 2004, Operable Unit One (OU-1), Agrico Site, Pensacola, Florida. February 11, 2005.

URS. 2005b. Annual Report for 2004, Operable Unit Two (OU-2), Agrico Site, Pensacola, Florida. February 11, 2005.

URS. 2006a. Annual Report for 2005, Operable Unit One (OU-1), Agrico Site, Pensacola, Florida. February 20, 2006.

URS. 2006b. Annual Report for 2005, Operable Unit Two (OU-2), Agrico Site, Pensacola, Florida. April 6, 2006.

URS. 2007. Annual Report for 2006, Operable Units One (OU-1) and Two (OU-2), Agrico Site, Pensacola, Florida. March 30, 2007.

URS. 2006c. Technical Memorandum – Evaluation of Studies on Benthic Community Analysis and Sediment Toxicity Testing Conducted for Bayou Texar, Agrico Site, Pensacola, Florida. November 7, 2006.

URS. 2006d. Technical Memorandum Report – Evaluation of Long-Term Groundwater Monitoring Network. Agrico Site, OU-1 and OU-2, Pensacola, Florida. November 30, 2006.

URS. 2008. Annual Report for 2007, Operable Units One and Two (OU-1, OU-2), Agrico Site, Pensacola, Florida. March 28, 2008.

URS. 2009a. Annual Report for 2008, Operable Units One and Two (OU-1, OU-2), Agrico Site, Pensacola, Florida. March 31, 2009.

URS. 2009b. Evaluation of Monitored Natural Attenuation in Groundwater, Agrico Site, Pensacola, Florida. Prepared by William A. Huber, Ph.D. (Quantitative Decisions), August 19, 2009.

URS. 2009c. Conceptual Site Model Ecological Impact Evaluation of Bayou Texar Downgradient of Agrico's Groundwater Fluoride Plume. In cooperation with Anchor-QEA; September 4, 2009.

URS. 2010a. Annual Report for 2009, Operable Units One and Two (OU-1, OU-2), Agrico Site, Pensacola, Florida. March 15, 2010.

URS, 2011, Annual Report for 2010, Operable Units One and Two (OU-1, OU-2), Agrico Site, Pensacola, Florida March 31, 2011.

URS, 2012, Annual Report for 2011, Operable Units One and Two (OU-1, OU-2, Agrico Site, Pensacola, Florida. March 31, 2012.

URS, 2013a, Annual Report for 2012, Operable Units One and Two (OU-1, OU-2, Agrico Site, Pensacola, Florida. March 29, 2013.

URS, 2013b, Evaluation of Monitored Natural Attenuation in Groundwater, Report #2, October 23, 2013, Agrico Site, Pensacola, Florida, by Quantitative Decisions, William A. Huber, Ph.D., October 31, 2013.

URS Greiner Woodward Clyde. January 1999. Annual Report. Ground Water Sampling Results – May and November 1998. Operable Unit One, Agrico Site, Pensacola, Florida.

URS Greiner Woodward Clyde. December 1999. Annual Report. Ground Water Sampling Results – May and November 1999. Operable Unit One, Agrico Site, Pensacola, Florida.

URS Greiner Woodward Clyde. 2000a. Remedial Action Implementation and First Annual Report (1999), OU-2, Agrico Site, Pensacola, Florida. February 2000.

URS Greiner Woodward Clyde. 2000b. Five-Year Review, Agrico Site, Pensacola, Florida. February 2000.

U.S. Army Corps of Engineers, Mobile District. 2005. Second Five-Year Review Report for Agrico Chemical Company, Operable Units 1 and 2, Pensacola, Escambia County, Florida, EPA ID: FLD980221857. Prepared for U.S. Environmental Protection Agency, Region 4. July 2005.

U.S. Department of Agriculture and Tennessee Valley Authority. 1964. Superphosphate: Its History, Chemistry, and Manufacturing. December 1964.

U.S. Environmental Protection Agency. 1992. Agrico Chemical Superfund Site, Record of Decision Operable Unit One. October 7, 1992.

U.S. Environmental Protection Agency. 1994. Record of Decision for Operable Unit Two, Agrico Chemical Superfund Site, Pensacola, Escambia County, Florida. August 25, 1994.

U. S. Environmental Protection Agency. 1994. Symposium on Natural Attenuation of Ground Water. 600/R-94/162.

U.S. Environmental Protection Agency. 2006.. Record of Decision. Summary of Remedial Alternative Selection. Escambia Wood Treating Company Superfund Site. Operable Unit 01 (Soil). Pensacola, Escambia County, Florida. February 2006.

U.S. Environmental Protection Agency. –2008. Record of Decision. Summary of Remedial Alternative Selection. Escambia Wood Treating Company Superfund Site. Operable Unit 2 (Groundwater). Pensacola, Escambia County, Florida, September 2008.

Wagner, J.R., T.W. Allen, L.A. Clemens, and J.B. Dalton. 1984. Ambient Ground Water Monitoring Program - Phase I: NWFWMD, DER Contract No. WM65.

Watts, G., J.M. Wilson, K. Busen, and W.H. Colona, III. 1988. Agrico Chemical, Inc., Escambia County: FDER Groundwater Investigation Report No. 88-08.

Watts, Geoffrey B., and George E. Wiegand. 1989. Supplementary Contamination Report. Agrico Chemical Company - Escambia County: FDER, Site Investigation Section.

Wilkins, K.T., Wagner, J.R., and T.W. Allen. 1985. Hydrogeologic Data for the Sand-and-Gravel Aquifer in Southern Escambia County, Florida: Northwest Florida Water Management District Technical File Report 85-2.

Woodward-Clyde Consultants. 1993. Off-Site Monitoring Well Installation and Ground Water Sampling. Agrico Chemical Site. Pensacola, Florida: Technical Memorandum; Volumes 1 and 2.

Woodward-Clyde Consultants. 1998. Annual Report. Ground Water Sampling Results – May and November 1997. Operable Unit One, Agrico Site, Pensacola, Florida.

Woodward-Clyde Consultants. 1997. Work Plan - OU-2 Remedial Design. Agrico Chemical Site. Pensacola, Florida.

Woodward-Clyde Consultants. 1997. Preliminary Design Analysis, Operable Unit Two Agrico Site. Pensacola, Florida.

Woodward-Clyde International- Americas. 1998. Intermediate Design Analysis, Operable Unit Two Agrico Site. Pensacola, Florida.

Woodward-Clyde International- Americas. 1998. Pre-Final Design Analysis, Operable Unit Two Agrico Site. Pensacola, Florida.

Woodward-Clyde International- Americas. 1998. Remedial Action Work Plan and Related Plans (including Management Plan, Sampling and Analysis Plan, Health and Safety Plan and Operation and Maintenance Plan). Operable Unit Two, Agrico Site, Pensacola, Florida.

Zapecza, O.S. and Szabo, Zoltan, 1988. Natural radioactivity in groundwater – A Review in Moody, D.W., Chase, E.B., and Paulson, R.W., comp., National Summary 1986 – Ground-water quality: Hydrologic conditions and events: U.S. Geological Survey Water Supply Paper 2325.

TABLES

TABLE 1
GROUNDWATER MONITORING WELL NETWORK
LONG-TERM AND PERIODIC MONITORING WELLS

Agrico Site
Pensacola, Florida

Well I.D.	Network Component	Description	Aquifer Zone
AC-2D	OU-2 LTGWMW	Downgradient Site, Below PS Concentration	MPZ
AC-2S	OU-2 LTGWMW	Elevated Concentration Area Well	SZ
AC-3S	OU-2 LTGWMW	Flow Path Well, Below PS Concentration	SZ
AC-3D	OU-2 LTGWMW	Elevated Concentrations, Flow Path Well	MPZ
AC-5D	PERIODIC	Outside of Plume	MPZ
AC-5S	PERIODIC	Outside of Plume, Background	SZ
AC-6D	OU-2 LTGWMW	Outside of Plume; Potentially Impacted by Site 348 (Kaiser)	MPZ
AC-6S	PERIODIC	Outside of Plume; Potentially Impacted by Site 348 (Kaiser)	SZ
AC-7SR	OU-1 LTGWMW	In Residual Plume Area	SZ
AC-8D	OU-2 LTGWMW	Outside Plume, Sentry Well	MPZ
AC-9D2 (1)	OU-2 LTGWMW	In Plume	MPZ
AC-10D	PERIODIC	Outside of Plume, Effects by Site 348 (Kaiser) Possible	MPZ
AC-11D	PERIODIC	Outside of Plume	MPZ
AC-12D	OU-2 LTGWMW	Flow Path Well Inside Plume	MPZ
AC-13D	OU-2 LTGWMW	Leading Edge of Plume	MPZ
AC-14D	PERIODIC	Outside of Plume	MPZ
AC-21-D	PERIODIC	Outside of Plume, Potential Effects by Site 348 (Kaiser)	MPZ
AC-22D	PERIODIC	Outside of Plume, Effects by Site 348 (Kaiser) Possible	MPZ
AC-23D	PERIODIC	Sidegradient Fringe of Plume	MPZ
AC-24D	OU-2 LTGWMW	Flow Path Well Inside Plume	MPZ
AC-24S	PERIODIC	Outside of Plume, Downgradient of Diversion Area	SZ
AC-25D	OU-2 LTGWMW	Flow Path Well Inside Plume	MPZ
AC-26D	PERIODIC	Near Bayou Texar Outisde of Plume	MPZ
AC-26S	PERIODIC	Outside of Plume, Downgradient of Diversion Area	SZ
AC-27D	PERIODIC	Located on East Side of Groundwater Divide	MPZ
AC-27S	PERIODIC	Located on East Side of Groundwater Divide	SZ
AC-28D	OU-2 LTGWMW	Flow Path Well Inside Plume	MPZ
AC-29D	OU-2 LTGWMW	Elevated Concentrations, Flow Path	MPZ
AC-30D	OU-2 LTGWMW	Flow Path, Inside Plume	MPZ
ACB-31S	OU-1 LTGWMW	Upgradient but not necessarily Background	SZ
ACB-32S	OU-1 LTGWMW	Upgradient but not necessarily Background	SZ
AC-33S	OU-1 LTGWMW	Downgradient Cap Area	SZ
AC-34S	OU-1 LTGWMW	Downgradient Cap Area	SZ
AC-35D	OU-2 LTGWMW	Elevated Concentration, Flow Path	MPZ
AC-36D	OU-2 LTGWMW	Adjacent Bayou, Outside Plume, Potential Discharge Area	MPZ
NWD-2D	PERIODIC	Outside of Plume, Effects by Site 348 (Kaiser) Possible	MPZ
NWD-2S	PERIODIC	Downgradient of Diversion Area, Outside of Plume	SZ
NWD-4D	OU-2 LTGWMW	Outside of Plume, Sentry Location	MPZ
NWD-4S	PERIODIC	Outside of Plume, Sentry Location	SZ
PIP-D	OU-2 LTGWMW	Upgradient but not necessarily Background	MPZ

NOTES:

MPZ = Main Producing Zone

SZ = Surficial Zone

PS = Performance Standard

Other wells associated with site were not located as of September 1997 and are assumed destroyed. Wells include AC-3D2, AC-21S, AC-23S, AC-25S, NWD-D, NWD-I

Well plugged with cement and abandoned according to NWFWMD regulations include AC-1S, AC-1D, AC-4S, AC-4D, AC-7S, AC-7D, AC-9D.

Former Periodic Well NWD-3S destroyed between November 2005 and November 2006; New construction location covers the former monitoring well location.

LTGWMW = Long-Term Groundwater Monitoring Well

Periodic = Annual water levels and sampling during Five-Year Reviews.

Annual = Beginning Nov. 2009; sampling will be conducted annually to assist in MNA evaluation;

once MNA determinations made, these wells will revert to periodic.

(1) AC-9D2 is replacement well for AC-9D. AC-9D was plugged and abandoned on October 21, 1993.

TABLE 2
MONITORING WELL CONSTRUCTION DETAILS

Agrico Site
Pensacola, Florida

Well I.D.	Elevation Measuring Point (ft NGVD)[5]	Well Depth (ft bls)[6]	Screen Interval (ft bls) [2]	Diameter (inches)[2]	Aquifer Zone
AC-2D[(4)]	92.74	149	147.2-149	4	MPZ
AC-2S	88.65	70	50 - 70	4	SZ
AC-3S	88.06	79	59 - 79	4	SZ
AC-3D	88.07	170	150 - 170	4	MPZ
AC-5D	82.4	171	151 - 171	4	MPZ
AC-5S	82.34	69	49 - 69	4	SZ
AC-6D	69.19	170	150 - 170	4	MPZ
AC-6S	69.32	70	50 - 70	4	SZ
AC-7SR	90.59	70	50 - 70	2	SZ
AC-8D	76.44	220	190 - 222	4	MPZ
AC-9D2 [(1)]	64.13	198	179 - 198	4	MPZ
AC-10D	79.48	224	190 - 224	4	MPZ
AC-11D	73.17	200	200 - 220	4	MPZ
AC-12D	79.23	211	191 - 211	4	MPZ
AC-13D	74.65	223	203 - 223	4	MPZ
AC-14D	49.79	199	179 - 199	4	MPZ
AC-21D [(7)]	75.47	170	160 - 169.5	4	MPZ
AC-22D	76.58	170	160 - 169.5	4	MPZ
AC-23D	79.51	170	160 - 169.5	4	MPZ
AC-24D	79.60	215	205 - 215	4	MPZ
AC-24S	79.50	80	70 - 80	4	SZ
AC-25D	39.75	180	170 - 180	4	MPZ
AC-26D	26.70	165	155 - 165	4	MPZ
AC-26S	26.75	35	25 - 35	4	SZ
AC-27D	18.55	150	140 - 150	4	MPZ
AC-27S	18.50	35	25 - 35	4	SZ
AC-28D	74.89	201	181 - 201	4	MPZ
AC-29D	82.26	211	191 - 211	4	MPZ
AC-30D	85.73	211	191 - 211	4	MPZ
ACB-31S	91.92	70	50 - 70	2	SZ
ACB-32S	88.16	69.5	49.5 - 69.5	2	SZ
AC-33S	89.18	69.5	49.5 - 69.5	2	SZ
AC-34S	89.09	70	50 - 70	2	SZ
AC-35D	10.49	145	125 - 145	4	MPZ
AC-36D	5.26	152	132 - 152	4	MPZ
NWD-2D[(3)]	76.80	180	160 - 180	4	MPZ
NWD-2S[(3)]	77.53	75	55 - 75	4	SZ
NWD-3S[(7)]	80.40	75	55 - 75	4	SZ
NWD-4D	34.70	120	100 - 120	4	MPZ
NWD-4S	34.70	45	35 - 45	4	SZ
PIP-D	39.10	180	160 - 180	4	MPZ

NOTES:

ROW = Road Right-of-Way

MPZ = Main Producing Zone

SZ = Surficial Zone

(1) AC-9D2 is replacement well for AC-9D. AC-9D plugged and abandoned on October 21, 1993.

(2) All wells are constructed of PVC casing and screen materials.

ft bls = feet below land surface

(3) Elevations for NWD-2D and NWD-2S were corrected in this Annual Report based on information from the NWFWMD database.

(4) Downhole Video Survey conducted in March 2004. Results indicate well filled in and only about 1 ft of screen remains.

(5) ft NGVD = feet above National Geodetic Vertical Datum of 1988.

(6) ft = feet

(7) NWD-3S destroyed as of 2006; AC-21D damaged as of 2007 (measured depth 163 ft bls; only 3 ft of screen remains).

TABLE 3
GROUNDWATER FIELD PARAMETER RESULTS

Agrico Site
Pensacola, Florida

Well I.D.	Date	pH (su)	Conductivity (µs/cm)	Temperature (0C)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
AC-2D	11/12/2013	4.44	95	23.70	2.48	212.1	2.71
AC-2S	11/12/2013	5.53	317	23.99	2.47	183.8	1.07
AC-3D	11/12/2013	4.18	407	23.69	0.06	260.9	1.25
AC-3S	11/12/2013	5.86	126	26.97	6.81	140.3	1.47
AC-6D	11/7/2013	5.19	193	23.25	0.07	103.2	70.4
AC-7SR	11/5/2013	5.46	155	23.33	3.49	147.0	1.65
AC-8D	11/6/2013	4.75	117	23.39	6.13	226.3	1.35
AC-9D2	11/7/2013	4.05	704	23.51	0.94	262.0	0.72
AC-12D	11/6/2013	3.83	656	23.85	0.68	368.5	1.18
AC-13D	11/6/2013	3.92	761	23.66	0.03	283.4	0.56
AC-24D	11/7/2013	4.05	748	23.56	0.05	312.5	2.00
AC-25D	11/12/2013	3.96	1326	23.10	0.04	358.7	0.78
AC-28D	11/6/2013	4.22	317	23.50	3.12	288.8	0.64
AC-29D	11/7/2013	4.02	661	23.83	0.12	357.3	0.56
AC-30D	11/12/2013	3.89	242	23.75	1.36	306.4	0.60
ACB-31S	11/5/2013	6.12	172	23.83	8.43	111.7	1.17
ACB-32S	11/5/2013	6.51	70	24.63	7.09	93.4	0.98
AC-33S	11/5/2013	5.14	102	23.44	1.62	197.0	0.99
AC-34S	11/5/2013	5.39	192	23.68	4.46	159.7	1.65
AC-35D	11/13/2013	3.90	1495	23.00	0.08	351.5	0.59
AC-36D	11/6/2013	4.74	145	22.86	6.35	214.1	2.14
NWD-4D	11/8/2013	5.52	196	22.97	0.09	34.8	0.60
PIP-D	11/13/2013	4.83	90	20.00	6.70	202.8	1.28

NOTES:
su = Standard Units
µs/cm=microsiemens per centimeter
^{0}C = Degrees Celsius
mg/L = milligrams per Liter
mV = milliVolt
NTU = Nephelometric Turbidity Units

TABLE 4
GROUNDWATER ELEVATIONS
November 4, 2013

Agrico Site
Pensacola, Florida

Well I.D.	Aquifer Zone	Elevation TOC (ft NGVD)	Water Level (ft bl TOC)	Water Level Elevation (ft NGVD)
ACB-31S	SZ	91.92	48.28	43.64
ACB-32S	SZ	88.16	45.67	42.49
AC-33S	SZ	89.18	48.30	40.88
AC-7SR	SZ	90.59	50.23	40.36
AC-34S	SZ	89.09	48.92	40.17
AC-2D	MPZ	92.74	53.03	39.71
AC-2S	SZ	88.65	49.19	39.46
AC-3D	MPZ	88.07	58.41	29.66
AC-3S	SZ	88.06	52.24	35.82
AC-5D	MPZ	82.40	46.90	35.50
AC-5S	SZ	82.34	41.05	41.29
AC-6D	MPZ	69.19	43.74	25.45
AC-6S	SZ	69.32	37.59	31.73
AC-8D	MPZ	76.44	58.71	17.73
AC-9D2	MPZ	64.13	52.68	11.45
AC-10D	MPZ	79.48	65.13	14.35
AC-11D	MPZ	73.17	63.43	9.74
AC-12D	MPZ	79.23	62.35	16.88
AC-13D	MPZ	74.65	64.29	10.36
AC-14D	MPZ	49.79	43.57	6.22
AC-21D	MPZ	75.47	43.20	32.27
AC-22D	MPZ	76.58	54.11	22.47
AC-23D	MPZ	79.51	56.23	23.28
AC-24D	MPZ	79.60	62.77	16.83
AC-24S	SZ	79.50	54.86	24.64
AC-25D	MPZ	39.75	32.17	7.58
AC-26D	MPZ	26.70	18.55	8.15
AC-26S	SZ	26.75	18.82	7.93
AC-27D	MPZ	18.55	13.35	5.12
AC-27S	SZ	18.50	12.97	4.87
AC-28D	MPZ	74.89	63.02	11.87
AC-29D	MPZ	82.26	58.37	23.89
AC-30D	MPZ	85.73	68.81	16.92
AC-35D	MPZ	10.49	4.06	6.43
AC-36D	MPZ	5.26	1.23	4.03
NWD-2D	MPZ	76.80	47.73	29.07
NWD-2S	SZ	77.53	41.32	36.21
NWD-4D	MPZ	34.70	18.19	16.51
NWD-4S	SZ	34.70	17.93	16.77
PIP-D	MPZ	86.05	43.53	42.52

NOTES:

SZ = surficial zone of Sand-and-Gravel aquifer

MPZ = main producing zone of Sand-and-Gravel aquifer

ft NGVD = feet above National Geodetic Vertical Datum of 1988.

ft bl TOC = feet below top of casing.

TABLE 5
SURFACE WATER FIELD PARAMETER RESULTS

Agrico Site
Pensacola, Florida

Surface Water Location	Date	pH (su)	Conductivity (µs/cm)	Temperature (^{0}C)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Salinity (ppT)
ACSW-1 Bayou Texar (Brackish Water)	11/24/1999	6.30	35,000	22.00	NM	NM	0	22.00
	11/30/2000	7.20	30,000	19.00	NM	NM	0	19.00
	11/7/2001	7.10	34,300	24.50	NM	NM	21.1	20.60
	12/3/2002	6.95	22,388	16.90	NM	NM	5.3	13.51
	1/29/2004	6.88	21,805	14.60	7.71	225	3.97	NM
	11/18/2004	5.54	6,575	20.40	NM	NM	NM	3.55
	11/21/2005	6.92	18,575	17.55	7.9	93.8	12.9	NM
	11/27/2006	6.72	17,348	19.80	6.69	141.6	7.71	11.54
	11/20/2007	7.00	29,785	22.40	6.46	141.3	4.4	18.52
	11/20/2008	7.71	37,362	18.40	7.87	185	8.51	23.61
	11/13/2009	6.91	19,505	20.45	6.93	177.3	6.78	11.67
	11/17/2010	7.33	28,783	21.26	5.89	251.6	17.1	17.8
	11/17/2011	7.62	34,043	21.70	7.79	14.1	13.2	21.25
	11/8/2012	7.03	32,649	23.43	5.93	73.8	12.3	20.75
	11/11/2013	7.59	25,388	22.42	6.67	84.9	12.5	NM
ACSW-2 Bayou Texar (Brackish Water)	11/24/1999	7.10	38,000	21.00	NM	NM	0	24.00
	11/30/2000	7.90	32,000	18.00	NM	NM	0	20.00
	11/7/2001	8.43	43,000	22.50	NM	NM	3.3	27.80
	12/3/2002	7.06	27,167	15.80	NM	NM	4.7	16.73
	1/29/2004	7.68	23,182	13.60	7.83	161.1	6.4	NM
	11/18/2004	4.90	9,788	21.17	NM	NM	NM	5.73
	11/21/2005	7.67	30,500	17.07	7.96	115.6	10.4	NM
	11/27/2006	7.40	28,104	19.03	7.9	157.6	8.17	17.3
	11/20/2007	7.66	35,752	21.57	7.12	73.6	5.4	22.57
	11/20/2008	7.64	35,968	19.05	7.6	173.9	10	22.73
	11/13/2009	7.30	30,925	20.97	3.87	-121.8	8.64	19.2
	11/17/2010	7.71	30,305	20.85	5.87	292.4	8.36	19.0
	11/17/2011	7.90	36,363	21.28	8.52	41.5	5.36	23.02
	11/8/2012	7.83	37,364	20.58	7.59	66.7	10.5	23.74
	11/11/2013	7.59	34,042	22.13	7.96	87.6	8.33	NM
BT-02 Bayou Texar (Brackish Water)	11/17/2010	7.44	28,836	21.43	6.07	180.4	7.98	17.74
	11/17/2011	7.63	33,288	21.92	8.15	-9.5	11.30	20.84
	11/8/2012	7.58	36,769	22.35	7.39	70.8	12.10	23.24
	11/11/2013	7.08	27,605	22.12	7.39	84.0	30.50	NM
BT-107 Bayou Texar (Brackish Water)	11/17/2010	7.39	29,165	21.45	6.14	193.5	5.30	18.05
	11/17/2011	7.51	32,523	21.61	7.96	9.9	9.80	20.48
	11/8/2012	7.23	36,230	22.27	7.01	73.6	10.80	22.94
	11/11/2013	6.89	28,619	22.69	6.37	81.2	7.85	NM
BT-127 Bayou Texar (Brackish Water)	11/17/2010	7.33	28,735	21.31	5.87	240.7	6.21	17.64
	11/17/2011	7.69	35,000	21.73	7.94	-1.8	10.40	22.07
	11/8/2012	7.37	36,564	22.60	7.44	67.5	10.30	22.95
	11/11/2013	6.87	28,952	22.86	6.53	84.9	5.86	NM

TABLE 5
SURFACE WATER FIELD PARAMETER RESULTS

Agrico Site
Pensacola, Florida

Surface Water Location	Date	pH (su)	Conductivity (µs/cm)	Temperature (^0C)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Salinity (ppT)
ACSW-BL Carpenter's Creek (Freshwater)	11/24/1999	7.20	360	22.00	NM	NM	0.00	0.00
	11/29/2000	7.10	380	19.00	NM	NM	0.00	0.00
	11/7/2001	6.11	69	18.70	NM	NM	0.00	0.00
	11/26/2002	5.67	80	20.40	NM	NM	1.70	NM
	1/29/2004	6.56	68	15.88	7.34	126.1	5.49	NM
	11/12/2004	5.86	92	20.12	NM	NM	NM	0.04
	11/22/2005	6.47	87	16.03	9.38	61.4	7.78	0.04
	11/21/2006	5.95	88	17.13	7.9	130.5	1.35	NM
	11/20/2007	6.51	90	20.31	7.59	73.6	1.80	0.04
	11/20/2008	6.14	104	17.13	8.32	125	3.97	0.05
	11/12/2009	6.08	45	18.87	8.71	187.8	3.00	NM
	11/17/2010	Discontinued						

NOTES:
SU = Standard Units
µs/cm= microsiemens per centimeter
^0C = Degrees Celsius
mg/L = milligram per Liter
mV = milliVolt
NTU = Nephelometric Turbidity Units
ppT=parts per thousand
NM = not measured

TABLE 6

ADVISORY NOTICE DISTRIBUTION LIST
WATER WELL, IRRIGATION/PLUMBING, AND POOL CONTRACTORS

OU-2 AGRICO SITE
PENSACOLA, FLORIDA

NAME	COMPANY NAME	ADDRESS	CITY	STATE	POSTAL CODE
	FLORIDA IRRIGATION SUPPLY INC	2810 COPTER ROAD	PENSACOLA	FL	32514
	STOVALL & COMPANY	3901 N. PACE BLVD.	PENSACOLA	FL	32505-4340
	WALLACE SPRINKLER INC	3607 ANDREW AVE	PENSACOLA	FL	32505-4108
	D & L LAWN SERVICES	207 CAROLYN WAY	PENSACOLA	FL	32505-2823
	ALL SEASONS POOL SERVICE	29 ADKINSON DR	PENSACOLA	FL	32506
	ALL SERVICES POOL SPA`	5585 WINDHAM RD	MILTON	FL	32507
	AMERICAN LIFESTYLE POOL, INC	5053 RING ROSE CT	GULF BREEZE	FL	32563-8935
	AVALON POOLS	4230 TANFIELD RD	MILTON	FL	32583
	COASTAL POOLS	6031 CHAPMAN CIR	PENSACOLA	FL	32504-7950
	PACE POOL & SPA SERVICES, INC.	4873 WEST SPENCER FIELD RD.	PACE	FL	32571-1232
	DOLPHIN POOLS	3210 GULF BREEZE PKWY	GULF BREEZE	FL	32563-2730
	FAMILY POOL AND SPA & BILLIARD CENTERS	3920 N. DAVIS HIGHWAY	PENSACOLA	FL	32503
	JOHNSON POOLS, INC	401 MASSACHUSETTS AVE	PENSACOLA	FL	32505-4207
	PARKER POOLS	PO BOX 11769	PENSACOLA	FL	32524-1769
	WHOLESALE SPA & POOL OUTLETS	2323 COPTER RD.	PENSACOLA	FL	32514-5802
	PENSACOLA POOLS INC	4412 HIGHWAY 90	PACE	FL	32571
	PENSACOLA POOLS INC	3480 GULF BREEZE PKWY	GULF BREEZE	FL	32563-3406
	PENSACOLA POOLS INC	501 E. HOLLYWOOD BLVD.	MARY ESTHER	FL	32569-2078
	PINCH A PENNY POOL PATIO SPA	7859 PINE FOREST RD.	PENSACOLA	FL	32526-8701
	PINCH A PENNY POOL PATIO SPA	3307 GULF BREEZE PKWY	GULF BREEZE	FL	32563
	SUNSET POOLS SPAS & WHIRLPOOL BATHS	4382 HIGHWAY 90	PACE	FL	32571
	BEDROCK WELLS - AAA SPRINKLERS & LANDSC/	6201 N. BLUE ANGEL PKWY	PENSACOLA	FL	32526-8006
	MCGOWAN WATER WORKS INC	3041 E. KINGSFIELD RD.	PENSACOLA	FL	32514-9753
	COFFEY S G WELL SVCE	331 BURNT PINE RD	BREWTON	AL	36426-5817
	COFFEY'S GEORGE WELL SERVICE	680 TRAVIS RD	BREWTON	AL	36426-5120
	J & S SPRINKLERS & WELL DRILLING	7251 E BAY BLVD.	NAVARRE	FL	32566-9015
	RUSSELLS WELL AND PUMP SERVICES	4053 KENTWOOD ST.	MILTON	FL	32571-2432
	WINDHAM & SON PUMPING SUPPLY	5800 MULDOON RD.	PENSACOLA	FL	32526-1699
ALAN ARD	ARD'S CLOSED LOOP	1931 TILLIMAN LN	PENSACOLA	FL	32506
GLENN ASHLEY	ASHLEY WELL DRILLING	8056 WAKULLA SPGS RD	TALLAHASSEE	FL	32305
GREG BAILEY	GREG'S IRRIGATION	4264 BARLOW RD	CRESTVIEW	FL	32536
RONNIE BARLOW		4575 J BARLOW ROAD	JAY	FL	32565
BOBBY BARLOW	BARLOW WATER SERVICES	P O BOX 539	WEWAHITCHKA	FL	32465
FREDERICK BASFORD	BASFORD WELL DRILLING	4513 LAFAYETTE ST	MARIANNA	FL	32446
CHARLES BASFORD	BASFORD WELL DRILLING	4513 LAFAYETTE ST	MARIANNA	FL	32446
LESTER BASFORD	BASFORD WELL DRILLING	4513 LAFAYETTE ST	MARIANNA	FL	32446
MACK H BEASLEY	MACK H BEASLEY WATER WELL SERVICE	4940 BECK AVE	JAY	FL	32565
TERRY BERRY	BERRY'S WELL SERVICE	225 SPENCER DR	FT WALTON BEACH	FL	32547
DAVIS L BOOTH		903 W TENNESSEE ST	TALLAHASSEE	FL	32304
PAUL BRANSON	COFFEY'S WELL SERVICE	P O BOX 564	JAY	FL	32565
TERRY BRANTON	BRANTON BROTHERS WELL DRILLING	755 MALVERN RD	DOTHAN	AL	36301
NEAL BRICKENER		9393 EAST RIVER DR	NAVARRE	FL	32566
MORGAN BROWN		28 MOONEY ROAD NE	FT WALTON BEACH	FL	32547
DOCK L BRYANT JR	B & B WELL DRILLING	108 FETTING AVE	FT WALTON BEACH	FL	32547
BYRON BUTLER		P O BOX 2820	HAINES CITY	FL	33845
TROY E BYRD		P O BOX 371	ATMORE	AL	36504
JOHN G CATON	UNIVERSAL SPRINKLER & LANDSCAPING	5344 SOUNDSIDE DRIVE	GULF BREEZE	FL	32563
HERBERT CHRISTIAN	CHRISTIAN TESTING LABS INC	P O BOX 3218	MONTGOMERY	AL	36109
JL CLANTON	CLANTON'S WELL DRILLING	6512 LOIS ST	PANAMA CITY	FL	32404
MARK COBB	C & S WELL SERVICE	2712 TWILIGHT AVE	PANAMA CITY	FL	32405
SANDRA COFFEY	S G COFFEY WELL SERVICE	409 BURNT PINE RD	BREWTON	AL	35425-5859
JIMMY H COFIELD	JIM'S WELL DRILLING	P O BOX 93	FLOMATON	AL	36441
TE COLLEY		5558 ORIOLE ST	MILTON	FL	32570
ARTHUR COLLINGSWORTH		6806 KEITHLEY RD	PANAMA CITY	FL	32404
JAMES R CONNER	JAMIE CONNER WELL DRILLING SERVICES	1278 LEAVINS RD	WESTVILLE	FL	32464
JOHN COOKE	COOKE'S WELL DRILLING SERVICE	4924 SATIN DR	BASCOM	FL	32423
VERNON CREAMER	COASTAL WELL DRILLING	11939 RACOON RD	SOUTHPORT	FL	32409
DON CRUTCHFIELD	PENSACOLA TESTING LAB	217 E BRENT LN	PENSACOLA	FL	32503
WILLIAM DAVIS	BILL DAVIS DRILLING SERVICES	32 SHORELINE DRIVE	PANACEA	FL	32346
ROBERT DE VALCOURT	PERDIDO HEATING & AIR	5555 BAUER RD	PENSACOLA	FL	32507
ROBIN DEAN	ROBIN DEAN WELL DRILLING	1904 WAX MYRTLE RD	TALLAHASSEE	FL	32310
WESLEY DEAN	DEAN'S WELL DRILLING	PO BOX 1469	WOODVILLE	FL	32362-1469
RANDALL DEAN		PO BOX 448	WOODVILLE	FL	32362
WESLEY DONALDSON	DONALDSON WELL DRILLING	1321 BLUE ANGEL PKY	PENSACOLA	FL	32506
ROBERT M DORRIETY		5251 COY BURGESS RD	DEFUNIAK SPRINGS	FL	32435
CURT DOYLE	GEOTECHNICAL SERVICES INC	904 BUTLER DR	MOBILE	AL	36693
HARRY DYE	HARRY'S WELL SERVICE	400 KELSON RD	PENSACOLA	FL	32514
BOB ECHOLD	NWFWMD	5453 DAVISSON RD	MILTON	FL	32583-5329
MATT GARCIA		1426 LOLA DR	TALLAHASSEE	FL	32301

TABLE 6

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WATER WELL, IRRIGATION/PLUMBING, AND POOL CONTRACTORS

OU-2 AGRICO SITE
PENSACOLA, FLORIDA

NAME	COMPANY NAME	ADDRESS	CITY	STATE	POSTAL CODE
DAN GARY	DAN GARY WELL DRILLING	RTE 1 BOX 164	GENEVA	AL	36340
DONALD GELDBAUGH	SOUTHERN COMPANY SERVICES INC	ONE ENERGY PLACE	PENSACOLA	FL	32520
ALPHA GIPSON	ALPHA GIPSON	6131 AGELINA RD	PENSACOLA	FL	32504
TOMMIE GLASS		3804 W BLOUNT ST	PENSACOLA	FL	32505
EM GLOVER	E. M. GLOVER DRILLING	243 GLOVER LN	CRAWFORDVILLE	FL	32327
WENDELL HALL		6620 CHIPEWA ST	PANAMA CITY	FL	32404
JOSEPH HARRELL JR	GEO ENERGY DRILLING INC	P O BOX 1454	CRAWFORDVILLE	FL	32326
HOWARD HAYES		20181 SE CL CAPPS RD	BLOUNTSTOWN	FL	32424
STEVE HOLT	HOLT WELL SERVICE	8331 HWY 189 N	BAKER	FL	32531
EDGAR HUGHES		6302 CR 636	CHANCELLOR	AL	36316
LEWIS C JOHNSON		4537 JAY BARLOW RD	JAY	FL	32565
LEWIS G JOHNSON	AMERICAN WELL DRILLING	7116 NELSON ST	NAVARRE	FL	32566
DAVID L JOHNSON	JOHNSON WELL DRILLING	5056 OAK DR	BASCOM	FL	32423
SAMUEL JOHNSON	JOHNSON WELL DRILLING	P O BOX 93	BASCOM	FL	32423
JAMES JOHNSON		7716 SUNSHINE HILL RD	MOLINO	FL	32577
DON JONES	LARRY JACOBS & ASSOCIATES	328 E GADSDEN ST	PENSACOLA	FL	32501
BILL KIGHT		3511 N CENTRY BLVD	MCDAVID	FL	32568
EDDIE LAWRENCE	TOWN & COUNTRY WELL DRILLING	19512 RIDGE RD	FOUNTAIN	FL	32438
EVERETTE LEAVINS	EVERETTE B LEAVINS WELL DRILLING	1239 LEAVINS RD	WESTVILLE	FL	32464
JAMES T LEWIS	ADVANCED BORING INC	4931 WOOD CLIFF DR	PENSACOLA	FL	32504
ROBERT LIVINGSTON		4909 PARK ST	PANAMA CITY	FL	32404
JOHN MARTIN		P O BOX 623	DEFUNIAK SPRINGS	FL	32435
SAM MARTIN	SAM MARTIN WELL DRILLING	P O BOX 623	DEFUNIAK SPRINGS	FL	32435
BILLY MCCLAIN	FDEP	2600 BLAIR STONE ROAD	TALLAHASSEE	FL	32399
GENE MCGOWAN		3041 E KINGSFIELD RD	PENSACOLA	FL	32526
MICHAEL MCGUYRE	MCGUYRE'S WELL DRILLING	4090 BUFORD LN	MILTON	FL	32583
CRAIG MCLEAN		P O BOX 700	FREEPORT	FL	32439
WILLIAM MCLEAN	CRAIG'S WELL SERVICE	P O BOX 700	FREEPORT	FL	32439
TE MILLS	MILLS WELL DRILLING & PUMPS	5355 TOWER RD	TALLAHASSEE	FL	32303
BRICE MOODY	BRICEY MOODY WELL DRILLING	160 SAN MARCOS DR	CRAWFORDFILLE	FL	32327
MAINOR MOORE	MOORE ELECTRIC COMPANY	1110 W WASHINGTON ST	QUINCY	FL	32351
JOHN A MORRILL		3805 A SPRINGHILL RD	TALLAHASSEE	FL	32310
FRANK J MOSLEY	MOSLEY WELL & PUMP	7685 FAIRBANKS FERRY RD	HAVANA	FL	32333
CLYFTON MYERS	MYERS PUMP & INSTALLATION	1391 ACORN LN	PENSACOLA	FL	32514
JAMES PEEL	SOUTHERN TESTING & DRILLING INC	1419 ORANGE HILL RD	CHIPLEY	FL	32428
TONY POWELL		P O BOX 116	URIAH	AL	36480
DOUGLAS RAY	FREETIME IRRIGATION	107 22ND STREET	NICEVILLE	FL	32578
HARVEY REAVES		P O BOX 426	WOODVILLE	FL	32362
CARL REVELL JR	REVELL WELL DRILLING	P O BOX 123	SOPCHOPPY	FL	32358
ROBERT ROACH	BOYLES BROTHERS DRILLING CO	P O BOX 1111	NORTHPORT	AL	35476
RICHARD ROBERTS		P O BOX 1022	NICEVILLE	FL	32588
RICHARD ROWE		P O DRAWER 1389	TALLAHASSEE	FL	32302
LAMAR ROWE	ROWE DRILLING COMPANY INC	P O DRAWER 1389	TALLAHASSEE	FL	32302
ROBERT SCRIBNER	KCW ELECTRIC CO INC	4765 SHELFER RD	TALLAHASSEE	FL	32310
WAYNE SIMMONS	SIMMONS WELL DRILLING	3152 BOB SIKES ROAD	DEFUNIAK SPRINGS	FL	32435
MILFORD SIMS		3606 S LAKEWOOD DR	TALLAHASSEE	FL	32310
STEVE SMALLEY	NORTH FLORIDA WELL DRILLING	24396 LONE STAR CT	TALLAHASSEE	FL	32310
DONALD SMITH	DONALD SMITH COMPANY INC	746 E MAIN	HEADLAND	FL	36345
FILBERT SMITH	ARDAMAN AND ASSOCIATES	3175 W THARPE ST	TALLAHASSEE	FL	32303
MIKE SPIVA	MIKE'S WATER WORKS	PO BOX 1299	SANTA ROSA BEACH	FL	32459-1289
MICHAEL SUGGS		936 PIONEER RD	CHIPLEY	FL	32428
CLIFFORD TAYLOR	POLLOCK WELL DRILLING INC	7307 EVEREST ST	PANAMA CITY	FL	32404
JAMES THOMASON		328 SEMINOLE ST	FT WALTON BEACH	FL	32547
VJ THOMPSON III	THOMASON DEEP WELL DRILLING	P O DRAWER 91537	MOBILE	AL	36691
VONNIE TOLBERT	VONNIE'S WELLS	7621 SAMANTHA CIRCLE	NAVARRE	FL	32566
JAMES TRINDELL		6 THREE SISTERS ROAD	CRAWFORDVILLE	FL	32327
DEN A TRUMBULL JR	CULLIGAN WATER SERVICES INC	315 E 15TH ST	PANAMA CITY	FL	32405
VICTOR C WALLACE	WALLACE SPRINKLER & SUPPLY INC	P O BOX 1313	GULF BREEZE	FL	32562
ALEX WALTERS		10704 ALEX DRIVE	FOUNTAIN	FL	32438
CHALES M WARD	CLYDE'S WELL SERVICE INC	4537 J BARLOW ROAD	JAY	FL	32565
JAMES W WESTBROOK	J & W WELL DRILLING	P O BOX 135	BASCOM	FL	32423
CHARLES WINDHAM	WILLIAMSON WELL DRILLING INC	5800 MULDOON RD	PENSACOLA	FL	32506
TERRY WOODWARD	TERRY'S WELL SERVICE	5001 CHIMES WAY	PENSACOLA	FL	32507
CHARLES WYCKOFF		12751 SMITH YOUNG RD	MOBILE	AL	36695
ACE PLUMBING & DRAIN		8861 GULF BEACH HWY	PENSACOLA	FL	32507
AGGRESSIVE PLUMBING BY R BROADLEY		1015 E LAKEVIEW AVE	PENSACOLA	FL	32503
ARNO'S PLUMBING AND HEATING		6917 SEA CRAB CIRCLE	NAVARRE	FL	32566
ARTO'S SEWER AND DRAIN PLUMBING CO INC		P O BOX 18116	PENSACOLA	FL	32523
BARBERI PLUMBING		1022 UNDERWOOD AVE	PENSACOLA	FL	32504
BELLVIEW PLUMBING CO INC		3101 MULDOON RD	PENSACOLA	FL	32526

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NAME	COMPANY NAME	ADDRESS	CITY	STATE	POSTAL CODE
BOYD PLUMBING		2464 S HWY 29	CANTONMENT	FL	32533
BRADLEY PLUMBING AND HEATING		2709 GRAINGER AVENUE	PENSACOLA	FL	32507
CLYDE'S SERVICES		815 N 77TH AVE	PENSACOLA	FL	32506
COKER PLUBMING CO		521 MILLS AVE	PENSACOLA	FL	32507
COOPER GARY PLUMBING		5676 COUNTRY SQUIRE DR	MILTON	FL	32570
DAVIDSON PLUMBING		8830 UNTREINER AVE	PENSACOLA	FL	32534
EAST BAY PLUMBING CO		6255 EAST BAY BLVD	GULF BREEZE	FL	32561
ELECTRIC ROTO		2376 W NINE MILE RD	PENSACOLA	FL	32534
ESCAMBIA PLUMBING AND HEATING CO		1860 ATWOOD DR	PENSACOLA	FL	32514
FAVORITE PLUMBING CO		2828 N T STREET	PENSACOLA	FL	32505
JIM'S PLUMBING OF NAVARRE INC		1888 COMMODORE ST	NAVARRE	FL	32566
JOHNSON LEON PLUMBING CO		7108 WHIRLEYBIRD AVE	PENSACOLA	FL	32504
MMI MECHANICAL CONTRACTOR		4904 W SPENCER FIELD	PACE	FL	32571
MCCLUSKEY PLUMBING CO		808 W ZARRAGOSSA STREET	PENSACOLA	FL	32501
PAYNE & SON PLUMBING, HEATING, AIR CONDITIONING		P O BOX 2575	PENSACOLA	FL	32513
PENSACOLA PLUMBING CONTRACTORS		2313 BROOKWOOD PLACE	PENSACOLA	FL	32533
QUALITY ONE PLUMBING CO		5724 PALMETTO PL	MILTON	FL	32570
ROOT-A-SEWER INC		2701 LONG LEAF DR	PENSACOLA	FL	32526
S & S PLUMBING AND MECHANICAL INC		7845 PINE FOREST RD	PENSACOLA	FL	32526
SANTA ROSA PLUMBING		5510 TOM SAWYER RD	MILTON	FL	32583
SMITH PLUMBING & HEATING CO INC		2510 N PACE BLVD	PENSACOLA	FL	32505
SPIVEY & SON PLUMBING INC		9820 VONNA JO DR	PENSACOLA	FL	32506
VAN PLUMBING		3248 CLEMSON RD	GULF BREEZE	FL	32561
WARRINGTON PLUMBING INC		910 W MAIN	PENSACOLA	FL	32501
BRAUN'S SPRINKLER SERVICE		10852 BERRYHILL RD	PENSACOLA	FL	32506
GORMAN CO INC		4149 WAREHOUSE LANE	PENSACOLA	FL	32505
PHOENIX LANDSCAPE & IRRIGATION INC		P O BOX 924	GULF BREEZE	FL	32562
RAINFALL LANDSCAPE & SPRINKLER		9850 NORTH LOOP RD	PENSACOLA	FL	32507
TIECO GULF COAST INC		540 W MICHIGAN AVE	PENSACOLA	FL	32505
DOUG MERRITT IRRIGATION		2600 W MICHIGAN AVE, LOT 35E	PENSACOLA	FL	32526
SHERMAN SPRINKLER & IRRIGATION		18 NOTTINGHAM WAY	PENSACOLA	FL	32506
TRIM A LAWN LAWN & GARDEN CENTER		1405 GULF BEACH HIGHWAY	PENSACOLA	FL	32507
MCGOWAN IRRIGATION		3041 E KINGSFIELD RD	PENSACOLA	FL	32526
GARVEY IRRIGATION		PO BOX 250	MOLINO	FL	32577-0250
KEN GRIFFIN LANDSCAPE CONTRACTORS INC		3004 WESTFIELD RD	GULF BREEZE	FL	32563
PENSACOLA LANSCAPING & LAWN CARE		7795 GROW DR	PENSACOLA	FL	32514
WATER WORKS SPRINKLER SYSTEMS & PONDS		4669 ANNA SIMPSON RD	MILTON	FL	32583
C & H PLUMBING		5239 OLD BERRYHILL RD	MILTON	FL	32570
DEALE PLUMBING		7019 WOODLEY DR	PENSACOLA	FL	32503
DOWNS PLUMBING & GAS	LARRY DOWNS	5840 MULDOON RD	PENSACOLA	FL	32526
ELECTRIC ROTO ROOTER SEWER & DRAIN CLEANING		2376 W NINE MILE ROAD	PENSACOLA	FL	32534
FLORIDA AIR CONDITIONING & PLUMBING		9310 BRIDLEWOOD RD	PENSACOLA	FL	32526
THE FRIENDLY PLUMBER OF FLORIDA INC		4300 HOLLYWOOD AVENUE	PENSACOLA	FL	32505
HIGH TECH PLUMBING & HEATING		8375 RALEIGH CIRCLE	PENSACOLA	FL	32534
HOMEOWNERS' ASSURANCE INC		4382 HIGHWAY 90	PACE	FL	32571
PACE PLUMBING		4274 BELL LANE	PACE	FL	32571
PETTRY PLUMBING & GAS SERVICE		P.O. BOX 3422	PENSACOLA	FL	32516
ROTO-ROOTER SERVICE & DRAIN CLEANING		2376 W NINE MILE RD	PENSACOLA	FL	32534
TERRY SMITH PLUMBING INC		22 W NINE & ONE HALF MILE RD	PENSACOLA	FL	32534
ENSLEY SEPTIC TANK SERVICE		10491 BETMARK RD	PENSACOLA	FL	32534
AFFORDABLE SPRINKLERS		4155 KINGBERRY ROAD	PENSACOLA	FL	32504
ALTERNATE RAIN SYSTEMS		5353 N BLUE ANGEL PARKWAY	PENSACOLA	FL	32526
AMORE SPRINKLER CO		3652 GARDENVIEW RD	PACE	FL	32571
IRRIGATION ENGINEERING		920 E LLOYD ST	PENSACOLA	FL	32503
KILLER WELLS, INC.		2600 W. MICHIGAN AVE, LOT 35E	PENSACOLA	FL	32525-2282
PERDIDO IRRIGATION SYSTEMS		5555 BAUER ROAD	PENSACOLA	FL	32507
RIKER IRRIGATION		1144 W NINE MILE RD	PENSACOLA	FL	32534
A1 LAWN SPRINKLER CO		15 REDWOOD CIRCLE	PENSACOLA	FL	32506
M7N VENDING SERVICE		440 W. HANNAH STREET	PENSACOLA	FL	32534
GLASS COAT INC		3180 HOWELL RD	PENSACOLA	FL	32568
GULF COAST POOL & SPA INC		2461 LANGLEY AVE	PENSACOLA	FL	32504
MANNING BROS POOL INC		9465 PENSACOLA BLVD	PENSACOLA	FL	32534
PANAMA POOLS OF NORTHWEST FLORIDA		291 POWELL ADAMS RD	PENSACOLA	FL	32413
PENSACOLA POOLS INC		8514 PENSACOLA BLVD	PENSACOLA	FL	32534
VAUGHN'S INC OF PENSACOLA		1290 NINE MILE ROAD	PENSACOLA	FL	32534
ALLPOOLS		8062 BRIOR OAK DRIVE	PENSACOLA	FL	32514
AVALON POOLS		4230 TANFIELD ROAD	MILTON	FL	32583
COX POOLS		22656 F CANAL ROAD	ORANGE BEACH	AL	36561
D K POOLS INC		4111 LILLIAN HWY	PENSACOLA	FL	32505-2202
L W POOLS		11600 MOBILE HIGHWAY	PENSACOLA	FL	32526

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NAME	COMPANY NAME	ADDRESS	CITY	STATE	POSTAL CODE
PINCH A PENNY POOL PATIO SPA		8090 N 9th AVE	PENSACOLA	FL	32514
SOUTHLAND POOLS		4333 BARCLAY PLACE	PACE	FL	32571
SUNSET POOLS SPAS & WHIRLPOOL BATHS		4382 HIGHWAY 90	PACE	FL	32571
SOUTH CENTRAL POOL SUPPLY		8808 Grow Dr	PENSACOLA	FL	32514
FANTASY POOLS & SPA		1350 S Blue Angel Pkwy	PENSACOLA	FL	32506
JOHNSON POOLS INC.		401 Massachusetts Ave	PENSACOLA	FL	32505
FAGANS CUSTOM POOLS INC.		13440 Serenity Cir	PENSACOLA	FL	32506
ATLANTIS POOL & SPA		2075 Elaine Cir	PENSACOLA	FL	32504
SUPERIOR POOLS PRODUCTS		3338 Mclemore Dr	PENSACOLA	FL	32514
WHOLESALE SPA & POOL OUTLETS		2323 Copter Rd	PENSACOLA	FL	32514
AFFORDABLE TREE LAWN & POOL		2011 W. Garden Street	PENSACOLA	FL	32502
EMERALD COAST IRRIGATION LLC		3041 Kingsfield Road	PENSACOLA	FL	32514
JERRY PATE TURF & IRRIGATION INC.		301 Schubert Drive	PENSACOLA	FL	32504
GULFSIDE LANDSCAPING INC		8221 Kipling Street	PENSACOLA	FL	32514
GONZALEZ PLUMBING & SPRINKLER		1801 Government Street	PENSACOLA	FL	32502
AIR DESIGN SYSTEMS INC.		400 Lurton St	PENSACOLA	FL	32505
ALL PRO PLUMBING & DRAIN		1765 E Nine Mile Rd Ste 1	PENSACOLA	FL	32514
ARTO'S SEWER & DRAIN SERVICE INC		2923 Rhythm St	PENSACOLA	FL	32505
CERTIFIED PLUMBING SEWER & GAS		7075 N Blue Angel Pkwy	PENSACOLA	FL	32526
PRICHARDS PLUMBING		40 Olive Rd	PENSACOLA	FL	32514
AGGRESSIVE PLUMBING		1220 Maura St	PENSACOLA	FL	32503
Terry Lambert Plumbing & Gas Service Inc		8145 Whitmire Dr	PENSACOLA	FL	32514
BATTLES PLUMBING LLC		2083 Downing Dr	PENSACOLA	FL	32505
KIMMON PLUMBING INC.		2560 Gulf Breeze Ave	PENSACOLA	FL	32507
NELSON PLUMBNIG CONTRACTORS		211 Brent Ln	PENSACOLA	FL	32503
GMC PLUMBING CONTRACTOR		664 Whitney Dr	PENSACOLA	FL	32503
CASEY HYMAN PLUMBING INC		5650 Dixie Dr	PENSACOLA	FL	32503
BALDWIN PLUMBING WORKS INC		3521 Bauer Rd	PENSACOLA	FL	32506
COASTAL PLUMBING & SEWER INC.		3010 Keats Dr	PENSACOLA	FL	32503
LARRY DOWNS JR PLUMBING CO		1949 Athens Ave	PENSACOLA	FL	32507
PLUMBERSMITH		9312 Bridlewood Rd	PENSACOLA	FL	32526
AQUA PRODUCTS INC.		3983 N.W. Street	Pensacola	FL	32505
VIP POOLS		3303 N. Davis Hwy.	Pensacola	FL	32503
AFFORDABLE POOL & SPA REPAIR INC.		7208 W. Fairfield Drive	Pensacola	FL	32506
POOL CARE		600 Careondelay Drive	Pensacola	FL	32506
LESLIE'S SWIMMING POOL SUPPLIES		9251 University Pkwy	Pensacola	FL	32514
KENNY SMITHS POOL CARE		7134 Inniswold Drive	Pensacola	FL	32526
LORING IRRIGATION		2406 Escambia Avenue	Pensacola	FL	32503
AA IRRIGATION REPAIR		4301 N. Davis Hwy	Pensacola	FL	32503
THE FINISH LINE COMPANIES		3370 Pursell Lane	Pensacola	FL	32526
VEREN IRRIGATION PUMP SERVICE		10160 Candlestick Lane	Pensacola	FL	32514
PROFESSIONAL SPRINKLER SYSTEMS INC.		1125 Corsa Terrace	Pensacola	FL	32514
GULF STREAM LANDSCAPING & IRRIGATION		8449 Old Palafox Street	Pensacola	FL	32504
KEN GRIFFIN LANDSCAPE CONTRACTORS INC		3004 Westfield Road	Gulf Breeze	FL	32563
LAYNE CHRISTENSEN CO.		3720 N. Palafox Street	Pensacola	FL	32505
CLARK DRILLING		1040 Aquamarine Drive	Gulf Breeze	FL	32563
PRO POOLS INC.		1752 Old Bainbridge Road	Tallahassee	FL	32303
BRYANT CHEMICAL COMPANY		6206 Vicksburg Drive	Pensacola	FL	32503
K C W WATER WELL SERVICE		4765 Shelfer Road	Tallahassee	FL	32305
DRILLING SOLUTIONS INC.		5624 Pasture Lane	Jay	FL	32565
AQUA POOL & PATIO		5904 N. Palafox St	Pensacola	FL	32503
SURFSIDE POOLS		6677 Old Bagdad Hwy.	Milton	FL	32583

TABLE 7
IRRIGATION WELL INFORMATION

Agrico Site
Pensacola, Florida

ID	PERMIT	NAME	STREET	DIAMETER (INCHES)	DEPTH FT. BLS	CASING FT. BLS	AQUIFER	ABANDONMENT OFFER LETTER SENT	IRRIGATION WELL SAMPLED	DATE SAMPLED	WELL ABANDONED	REMARKS
1		C.E. Anderson	905 TEXAR DRIVE	2	85	75	SZ	NO	NO			Outside of area of expected impacts for SZ
2	41(HC-1)	Holy Cross Cemetary Diocese of Pensacola	1300 E. HAYES	4	160	140	MPZ	YES	YES	11/28/2000		Two wells exist for cemetary, for sampling purposes labeled HC-1 and HC-2
	41(HC-2)	Holy Cross Cemetary Diocese of Pensacola	1300 E. HAYES	4	160	140	MPZ	YES	YES	11/28/2000		Two wells exist for cemetary, for sampling purposes labeled HC-1 and HC-2
3	81	C. Hass	349 SILVER ROAD	4	82	82	SZ	NO	NO			Outside of area of expected impacts for SZ
4	82	W.S. VanMetre	1221 TEXAR	4	95	95	SZ	NO	NO			Outside of area of expected impacts for SZ
5	97	O. English	3803 N. 10TH AVE.	4	71	130	120	yes	YES	3\13\01		
6	103	Dr. D. McGraw	1680 TEXAR	4	71	61	SZ	NO	NO			Outside of area of expected impacts for SZ
7	109	K. Wolfersterger	2700 MAGNOLIA AVE.	4	115	100	MPZ	YES	NO			
8	110	F & Kathleen Edsel, Jr	2721 BLACKSHEAR	4	UNK	UNK	UNK	RETURNED	NO			
9	111	J. Colley	1750 E. TEXAR DR.	2	85	80	SZ	NO	NO			Outside of area of expected impacts for SZ
10		Curry	2701 N. 16TH AVE.	4	158	143	MPZ	YES	YES	3/15/2001		
11	123	D. Lavin	3632 MENENDEZ DR.	4	73	63	SZ	NO	NO			Outside of area of expected impacts for SZ
12	124	Dr. B. Beidleman	2909 BLACKSHEAR	4	87	77	SZ	NO	NO			Outside of area of expected impacts for SZ
13	127	F. McCallister	2706 BLACKSHEAR	4	85	75	SZ	NO	NO			Outside of area of expected impacts for SZ
14	135	J. Klocke	2914 BLACKSHEAR	2	50	45	SZ	NO	NO			Outside of area of expected impacts for SZ
15	139	R. Moulton	3970 MENENDEZ DR.	4	110	100	MPZ	YES	NO			Well capped under land surface. Not Used
16	140	M. Johnson	1650 E. HAYES ST.	4	120	110	MPZ	YES	YES	11/28/2000		
17	142	L. Fishman	3003 MAGNOLIA AVE	NA	NA	NA	NA	YES	NA	NA		**No well found at location**
18	143	F. Clayborn	1640 E. HAYES ST.	4	125	110	MPZ	YES	NO		2/27/2001	Well exists. Irrigation System Not Used.
19	144	Dr. Willis (Family Practice)	915 E. FAIRFIELD DR	4	120	110	MPZ	YES	YES	5/10/2001		
20	160	B. Hodnelle, Jr.	3966 MENENDEZ	4	117	107	MPZ	YES	NO			
21		E. Davis	4130 MENENDEZ	2	45	40	SZ	NO	NO			Outside of area of expected impacts for SZ
22	194	D. Conkle	3080 BLACKSHEAR AVE	2	68	63	SZ	NO	NO			Outside of area of expected impacts for SZ
23	P9407748	Henry Langhorn	1725 EAST MAURA ST	4	140	120	MPZ	YES	NO			
24	P9503948	Floral Tree Gardens	3601 NORTH DAVIS HWY.	4	115	100	MPZ	YES	NO			
25	T8301727	Fred Levin	3600 MENENDEZ	2	35	30	SZ	NO	NO			Outside of area of expected impacts for SZ
26	T8402575	W.L. Glaze	2675 N. 17TH AVENUE	4	140	120	MPZ	RETURNED	NO			
27	T8403811	Mrs. Dorothy Bearman	1501 GAMARA ROAD	4	110	100	MPZ	YES	NO			
28	T8707396	Richard and Sarah Sanchez	1221 DURNFORD PLACE	4	140	130	MPZ	YES	YES	3/1/2001		
29	T8800778	William C. Baker	1250 DRIFTWOOD DRIVE	4	110	90	MPZ	YES	NO			

TABLE 7
IRRIGATION WELL INFORMATION

Agrico Site
Pensacola, Florida

ID	PERMIT	NAME	STREET	DIAMETER (INCHES)	DEPTH FT. BLS	CASING FT. BLS	AQUIFER	ABANDONMENT OFFER LETTER SENT	IRRIGATION WELL SAMPLED	DATE SAMPLED	WELL ABANDONED	REMARKS
30	T8905178	Leroy Gamlin	1005 TUNIS STREET	4	116	106	MPZ	YES	NO			
31	T9005951	Joseph Bores	4100 MENENDEZ DRIVE	4	130	120	MPZ	YES	YES	11/28/2000		
32	T9103343	Charles R. Earnest	1900 EAST LEONARD ST.	4	151	121	MPZ	YES	YES	11/28/2000		Well Resampled 5-10-01 to confirm PCE detection
33	T9104961	Dr. Peter C. Delevett	1660 TEXAR DRIVE	2	84	74	SZ	NO	NO			
34	T9104962	Paul Williams	800 E. BAARS ST	4	120	60	MPZ	YES	NO			808 E. Baars sharing well at 800 E. Baars
35	T9206908	John C. Sowers	3090 BLACKSHEAR AVE	2	90	80	SZ	NO	NO			Outside of area of expected impacts for SZ
36	T9304906	J.E. Boatwright Jr.	2575 PARADISE POINT DR	4	120	100	MPZ	YES	YES	3/1/2001		
37	T9701332	Elisabeth Holmes	1781 E. LEONARD ST.	2	UNK	UNK	UNK	YES	NO			
38	T9800088	James T. Baer	1775 EAST TEXAR DR	4	UNK	UNK	UNK	YES	YES	11/29/2000		
39	P9405922	Randy Head	2015 E. Maura St	NA			NA	YES	NA			**No well found at location**
40	158	N. Kinder	1227 BARCIA DR.	UNK	UNK	UNK	UNK	YES	NO			
41	162	W. Veasie	1271 DRIFTWOOD DR.	4	96	73	SZ	NO	no			Outside of area of expected impacts for SZ
42	171	D. Tringas	2621 PARADISE POINT	UNK	UNK	UNK	UNK	YES	YES	3/1/2001		
43	172	B. Samples	1009 EAST TUNIS	UNK	UNK	UNK	UNK	YES	YES	11/28/2000		
44	178	C. Davis	1555 EAST CROSS ST.	2	UNK	UNK	UNK	YES	NO			
45		Moss & Bessie Wilson	3510 N. 9TH AVE	NA	NA	NA	NA	NO	NA			**No well found at location**
46		John & Priscilla Snyder	2912 BLACKSHEAR AVE	UNK	UNK	UNK	UNK	YES	NO			
47		David & Jean Mayo	3030 BLACKSHEAR AVE	UNK	UNK	UNK	UNK	YES	YES	3/1/2001		
48		Neroy & Lois Anderson	1301 E FISHER ST	UNK	UNK	UNK	UNK	YES	NO			
49		Jude & Nancy White	1710 E CROSS ST	4	140		UNK	YES	YES	8/25/1999		Results in the First annual report OU-2 (2/2000)
50		Mr. Glen McDonald	2860 BLACKSHEAR AVE	UNK	UNK	UNK	UNK	RETURNED	NO			
51		John & Sue Woodward	2710 BLACKSHEAR AVE	4	100	90	MPZ	YES	YES	3/1/2001		
52	159	Amos & Clementine Prevatt	2712 BLACKSHEAR AVE	2	55	45	SZ	NO	NO			Outside of area of expected impacts for SZ
53	80	Howard & Joyce Rein	2101 E CROSS ST	4	130	120	MPZ	YES	YES	11/28/2001		
54		Diocese of Pensacola	1231 DURNFORD PL	UNK	UNK	UNK	UNK	YES	YES	11/28/2001		Bishop's Residence
55		Larry & Catherine Parks	1210 DURNFORD PL	4	145	130	MPZ	YES	NO		2/27/2001	

TABLE 7
IRRIGATION WELL INFORMATION

Agrico Site
Pensacola, Florida

ID	PERMIT	NAME	STREET	DIAMETER (INCHES)	DEPTH FT. BLS	CASING FT. BLS	AQUIFER	ABANDONMENT OFFER LETTER SENT	IRRIGATION WELL SAMPLED	DATE SAMPLED	WELL ABANDONED	REMARKS
56		Dennis & Betty Peters	3990 MENENDEZ DR	4	78	65	SZ	NO	NO			Outside of area of expected impacts for SZ
57		Jack & Carolyn Fleming	4010 MENENDEZ DR	UNK	UNK	UNK	UNK	YES	YES	11/28/2000		
58		Richard & Page Ciordia	4020 MENENDEZ DR	4	92	82	SZ	NO	NO			Outside of area of expected impacts for SZ
59		Garrett & Joyce Boyd	1261 STOW AVE	UNK	UNK	UNK	UNK	YES	NO			
60		Gene Schmidt	4141 MENENDEZ DR	4	115	100	MPZ	YES	YES	11/29/2000		
62		C.E. Davis	808 BAARS ST.	UNK	UNK	UNK	UNK	YES	YES	3/13/2001		
63	P200104-707	Escambia County Park Service	CARRIE MILLER PARK	4	90	70	SZ	NO	NO			Downgradient of FDEP Kaiser Site; drilled after moratory initiated.

(1) ID = Map ID number for Figure 2
(2) Permit = Northwest Florida Water Management District Permit Number
(3) Aquifer = SZ = Surficial zone of Sand-and-Gravel Aquifer; MPZ = Main producing zone of Sand-and-Gravel Aquifer;
(4) Unknown = No well construction information available ; UNK= Data Unknown
*(5) NA = Not Applicable
*(6) ft. bls = feet below land surface

SUMMARY	TOTAL
1. NUMBER OF NOTIFICATIONS OF VOLUNTARY ABANDONMENT OFFER	41
2. NUMBER OF LOCATION WHERE SURFICIAL ZONE IRRIGATION WELLS EXIST BUT NO POTENTIAL FOR IMPACTS BY AGRICO-RELATED CONSTITUENTS	8
3. WRONG INFORMATION - NO WELL PRESENT AT LOCATION	1
4. NUMBER OF ADDITIONAL IRRIGATION WELLS IDENTIFIED (1 additional well identified at Holy Cross Cemetery)	1
5. TOTAL NUMBER OF IRRIGATION WELLS IDENTIFIED	60
6. TOTAL NUMBER OF WELLS ABANDONED THROUGH FEBRUARY 2001.	0
7. NUMBER OF WELLS SAMPLED THROUGH FEBRUARY 2001.	12

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
ACB-31S	5/9/1997	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/10/1997	<0.2	<0.010	<0.0050	NA	NA	NA	NA	NA	NA
	5/4/1998	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/23/1998	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/25/1999	<0.2	<0.01	<0,005	NA	NA	NA	NA	NA	NA
	11/17/1999	<0.2	<0.010	<0.0050	NA	NA	NA	NA	NA	NA
	5/15/2000	<0.2	<0.010	<0.0050	NA	NA	NA	NA	NA	NA
	11/14/2000	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/9/2001	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/15/2001	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/15/2002	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/19/2002	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/7/2003	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	1/13/2004	< 0.2 U	< 0.01 U	< 0.005 U	4.9	50	3.4 J	0.67 J+/- 0.21	5.08 +/- 0.92	**5.8**
	5/11/2004	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/9/2004	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/10/2005	0.2	0.01	0.005	NA	NA	NA	NA	NA	NA
	11/8/2005	< 0.2 U	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	5/15/2006	<0.2 U	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/14/2006	< 0.2 U	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	5/16/2007	< 0.1 U	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/15/2007	< 0.2 U	< 0.01 U	< 0.005 U	7.9	50	4.8	0.829 +/- 0.16	5.25 +/- 0.61	**6.08**
	5/15/2008	< 0.2 U	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/13/2008	< 0.2 U	< 0.01 U	< 0.005 U	5.1	51	6.5	0.68 +/- 0.16	6.59 +/- 0.63	**7.27**
	11/19/2009	< 0.1 U	< 0.01 U	NA	5.3	44	4.9	0.708 +/- 0.18	5.58 +/- 0.55	**6.29**
	11/16/2010	<0.10	NA	NA	3.2	43	6.8	0.611 +/- 0.21	4.35 +/- 0.71	4.96
	11/8/2011	<0.10	NA	NA	5.5	52	3.4	0.498 +/- 0.18	4.49 +/- 0.93	4.99
	11/6/2012	<0.10	NA	NA	3.5	39	1.9	0.474 +/- 0.19	4.99 +/- 0.81	**5.46**
	11/5/2013	<0.10	NA	NA	3.1	36	2.4	0.184 +/- 0.17	4.15 +/- 0.74	4.33

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
ACB-32S	5/9/1997	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/10/1997	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/4/1998	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/23/1998	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/15/1999	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/17/1999	<0.2	<0.010	<0.0050	NA	NA	NA	NA	NA	NA
	5/15/2000	<0.2	<0.010	<0.0050	NA	NA	NA	NA	NA	NA
	11/14/2000	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/9/2001	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/1/2001	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/15/2002	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/19/2002	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/7/2003	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	1/13/2004	< 0.2 U	0.011	< 0.005 U	7.2	55	8.3 J	0.62 J+/- 0.21	3.89 +/- 0.88	4.5
	5/11/2004	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/9/2004	< 0.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/10/2005	<0.2	<0.01	<0.005	NA	NA	NA	NA	NA	NA
	11/8/2005	< 0.2 U	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	5/15/2006	< 0.2 U	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/14/2006	< 0.2 U	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	5/16/2007	< 0.1 U	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/15/2007	< 0.2 U	< 0.01 U	< 0.005 U	3.7	16	1.7	0.195 +/- 0.0690	1.11 +/- 0.34	1.31
	5/15/2008	< 0.2 U	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/13/2008	< 0.2 U	< 0.01 U	< 0.005 U	3.1	18	2.2	0.104 +/- 0.0870	1.1 +/- 0.30	1.2
	11/19/2009	< 0.1 U	< 0.01 U	NA	2	10	1.3	0.164 +/- 0.12	0.796 +/- 0.37	0.960
	11/16/2010	0.11	NA	NA	1.6	14	0.78	0.199 +/- 0.12	0.619 +/- 0.48	0.818
	11/8/2011	0.1	NA	NA	1.5	8.3	0.85	-0.0461 +/- 0.11	1.28 +/- 0.39	1.23
	11/6/2012	0.11	NA	NA	1	4.5	0.93	0.206 +/- 0.13	0.580 +/- 0.40	0.786
	11/5/2013	<0.10	NA	NA	1.2	2.8	0.34	0.290 +/- 0.16	0.517 +/- 0.43	0.807

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
AC-33S	5/9/1997	0.81	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/10/1997	0.82	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/4/1998	1.7	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/23/1998	0.47	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/15/1999	0.29	0.017	0.0063	NA	NA	NA	NA	NA	NA
	11/17/1999	0.26	<0.010	<0.0050	NA	NA	NA	NA	NA	NA
	5/16/2000	0.25	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/14/2000	0.22	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/9/2001	0.32	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/15/2001	0.4	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/15/2002	0.33	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/19/2002	0.5	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/7/2003	0.63	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	1/14/2004	0.71	< 0.01 U	< 0.005 U	26	94	1.7	3.27 +/- 0.54	11.9 +/- 1.50	**15.2**
	5/11/2004	1.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/9/2004	2.7	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/10/2005	0.6	0.01	0.005	NA	NA	NA	NA	NA	NA
	11/8/2005	0.75	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	5/15/2006	0.27	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/14/2006	1.4	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	5/16/2007	1.4	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/15/2007	0.64	< 0.01 U	< 0.005 U	7.5	26	1.5	0.437 +/- 0.14	1.38 +/- 0.34	1.82
	5/15/2008	0.94	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/14/2008	0.94	< 0.01 U	< 0.005 U	7.7	27	1.6	0.673 +/- 0.15	1.92 +/- 0.39	2.59
	11/19/2009	1.6	< 0.01 U	NA	6.5	23	1	0.475 +/- 0.13	2.73 +/- 0.41	3.21
	11/16/2010	0.77	NA	NA	8.5	25	0.59	0.522 +/- 0.19	1.99 +/- 0.50	2.51
	11/8/2011	0.61	NA	NA	1.9	20	0.45	0.391 +/- 0.15	2.00 +/- 0.44	2.39
	11/6/2012	0.67	NA	NA	6.6	90	0.36	0.930 +/- 0.28	4.68 +/- 0.78	**5.61**
	11/5/2013	0.78	NA	NA	5.7	20	0.24	0.410 +/- 0.20	2.07 +/- 0.47	2.48

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
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Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
AC-34S	5/9/1997	16	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/10/1997	9.5	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/4/1998	6.3	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/23/1998	3.8	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/15/1999	3.5	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/17/1999	2.5	<0.010	<0.0050	NA	NA	NA	NA	NA	NA
	5/16/2000	2.6	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/14/2000	1.6	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/9/2001	1.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/15/2001	1.6	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/15/2002	1.4	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/19/2002	1.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/7/2003	1.9	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	1/14/2004	2	< 0.01 U	< 0.005 U	9.3	80	6.5	0.38 J+/- 0.18	2.04 +/- 0.58	2.42
	5/11/2004	9.7	0.011	< 0.005	NA	NA	NA	NA	NA	NA
	11/9/2004	9.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/10/2005	8	<0.01	<0.005	NA	NA	NA	NA	NA	NA
	11/8/2005	7.3	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	5/15/2006	6.4	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/14/2006	5.6	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	5/16/2007	4.6	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/15/2007	4.2	< 0.01 U	< 0.005 U	8.6	74	2.4	0.261 +/- 0.12	2.06 +/- 0.43	2.32
	5/15/2008	3.1	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/14/2008	2.4	< 0.01 U	< 0.005 U	7.2	68	2.8	0.159 +/- 0.0990	2.04 +/- 0.38	2.20
	11/19/2009	1.6	< 0.01 U	NA	5.9	60	2.3	0.152 +/- 0.12	2.54 +/- 0.42	2.69
	11/17/2010	1.9	NA	NA	5.1	68	6.6	0.149 +/- 0.085	1.14 +/- 0.34	1.29
	11/9/2011	1	NA	NA	3.3	67	2.9	0.296 +/- 0.15	0.984 +/- 0.31	1.28
	11/7/2012	0.97	NA	NA	2.1	37	2.8	0.152 +/- 0.12	0.785 +/- 0.29	0.937
	11/5/2013	0.77	NA	NA	4.1	52	2.1	0.218 +/- 0.14	0.927 +/- 0.36	1.15

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
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Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
AC-7SR	5/9/1997	19	0.014	0.012	NA	NA	NA	NA	NA	NA
	11/10/1997	9.1	0.012	0.011	NA	NA	NA	NA	NA	NA
	5/4/1998	10	0.017	0.028	NA	NA	NA	NA	NA	NA
	11/23/1998	6.7	< 0.01	0.011	NA	NA	NA	NA	NA	NA
	5/15/1999	7.4	0.02	0.022	NA	NA	NA	NA	NA	NA
	11/17/1999	6.4	<0.010	<0.0050	NA	NA	NA	NA	NA	NA
	5/16/2000	5.6	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/14/2000	5.1	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/9/2001	5.8	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/15/2001	5.6	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/15/2002	6.5	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/19/2002	4.8	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/7/2003	6.1	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	1/14/2004	6.4	< 0.01 U	< 0.005 U	6.4	38	2.8	0.58 J+/- 0.21	1.62 +/- 0.52	2.2
	5/11/2004	9.4	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	11/9/2004	9.2	< 0.01	< 0.005	NA	NA	NA	NA	NA	NA
	5/10/2005	5.4	0.01	0.005	NA	NA	NA	NA	NA	NA
	11/8/2005	5.3	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	5/15/2006	4.4	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/14/2006	5.7	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	5/16/2007	4.1	< 0.01 U	< 0.005 U	NA	NA	NA	NA	NA	NA
	11/15/2007	3.6	< 0.01 U	< 0.005 U	6.9	35	2.3	0.339 +/- 0.12	0.974 +/- 0.34	1.31
	5/15/2008	6	< 0.01 U	0.0056	NA	NA	NA	NA	NA	NA
	11/14/2008	3.3	< 0.01 U	< 0.005 U	6.8	46	2.1	0.188 +/- 0.10	1.24 +/- 0.39	1.43
	11/19/2009	3.1	< 0.01 U	NA	7	32	2.1	0.239 +/- 0.10	1.11 +/- 0.31	1.35
	11/17/2010	3.7	NA	NA	5.1	27	1.7	0.240 +/- 0.11	0.820 +/- 0.30	1.06
	11/8/2011	2.9	NA	NA	3.8	30	1.8	0.322 +/- 0.14	1.05 +/- 0.30	1.37
	11/6/2012	0.94	NA	NA	5.8	34	1.9	0.272 +/- 0.16	1.45 +/- 0.44	1.72
	11/5/2013	2.4	NA	NA	5.0	28	1.4	0.172 +/- 0.16	1.09 +/- 0.36	1.26

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
AC-2S	4/15/1987	16	0.010	NA	7.4	143	NA	NA	NA	NA
	10/1/1990	63	0.74	<0.005	18	260	12	NA	NA	NA
	2/4/1992	94	0.164	< 0.005	20	290	15	0.4 +/- 0.10	1.2 +/- 1	1.6
	9/28/1997	130	0.058	NA	10	150	9	< 0.6 +/- 0.03	1.7 +/- 0.48	2.3
	11/17/1999	98	0.029	NA	7	57	5	< 1. +/- 0.94	< 1.5 +/- 0.90	2.5
	11/21/2000	150	0.048	NA	6.8	48	5.6	0.5 +/- 0.20	1.9 +/- 1.50	2.4
	11/15/2001	190	0.036	NA	6	23	3.8	0.1 +/- 0.07	2.8 +/- 1	2.9
	11/26/2002	210	0.042	NA	5.7	22	3.6	0.1 +/- 0.07	0. +/- 0.60	0.1
	1/23/2004	170	0.046	< 0.005 U	5.7	15	3.5	< 0.25 U+/- 0.17	< 1.1 U+/- 0.66	0.79
	11/17/2004	100	0.027	NA	7.1	< 5.	3	0.134 +/- 0.08	0.286 +/- 0.31	0.420
	11/15/2005	73	0.021	NA	8.8	59	3.9	0.103 J+/- 0.0690	0.649 J+/- 0.34	0.752
	11/28/2006	85	0.029	NA	9.1	69	4	0.032 +/- 0.0750	-0.382 +/- 0.19	-0.35
	11/21/2007	50	0.016	NA	5.3	< 5. U	1.9	0.041 +/- 0.0790	0.0402 +/- 0.13	0.081
	11/19/2008	54	0.02	< 0.005 U	7.6	< 5. U	3.2	0.0442 +/- 0.0860	-0.0882 +/- 0.21	-0.0440
	11/18/2009	44	0.017	NA	4.9	31	2.7	0.191 +/- 0.11	0.0314 +/- 0.19	0.222
	11/29/2010	48	0.024	NA	6.1	44	3.4	0.0772 +/- 0.082	0.449 +/- 0.26	0.526
	11/16/2011	68	0.024	NA	7.5	54	6.2	0.168 +/- 0.13	0.0656 +/- 0.27	0.234
	11/14/2012	43	0.016	NA	4.3	62	4.6	0.0957 +/- 0.16	0.118 +/- 0.24	0.214
	11/12/2013	36	0.016	NA	3.8	59	3.3	0.0439 +/- 0.13	0.273 +/- 0.27	0.317

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
AC-3S	4/15/1987	0.65	<0.004	NA	4.1	59	1.9	NA	NA	NA
	10/1/1990	0.21	<0.01	<0.005	15	22	4	NA	NA	NA
	2/5/1992	< 0.2	< 0.01	0.0081	5.5	27	2.9	1.4 +/- 0.10	0.8 +/- 0.90	2.2
	9/28/1997	1.4	< 0.01	NA	3.8	24	0.92	< 0.6 +/- 0.05	< 1. +/- 0.46	1.6
	11/17/1999	< 0.2	< 0.01	NA	5.7	14	1.1	< 1. +/- 0.79	< 1.5 +/- 0.60	2.5
	11/21/2000	< 0.2	< 0.01	NA	11	16	2.7	0.3 +/- 0.10	1.1 +/- 1.20	1.4
	11/14/2001	< 0.2	< 0.01	NA	7.7	17	2.3	0.1 +/- 0.09	0. +/- 0.70	0.1
	11/26/2002	< 0.2	< 0.01	NA	3.4	13	1.1	0.4 +/- 0.07	0.6 +/- 0.70	1
	1/22/2004	< 0.2 U	< 0.01 U	< 0.005 U	2.9	7.9	1. J	< 0.34 U+/- 0.18	< 1.4 U+/- 0.86	1.22
	11/17/2004	< 0.2	< 0.01	NA	4.2	13	2.1	0.25 +/- 0.0820	0.285 +/- 0.30	0.54
	11/15/2005	< 0.2 U	< 0.01 U	NA	12	15	2.8	0.0862 U+/- 0.10	1.44 +/- 0.40	1.53
	11/22/2006	< 0.2 U	< 0.01 U	NA	8.9	16	2.8	0.243 +/- 0.15	0.81 +/- 0.29	1.1
	11/21/2007	< 0.2 U	< 0.01 U	NA	5.5	20	2	0.191 +/- 0.11	0.687 +/- 0.25	0.878
	11/13/2008	< 0.2 U	< 0.01 U	< 0.005 U	3.6	11	1.1	0.204 +/- 0.10	0.226 +/- 0.27	0.430
	11/18/2009	< 0.1 U	< 0.01 U	NA	3.7	11	1.8	0.14 +/- 0.0790	0.634 +/- 0.38	0.77
	11/29/2010	< 0.1	< 0.01	NA	6.7	17	7.3	0.248 +/- 0.10	0.453 +/- 0.26	0.701
	11/15/2011	< 0.1	< 0.01	NA	3.8	30	3.9	0.147 +/- 0.11	0.888 +/- 0.35	1.04
	11/13/2012	<0.1	<0.010	NA	2.9	21	1.7	0.266 +/- 0.18	0.798 +/- 0.37	1.06
	11/12/2013	<0.1	<0.010	NA	2.4	17	1.5	0.229 +/- 0.16	0.955 +/- 0.41	1.18

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
AC-5S	4/15/1987	0.26	NA	NA	7	90	NA	NA	NA	NA
	10/1/1990	<0.2	<0.01	<0.005	12	25	12	NA	NA	NA
	1/31/1992	< 0.2	< 0.01	< 0.005	9.3	27	6.4	NA	NA	NA
	9/26/1997	< 0.2	< 0.01	NA	8.6	27	4.3	< 0.6 +/- 0.05	1.3 +/- 0.44	1.9
	11/17/1999	< 0.2	< 0.01	NA	19	29	5.9	< 1. +/- 0.66	1.9	2.9
	11/21/2000	< 0.2	< 0.01	NA	24	30	4.9	0.5 +/- 0.20	0.8 +/- 1	1.3
	11/13/2001	< 0.2	< 0.01	NA	35	31	1.5	0.7 +/- 0.10	1.8 +/- 0.90	2.5
	11/20/2002	< 0.2	< 0.01	NA	17	21	2.1	0.5 +/- 0.10	1. +/- 0.80	1.5
	1/20/2004	< 0.2 U	< 0.01 U	< 0.005 U	14	10	0.9	< 0.26 U+/- 0.18	< 0.66 U+/- 0.40	0.59
	11/10/2004	< 0.2	< 0.01	NA	46	13	1.2	0.481 +/- 0.11	1.58 +/- 0.30	2.06
	11/16/2005	< 0.2 U	< 0.01 U	NA	27	12	1.5	0.352 J+/- 0.13	1.42 +/- 0.43	1.77
	11/21/2006	< 0.2 U	< 0.01 U	NA	18	24	4.5	0.461 +/- 0.17	0.928 +/- 0.30	1.39
	11/13/2008	< 0.2 U	< 0.01 U	< 0.005 U	12	19	6.8	0.539 +/- 0.13	1.17 +/- 0.33	1.71
Surficial Zone										
AC-6S	4/15/1987	1.04	NA	NA	24.3	74	**21.9**	NA	NA	NA
	10/1/1990	1.9	<0.01	0.0072	24	32	**24**	NA	NA	NA
	2/2/1992	0.6	< 0.01	< 0.005	15	28	6.7	NA	NA	NA
	9/25/1997	0.75	< 0.01	NA	12	47	5.3	0.88 +/- 0.07	1.6 +/- 0.48	2.5
	1/27/2004	0.85	< 0.01 U	< 0.005 U	30	130	**14**	2.22 +/- 0.45	5.71 +/- 0.91	**7.93**
	11/12/2008	0.71	< 0.01 U	< 0.005 U	31	110	**11**	1.3 +/- 0.20	5.01 +/- 0.54	**6.3**

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
AC-24S	2/19/1992	< 0.2	< 0.01	< 0.005	8	7.4	1.6	NA	NA	NA
	9/27/1997	< 0.2	< 0.01	NA	8.4	9.7	1.4	< 0.6 +/- 0.03	< 1. +/- 0.45	1.6
	11/17/1999	< 0.2	< 0.01	NA	8	8.8	1.1	< 1. +/- 0.82	< 1.5 +/- 0.68	2.5
	11/21/2000	< 0.2	< 0.01	NA	8	6.7	1.7	0.4 +/- 0.10	5.1 +/- 1.10	**5.5**
	11/14/2001	< 0.2	< 0.01	NA	8.1	5.9	1.9	0.2 +/- 0.09	0. +/- 0.70	0.2
	11/20/2002	< 0.2	< 0.01	NA	9.2	4.3 J	1.8	0.3 +/- 0.10	0.3	0.6
	1/21/2004	< 0.2 U	< 0.01 U	< 0.005 U	9.9	< 5. U	1.8	< 0.29 U+/- 0.19	< 1.6 U+/- 0.9980	1.6
	11/16/2004	< 0.2	< 0.01	NA	8.9	< 5.	2.5	0.207 +/- 0.0850	1.44 +/- 0.32	1.65
	11/17/2005	< 0.2 U	< 0.01 U	NA	11	7.2	3.6	0.596 J+/- 0.18	2.36 +/- 0.53	2.96
	11/21/2006	< 0.2 U	< 0.01 U	NA	17	5.2	6.8	0.595 +/- 0.18	2. +/- 0.40	2.60
	11/18/2008	< 0.2 U	< 0.01 U	< 0.005 U	20	11	1.9	0.33 +/- 0.0990	1.42 +/- 0.33	1.8
Surficial Zone										
AC-26S	2/11/1992	< 0.2	< 0.01	< 0.005	10	13	0.95	NA	NA	NA
	9/24/1997	< 0.2	< 0.01	NA	12	21	2.9	< 0.6 +/- 0.06	< 1. +/- 0.47	1.6
	11/17/1999	< 0.2	< 0.01	NA	20	17	2.1	1.8	3.1 +/- 0.76	4.9
	11/21/2000	< 0.2	< 0.01	NA	25	15	1.6	0.6 +/- 0.10	4.9 +/- 1.20	**5.5**
	11/14/2001	< 0.2	< 0.01	NA	23	23	2.3	0.6 +/- 0.10	2.5 +/- 0.90	3.1
	11/21/2002	< 0.2	< 0.01	NA	19	22	1.7	0.7 +/- 0.20	1.5 +/- 1	2.2
	1/20/2004	< 0.2 U	< 0.01 U	< 0.005 U	20	21	1.2	0.82 J+/- 0.25	1.83 +/- 0.42	2.7
	11/10/2004	< 0.2	< 0.01	NA	22	20	2.6	0.722 +/- 0.14	2.43 +/- 0.36	3.15
	11/9/2005	< 0.2 U	< 0.01 U	NA	18	20	1.7	0.444 J+/- 0.14	1.56 +/- 0.35	2.00
	11/20/2006	< 0.2 U	< 0.01 U	NA	26	19	2.9	0.512 +/- 0.19	1.85 +/- 0.39	2.36
	11/12/2008	< 0.2 U	< 0.01 U	< 0.005 U	11	19	0.74	0.424 +/- 0.12	1.62 +/- 0.43	2.04

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
AC-27S	4/8/1992	< 0.2	< 0.01	< 0.005	18	< 5.	1.9	NA	NA	NA
	9/24/1997	< 0.2	< 0.01	NA	14	4.3	1.5	< 0.6 +/- 0.05	1.1 +/- 0.45	1.7
	1/13/2004	< 0.2 U	< 0.01 U	< 0.005 U	4.5	< 5. U	0.19	0.18 J+/- 0.12	< 0.88 U+/- 0.55	0.88
	11/11/2005	< 0.2 U	< 0.01 U	NA	47	< 5. U	6.4	1.71 +/- 0.38	0.418U+/- 0.29	2.13
	11/17/2008	< 0.2 U	< 0.01 U	< 0.005 U	4.7	8.6	0.089	0.167 +/- 0.09	0.157 +/- 0.23	0.324
Surficial Zone										
NWD-2S	10/1/1990	0.78	<0.01	<0.005	8.6	25	5.7	NA	NA	NA
	2/3/1992	**4.2**	< 0.01	< 0.005	8.2	19	4.6	NA	NA	NA
	9/25/1997	**5.2**	< 0.01	NA	4	25	3	< 0.6 +/- 0.07	1.2 +/- 0.42	1.8
	11/17/1999	**4.5**	< 0.01	NA	7.1	30	3.5	1.1 +/- 0.59	< 1.5 +/- 0.06	2.6
	11/21/2000	**4.2**	< 0.01	NA	4.3	32	3.4	1.56 +/- 0.30	2.6 +/- 0.90	4.2
	11/14/2001	3.7	< 0.01	NA	5.1	28	3.6	0.8 +/- 0.20	1.2 +/- 0.80	2
	11/20/2002	3.1	< 0.01	NA	4.4	28	2.8	0.7 +/- 0.10	1.1	1.8
	1/19/2004	3.2	< 0.01 U	< 0.005 U	12	26	5	0.66 J+/- 0.19	1.61 +/- 0.60	2.3
	11/10/2004	2.7	< 0.01	NA	14	28	5.1	0.628 +/- 0.15	1.67 +/- 0.32	2.30
	11/17/2005	2.2	< 0.01 U	NA	11	35	4	0.237 J+/- 0.11	1.86 +/- 0.46	2.10
	11/21/2006	2.1	< 0.01 U	NA	15	27	5.3	0.48 +/- 0.22	1.3 +/- 0.34	1.8
	11/12/2008	2	< 0.01 U	< 0.005 U	12	19	3.4	0.616 +/- 0.14	1.27 +/- 0.35	1.89

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Surficial Zone										
NWD-4S	2/7/1992	< 0.2	< 0.01	0.0054	6.1	< 5.	1.3	0.7 +/- 0.20	1.5 +/- 0.80	2.2
	9/26/1997	< 0.2	< 0.01	NA	4.7	< 5.	0.41	< 0.6 +/- 0.04	< 1. +/- 0.40	1.6
	11/17/1999	< 0.2	< 0.01	NA	7.2	< 5.	0.31	1.4	< 1.5 +/- 0.81	2.9
	11/21/2000	< 0.2	< 0.01	NA	5.5	< 5.	0.4	0.5 +/- 0.10	6.4 +/- 1.20	**6.9**
	11/13/2001	< 0.2	< 0.01	NA	5	< 5.	0.44	0.5 +/- 0.10	1.8 +/- 0.80	2.3
	11/22/2002	< 0.2	< 0.01	NA	5.5	< 5.	0.35	0.6 +/- 0.20	1.1 +/- 0.80	1.7
	1/21/2004	< 0.2 U	< 0.01 U	< 0.005 U	9.6	< 5. U	1.2	0.5 J+/- 0.22	2.17 +/- 0.95	2.7
	11/16/2004	< 0.2	< 0.01	NA	9.8	< 5.	0.61	0.583 +/- 0.15	1.49 +/- 0.33	2.07
	11/15/2005	< 0.2 U	< 0.01 U	NA	15	< 5. U	0.28	0.741 J+/- 0.23	1.62 +/- 0.46	2.36
	11/21/2006	< 0.2 U	< 0.01 U	NA	17	< 5. U	1.2	0.79 +/- 0.19	0.973 +/- 0.34	1.8
	11/19/2008	< 0.2 U	< 0.01 U	< 0.005 U	9.4	< 5. U	2.6	0.951 +/- 0.15	1.08 +/- 0.31	2.03

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-2D	4/15/1987	**5.1**	<0.004	NA	14.7	22	3.37	NA	NA	NA
	10/1/1990	**5.1**	<0.01	<0.005	15	10	3.5	NA	NA	NA
	2/4/1992	**5.2**	< 0.01	0.0057	16	7.4	3.5	2.8 +/- 0.30	7. +/- 1.30	**9.8**
	9/30/1997	2.9	< 0.01	NA	12	26	5.6	0.6	< 1. +/- 0.45	1.6
	11/17/1999	3.5	< 0.01	NA	11	15	3.6	< 1. +/- 0.49	< 1.5 +/- 0.83	2.5
	11/21/2000	3	< 0.01	NA	9.8	19	4.4	1. +/- 0.20	2.7 +/- 0.90	3.7
	11/15/2001	3	< 0.01	NA	9.4	17	3.5	1. +/- 0.20	2.5 +/- 1	3.5
	11/26/2002	3.2	< 0.01	NA	9.1	18	2.5	1.1 +/- 0.20	2. +/- 0.80	3.1
	1/23/2004	2.9	< 0.01 U	< 0.005 U	9	13	2.5	1.05 +/- 0.25	1.54 +/- 0.71	2.59
	11/17/2004	2.7	< 0.01	NA	9.1	14	2.6	1.09 +/- 0.17	1.42 +/- 0.37	2.51
	11/14/2005	2.3	< 0.01 U	NA	9.2	16	2.8	0.983 J+/- 0.27	1.85 +/- 0.51	2.83
	11/28/2006	2.2	< 0.01 U	NA	8.2	15	2.5	0.896 +/- 0.14	1.16 +/- 0.28	2.06
	11/21/2007	2.5	< 0.01 U	NA	7.8	16	3.3	0.843 +/- 0.17	1.22 +/- 0.28	2.06
	11/19/2008	2	< 0.01 U	< 0.005 U	8.8	13	2.5	0.994 +/- 0.16	1.17 +/- 0.31	2.16
	11/18/2009	2	< 0.01 U	NA	8.4	15	2.3	1.2 +/- 0.18	1.7 +/- 0.34	2.9
	11/29/2010	2.3	NA	NA	8.3	16	2.6	1.31 +/- 0.39	1.59 +/- 0.39	2.90
	11/16/2011	2.3	NA	NA	7.6	17	2	1.06 +/- 0.22	1.71 +/- 0.42	2.77
	11/14/2012	2.2	NA	NA	6.9	17	2.1	0.744 +/- 0.27	1.94 +/- 0.54	2.68
	11/12/2013	2.3	NA	NA	7.0	17	5.3	0.887 +/- 0.27	1.43 +/- 0.41	2.32

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-3D	4/15/1987	105	0.041	NA	376	686	52.2	NA	NA	NA
	10/1/1990	75	<0.01	<0.005	150	680	47	NA	NA	NA
	2/5/1992	80	< 0.01	0.0059	270	500	42	8.4 +/- 0.40	12	20.4
	9/28/1997	46	< 0.01	NA	110	460	27	0.81 +/- 0.07	NA	0.81
	11/19/1999	14	< 0.01	NA	19	< 5.	12	< 1. +/- 0.54	2.1	3.1
	11/21/2000	18	< 0.01	NA	32	240	15	1. +/- 0.20	6.5 +/- 1.20	7.5
	11/14/2001	13	< 0.01	NA	22	250	12	0.4 +/- 0.10	5.4 +/- 1.10	5.8
	11/26/2002	46	< 0.01	NA	64	380	16	1.3 +/- 0.20	17.8 +/- 2	19.1
	1/22/2004	34	< 0.01 U	< 0.005 U	48	300	13. J	5.04 +/- 0.77	20.6 +/- 2.50	25.6
	11/17/2004	36	< 0.01	NA	48	310	14	0.934 +/- 0.16	12.3 +/- 1.10	13.2
	11/15/2005	23	< 0.01 U	NA	36	300	12	0.994 J+/- 0.28	18. +/- 2.30	19.0
	11/22/2006	27	< 0.01 U	NA	39	330	12	0.939 +/- 0.27	13.2 +/- 0.89	14.1
	11/21/2007	22	< 0.01 U	NA	24	220	7.8	1.06 +/- 0.22	8.12 +/- 0.56	9.18
	11/13/2008	18	< 0.01 U	< 0.005 U	25	180	8.5	1.22 +/- 0.19	10.9 +/- 0.79	12.1
	11/18/2009	15	< 0.01 U	NA	20	160	6.9	0.951 +/- 0.18	9.9 +/- 0.69	10.1
	11/29/2010	16	NA	NA	22	160	7.8	1.74 +/- 0.44	12.9 +/- 1.8	14.6
	11/15/2011	17	NA	NA	20	130	7.8	1.59 +/- 0.26	12.5 +/- 0.90	14.1
	11/13/2012	16	NA	NA	20	140	7.2	1.38 +/- 0.39	12.7 +/- 1.7	14.1
	11/12/2013	15	NA	NA	16	130	6.1	1.14 +/- 0.36	9.67 +/- 1.3	10.8

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
NWD-4D	2/7/1992	< 0.2	< 0.01	< 0.005	13	14	7.6	4.5 +/- 0.30	5. +/- 0.70	9.5
	9/26/1997	< 0.2	< 0.01	NA	4	11	1.8	0.9 +/- 0.08	1.5 +/- 0.46	2.4
	11/18/1999	< 0.2	< 0.01	NA	6.2	< 5.	0.27	< 1. +/- 0.52	< 1.5 +/- 0.32	2.5
	11/21/2000	< 0.2	< 0.01	NA	4.9	< 5.	0.35	0.8 +/- 0.40	1.9 +/- 3	2.7
	11/13/2001	< 0.2	< 0.01	NA	8.3	< 5.	0.53	0.9 +/- 0.20	0.5 +/- 0.70	1.4
	11/22/2002	< 0.2	< 0.01	NA	13	29	9.7	3.7 +/- 0.40	6.5 +/- 0.80	10.2
	1/21/2004	< 0.2 U	< 0.01 U	< 0.005 U	12	30	11	4.35 +/- 0.71	15.7 +/- 2.20	20.1
	11/16/2004	< 0.2	< 0.01	NA	7	32	10	3.78 +/- 0.28	8.62 +/- 0.62	12.4
	11/15/2005	< 0.2 U	< 0.01 U	NA	9.8	41	8.3	2.93 +/- 0.62	9.04 +/- 1.30	12.0
	11/21/2006	< 0.2 U	< 0.01 U	NA	8.2	52	5.8	1.75 +/- 0.28	4.7 +/- 0.52	6.45
	11/19/2007	< 0.2 U	< 0.01 U	NA	7.7	42	7	1.86 +/- 0.28	2.86 +/- 0.47	4.72
	11/19/2008	< 0.2 U	< 0.01 U	< 0.005 U	8.6	39	1.5	1.91 +/- 0.19	3.85 +/- 0.50	5.76
	11/18/2009	< 0.1 U	< 0.01 U	NA	8.6	39	0.96	1.85 +/- 0.24	3.89 +/- 0.51	5.74
	11/23/2010	< 0.1 U	NA	NA	8.1	40	0.21	1.96 +/- 0.49	3.81 +/- 0.69	5.77
	11/15/2011	< 0.1	NA	NA	7.9	35	0.13	1.45 +/- 0.23	3.43 +/- 0.47	4.88
	11/8/2012	<0.1	NA	NA	8	47	<0.010	1.91 +/- 0.44	4.09 +/- 0.07	6.00
	11/8/2013	<0.1	NA	NA	8.2	53	<0.010	2.05 +/- 0.60	5.20 +/- 0.86	7.25
Main Producing Zone										
AC-6D	10/1/1990	<0.2	<0.01	<0.005	13	75	8.6	NA	NA	NA
	2/2/1992	< 0.2	< 0.01	< 0.005	12	51	6.4	NA	NA	NA
	9/25/1997	< 0.2	< 0.01	NA	9.1	18	4.6	2.7 +/- 0.12	2.8 +/- 0.54	5.5
	1/27/2004	< 0.2 U	< 0.01 U	< 0.005 U	11	16	7.7	4.58 +/- 0.69	6.6 +/- 1.30	11.18
	11/19/2007	< 0.2 U	< 0.01 U	NA	12	36	6.6	3.07 +/- 0.34	1.67 +/- 0.39	4.74
	11/12/2008	< 0.2 U	< 0.01 U	< 0.005 U	13	42	5.9	3.79 +/- 0.32	3.45 +/- 0.48	7.24
	11/17/2009	< 0.1 U	< 0.01 U	NA	12	31	4	3.64 +/- 0.35	2.82 +/- 0.53	6.46
	11/22/2010	< 0.1 U	NA	NA	12	32	5	4.59 +/- 0.92	2.94 +/- 0.60	7.53
	11/10/2011	< 0.1 U	NA	NA	10	29	5	5.14 +/- 0.45	3.28 +/- 0.54	8.42
	11/7/2012	< 0.1 U	NA	NA	11	37	5.1	4.10 +/- 0.93	3.04 +/- 0.58	7.14
	11/7/2013	< 0.1 U	NA	NA	12	37	5.0	3.65 +/- 0.83	2.86 +/- 0.60	6.51

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-8D	4/15/1987	0.21	<0.002	NA	14	40	NA	NA	NA	NA
	10/1/1990	<0.2	<0.01	<0.005	4.9	4	<0.05	NA	NA	NA
	4/10/1992	< 0.2	< 0.01	< 0.005	14	5.7	7.1	NA	NA	NA
	9/25/1997	< 0.2	< 0.01	NA	14	< 5.	6.7	< 0.6 +/- 0.07	< 1. +/- 0.44	1.6
	11/18/1999	< 0.2	< 0.01	NA	17	< 5.	8.1	1.7	1.9	3.6
	11/17/2000	< 0.2	< 0.01	NA	16	< 5.	9.1	0.9 +/- 0.20	2.7 +/- 0.90	3.6
	11/13/2001	< 0.2	< 0.01	NA	16	< 5.	8.9	1. +/- 0.20	2.5 +/- 1	3.5
	11/25/2002	< 0.2	< 0.01	NA	17	< 5.	9.1	1.5 +/- 0.20	2. +/- 0.90	3.5
	1/27/2004	< 0.2 U	< 0.01 U	< 0.005 U	18	< 5. U	9.3	1.28 +/- 0.28	1.94 +/- 0.54	3.22
	11/10/2004	< 0.2	< 0.01	NA	18	< 5.	9.4	1.04 +/- 0.15	1.96 +/- 0.35	3.00
	11/9/2005	< 0.2 U	< 0.01 U	NA	16	< 5. U	8.1	0.837 J+/- 0.23	1.42 +/- 0.35	2.26
	11/16/2006	< 0.2 U	< 0.01 U	NA	15	< 5. U	8.9	0.805 +/- 0.15	1.5 +/- 0.40	2.3
	11/19/2007	< 0.2 U	< 0.01 U	NA	15	< 5. U	7.8	0.74 +/- 0.19	1.23 +/- 0.39	2.0
	11/11/2008	< 0.2 U	< 0.01 U	< 0.005 U	16	< 5. U	7.0	0.776 +/- 0.19	0.96 +/- 0.34	1.7
	11/11/2009	< 0.1 U	< 0.01 U	NA	15	3.3	7.4	0.933 +/- 0.17	1.16 +/- 0.40	2.09
	11/18/2010	< 0.1 U	NA	NA	14	3.5	6.1	0.668 +/- 0.18	1.71 +/- 0.44	2.38
	11/9/2011	< 0.1 U	NA	NA	13	3.7	6.5	0.863 +/- 0.22	1.45 +/- 0.36	2.31
	11/7/2012	< 0.1	NA	NA	12	4.2	6.3	0.918 +/- 0.28	1.65 +/- 0.43	2.57
	11/6/2013	< 0.1	NA	NA	13	4.5	5.3	0.941 +/- 0.37	1.79 +/- 0.45	2.73
Main Producing Zone										
AC-9D2	9/27/1997	1	< 0.01	NA	5.3	5.6	0.45	< 0.6 +/- 0.04	< 1. +/- 0.44	1.6
	1/28/2004	**37**	< 0.01 U	< 0.005 U	56	230	**13**	3.06 +/- 0.49	12.8 +/- 1.60	**15.9**
	11/17/2008	**33**	< 0.01 U	< 0.005 U	47	220	**13**	1.51 +/- 0.24	7.9 +/- 0.67	**9.4**
	11/12/2009	**36**	< 0.01 U	NA	50	**250**	**14**	2.03 +/- 0.27	8.87 +/- 0.70	**10.9**
	11/19/2010	**40**	NA	NA	47	**250**	**13**	2.06 +/- 0.47	7.81 +/- 1.1	**9.87**
	11/10/2011	**42**	NA	NA	44	230	**13**	1.52 +/- 0.26	8.56 +/- 0.67	**10.1**
	11/12/2012	**36**	NA	NA	43	**260**	**13**	1.34+/- 0.097	8.28 +/-1.1	**9.90**
	11/7/2013	**41**	NA	NA	39	**270**	**10**	1.59 +/- 0.40	9.26 +/- 1.3	**10.9**

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-12D	10/1/1990	**24**	<0.01	<0.005	28	**290**	**13**	NA	NA	NA
	4/9/1992	2.6	< 0.01	< 0.005	8.2	39	2.8	NA	NA	NA
	9/27/1997	**8.8**	0.012	NA	20	**320**	**11**	1.5 +/- 0.09	6.9 +/- 0.58	**8.4**
	11/19/1999	0.52	< 0.01	NA	6.4	7.8	2.4	< 1. +/- 0.09	< 1.5 +/- 0.68	2.5
	11/17/2000	**6.7**	< 0.01	NA	15	130	6.8	0.5 +/- 0.10	3.7 +/- 1	4.2
	11/8/2001	1.7	< 0.01	NA	7.3	30	3.7	0.4 +/- 0.20	4.5 +/- 1.10	4.9
	11/22/2002	**11**	0.011	NA	22	**310**	**10**	1.9 +/- 0.30	8.6 +/- 1	**10.5**
	1/28/2004	**10**	0.015	0.0052	20	**280**	**11**	4.13 +/- 0.61	14.2 +/- 1.80	**18.3**
	11/11/2004	**11**	< 0.01	NA	20	**310**	**12**	1.84 +/- 0.22	7.57 +/- 0.59	**9.41**
	11/10/2005	**15**	< 0.01 U	NA	23	**290**	**12**	1.65 +/- 0.40	7.59 +/- 1.10	**9.24**
	11/16/2006	**13**	< 0.01 U	NA	21	**310**	**12**	1.26 +/- 0.18	7.08 +/- 0.65	**8.34**
	11/16/2007	**20**	< 0.01 U	NA	22	**300**	**12**	1.62 +/- 0.21	7.76 +/- 0.60	**9.38**
	11/13/2008	**17**	< 0.01 U	< 0.005 U	23	**310**	**12**	1.73 +/- 0.21	6.75 +/- 0.59	**8.48**
	11/12/2009	**15**	< 0.01 U	NA	22	**280**	**12**	1.57 +/- 0.25	7.7 +/- 0.68	**9.3**
	11/18/2010	**14**	NA	NA	22	**280**	**11**	1.34 +/- 0.38	6.68 +/- 1.3	**8.0**
	11/9/2011	**14**	NA	NA	18	240	**10**	4.80 +/- 0.69	8.43 +/- 0.75	**13.2**
	11/8/2012	**15**	NA	NA	18	**250**	9.6	1.43 +/- 0.39	7.88 +/- 1.1	**9.31**
	11/6/2013	**14**	NA	NA	19	**260**	9.0	1.27 +/- 0.40	8.50 +/- 1.2	**9.77**

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-13D	10/1/1990	8.6	<0.01	<0.005	16	220	8.3	NA	NA	NA
	2/3/1992	5.3	< 0.01	< 0.005	16	150	8.9	4.7 +/- 0.30	3.6 +/- 1.10	8.3
	9/27/1997	4.9	< 0.01	NA	20	260	12	1.3 +/- 0.09	4.1 +/- 0.59	5.4
	11/16/2000	4.6	< 0.01	NA	19	220	11	2.8 +/- 0.30	5	7.8
	11/8/2001	4.7	< 0.01	NA	17	210	10	1.9 +/- 0.20	3.7 +/- 1.10	5.6
	11/21/2002	6.7	< 0.01	NA	20	250	11	1.3 +/- 0.20	5.7 +/- 0.80	7
	1/16/2004	6.3	< 0.01 U	< 0.005 U	22	230	12	1.67 +/- 0.36	11.1 +/- 1.70	12.77
	11/11/2004	7.8	< 0.01	NA	23	260	12	1.55 +/- 0.19	8.2 +/- 0.64	9.75
	11/10/2005	11	< 0.01 U	NA	25	260	12	2.18 +/- 0.53	8.68 +/- 1.20	10.86
	11/16/2006	14	< 0.01 U	NA	28	290	14	1.55 +/- 0.22	7.83 +/- 0.78	9.38
	11/19/2007	17	< 0.01 U	NA	27	300	18	1.64 +/- 0.23	7.41 +/- 0.67	9.05
	11/11/2008	15	< 0.01 U	< 0.005 U	28	360	13	1.32 +/- 0.21	5.95 +/- 0.59	7.27
	11/12/2009	15	0.011	NA	28	300	14	2.28 +/- 0.31	10.5 +/- 0.95	12.78
	11/18/2010	14	NA	NA	23	290	12	1.45 +/- 0.39	6.84 +/- 1.0	8.29
	11/9/2011	14	NA	NA	26	300	13	1.64 +/- 0.25	8.18 +/- 0.69	9.82
	11/7/2012	15	NA	NA	24	290	12	2.05 +/- 0.54	8.99 +/- 1.3	11.0
	11/6/2013	14	NA	NA	24	310	11	1.98 +/- 0.50	9.60 +/- 1.4	11.6
Main Producing Zone										
AC-24D	2/19/1992	36	< 0.01	0.005	200	50	1.9	NA	NA	NA
	9/27/1997	8.5	< 0.01	NA	31	8.8	1.3	0.63 +/- 0.06	< 1. +/- 0.42	1.63
	1/21/2004	57	< 0.01 U	< 0.005 U	180	37	3.7	2.32 +/- 0.47	15.3 +/- 2.20	17.6
	11/18/2008	56	< 0.01 U	< 0.005 U	200	65	6.8	2.98 +/- 0.28	7.41 +/- 0.62	10.4
	11/16/2009	59	< 0.01 U	NA	190	79	5.8	2.44 +/- 0.25	6.4 +/- 0.60	8.8
	11/23/2010	77	NA	NA	190	84	6.4	2.09 +/- 0.50	7.60 +/- 1.1	9.7
	11/14/2011	65	NA	NA	160	76	6.8	2.96 +/- 0.35	10.0 +/- 0.86	13.0
	11/9/2012	67	NA	NA	190	78	5.5	1.48 +/- 0.42	10.9 +/- 1.5	12.4
	11/7/2013	68	NA	NA	170	86	4.5	2.02 +/- 0.53	10.2 +/- 1.4	12.2

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-25D	2/15/1992	19	NA	<0.0050	120	7.1	11	NA	NA	7.9
AC-25D	9/24/1997	20	< 0.01	NA	270	44	2.1	2. +/- 0.10	3.5 +/- 0.52	5.5
AC-25D	11/19/1999	2.6	< 0.01	NA	45	< 5.	1.9	< 1. +/- 0.62	< 1.5 +/- 0.75	2.5
AC-25D	11/17/2000	3.3	< 0.01	NA	46	13	5.5	0.6 +/- 0.10	0.6 +/- 0.80	1.2
AC-25D	11/13/2001	2.9	< 0.01	NA	32	9.4	2.3	0.4 +/- 0.10	1.1 +/- 0.80	1.5
AC-25D	11/21/2002	48	< 0.01	NA	410	80	2	2.9 +/- 0.30	5.1 +/- 0.80	8.0
AC-25D	1/22/2004	52	< 0.01 U	< 0.005 U	410	65	2.3 J	4.48 +/- 0.72	7.6 +/- 1.20	12
AC-25D	11/15/2004	57	< 0.01	NA	440	83	2.2	2.46 +/- 0.23	5.6 +/- 0.54	8.1
AC-25D	11/10/2005	59	< 0.01 U	NA	390	81	3.1	2.31 +/- 0.52	7.73 +/- 1.20	10.0
AC-25D	11/20/2006	77	< 0.01 U	NA	430	80	3.1	2.5 +/- 0.35	4.53 +/- 0.55	7.03
AC-25D	11/20/2007	90	< 0.01 U	NA	390	80	3.7	1.85 +/- 0.29	4.08 +/- 0.49	5.93
AC-25D	11/18/2008	71	< 0.01 U	< 0.005 U	480	77	3.7	2.2 +/- 0.25	3.98 +/- 0.51	6.18
AC-25D	11/17/2009	77	< 0.01 U	NA	420	88	3.5	1.84 +/- 0.24	5.33 +/- 0.55	7.17
AC-25D	11/23/2010	110	NA	NA	440	89	4.3	2.29 +/- 0.62	4.47 +/- 0.73	6.76
AC-25D	11/15/2011	100	NA	NA	390	78	4.7	2.31 +/- 0.29	5.0 +/- 0.56	7.3
AC-25D	11/14/2012	100	NA	NA	370	94	4.2	2.38 +/- 0.55	5.50 +/- 0.85	7.88
AC-25D	11/12/2013	96	NA	NA	370	80	4.4	2.64 +/- 0.75	5.06 +/- 0.83	7.70
Main Producing Zone										
AC-28D	10/14/1993	3.1	NA	NA	NA	13	NA	NA	NA	NA
AC-28D	9/27/1997	0.42	< 0.01	NA	14	< 5.	6.1	1. +/- 0.08	5.9 +/- 0.59	6.9
AC-28D	1/21/2004	5.9	< 0.01 U	< 0.005 U	26	24	6	1.93 +/- 0.43	6.5 +/- 1.30	8.4
AC-28D	11/17/2008	7.6	< 0.01 U	< 0.005 U	31	49	6.8	2.07 +/- 0.24	6.43 +/- 0.59	8.5
AC-28D	11/12/2009	8.1	< 0.01 U	NA	31	55	6.7	2.29 +/- 0.26	6.97 +/- 0.64	9.26
AC-28D	11/19/2010	9.5	NA	NA	30	67	6.7	2.70 +/- 0.56	8.60 +/- 0.56	11.3
AC-28D	11/10/2011	9.3	NA	NA	23	56	6.8	3.27 +/- 0.35	10.4 +/- 0.81	13.7
AC-28D	11/12/2012	9.5	NA	NA	30	74	6.4	3.48 +/- 0.99	10.3 +/- 1.4	13.8
AC-28D	11/6/2013	9.6	NA	NA	28	69	5.5	3.57 +/- 1.0	11.2 +/- 1.6	14.8

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-29D	9/27/1997	65	< 0.01	NA	180	340	20	0.66 +/- 0.05	9.9 +/- 0.65	10.56
	11/19/1999	65	< 0.01	NA	110	< 5.	14	2.3	8.1	10.4
	11/21/2000	45	< 0.01	NA	300	260	14	1.3 +/- 0.10	11.4 +/- 1.10	12.7
	11/13/2001	48	< 0.01	NA	100	280	13	1.4 +/- 0.20	14. +/- 1.60	15
	11/25/2002	59	< 0.01	NA	100	340	16	1.7 +/- 0.20	16.5 +/- 1.70	18
	1/23/2004	52	< 0.01 U	< 0.005 U	93	310	16	3.42 +/- 0.55	21.9 +/- 2.50	25.3
	11/12/2004	45	< 0.01 U	NA	84	290	14	1.52 +/- 0.19	17.7 +/- 0.96	19.2
	11/16/2005	30	< 0.01 U	NA	58	220	9.8	1.53 +/- 0.37	21. +/- 2.70	22.5
	11/17/2006	34	< 0.01 U	NA	67	200	12	1.48 +/- 0.18	11.9 +/- 0.90	13.4
	11/20/2007	42	< 0.01 U	NA	63	220	12	1.45 +/- 0.26	11.7 +/- 0.77	13.2
	11/18/2008	31	< 0.01 U	< 0.005 U	65	200	11	1.54 +/- 0.20	10.8 +/- 0.76	12.3
	11/17/2009	30	< 0.01 U	NA	61	220	9.5	1.54 +/- 0.21	13.8 +/- 0.83	15.3
	11/19/2010	39	NA	NA	62	240	11	1.64 +/- 0.37	14.9 +/- 1.9	16.5
	11/11/2011	41	NA	NA	54	220	12	1.76 +/- 0.27	13.6 +/- 0.81	15.4
	11/13/2012	35	NA	NA	52	230	10	1.08 +/- 0.30	15.9 +/- 2/1	17.0
	11/7/2013	36	NA	NA	45	220	8.1	0.836 +/- 0.27	14.8 +/- 2.0	15.6

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-30D	9/26/1997	15	< 0.01	NA	60	100	11	3. +/- 0.12	7.9 +/- 0.61	10.9
	11/22/1999	18	< 0.01	NA	70	130	12	2.5	9.5	12
	11/17/2000	11	< 0.01	NA	50	100	11	2.6 +/- 0.30	14.6 +/- 1.70	17.2
	11/13/2001	11	< 0.01	NA	44	92	9.8	3.4 +/- 0.30	9.3 +/- 1.40	12.7
	11/25/2002	61	< 0.01	NA	120	250	16	2.8 +/- 0.30	13.1 +/- 1.50	15.9
	1/15/2004	46	0.017	< 0.005 U	94	190	15	6.96 +/- 0.97	21.4 +/- 2.40	28.4
	11/16/2004	34	< 0.01	NA	56	180	15	1.98 +/- 0.21	12.5 +/- 0.78	14.5
	11/17/2005	16	< 0.01 U	NA	44	120	9.2	1.48 +/- 0.34	11.9 +/- 1.60	13.4
	11/17/2006	11	< 0.01 U	NA	29	91	7.9	1.27 +/- 0.17	8.37 +/- 0.73	9.64
	11/20/2007	12	< 0.01 U	NA	25	64	7.2	1.62 +/- 0.25	6.48 +/- 0.57	8.10
	11/18/2008	8	< 0.01 U	< 0.005 U	25	60	6	1.69 +/- 0.22	6.8 +/- 0.63	8.49
	11/17/2009	6.7	< 0.01 U	NA	20	55	5.1	1.71 +/- 0.25	7.51 +/- 0.66	9.22
	11/22/2010	7.2	NA	NA	19	51	4.7	1.81 +/- 0.41	7.13 +/- 1.1	8.94
	11/14/2011	7	NA	NA	11	27	5.7	2.05 +/- 0.34	9.32 +/- 0.93	11.4
	11/14/2012	8	NA	NA	18	64	5.5	2.00 +/- 0.55	8.21 +/- 1.2	10.2
	11/12/2013	7.1	NA	NA	17	48	5.2	1.80 +/- 0.46	6.88 +/- 1.0	8.68

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-35D	11/19/1999	23	< 0.01	NA	160	130	3.1	< 1. +/- 0.53	< 1.5 +/- 0.95	2.5
	11/16/2000	150	< 0.01	NA	120	220	12	1.5 +/- 0.20	5. +/- 1.20	6.5
	11/8/2001	160	0.012	NA	520	220	13	1.9 +/- 0.20	7.2 +/- 1.40	9.1
	11/21/2002	170	< 0.01	NA	550	230	11	2. +/- 0.30	8.5 +/- 1	10.5
	1/15/2004	160	0.015	< 0.005 U	530	210	13	4.58 +/- 0.69	12.9 +/- 1.60	17.5
	11/15/2004	170	< 0.01	NA	520	260	14	2.22 +/- 0.21	9.37 +/- 0.69	11.6
	11/16/2005	150	< 0.01 U	NA	430	260	12	2.01 +/- 0.50	14.4 +/- 1.90	16.4
	11/20/2006	160	< 0.01 U	NA	460	270	12	1.83 +/- 0.31	9.26 +/- 0.77	11.1
	11/20/2007	150	< 0.01 U	NA	420	190	12	2.01 +/- 0.29	5.8 +/- 0.53	7.81
	11/19/2008	120	0.01	< 0.005 U	460	190	11	1.78 +/- 0.20	5.29 +/- 0.57	7.07
	11/19/2009	120	< 0.01 U	NA	430	200	9.3	2.33 +/- 0.28	8.44 +/- 0.68	10.8
	11/23/2010	180	NA	NA	580	240	13	2.52 +/- 0.64	8.83 +/- 1.2	11.4
	11/16/2011	130	NA	NA	370	170	11	1.71 +/- 0.28	5.94 +/- 0.61	7.65
	11/15/2012	130	NA	NA	350	200	9.6	1.91 +/- 0.51	6.45 +/- 0.98	8.36
	11/13/2013	120	NA	NA	360	190	9.5	2.01 +/- 0.54	7.69 +/- 1.1	9.70

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-36D	11/18/1999	0.79	< 0.01	NA	28	120	3.1	< 1. +/- 0.53	< 1.5 +/- 0.55	2.5
	11/16/2000	< 0.2	< 0.01	NA	10	14	4.6	0.6 +/- 0.09	4.4 +/- 0.70	5
	11/8/2001	< 0.2	< 0.01	NA	10	15	5.1	0.6 +/- 0.20	4.5 +/- 1.10	5.1
	11/15/2002	<0.20	<0.010	NA	11	17	5.9	1.0 +/- 0.1	1.9 +/- 0.6	2.9
	1/14/2004	< 0.2 U	< 0.01 U	< 0.005 U	11	12	5.9	1.46 +/- 0.30	2.76 +/- 0.58	4.22
	11/11/2004	< 0.2	< 0.01	NA	14	15	5.2	1.02 +/- 0.17	2.63 +/- 0.38	3.65
	11/9/2005	< 0.2 U	< 0.01 U	NA	11	19	5.9	1.07 +/- 0.27	2.34 +/- 0.52	3.41
	11/16/2006	< 0.2 U	< 0.01 U	NA	11	18	5.9	1.21 +/- 0.20	2.66 +/- 0.49	3.87
	11/16/2007	< 0.2 U	< 0.01 U	NA	11	15	5.7	1.08 +/- 0.21	1.99 +/- 0.35	3.07
	11/11/2008	< 0.2 U	< 0.01 U	< 0.005 U	12	19	5.2	1.19 +/- 0.22	2.63 +/- 0.41	3.82
	11/11/2009	< 0.1 U	< 0.01 U	NA	12	16	5.6	1.05 +/- 0.18	2.24 +/- 0.46	3.29
	11/18/2010	< 0.1 U	NA	NA	12	16	5.3	1.52 +/- 0.45	3.09 +/- 0.59	4.61
	11/9/2011	< 0.1 U	NA	NA	12	17	5.7	1.45 +/- 0.26	2.88 +/- 0.43	4.33
	11/6/2012	<0.10	NA	NA	11	16	5.2	1.28 +/- 0.37	3.30 +/- 0.65	4.58
	11/6/2013	<0.10	NA	NA	12	20	4.9	1.73 +/- 0.53	3.06 +/- 0.59	4.79
Main Producing Zone										
PIP-D	11/14/2005	< 0.2 U	< 0.01 U	NA	7.8	< 5. U	3.4	0.835 +/- 0.336	2.23 +/- 0.57	2.83
	11/22/2006	< 0.2 U	< 0.01 U	NA	12	< 5. U	5.3	1.19 +/- 0.22	1.89 +/- 0.35	3.08
	11/16/2007	< 0.2 U	< 0.01 U	NA	7.6	5.3	3.8	0.85 +/- 0.20	1.64 +/- 0.32	2.5
	11/13/2008	< 0.2 U	< 0.01 U	< 0.005 U	10	8.2	4.1	1.32 +/- 0.21	2.41 +/- 0.45	3.73
	11/18/2009	< 0.1 U	< 0.01 U	NA	8.9	5	3.5	0.994 +/- 0.18	1.24 +/- 0.33	2.23
	11/24/2010	< 0.1 U	NA	NA	9.8	4.9	3.7	1.28 +/- 0.37	1.81 +/- 0.47	3.09
	11/11/2011	< 0.1 U	NA	NA	3.3	2.1	2.9	1.01 +/- 0.20	1.37 +/- 0.39	2.38
	11/13/2012	<0.10	NA	NA	9.1	4.4	3.5	0.957 +/- 0.31	2.07 +/- 0.48	3.03
	11/13/2013	<0.10	NA	NA	9.3	5.4	4.1	1.11 +/- 0.30	1.98 +/- 0.44	3.09

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-10D	10/1/1990	<0.2	<0.01	0.013	9.7	140	5.2	NA	NA	NA
	4/9/1992	< 0.2	< 0.01	< 0.005	10	65	3.6	NA	NA	NA
	9/27/1997	< 0.2	< 0.01	NA	12	97	6.6	0.93 +/- 0.07	2.8 +/- 5.20	3.7
	1/28/2004	< 0.2 U	< 0.01 U	< 0.005 U	14	42	7.7	1.91 +/- 0.36	3.32 +/- 0.81	**5.23**
	11/12/2008	< 0.2 U	< 0.01 U	< 0.005 U	8	29	6.1	1.13 +/- 0.18	2.2 +/- 0.40	3.3
Main Producing Zone										
AC-11D	10/1/1990	<0.2	<0.01	0.0058	10	<5	4.3	NA	NA	NA
	4/9/1992	< 0.2	< 0.01	< 0.005	9.5	< 5.	3.5	NA	NA	NA
	9/24/1997	< 0.2	< 0.01	NA	11	< 5.	3.8	0.66 +/- 0.06	1.2 +/- 0.45	1.9
	1/27/2004	< 0.2 U	< 0.01 U	< 0.005 U	11	< 5. U	4.9	1.28 +/- 0.29	3.04 +/- 0.75	4.32
	11/11/2008	< 0.2 U	< 0.01 U	< 0.005 U	10	< 5. U	3	0.828 +/- 0.19	1.93 +/- 0.41	2.76
Main Producing Zone										
AC-14D	10/1/1990	0.028	<0.01	<0.005	9	34	4.2	NA	NA	NA
	4/8/1992	< 0.2	< 0.01	**0.0219**	9.4	33	3.5	NA	NA	NA
	9/24/1997	< 0.2	< 0.01	NA	10	18	4.2	< 0.6 +/- 0.07	1.2 +/- 0.44	1.8
	1/28/2004	< 0.2 U	< 0.01 U	< 0.005 U	11	39	5.8	2.05 +/- 0.37	4.8 +/- 1	**6.9**
	11/11/2008	< 0.2 U	< 0.01 U	< 0.005 U	12	32	5.5	1.89 +/- 0.30	1.97 +/- 0.40	3.86

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-21D	10/1/1990	<0.2	<0.01	0.0053	15	9.8	6	NA	NA	NA
	2/2/1992	< 0.2	< 0.01	< 0.005	13	11	5.5	NA	NA	NA
	9/26/1997	< 0.2	< 0.01	NA	21	11	5.9	2.3 +/- 0.12	3.5 +/- 0.50	**5.8**
	1/29/2004	< 0.2 U	< 0.01 U	< 0.005 U	19	16	8.1	3.72 +/- 0.57	4.71 +/- 0.79	**8.43**
	11/12/2008	< 0.2 U	< 0.01 U	< 0.005 U	10	24	4	2.03 +/- 0.23	2.08 +/- 0.38	4.11
Main Producing Zone										
AC-22D	10/1/1990	2.2	<0.01	<0.005	15	17	8.6	NA	NA	NA
	9/25/1997	0.81	< 0.01	NA	14	6	7.7	0.65 +/- 0.06	1.1 +/- 0.47	1.8
	1/29/2004	1.2	< 0.01 U	< 0.005 U	8.9	10	5	1.55 +/- 0.33	4.01 +/- 0.68	**5.56**
	11/11/2008	3.1	< 0.01 U	< 0.005 U	9.4	15	3.9	1.34 +/- 0.23	2.65 +/- 0.42	3.99
Main Producing Zone										
AC-23D	10/1/1990	<0.2	<0.01	<0.005	24	28	4.5	NA	NA	NA
	2/6/1992	< 0.2	< 0.01	< 0.005	26	17	5.8	NA	NA	NA
	9/26/1997	< 0.2	< 0.01	NA	12	9.5	3.1	1. +/- 0.08	1.7 +/- 0.43	2.7
	1/22/2004	< 0.2 U	< 0.01 U	< 0.005 U	8.9	15	5.2J	3.74 +/- 0.63	4.81 +/- 0.9950	**8.55**
	11/18/2008	< 0.2 U	< 0.01 U	< 0.005 U	10	20	4.6	2.96 +/- 0.26	3.51 +/- 0.44	**6.47**

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE
Highlighted Results Meet Performance Standard
(see last page for footnotes)
Agrico Site, Pensacola, Florida

Well ID	Date	Fluoride (mg/L)	Arsenic (mg/L)	Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Combined Radium 226 + 228 (pCi/L)
PERFORMANCE STANDARD		4	0.05	0.015	250	250	10	--	--	5
Main Producing Zone										
AC-26D	2/11/1992	< 0.2	< 0.01	< 0.005	6.2	6.9	1.1	NA	NA	NA
	9/24/1997	< 0.2	< 0.01	NA	3.3	10	0.18	< 0.6 +/- 0.04	< 1. +/- 0.43	1.6
	1/20/2004	< 0.2 U	< 0.01 U	< 0.005 U	4.9	< 5. U	1.4	< 0.21 U+/- 0.15	< 0.55 U+/- 0.32	0.21
	11/12/2008	< 0.2 U	< 0.01 U	< 0.005 U	3.8	9.8	0.07	0.161 +/- 0.0760	0.0167 +/- 0.14	0.178
Main Producing Zone										
AC-27D	4/8/1992	< 0.2	< 0.01	**0.0272**	6.7	11	0.3	NA	NA	NA
	9/24/1997	< 0.2	< 0.01	NA	4.7	14	<0.05	< 0.6 +/- 0.06	< 1. +/- 0.41	1.6
	1/13/2004	< 0.2 U	< 0.01 U	< 0.005 U	16	5	3	1.09 +/- 0.26	4.83 +/- 0.92	**5.92**
	11/11/2005	< 0.2 U	< 0.01 U	NA	4.6	9.6	0.12	0.266 J+/- 0.11	6.75 +/- 1	**7.02**
	11/18/2008	< 0.2 U	< 0.01 U	< 0.005 U	29	< 5. U	2	1.12 +/- 0.18	2.43 +/- 0.40	3.55
Main Producing Zone										
AC-5D	10/1/1990	<0.2	<0.01	<0.005	10	<5	5.4	NA	NA	NA
	1/31/1992	< 0.2	< 0.01	< 0.005	13	6.4	5.1	NA	NA	NA
	9/26/1997	3.6	< 0.01	NA	9.7	< 5.	3.8	< 0.6 +/- 0.04	1.4 +/- 0.44	2.0
	1/20/2004	< 0.2 U	< 0.01 U	< 0.005 U	10	< 5. U	4.5	1.15 +/- 0.28	1.7 +/- 0.46	2.9
	11/13/2008	< 0.2 U	< 0.01 U	< 0.005 U	7.9	< 5. U	3.6	0.922 +/- 0.17	1.3 +/- 0.38	2.2
Main Producing Zone										
NWD-2D	10/1/1990	<0.2	<0.01	<0.005	11	5.8	4.9	NA	NA	NA
	2/3/1992	0.2	< 0.01	< 0.005	9.5	< 5.	4.4	NA	NA	NA
	9/25/1997	< 0.2	< 0.01	NA	8.8	< 5.	3.9	< 0.6 +/- 0.06	2. +/- 0.44	2.6
	1/19/2004	< 0.2 U	< 0.01 U	< 0.005 U	10	7.5	5.6	0.79 J+/- 0.21	2.19 +/- 0.60	3.0
	11/13/2008	< 0.2 U	< 0.01 U	< 0.005 U	11	13	5.2	0.901 +/- 0.17	1.71 +/- 0.44	2.61

TABLE 8
COMPARISON OF COC RESULTS AT GROUNDWATER MONITORING LOCATIONS FOR SURFICIAL ZONE AND MAIN PRODUCING ZONE

Agrico Site
Pensacola, Florida

Notes:

Monitoring wells ACB-31S, ACB-32S, AC-33S, AC-34S and AC-7SR sampled semiannually from May 1997 through May 2008 and samples analyzed for fluoride, arsenic, and lead only (OU-1 COCs); Beginning in November 2007, these wells incorporated into OU-2 network and samples analyzed for fluoride, arsenic, lead, chloride, sulfate, nitrate, radium 226 and radium 228.

* Radium samples analyzed by STL St Louis for January 2004 event were determined by STL to be baised high results

** Nitrite determined not be part of Agrico plume constituents; Analysis change to nitrate only as per 1/07 EPA approval

COC = constituent of concern

mg/L = milligrams per Liter

pCi/L = picocuries per Liter

BOLD = exceeds constituent performance standard

Highlight = Below performance standard.

NA = Not Analyzed

NS = Not Sampled

I = The reported value is between the laboratory method detection limit and the practical quantitation limit.

J = Estimated Value

Q = Sample was analyzed outside recommended analytical holdtime criteria.

V = The analyte was detected in both the sample and the associated method blank.

<, U = Analyzed for but not detected above limiting criteria of 0.256

1 = First date for arsenic is 1990 data results

Radium 226 + 228 Analytical Laboratories:

1987 State of Florida Department of Environmental Regulation Laboratory

1992 Savannah Laboratories - Contract Lab Unknown

1997 Savannah Laboratories - Contract Lab Unknown

1999 General Engineering Laboratory - Charleston, SC

2000 KNL, Tampa, FL

2001 KNL, Tampa, FL

2002 KNL, Tampa, FL

1/2004 STL - St. Louis

11/2004 through 2013 - STL/TA Richland

TABLE 9
COMPARISON OF COC RESULTS AT LONG-TERM MONITORING LOCATIONS FOR SURFACE WATER

Agrico Site
Pensacola, Florida

Sample Location ID	Date	Fluoride (mg/L)	Total Arsenic (mg/L)	Total Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate + Nitrite (before 2007) Nitrate (2007 and later) (mg/L)	Combined Radium 226 + 228 (pCi/L)
ACSW-1 Bayou Texar (Brackish Water)	11/1999	1.2	<0.010	NA	14000(1)	2300(1)	0.74	1.69
	11/2000	1	<0.010	NA	26000	1700	0.14	2.0
	11/2001	1.1	0.0065	NA	1000	1700	0.26	1.5
	11/2002	1.3	<0.010	NA	8400	1200	0.49	0.9
	1/2004	1.5	<0.010	<0.0050	8900	1300	0.45	<1.0
	11/2004	1.3	<0.010	NA	3900	900	0.43	1.44
	11/2005	1.1	<0.010	NA	8600	1200	0.52	1.18
	11/2006	1.3	<0.010	NA	4900	1100	0.63	1.45
	11/2007	1.1	<0.010	NA	10000	1500	0.74	1.33
	11/2008	0.89	<0.010	<0.0050	14000	2000	0.21	0.748
	11/2009	0.99	<0.010	NA	7500	890	0.46	0.989
	11/2010	0.94	NA	NA	27000	1600	0.27	1.376
	11/2011	0.78	NA	NA	12000	1700	0.23	0.58
	11/2012	1.3	NA	NA	13000	1700	0.31	1.08
	11/2013	0.91	NA	NA	8700	1200	0.47	1.41

TABLE 9
COMPARISON OF COC RESULTS AT LONG-TERM MONITORING LOCATIONS FOR SURFACE WATER

Agrico Site
Pensacola, Florida

Sample Location ID	Date	Fluoride (mg/L)	Total Arsenic (mg/L)	Total Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate + Nitrite (before 2007) Nitrate (2007 and later) (mg/L)	Combined Radium 226 + 228 (pCi/L)
ACSW-2 Bayou Texar (Brackish Water)	11/1999	0.82	<0.010	NA	15000	2300	0.15	<1.5
	11/2000	0.63	<0.010	NA	21000	1700	0.39	<1.8
	11/2001	0.74	<0.010	NA	14000	2200	<0.050	2.0
	11/2002	0.59	<0.010	NA	9300	1400	0.15	<1.0
	1/2004	0.66	<0.010	<0.0050	10000	1400	0.19	0.38
	11/2004	0.69	<0.010	NA	5900	1100	0.19	0.572
	11/2005	0.80	<0.010	NA	11000	1700	0.32	1.66
	11/2006	0.73	<0.010	NA	5200	1200	0.38	1.04
	11/2007	0.82	<0.010	NA	12000	1600	0.27	0.95
	11/2008	0.60	<0.010	<0.0050	15000	2200	0.68	0.641
	11/2009	0.59	<0.010	NA	12000	1500	0.13	0.712
	11/2010	0.65	NA	NA	28000	1800	0.082	0.894
	11/2011	0.73	NA	NA	13000	730	0.17	1.277
	11/2012	0.73	NA	NA	14000	1900	0.066	0.691
	11/2013	0.78	NA	NA	13000	1800	0.19	1.21

TABLE 9
COMPARISON OF COC RESULTS AT LONG-TERM MONITORING LOCATIONS FOR SURFACE WATER

Agrico Site
Pensacola, Florida

Sample Location ID	Date	Fluoride (mg/L)	Total Arsenic (mg/L)	Total Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate + Nitrite (before 2007) Nitrate (2007 and later) (mg/L)	Combined Radium 226 + 228 (pCi/L)
BT-02(3) Bayou Texar (Brackish Water)	08/2008	0.56	NA	NA	NA	NA	NA	NA
	11/2010	0.83	NA	NA	NA	NA	NA	NA
	11/2011	0.77	NA	NA	NA	NA	NA	NA
	11/2012	0.89	NA	NA	NA	NA	NA	NA
	11/2013	0.94	NA	NA	NA	NA	NA	NA
BT-107(3) Bayou Texar (Brackish Water)	05/2009	0.58	NA	NA	NA	NA	NA	NA
	11/2010	0.89	NA	NA	NA	NA	NA	NA
	11/2011	0.81	NA	NA	NA	NA	NA	NA
	11/2012	1.30	NA	NA	NA	NA	NA	NA
	11/2013	0.99	NA	NA	NA	NA	NA	NA
BT-127(3) Bayou Texar (Brackish Water)	05/2009	0.60	NA	NA	NA	NA	NA	NA
	11/2010	1.00	NA	NA	NA	NA	NA	NA
	11/2011	0.81	NA	NA	NA	NA	NA	NA
	11/2012	1.20	NA	NA	NA	NA	NA	NA
	11/2013	1.20	NA	NA	NA	NA	NA	NA

TABLE 9
COMPARISON OF COC RESULTS AT LONG-TERM MONITORING LOCATIONS FOR SURFACE WATER

Agrico Site
Pensacola, Florida

Sample Location ID	Date	Fluoride (mg/L)	Total Arsenic (mg/L)	Total Lead (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate + Nitrite (before 2007) Nitrate (2007 and later) (mg/L)	Combined Radium 226 + 228 (pCi/L)
ACSW-BL (2) Carpenter Creek (Freshwater)	11/1999	<0.20	<0.010	NA	9.4	<5.0	2.1	<1.5
	11/2000	<0.20	<0.010	NA	9.4	8.8	1.4	2.5
	11/2001	<0.20	<0.010	NA	8.0	<5.0	1.8	2.4
	11/2002	<0.20	<0.010	NA	8.8	<5.0	1.2	2.4
	1/2004	<0.20	<0.010	<0.0050	8.5	5.1	1.4	1.53
	11/2004	<0.20	<0.010	NA	8.7	7.1	1.1	1.08
	11/2005	<0.20	<0.010	NA	10	5.1	1.2	2.08
	11/2006	<0.20	<0.010	NA	11	<5.0	1.1	1.55
	11/2007	<0.20	<0.010	NA	9.8	<5.0	1.4	1.67
	11/2008	<0.20	<0.010	<0.0050	9.2	5.9	1.1	1.926
	11/2009	<0.20	<0.010	NA	7.3	5.7	0.73	0.895
	11/2010	Discontinued Sampling						

TABLE 9
COMPARISON OF COC RESULTS AT LONG-TERM MONITORING LOCATIONS FOR SURFACE WATER

Agrico Site
Pensacola, Florida

(1) Bayou Texar naturally occurring brackish water from Pensacola Bay

(2) Station Discontinued after 2009.

(3) Stations added in 2010; analysis is for fluoride only.

Notes:

COC = constituent of concern

mg/L = milligrams per Liter

pCi/L = picocuries per Liter

NA = Not Analyzed

Radium 226 + 228 Analytical Laboratories:

1992 Savannah Laboratories - Contract Lab Unknown

1997 Savannah Laboratories - Contract Lab Unknown

1999 General Engineering Laboratory - Charleston, SC

2000 KNL, Tampa, FL

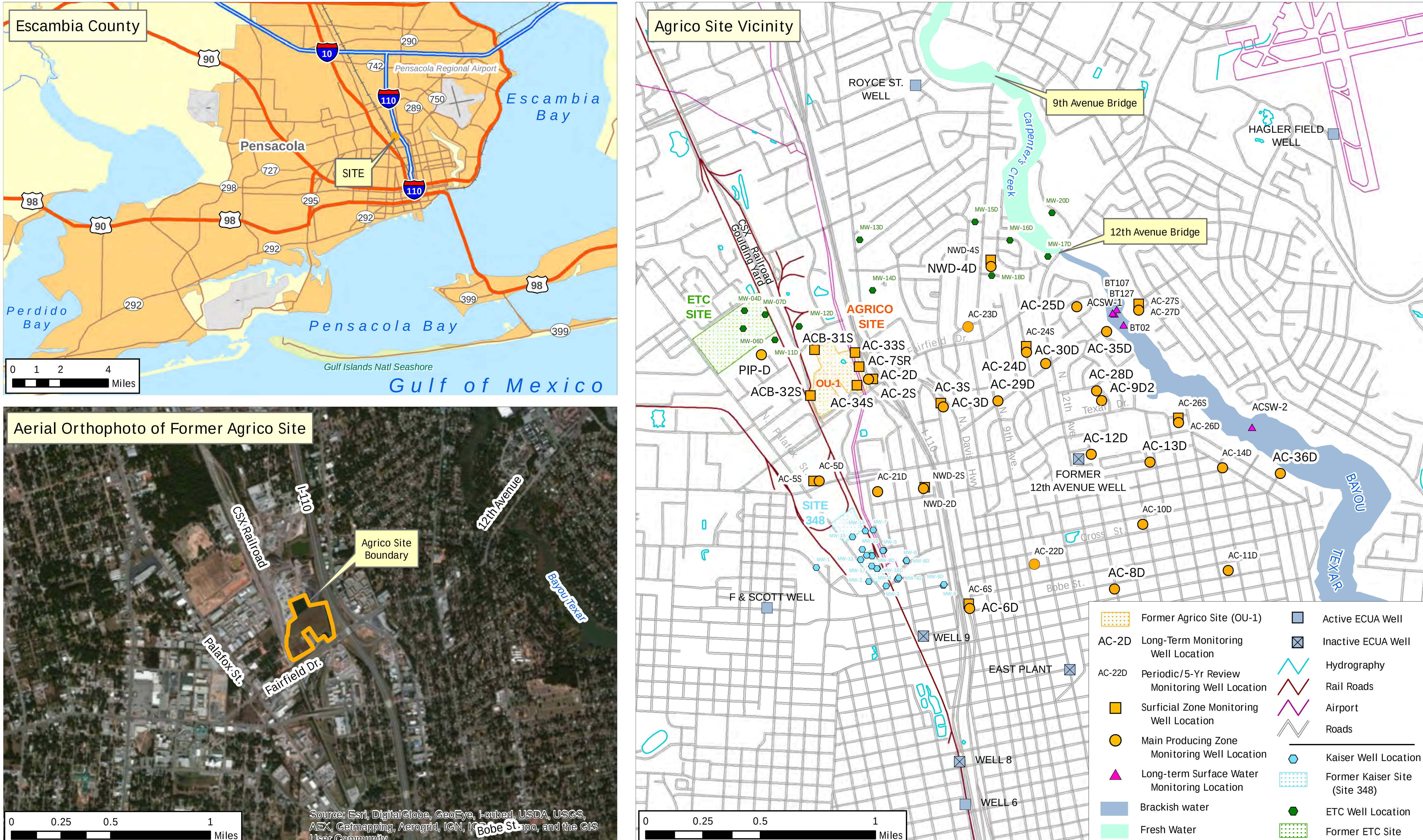
2001 KNL, Tampa, FL

2002 KNL, Tampa, FL

1/2004 STL - St. Louis

11/2004 through 2013- STL/TA Richland

FIGURES



OU-1 and OU-2
AGRICO SITE
PENSACOLA, FLORIDA

URS

Base Map Data Provided By:
Florida Department of Environmental Protection
and Northwest Florida Water Management District
Aerial Source: ESRI

SITE LOCATION AND SITE-WIDE MONITORING WELL LOCATIONS OU-1 AND OU-2

FIGURE 1

brett_mckee - Tallahassee - 1/28/2014

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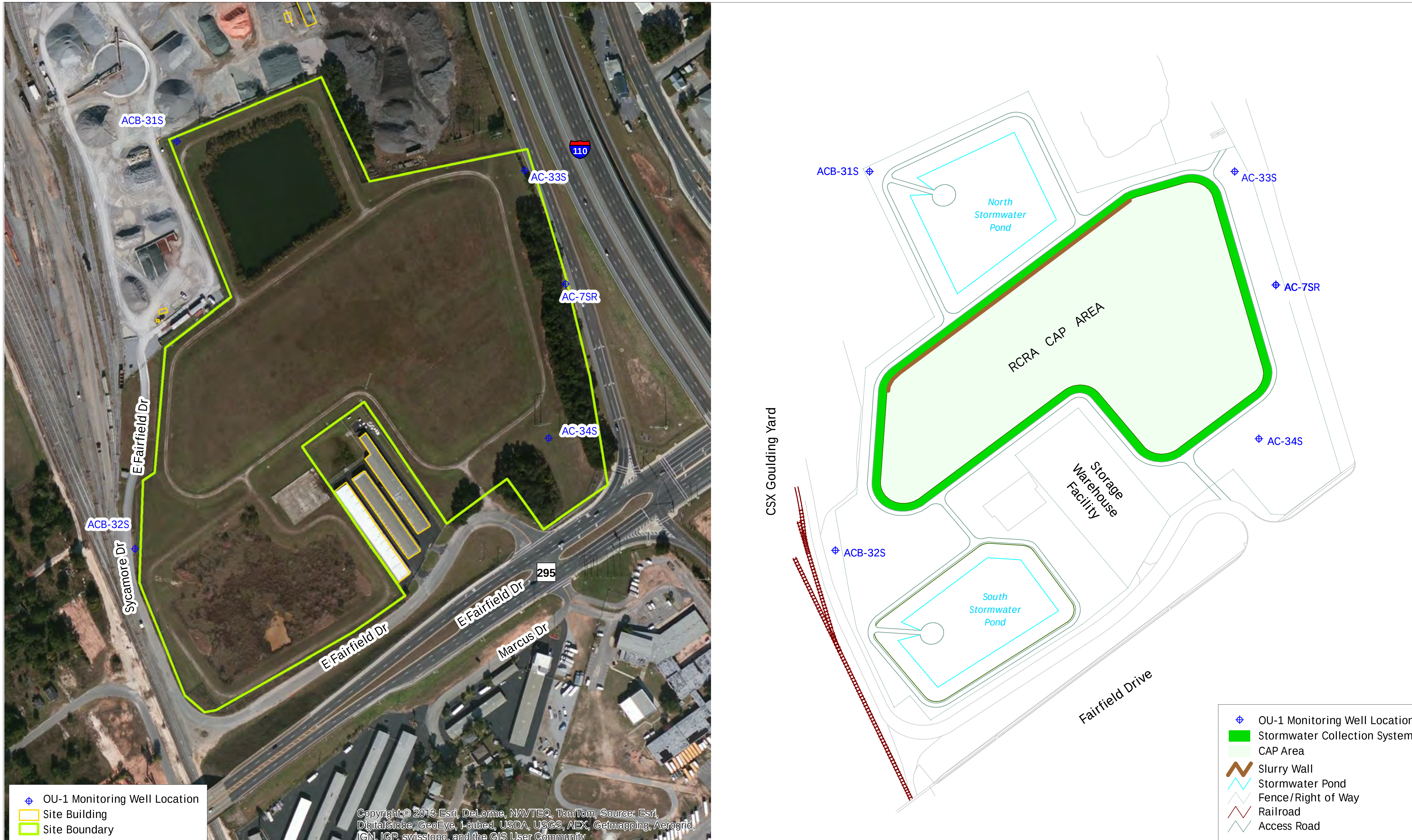

OU-1 and OU-2
AGRICO SITE
PENSACOLA, FLORIDA

URS

Base Map Data Provided By:
Florida Department of Environmental Protection
and Northwest Florida Water Management District
Aerial Source: ESRI

FORMER SITE AREA AND
MONITORING WELL LOCATIONS
OU-1

FIGURE
2

brett_mckee - Tallahassee - 1/28/2014

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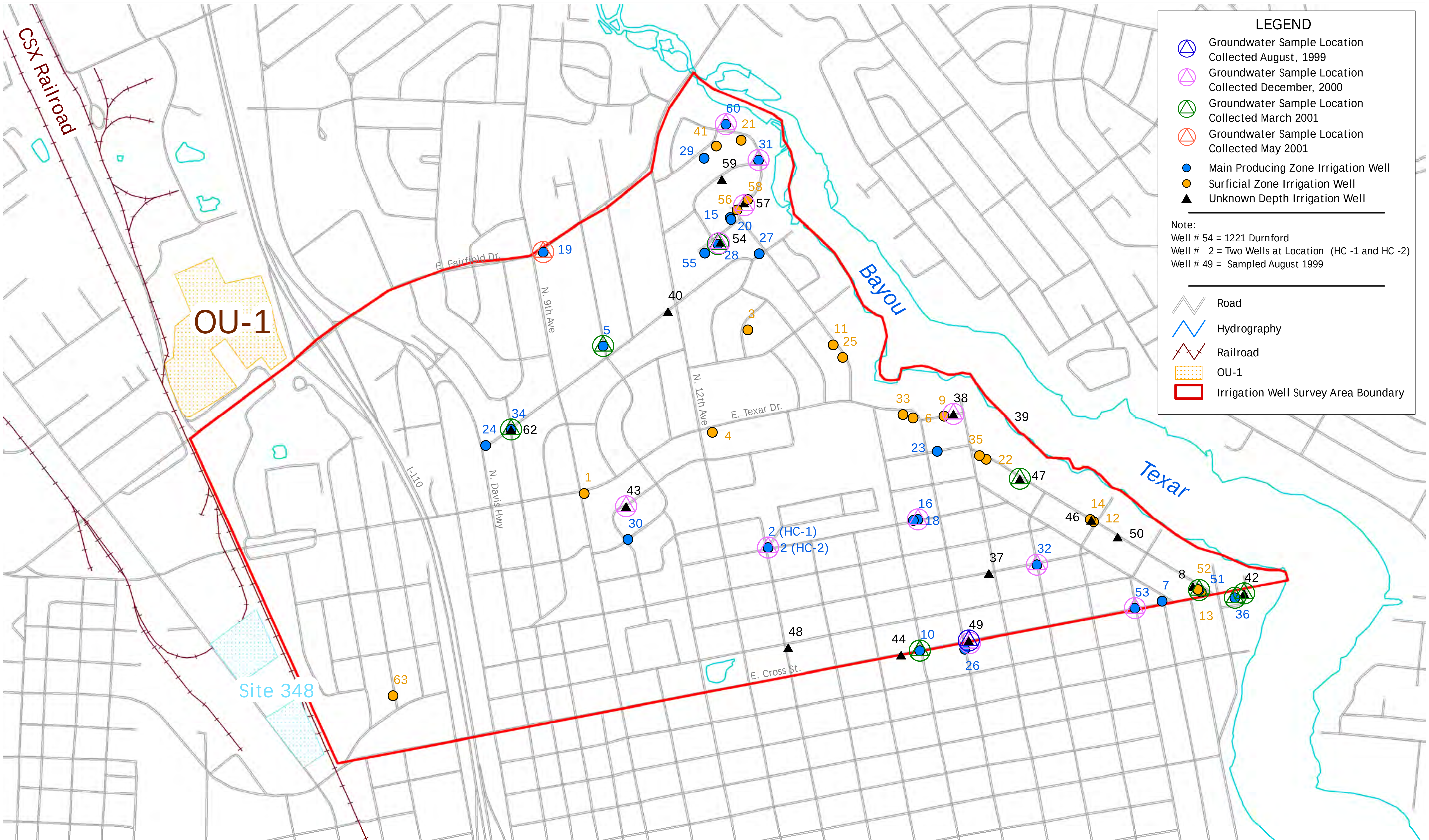

OU-1 and OU-2
AGRICO SITE
PENSACOLA, FLORIDA

URS

Base Map Data Provided By:
Florida Department of Environmental Protection
and Northwest Florida Water Management District

0.25 0.125 0 0.25 0.5 Miles

Projection: UTM, Zone 16, NAD27, Meters

IRRIGATION WELL LOCATIONS

FIGURE 3

brett_mckee - Tallahassee - 1/28/2014

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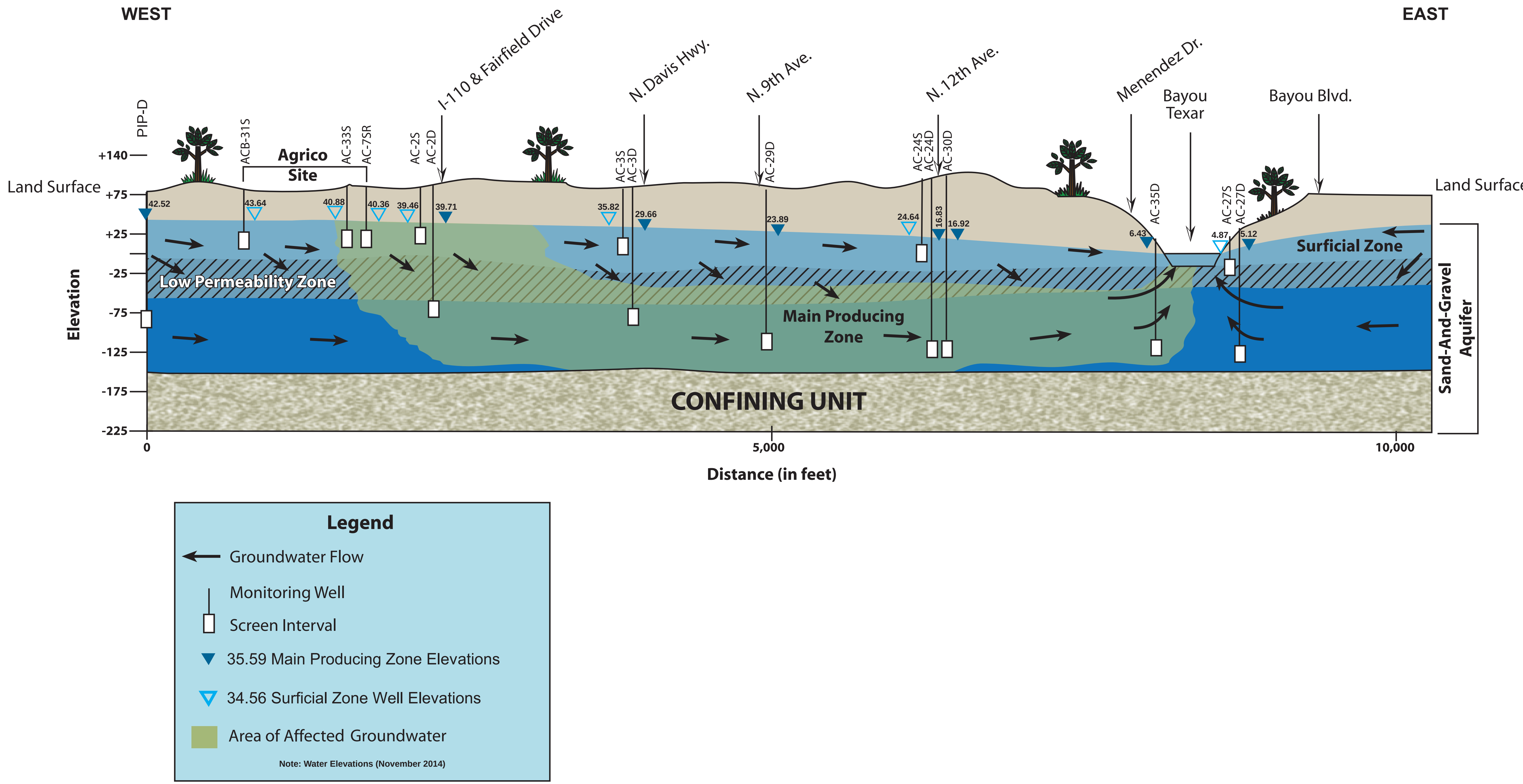

OU-1 and OU-2
AGRICO SITE
PENSACOLA, FLORIDA

URS

HYDROGEOLOGIC CONCEPTUAL MODEL
FROM AGRICO SITE TO BAYOU TEXAR

FIGURE
4

B.McKee - Tallahassee - 1/17/2014

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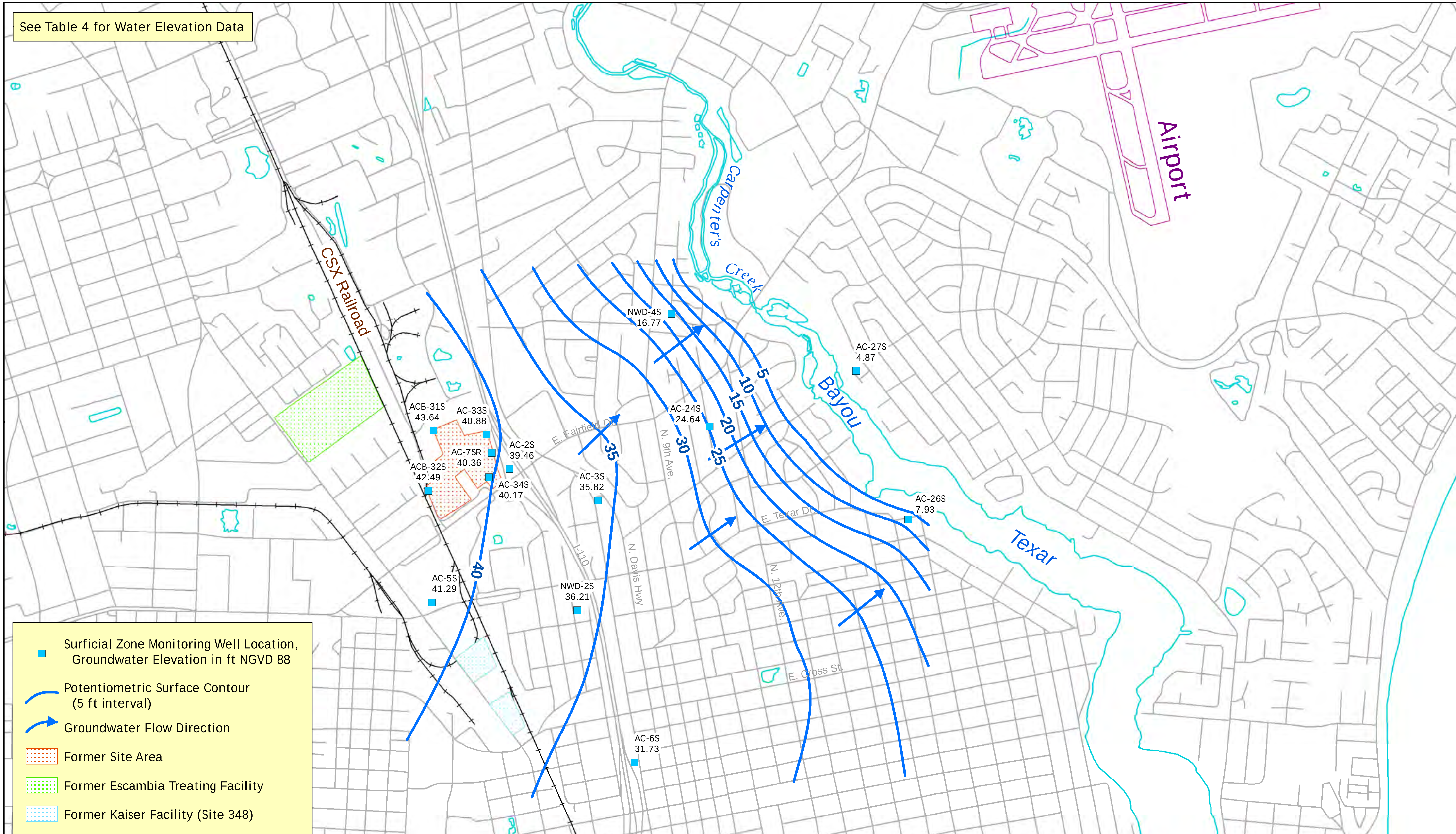

OU-1 and OU-2
AGRICO SITE
PENSACOLA, FLORIDA

URS

Base Map Data Sources:
Florida Department of Environmental Protection
Northwest Florida Water Management District

N W E S

0.5 0.25 0 0.5 Miles

Coordinate System: UTM, Zone 16, NAD27

POTENTIOMETRIC SURFACE
SURFICIAL ZONE
November 4, 2013

FIGURE
5

brett_mckee - Tallahassee - 1/29/2014

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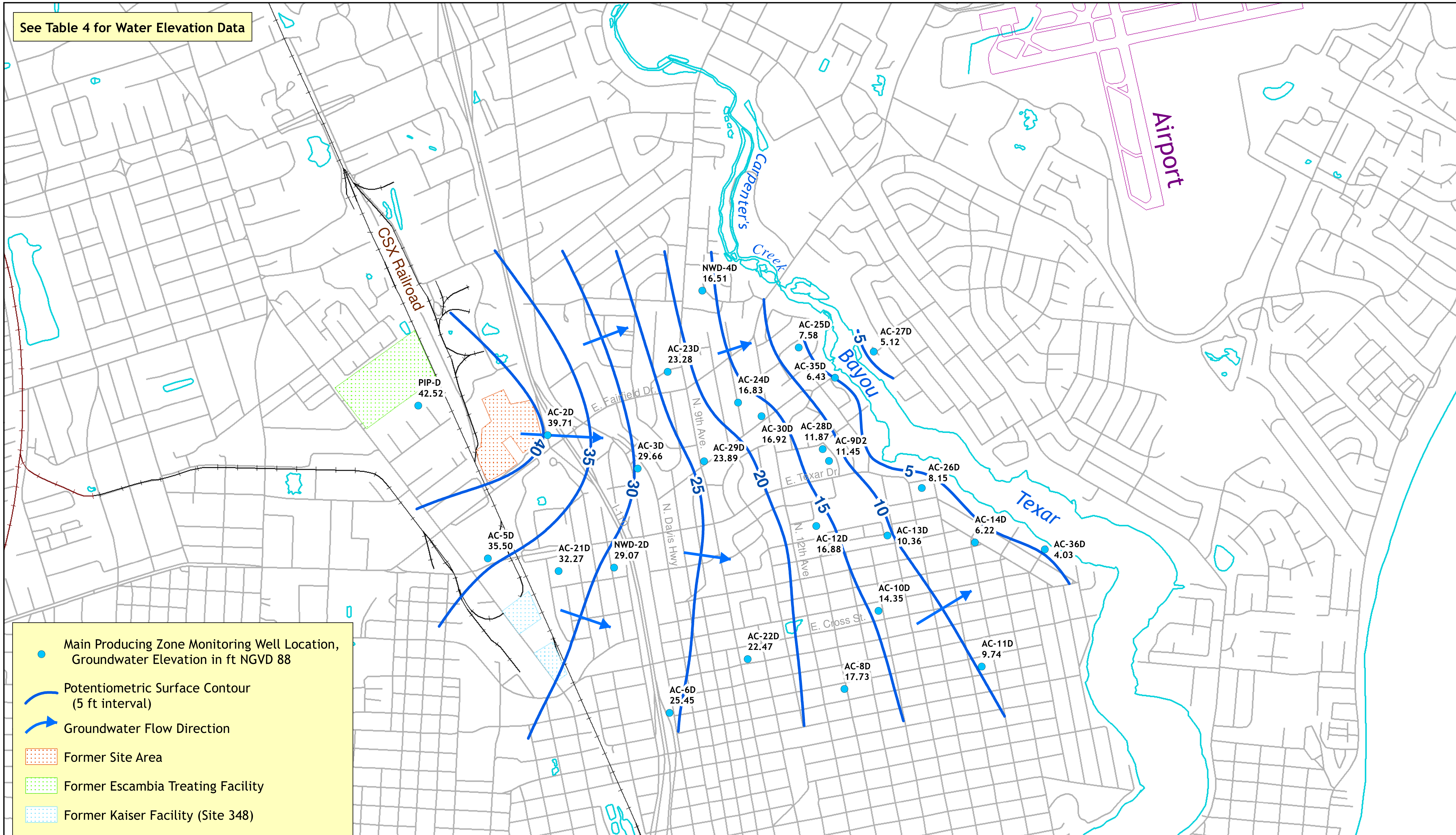

OU-1 and OU-2
AGRICO SITE
PENSACOLA, FLORIDA

URS

Base Map Data Provided By:
Florida Department of Environmental Protection
and Northwest Florida Water Management District

N W E S

0.5 0.25 0 0.5 Miles

Coordinate System: UTM, Zone 16, NAD27

POTENTIOMETRIC SURFACE
MAIN PRODUCING ZONE
November 4, 2013

FIGURE
6

brett_mckee - Tallahassee - 1/29/2014

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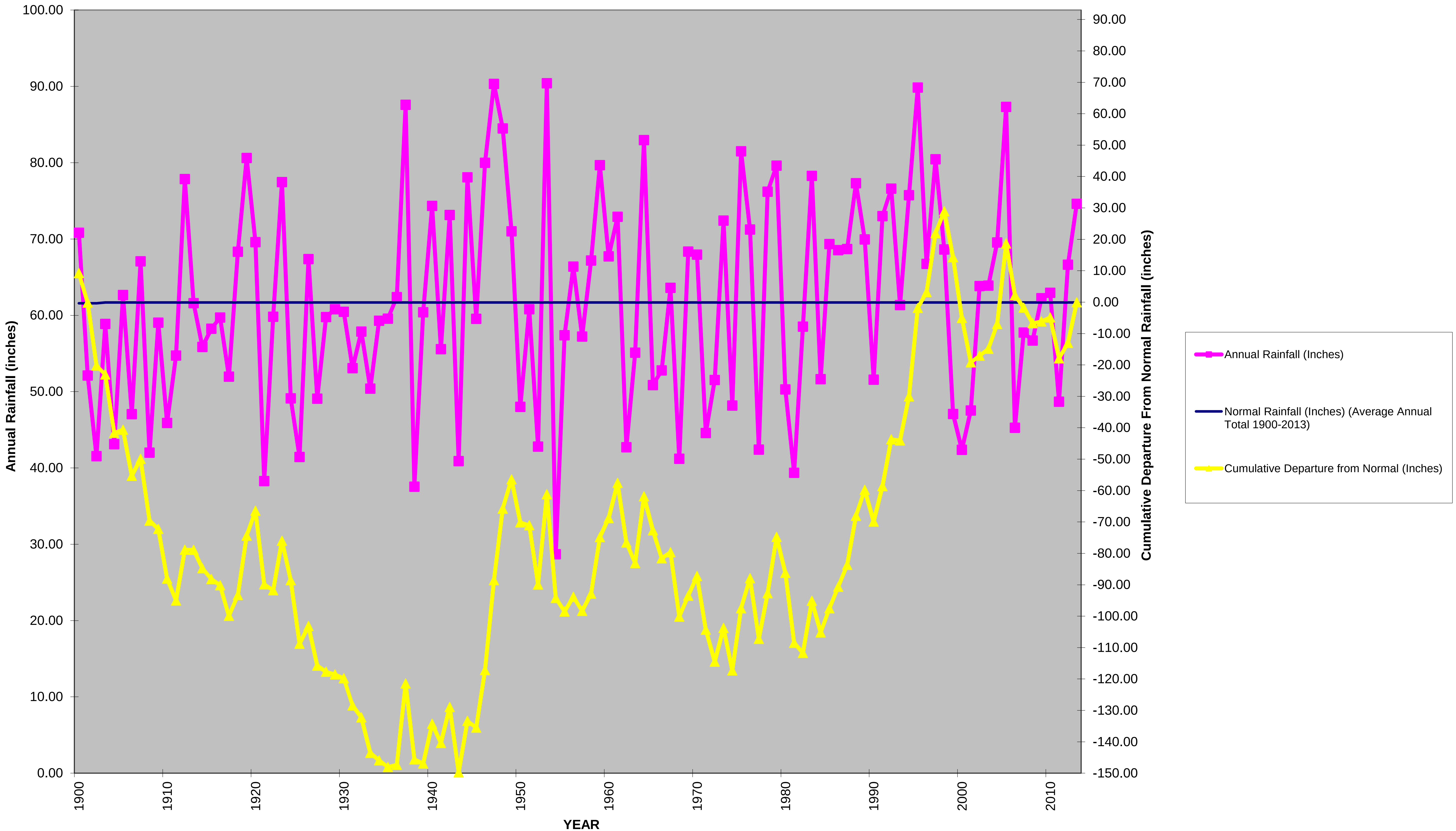
Figure 7
Annual Rainfall and Cumulative Departure from Normal
NOAA Rainfall Station
Pensacola, Florida



URS

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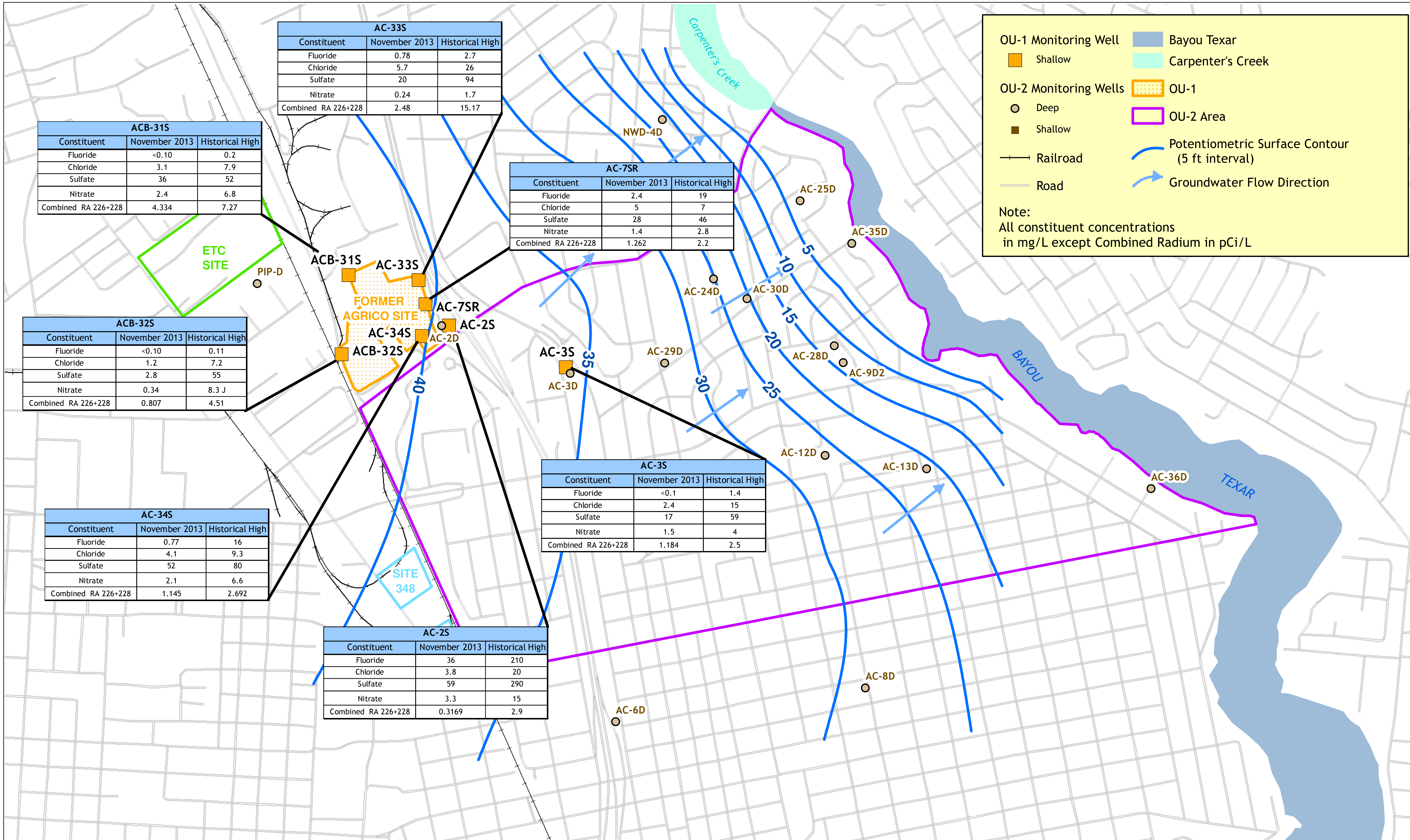

AC-33S

Constituent	November 2013	Historical High
Fluoride	0.78	2.7
Chloride	5.7	26
Sulfate	20	94
Nitrate	0.24	1.7
Combined RA 226+228	2.48	15.17

ACB-31S

Constituent	November 2013	Historical High
Fluoride	<0.10	0.2
Chloride	3.1	7.9
Sulfate	36	52
Nitrate	2.4	6.8
Combined RA 226+228	4.334	7.27

AC-7SR

Constituent	November 2013	Historical High
Fluoride	2.4	19
Chloride	5	7
Sulfate	28	46
Nitrate	1.4	2.8
Combined RA 226+228	1.262	2.2

ACB-32S

Constituent	November 2013	Historical High
Fluoride	<0.10	0.11
Chloride	1.2	7.2
Sulfate	2.8	55
Nitrate	0.34	8.3 J
Combined RA 226+228	0.807	4.51

AC-3S

Constituent	November 2013	Historical High
Fluoride	<0.1	1.4
Chloride	2.4	15
Sulfate	17	59
Nitrate	1.5	4
Combined RA 226+228	1.184	2.5

AC-34S

Constituent	November 2013	Historical High
Fluoride	0.77	16
Chloride	4.1	9.3
Sulfate	52	80
Nitrate	2.1	6.6
Combined RA 226+228	1.145	2.692

AC-2S

Constituent	November 2013	Historical High
Fluoride	36	210
Chloride	3.8	20
Sulfate	59	290
Nitrate	3.3	15
Combined RA 226+228	0.3169	2.9

OU-1 and OU-2
AGRICO SITE
PENSACOLA, FLORIDA

URS

Base Map Data Provided By:
Florida Department of Environmental Protection
and Northwest Florida Water Management District
Aerial Source: Bing Image Server

N W E S

0 500 1,000 2,000 Feet

TREND PLOT LOCATIONS
SURFICIAL ZONE
OU-1 AREA

FIGURE 8

ashlyn_mitchell - Tallahassee - 2/27/2014

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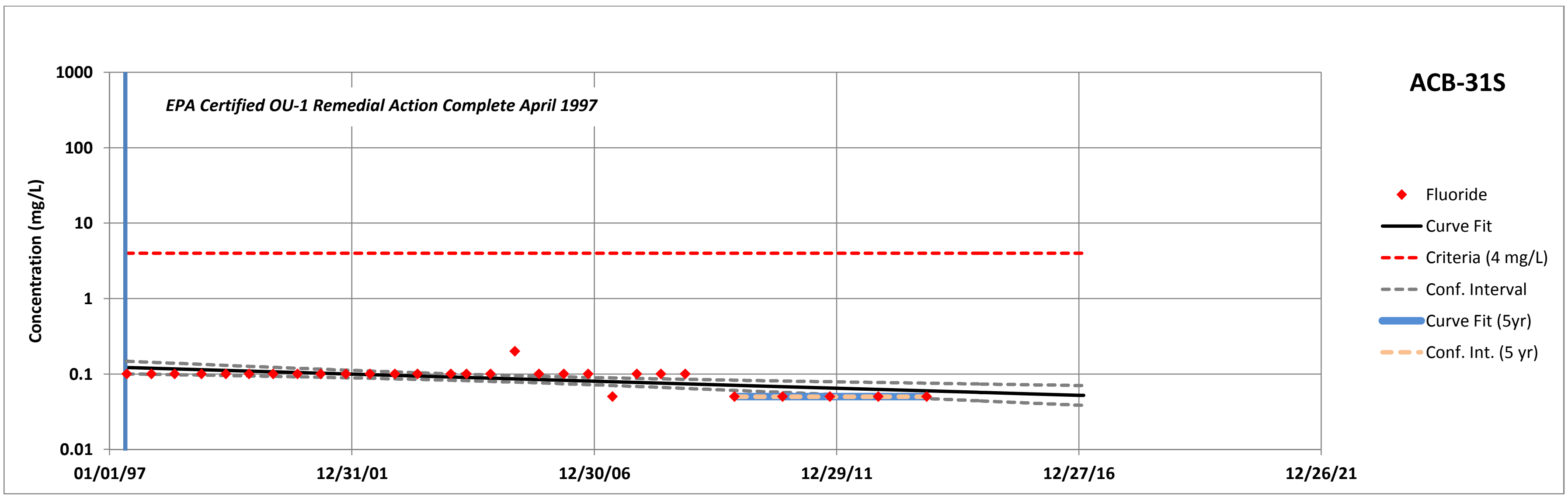
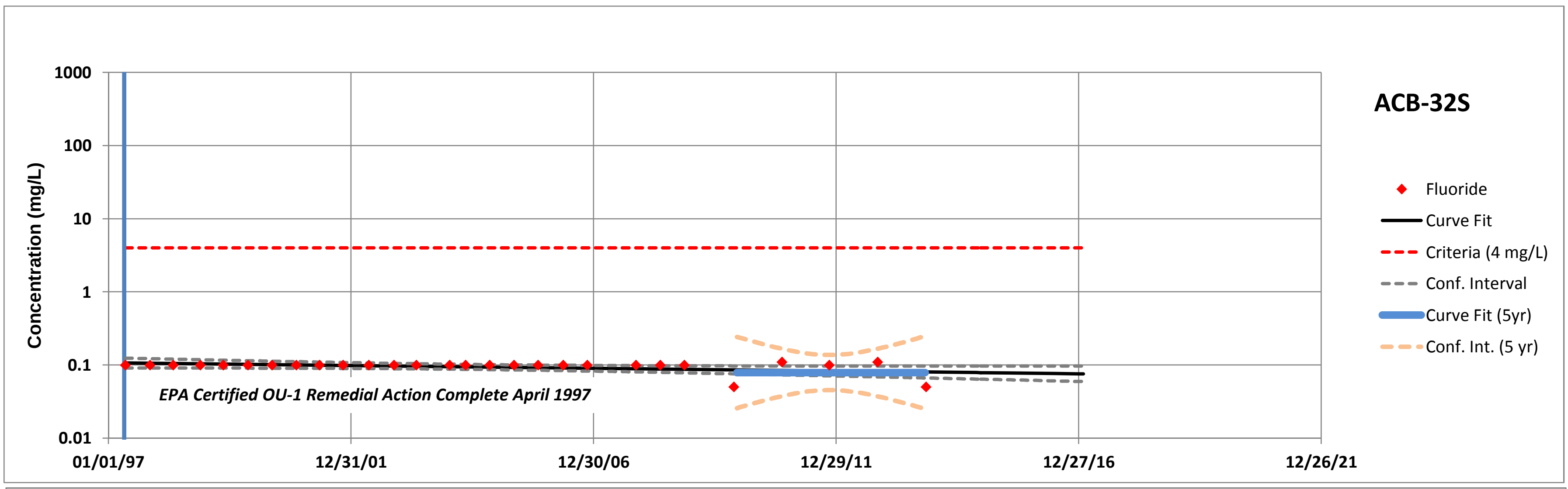
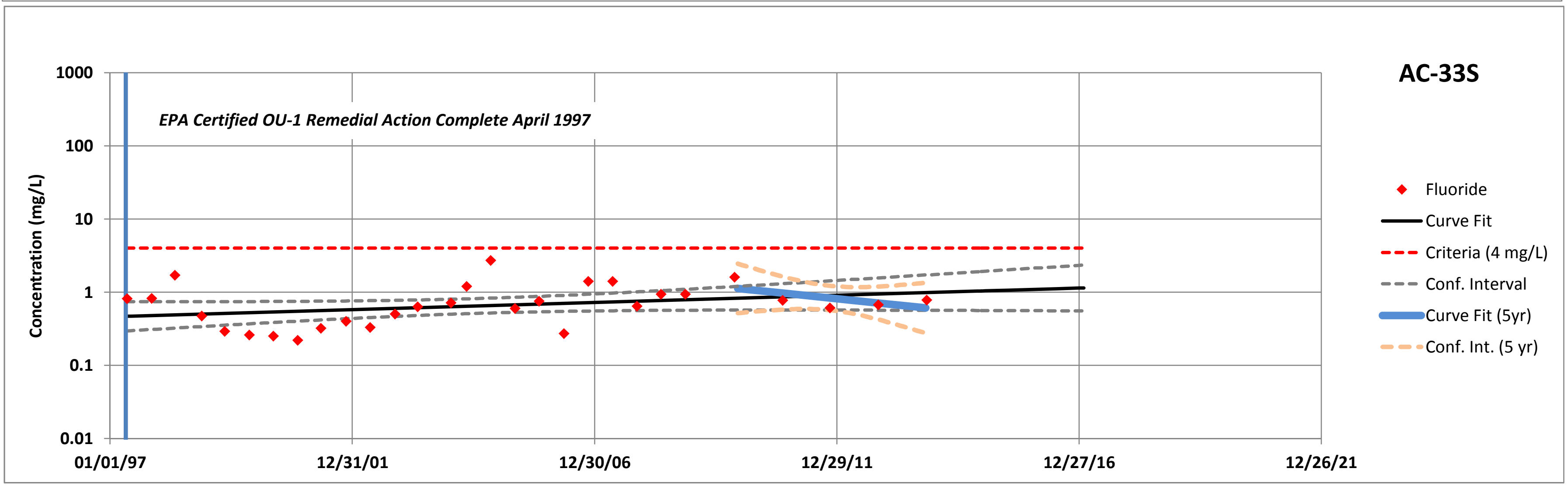
Figure 9

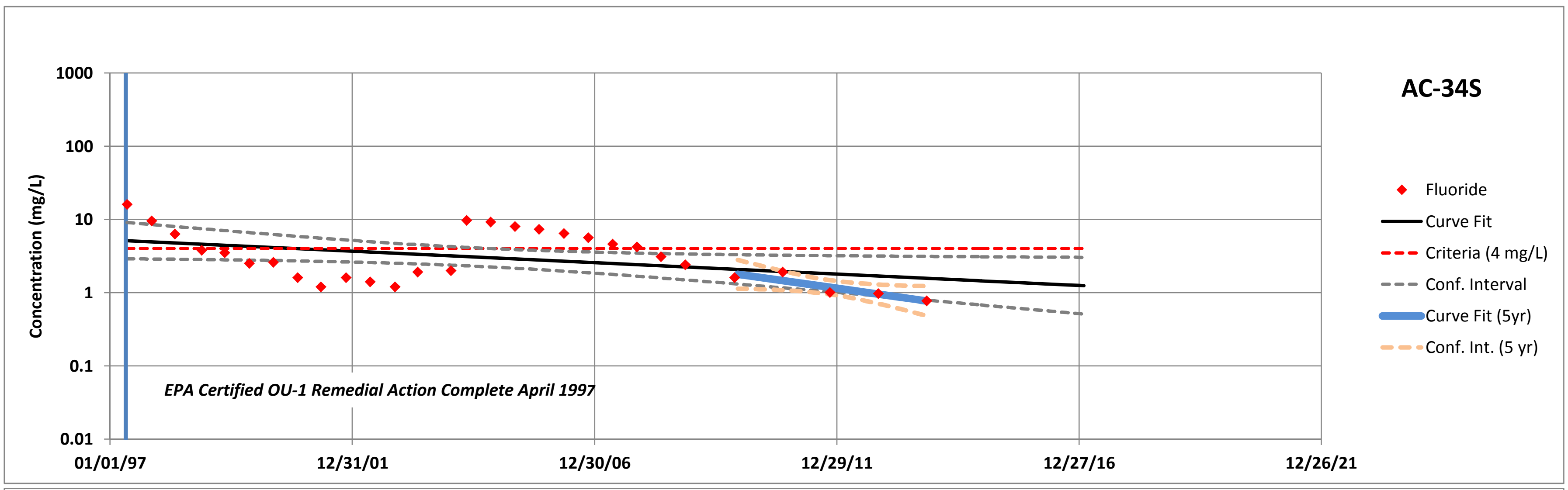
Fluoride Trend Plots for Surficial Zone Monitoring Wells, OU-1 Area

Agrico Site
Pensacola, Florida









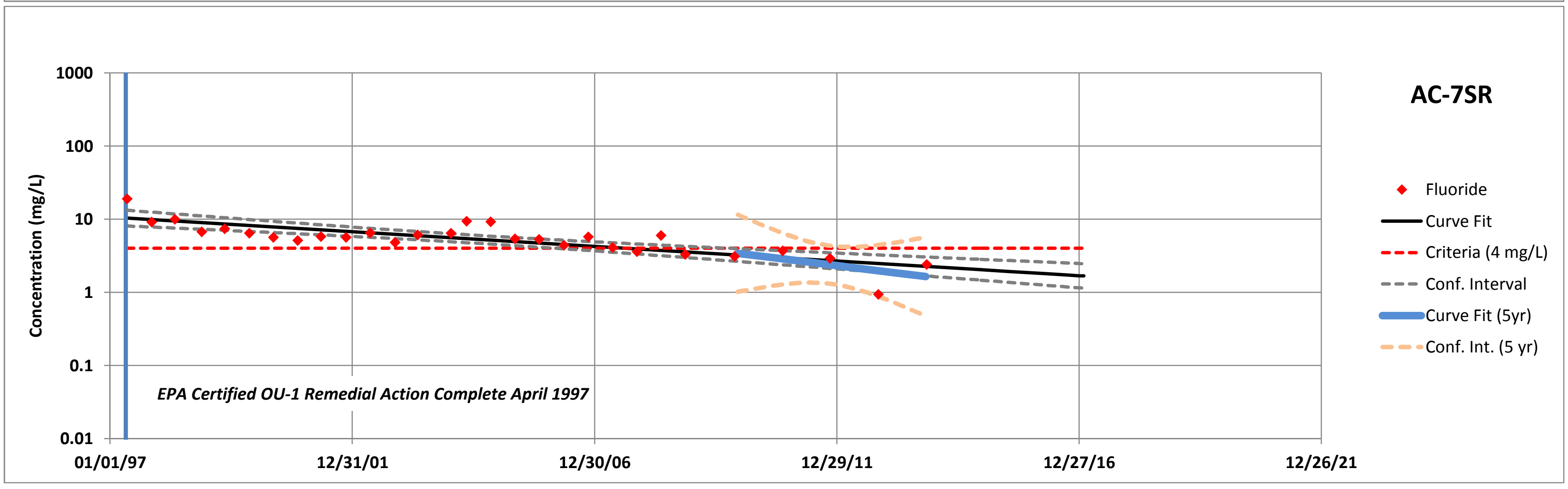
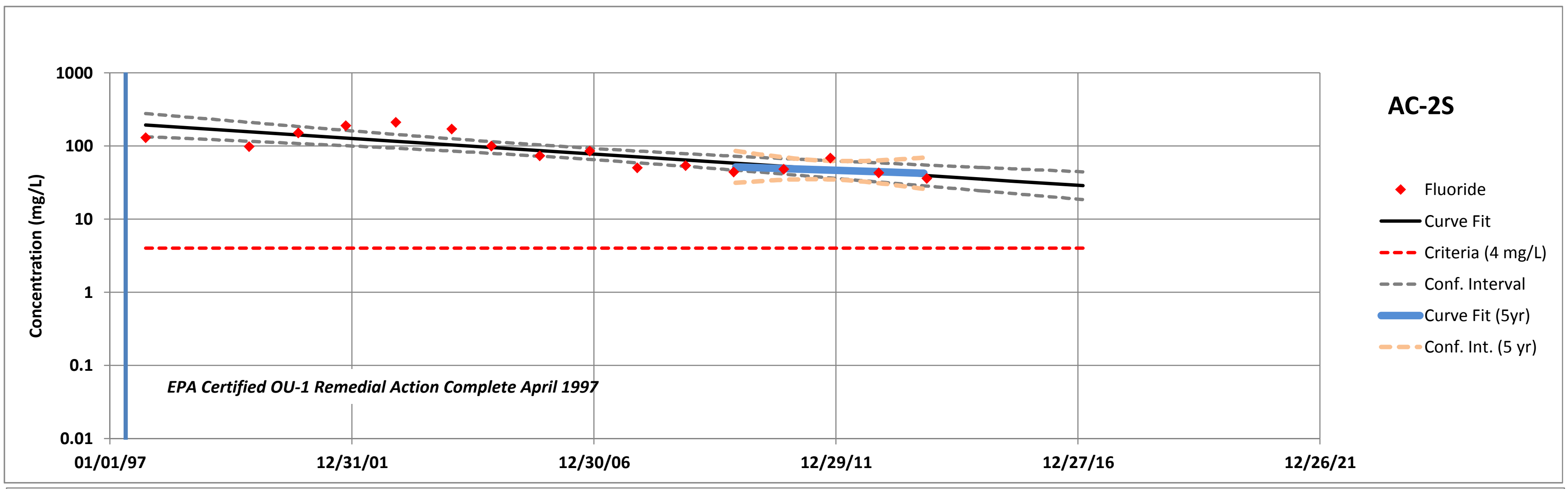


Figure 9 (Cont'd.)

Fluoride Trend Plots for Surficial Zone Monitoring Wells, OU-1 Area

Agrico Site
Pensacola, Florida



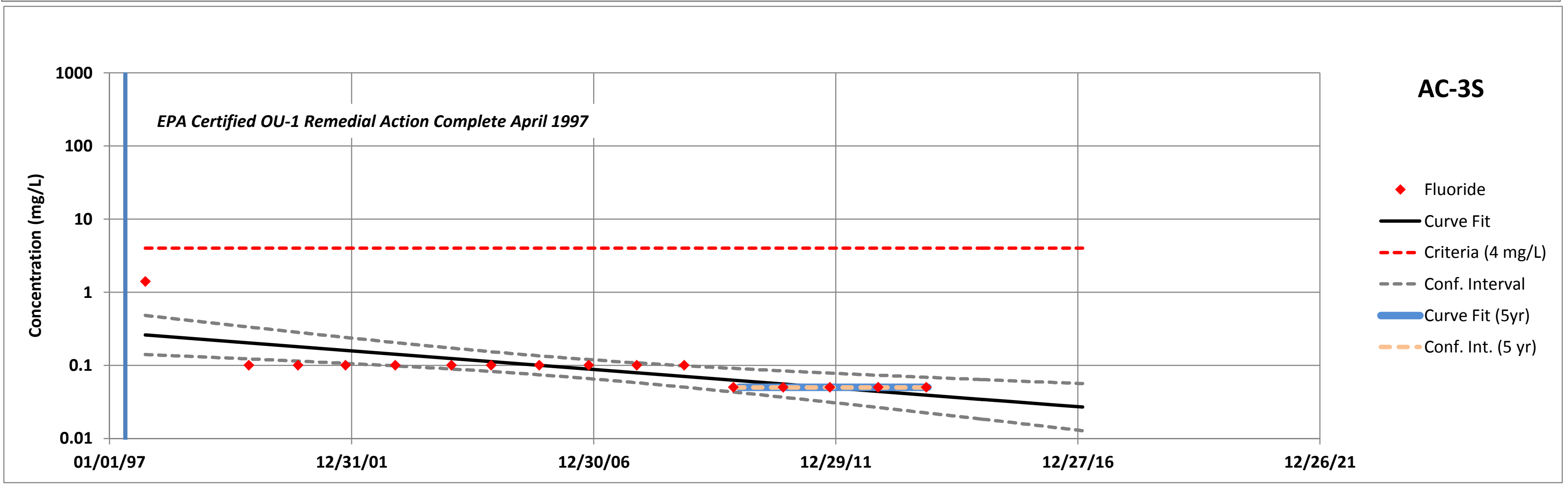
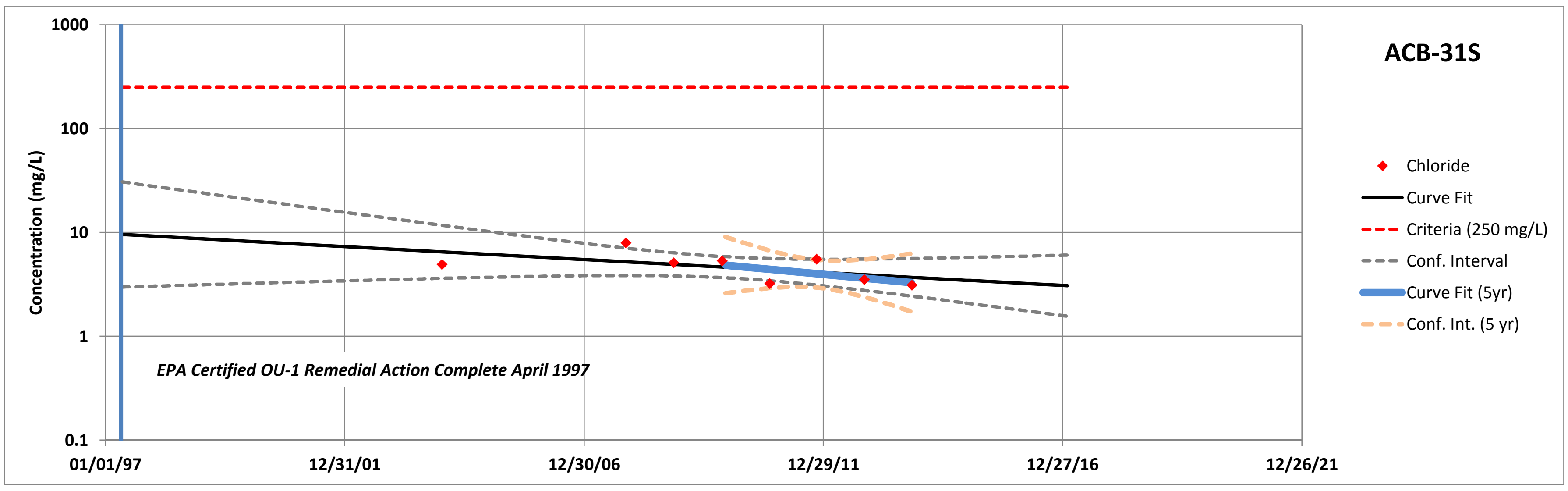
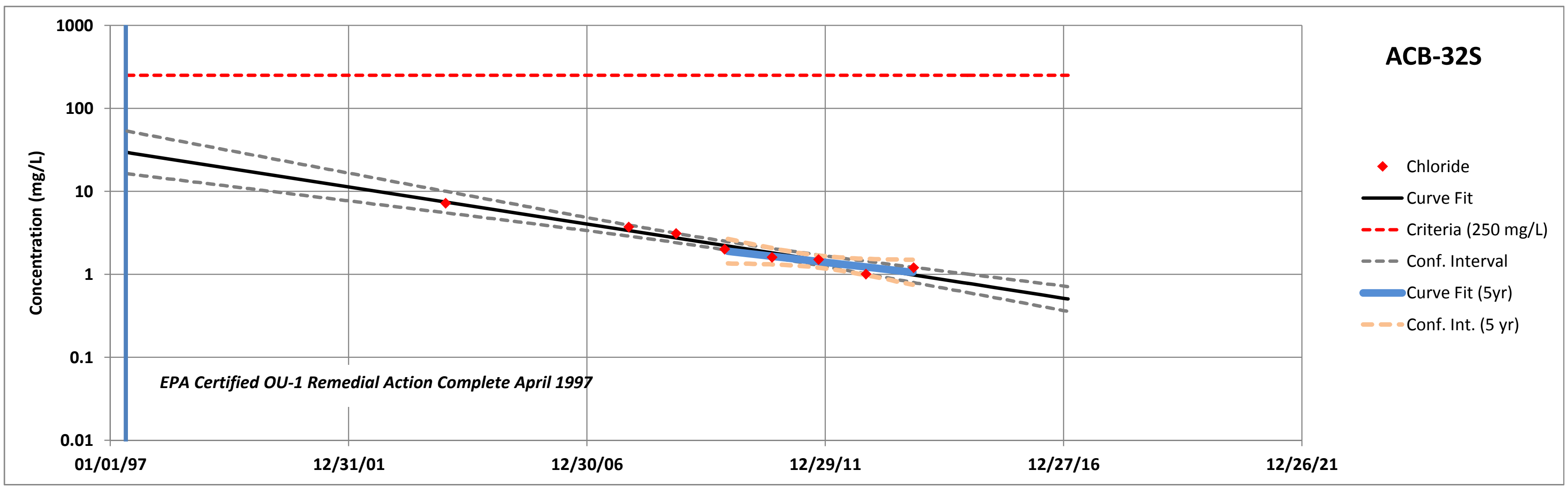


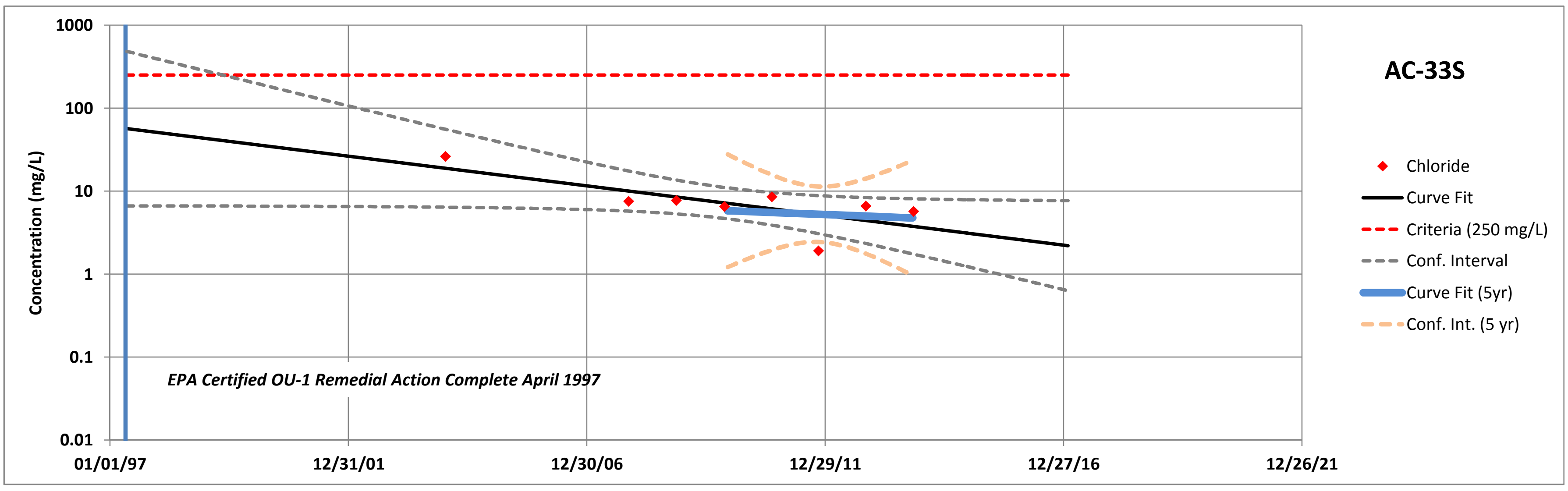
Figure 10

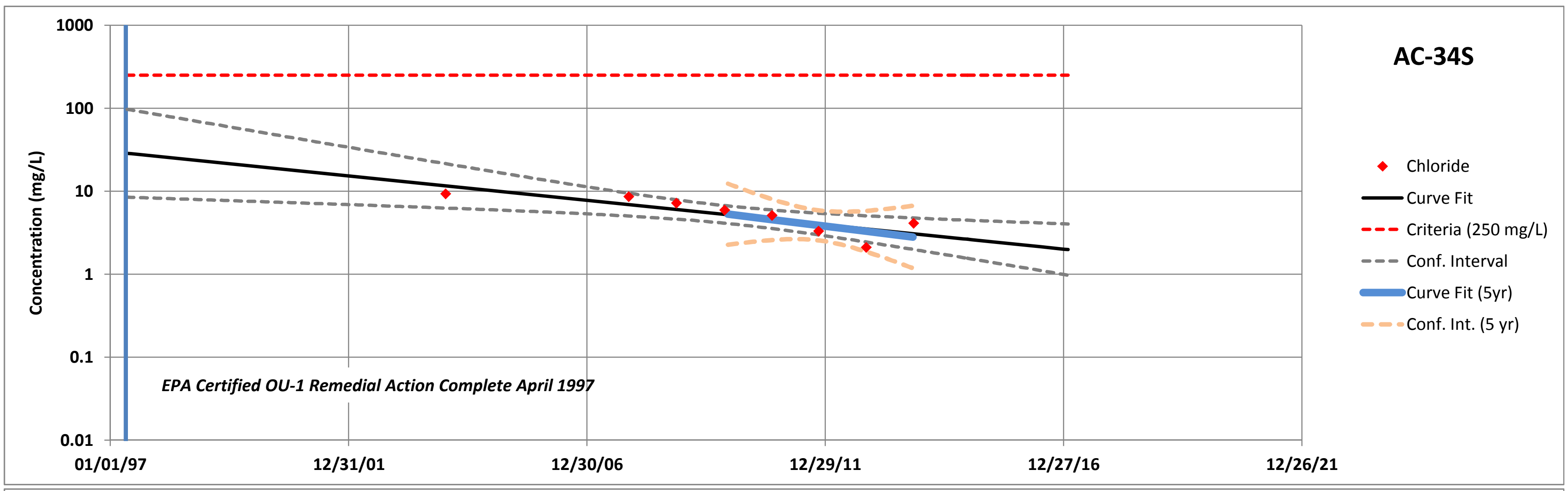
Chloride Trend Plots for Surficial Zone Monitoring Wells, OU-1 Area

Agrico Site
Pensacola, Florida









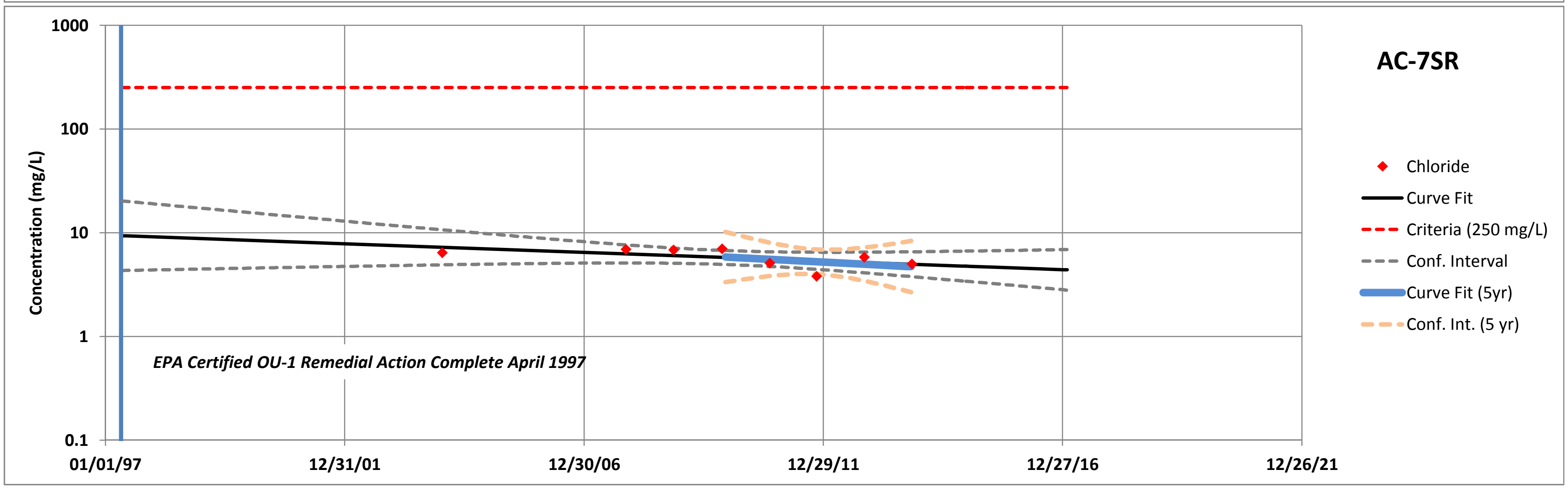
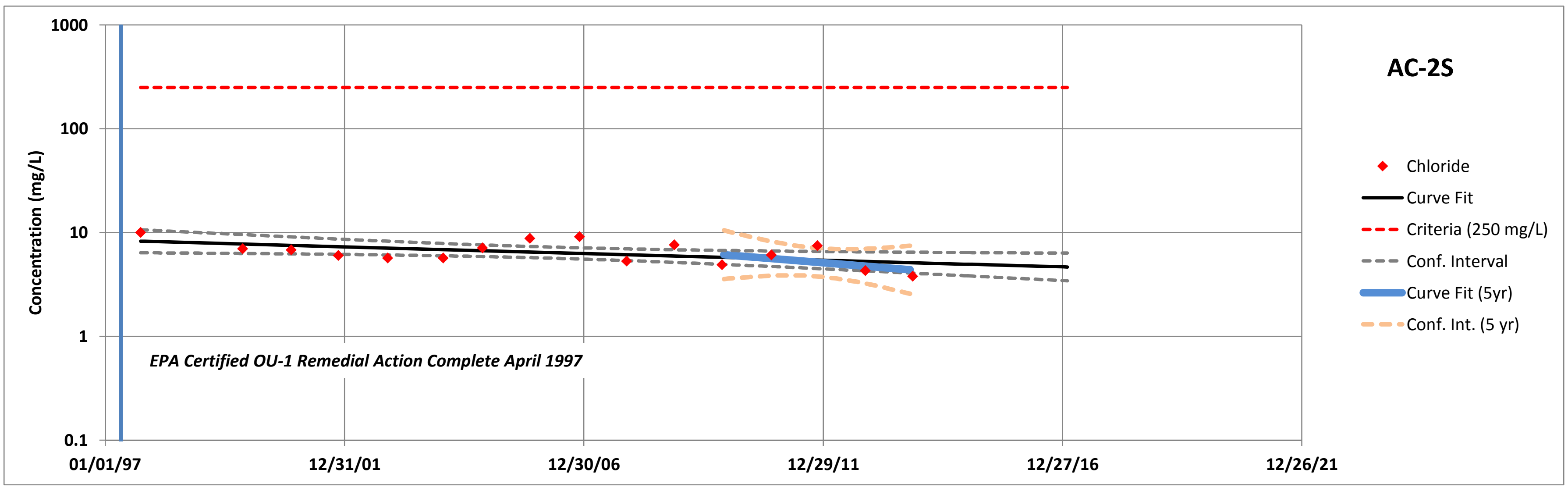


Figure 10 (Cont'd.)

Chloride Trend Plots for Surficial Zone Monitoring Wells, OU-1 Area

Agrico Site
Pensacola, Florida



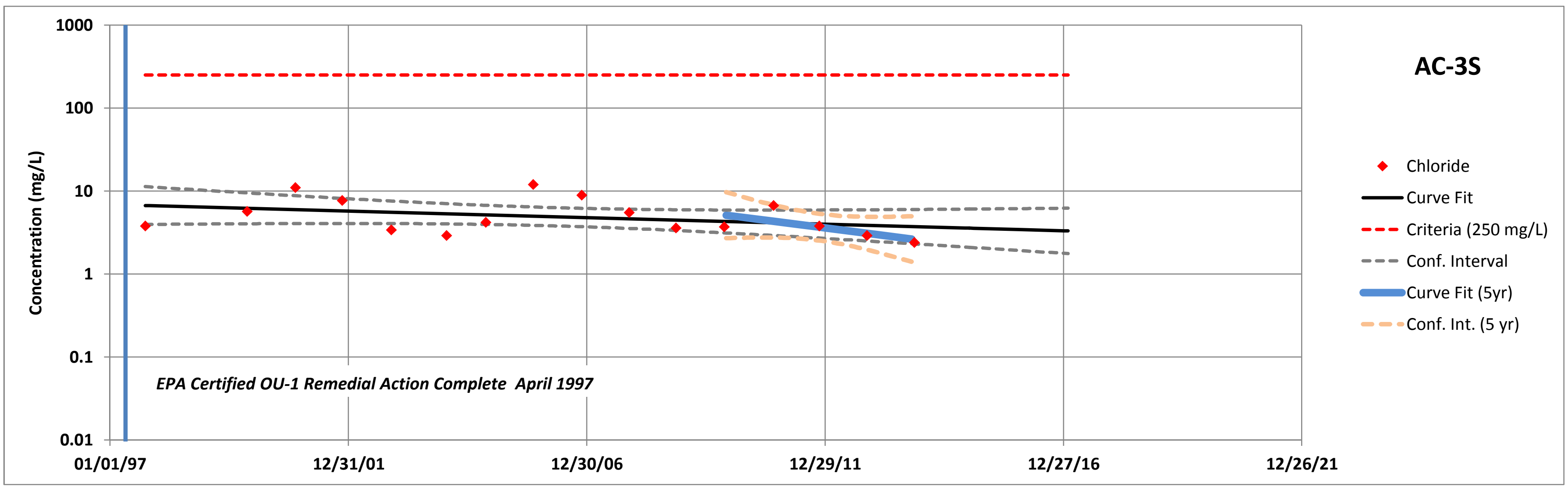
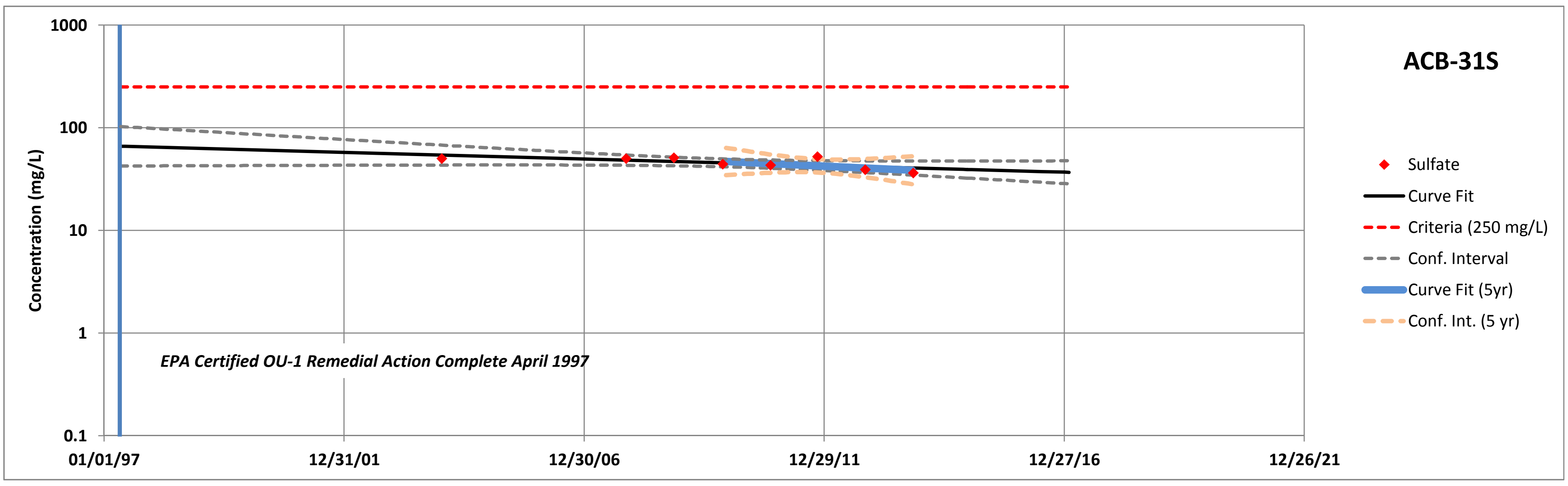
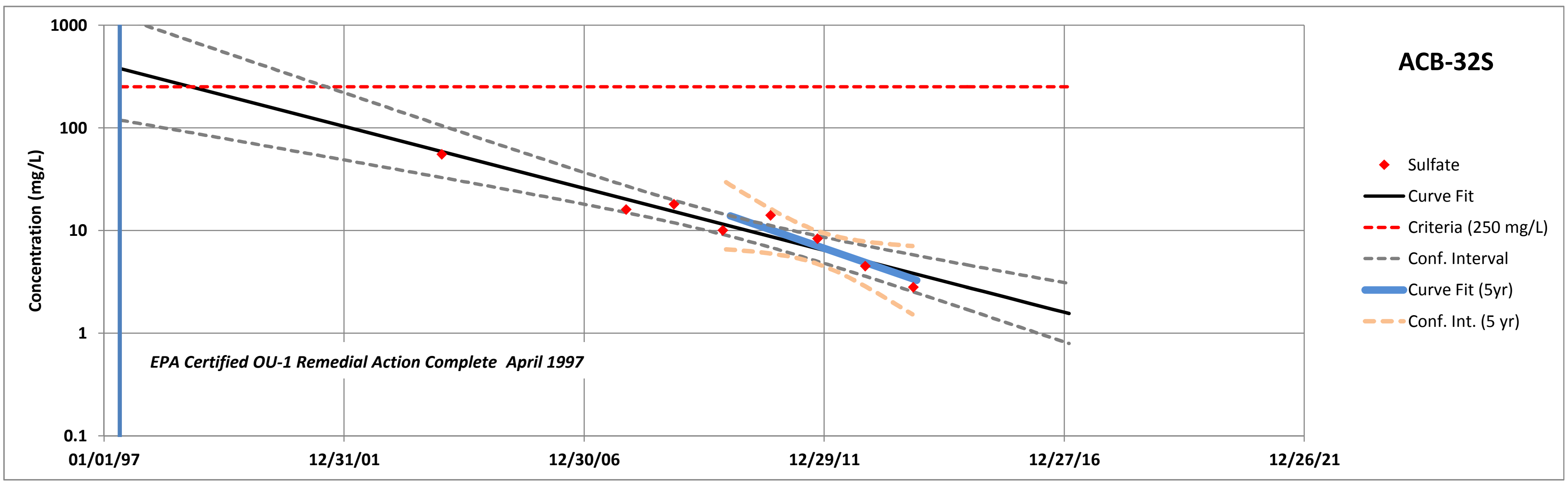


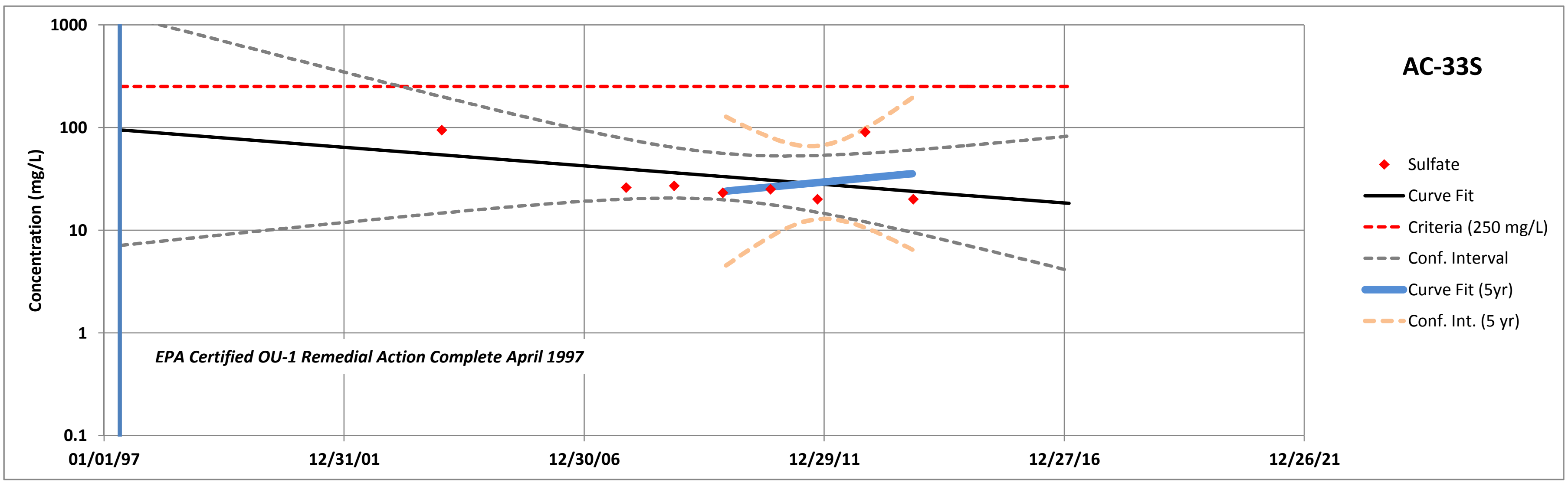
Figure 11

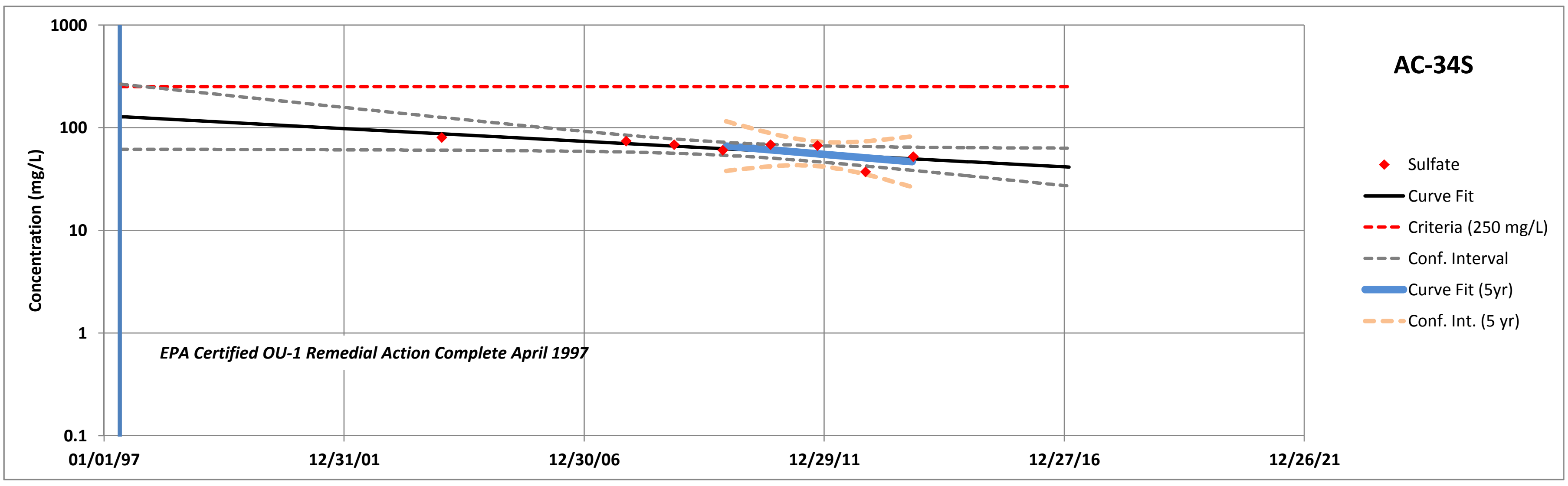
Sulfate Trend Plots for Surficial Zone Monitoring Wells, OU-1 Area

Agrico Site
Pensacola, Florida









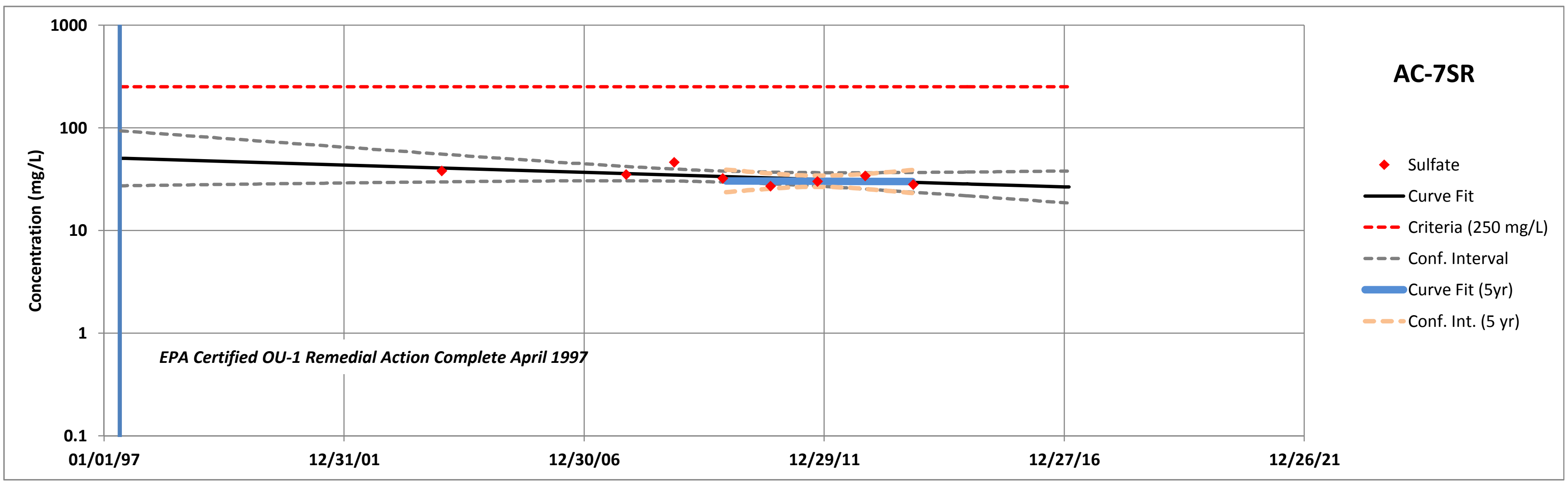
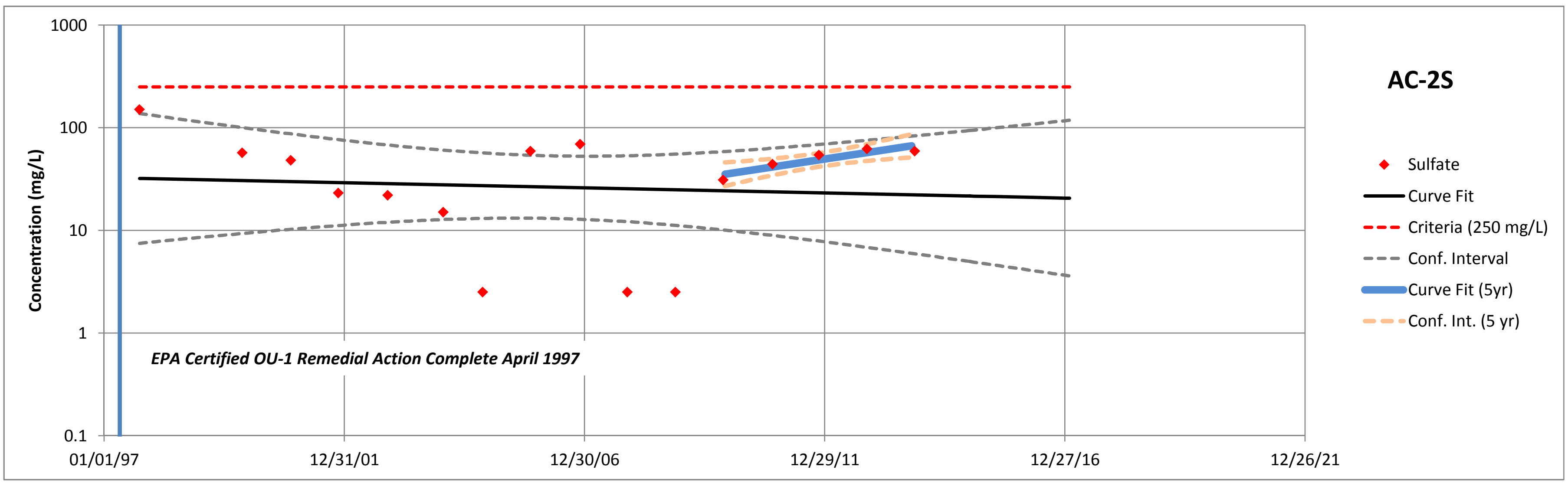


Figure 11 (Cont'd.)

Sulfate Trend Plots for Surficial Zone Monitoring Wells, OU-1 Area

Agrico Site
Pensacola, Florida



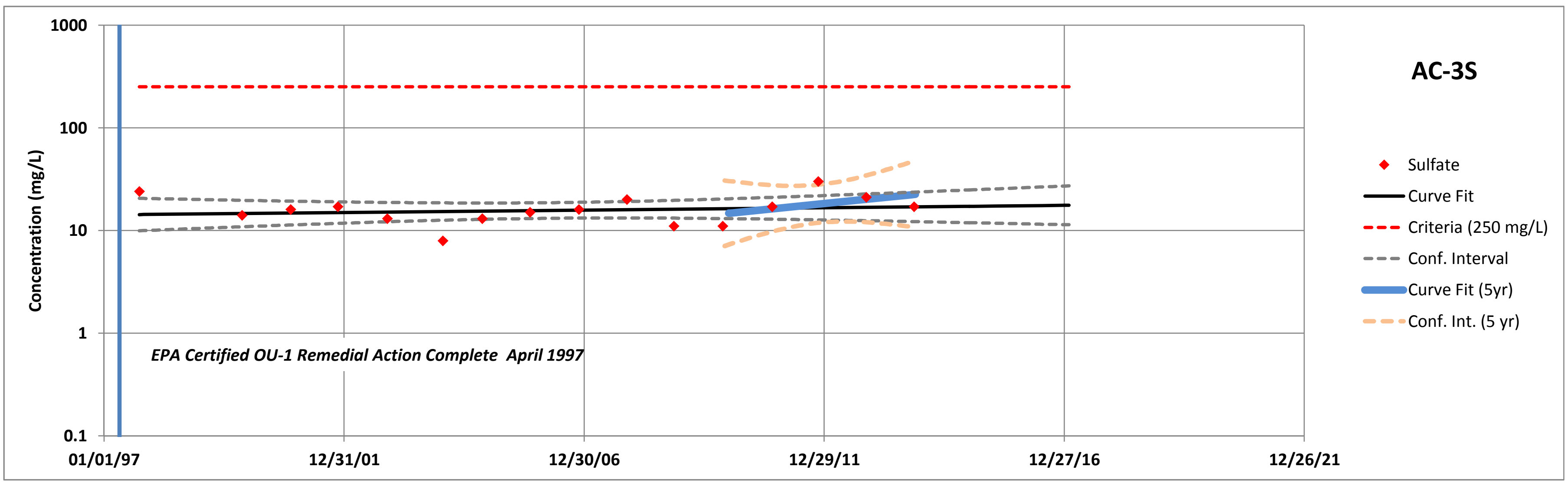
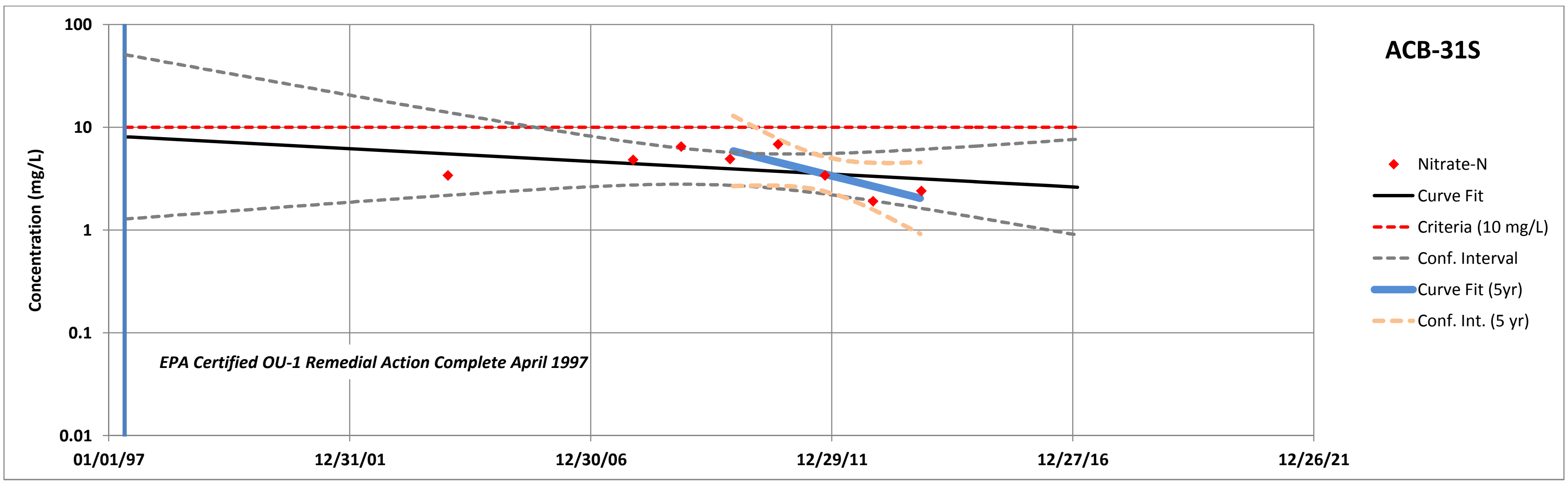
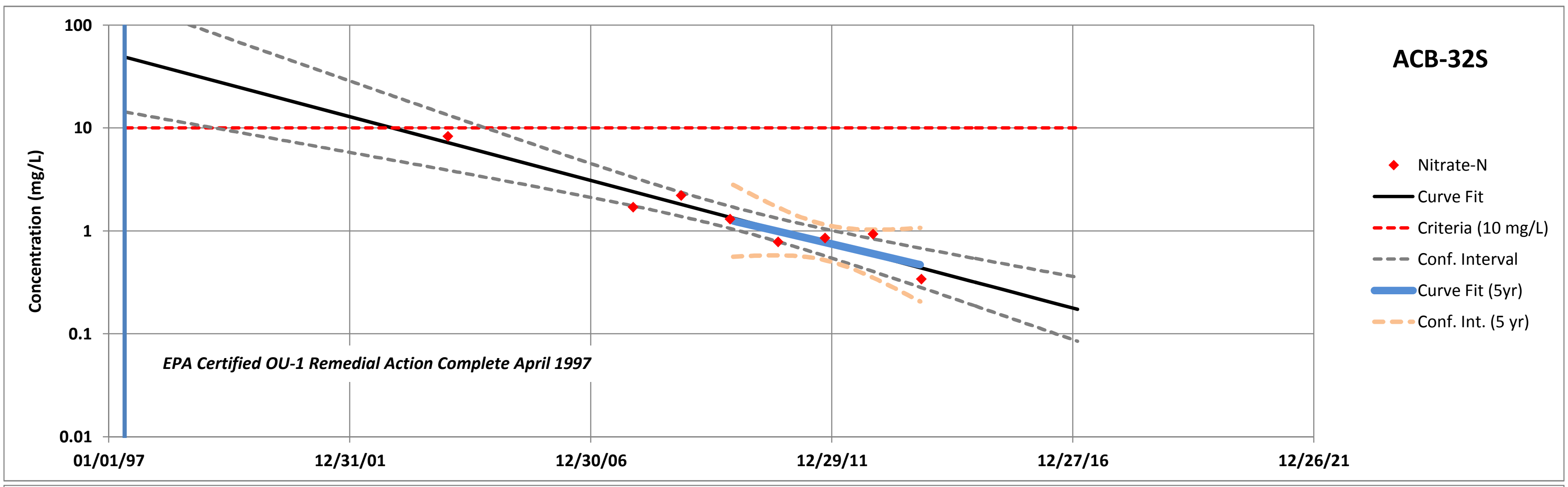


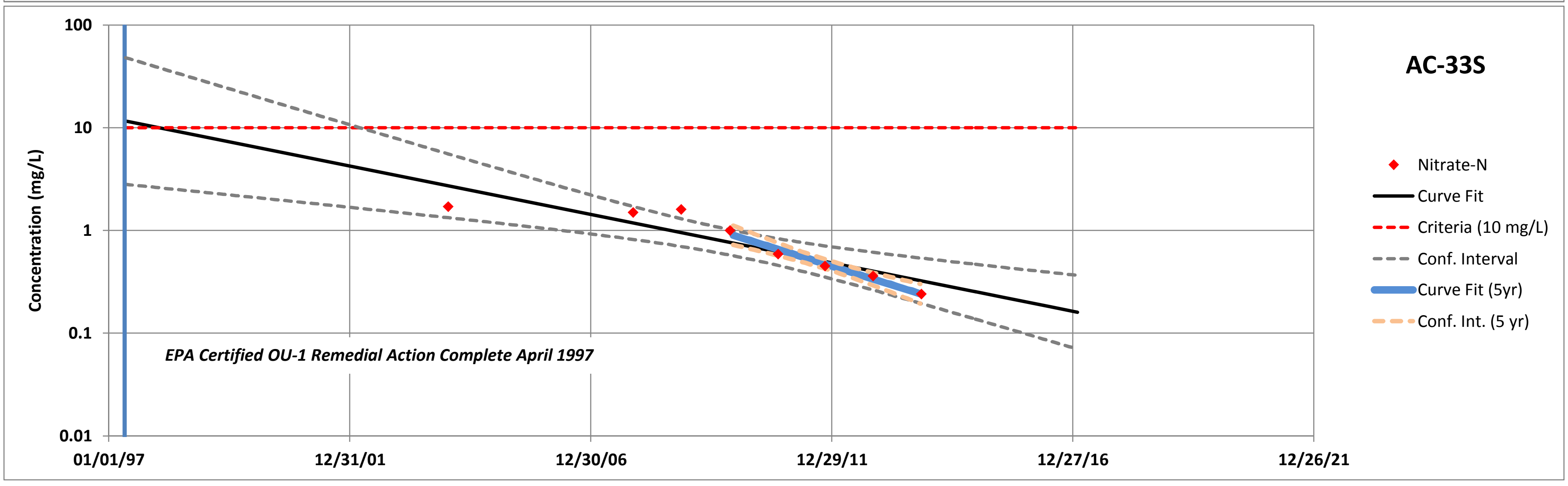
Figure 12

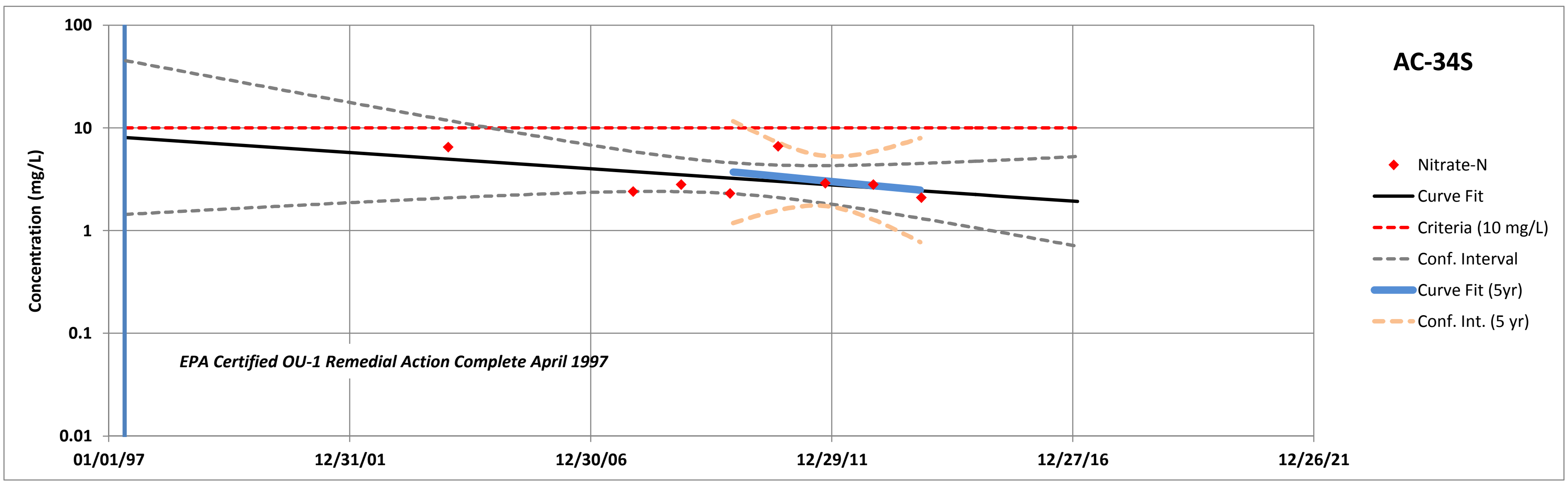
Nitrate-N Trend Plots for Surficial Zone Monitoring Wells, OU-1 Area

Agrico Site
Pensacola, Florida









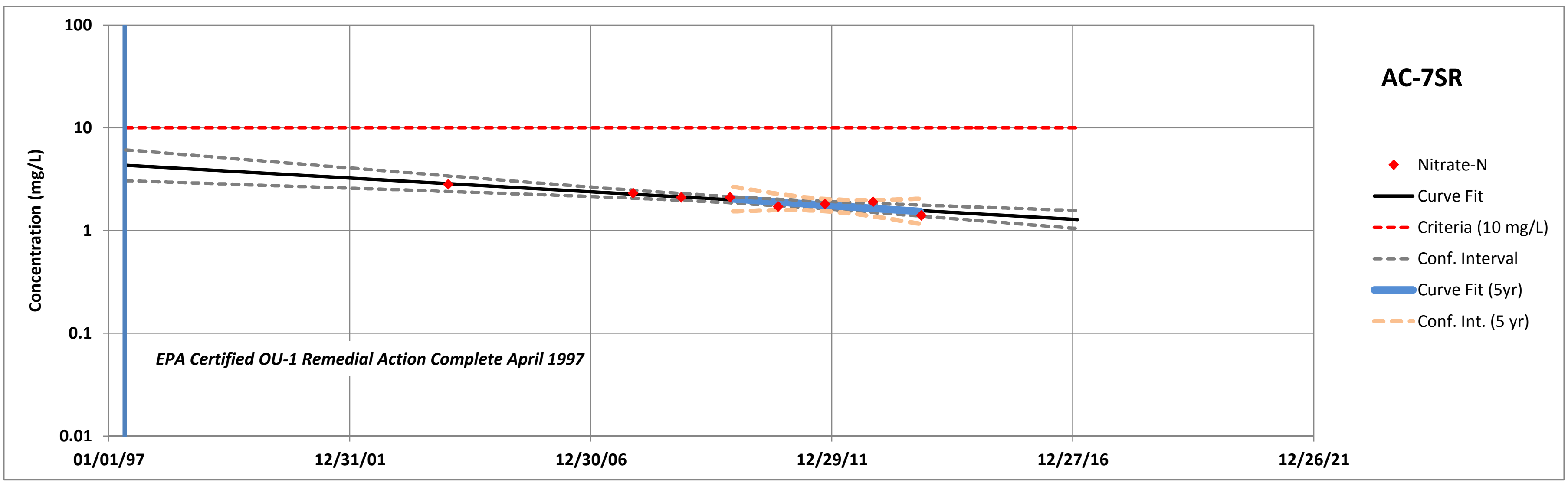
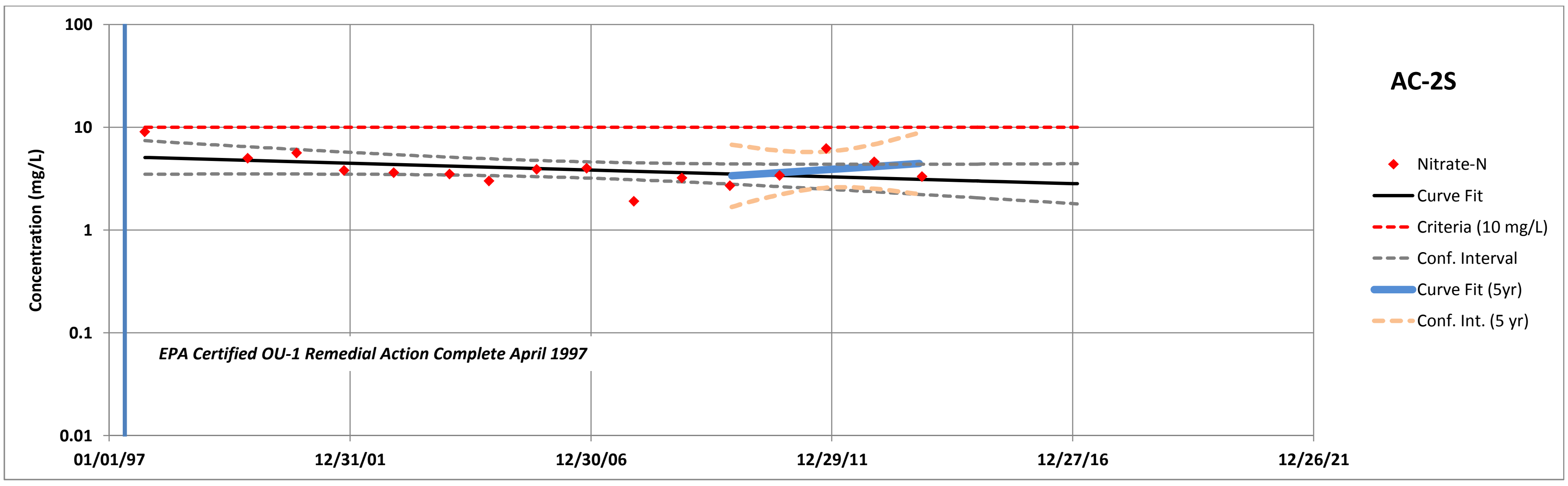


Figure 12 (Cont'd.)

Nitrate-N Trend Plots for Surficial Zone Monitoring Wells, OU-1 Area

Agrico Site
Pensacola, Florida



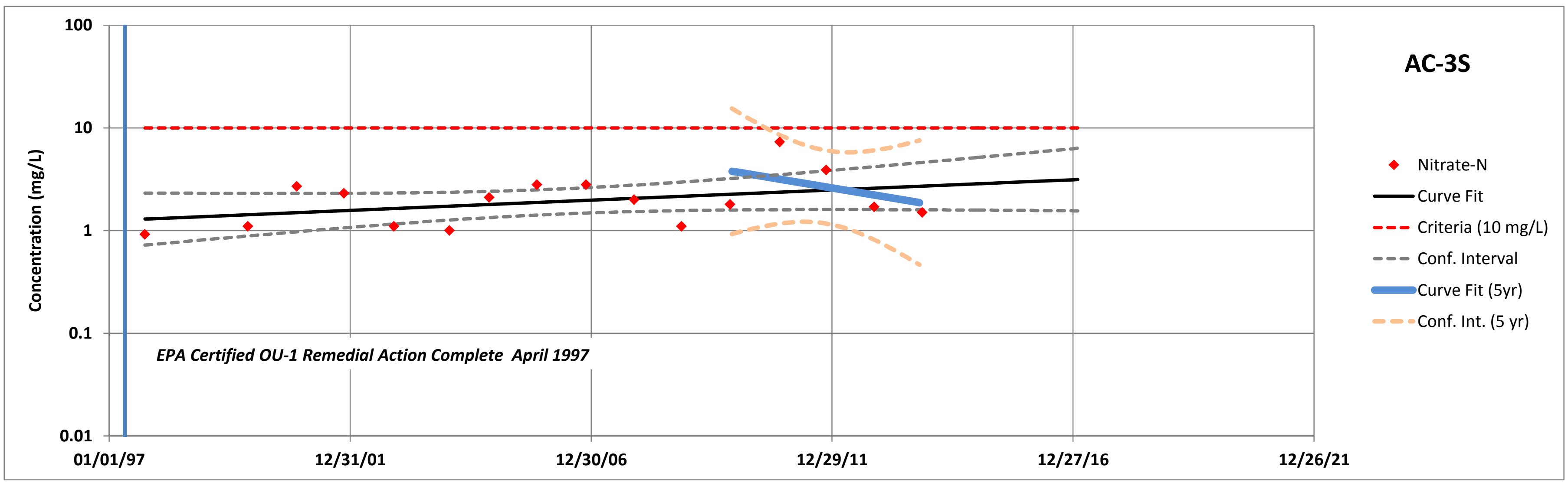
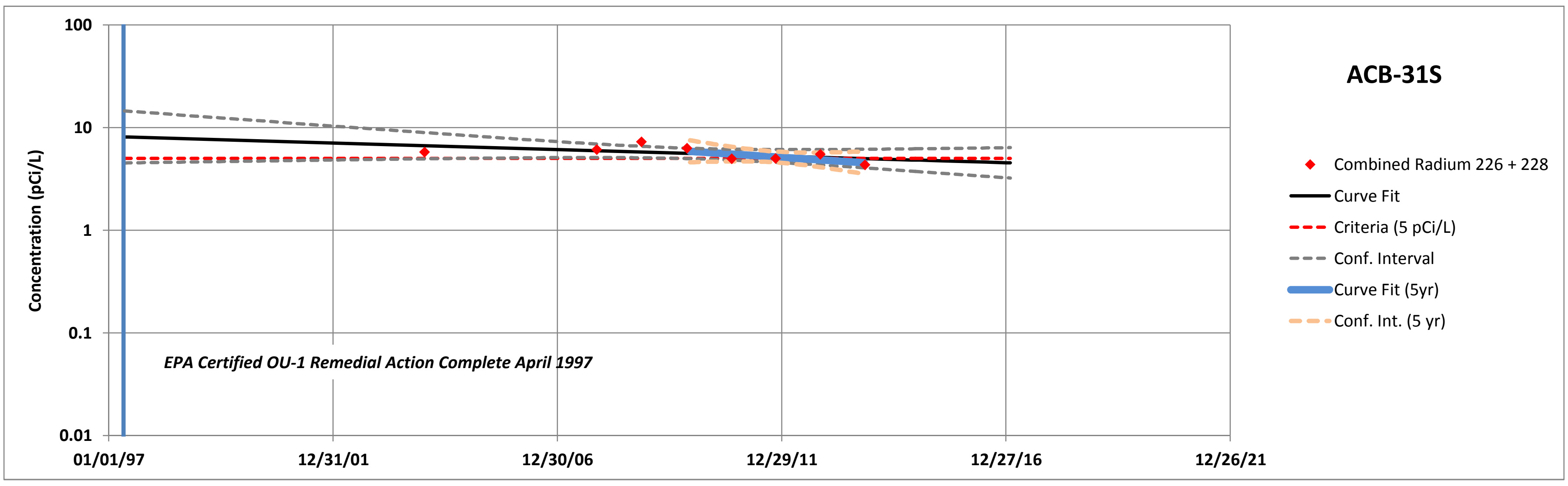
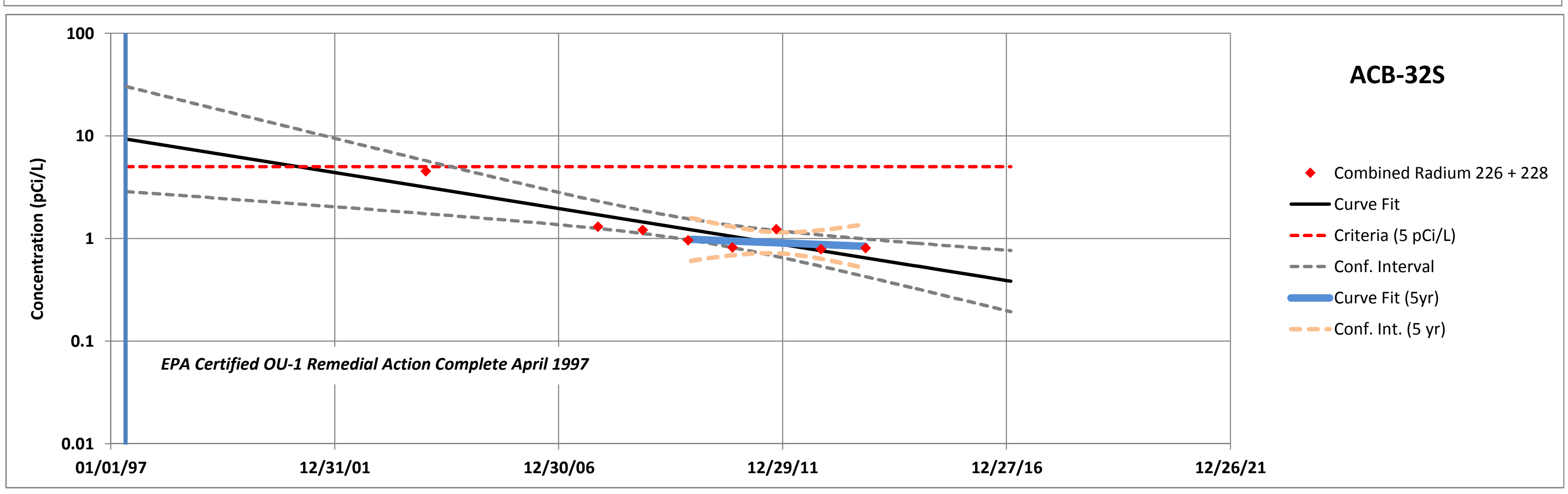


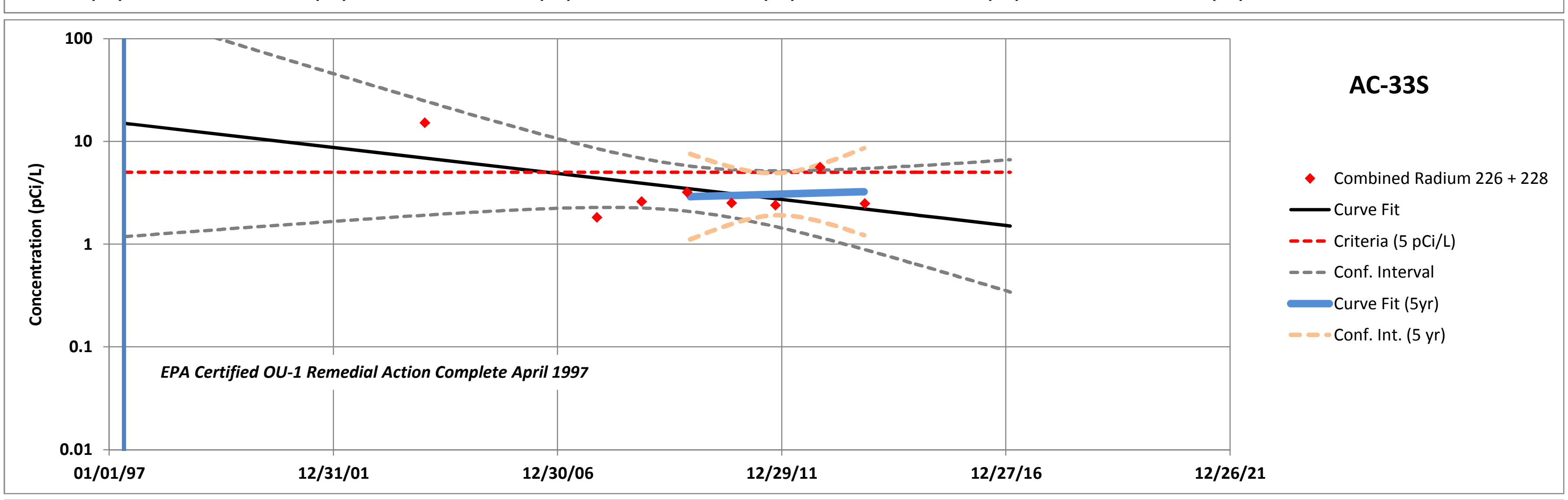
Figure 13

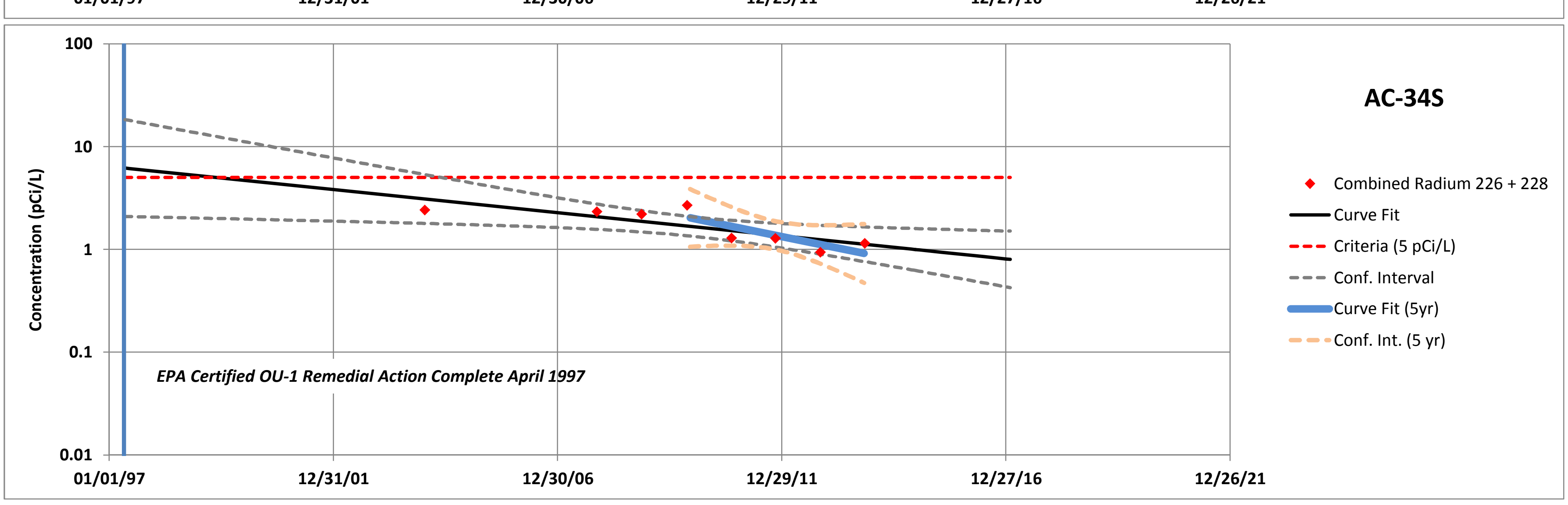
Combined Radium 226 + 228 Trend Plots for Surficial Zone Monitoring Wells, OU-1 Area

Agrico Site
Pensacola, Florida









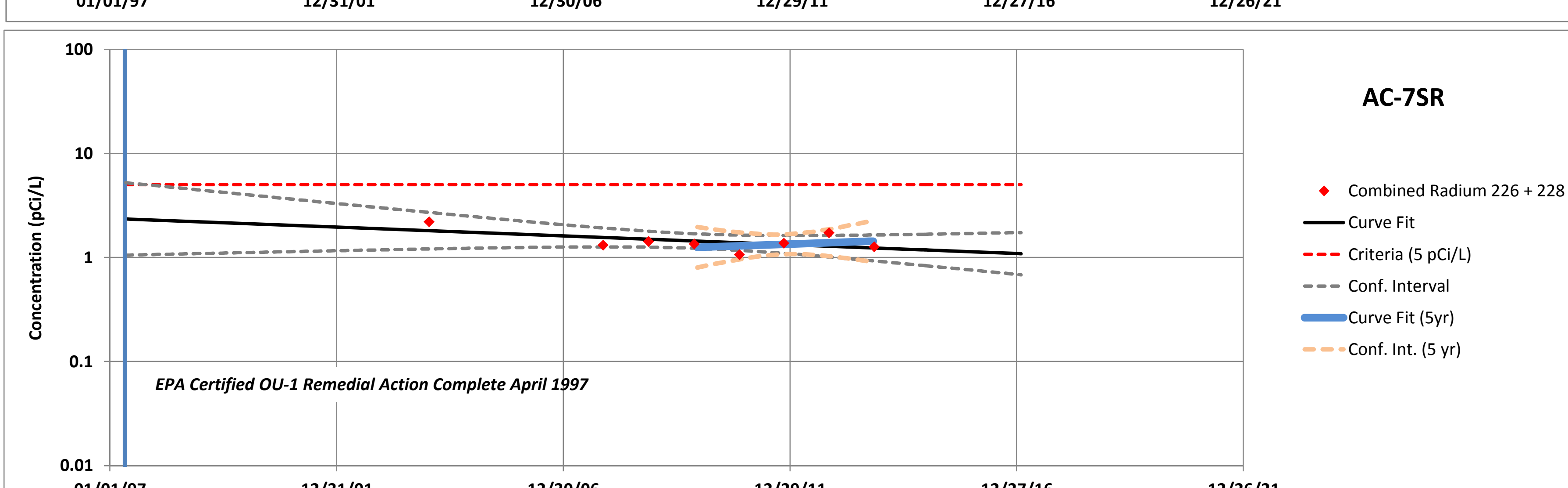
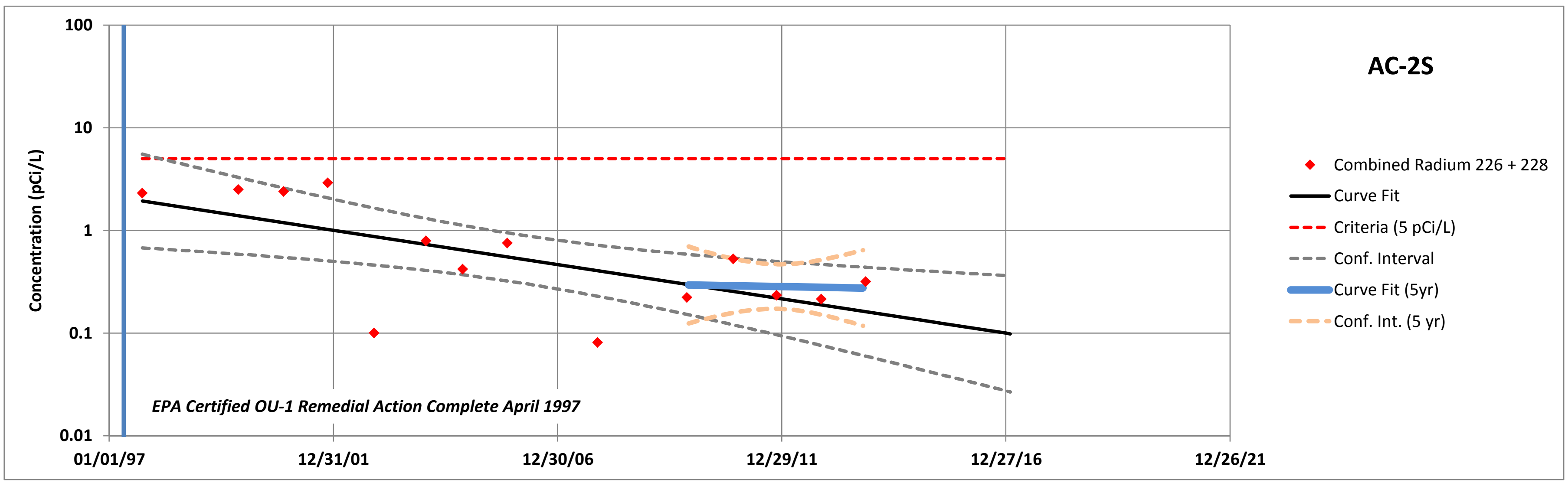
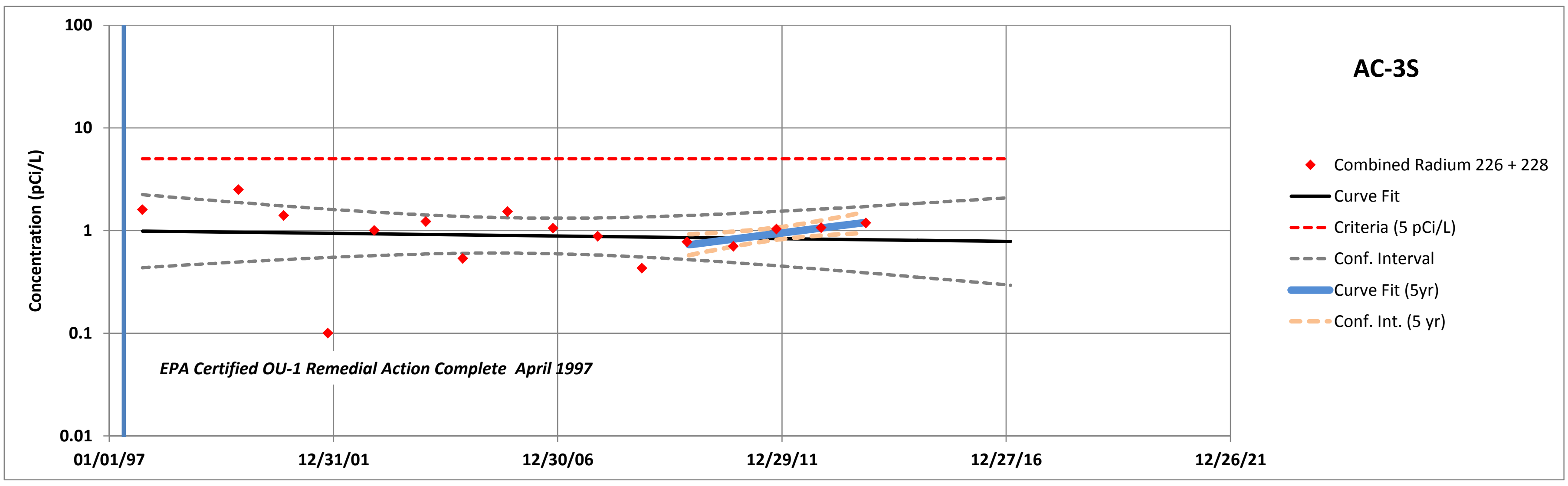


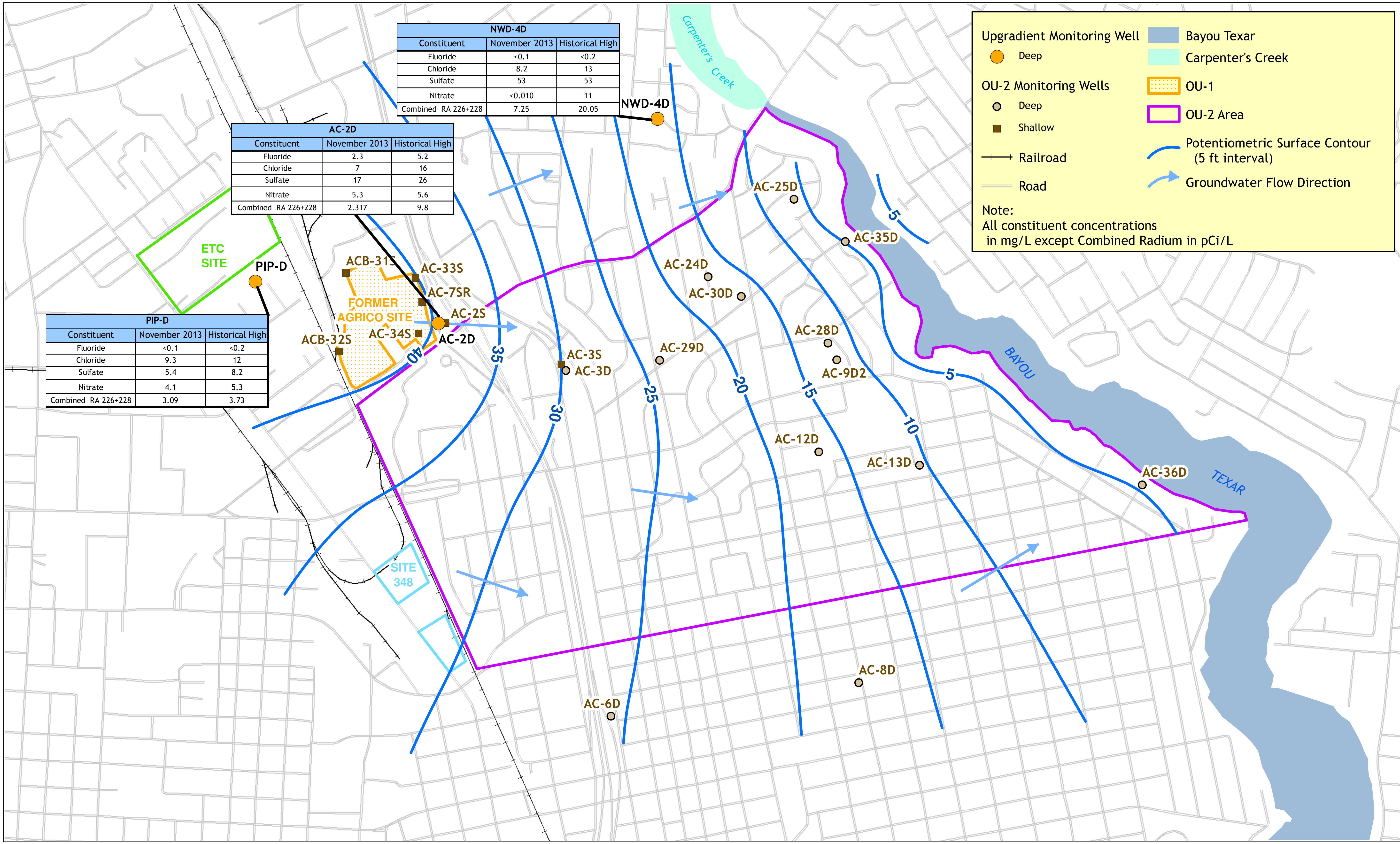
Figure 13 (Cont'd.)

Combined Radium 226 + 228 Trend Plots for Surficial Zone Monitoring Wells, OU-1 Area

Agrico Site
Pensacola, Florida







NWD-4D

Constituent	November 2013	Historical High
Fluoride	<0.1	<0.2
Chloride	8.2	13
Sulfate	53	53
Nitrate	<0.010	11
Combined RA 226+228	7.25	20.05

AC-2D

Constituent	November 2013	Historical High
Fluoride	2.3	5.2
Chloride	7	16
Sulfate	17	26
Nitrate	5.3	5.6
Combined RA 226+228	2.317	9.8

PIP-D

Constituent	November 2013	Historical High
Fluoride	<0.1	<0.2
Chloride	9.3	12
Sulfate	5.4	8.2
Nitrate	4.1	5.3
Combined RA 226+228	3.09	3.73

OU-1 and OU-2
AGRICO SITE
PENSACOLA, FLORIDA

URS

Base Map Data Provided By:
Florida Department of Environmental Protection
and Northwest Florida Water Management District
Aerial Source: Bing Image Server

N W E S

0 500 1,000 2,000 Feet

TREND PLOT LOCATIONS
MAIN PRODUCING ZONE
UPGRADIENT AREA

FIGURE 14

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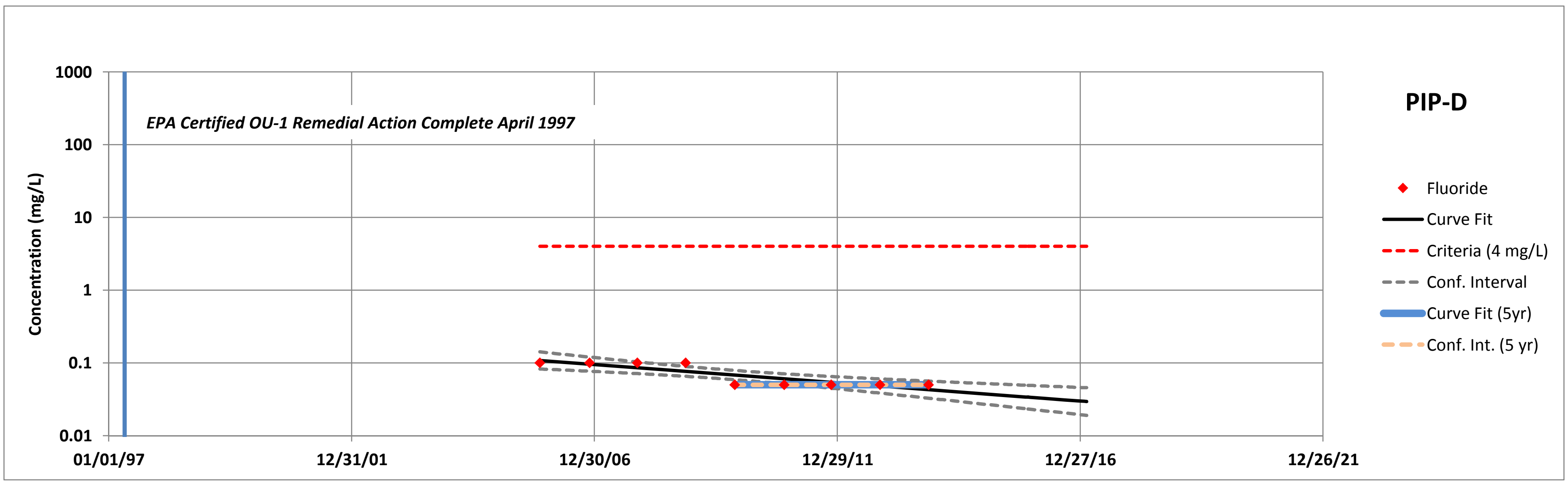
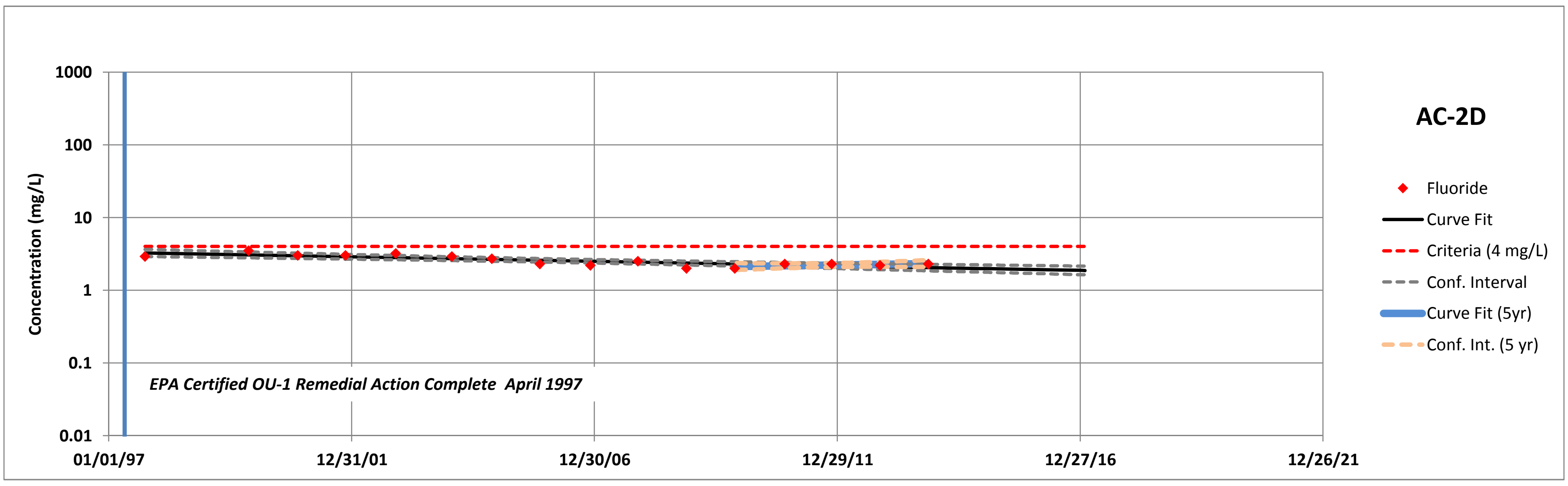
Figure 15

Fluoride Trend Plots for Main Producing Zone Monitoring Wells in Upgradient Area

Agrico Site
Pensacola, Florida





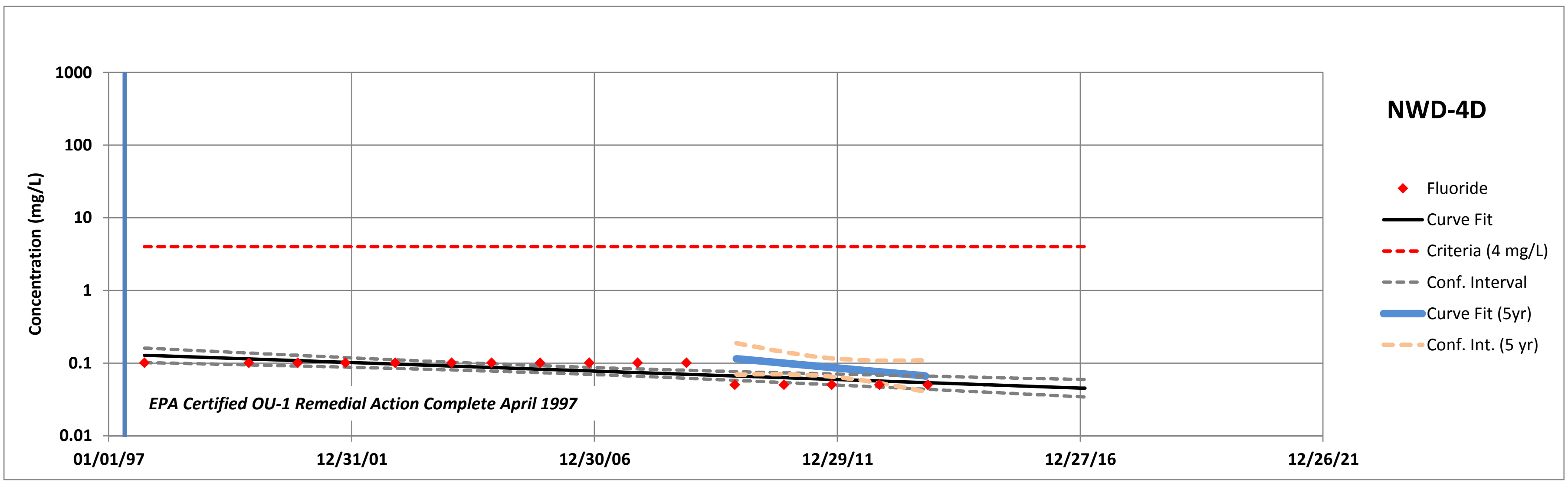
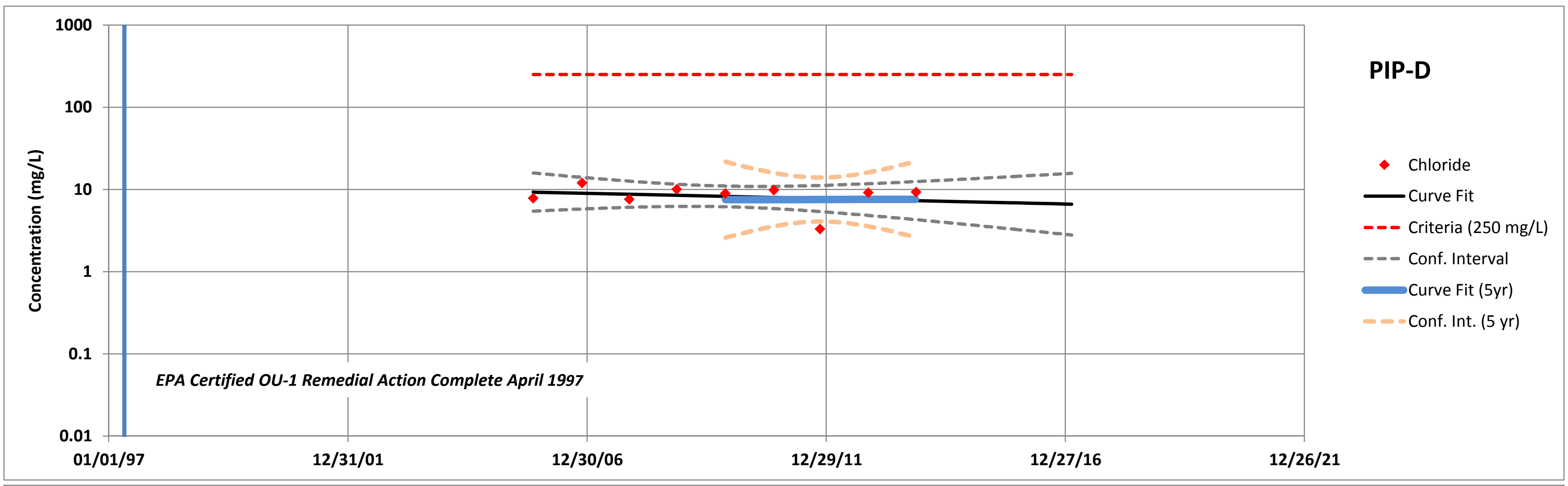
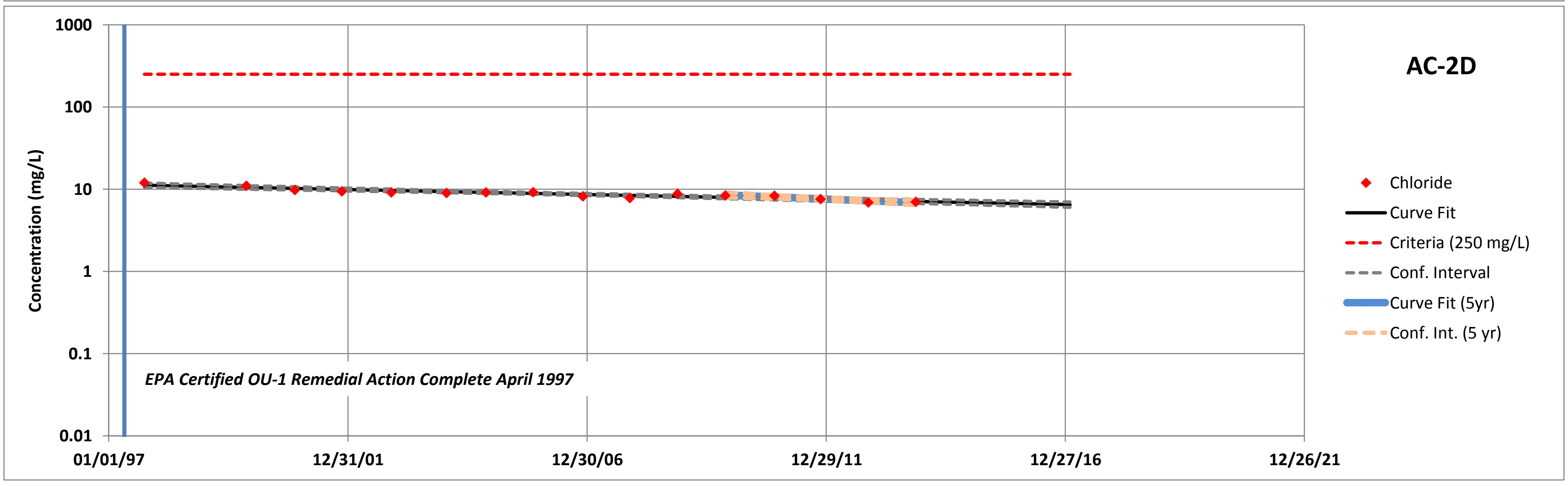


Figure 16

Chloride Trend Plots for Main Producing Zone Monitoring Wells in Upgradient Area

Agrico Site
Pensacola, Florida





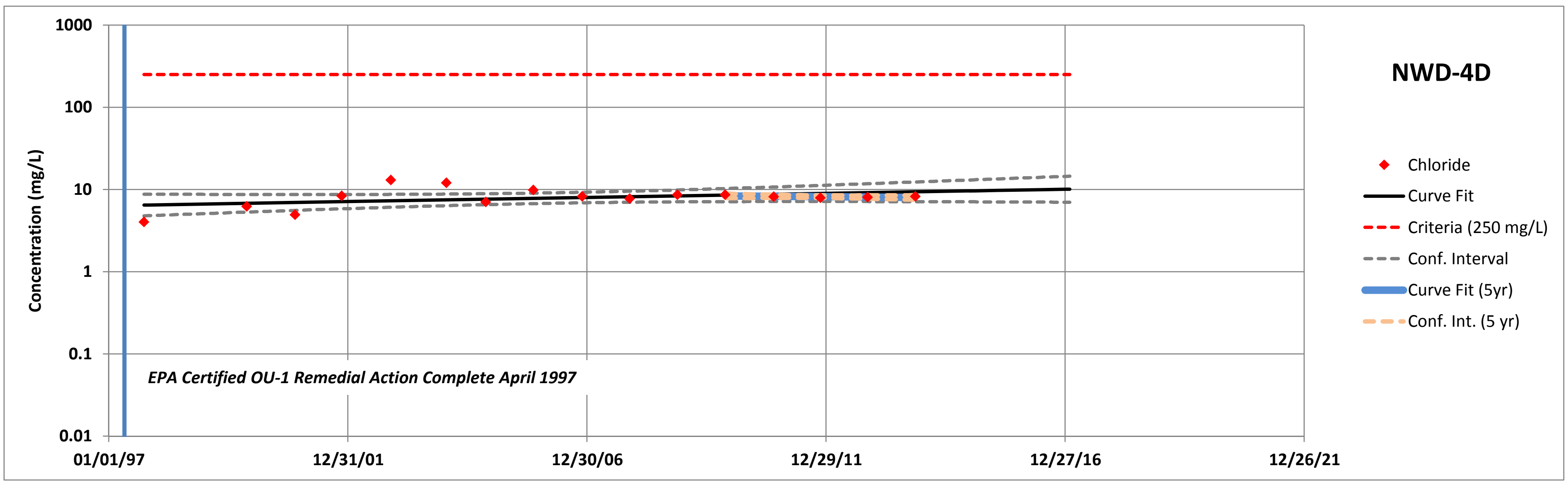
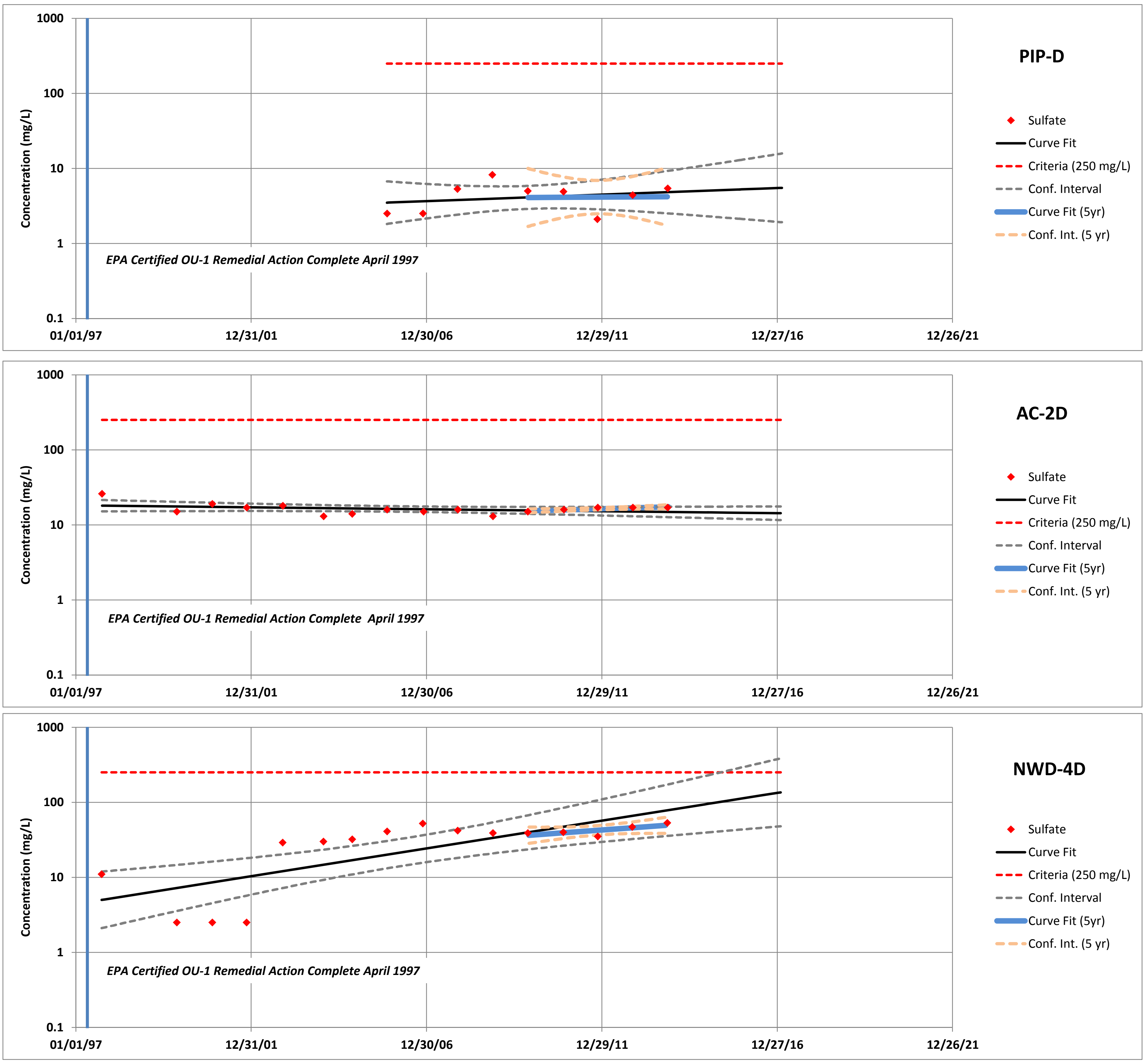


Figure 17

Sulfate Trend Plots for Main Producing Zone Monitoring Wells in Upgradient Area

Agrico Site
Pensacola, Florida

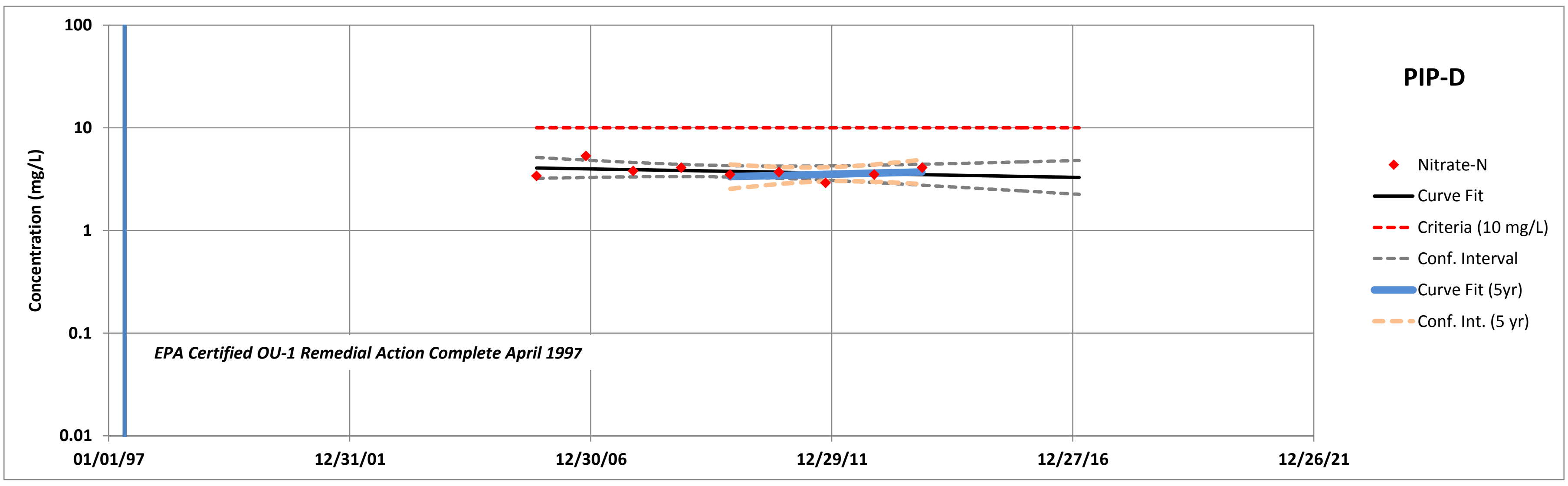


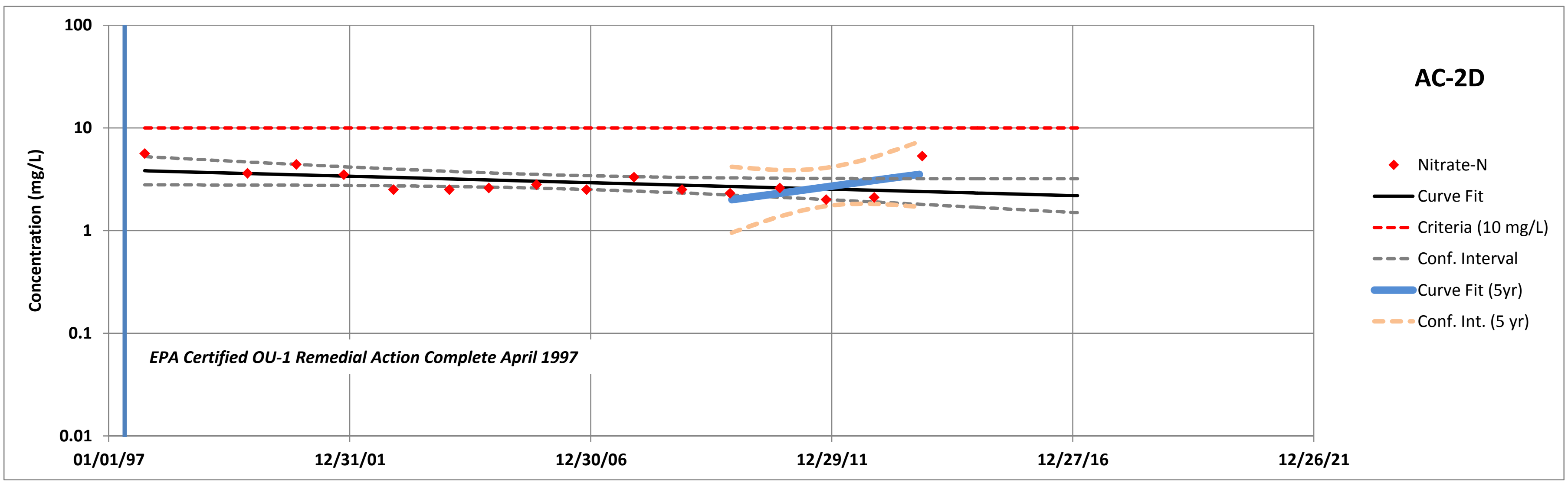
S:\WilliamsConoco\Deliverables\2014\2013 Annual Report\Agrico_TrendPlotting\Extracted data_11_13_v1.xlsx

Figure 18

Nitrate-N Trend Plots for Main Producing Zone Monitoring Wells in Upgradient Area

Agrico Site
Pensacola, Florida





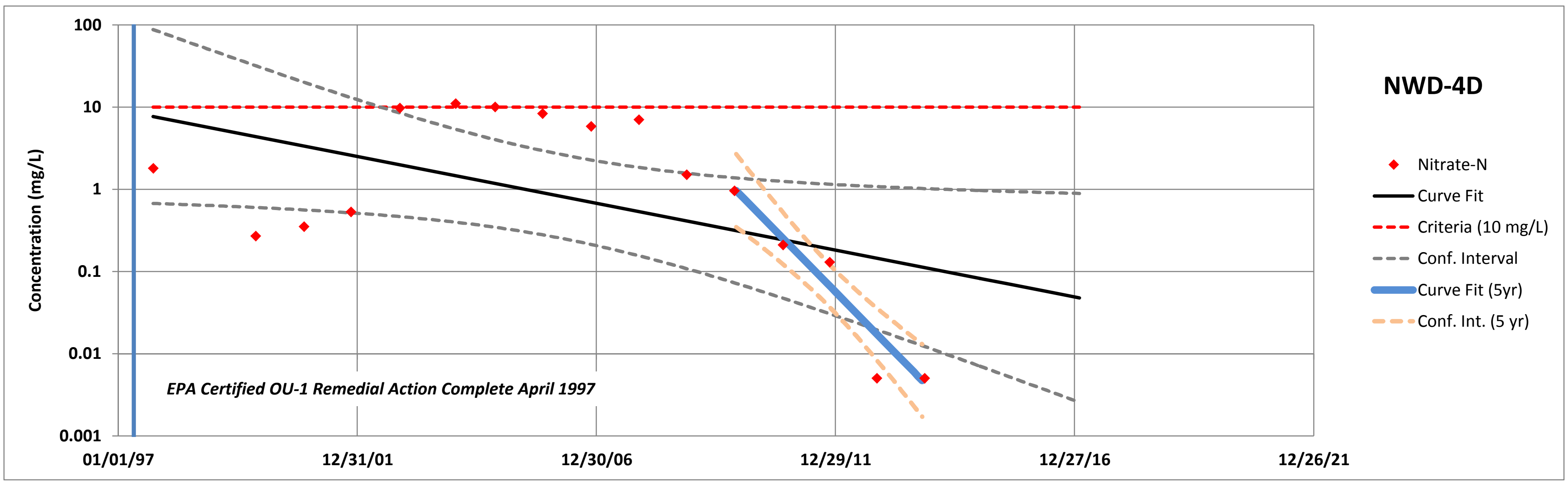
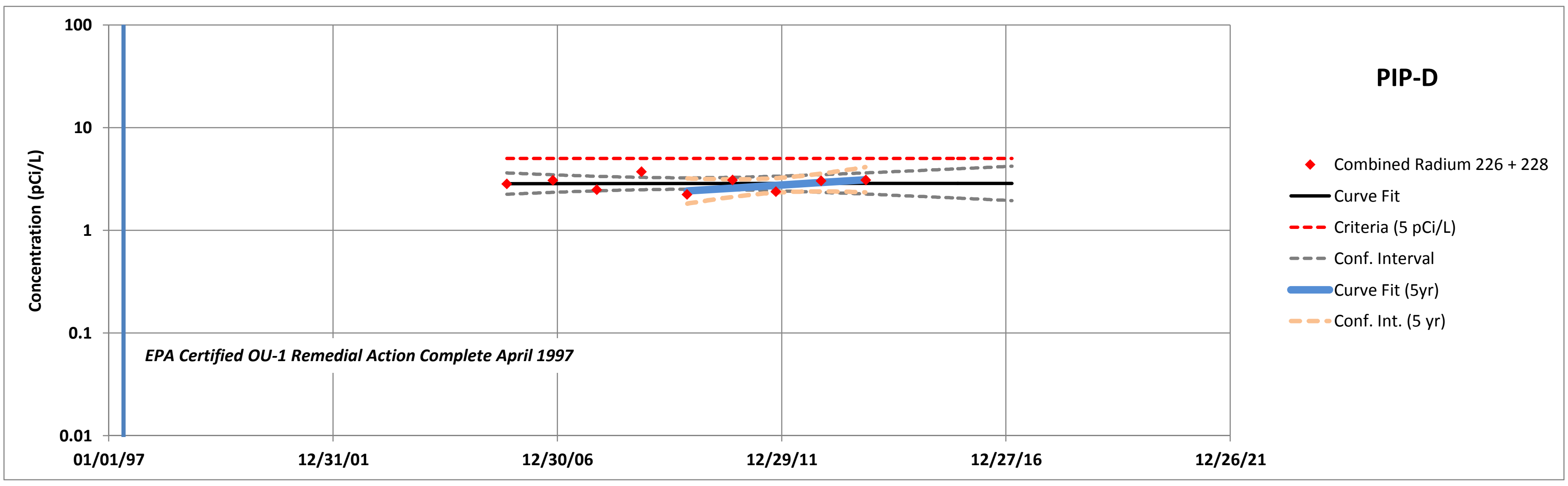
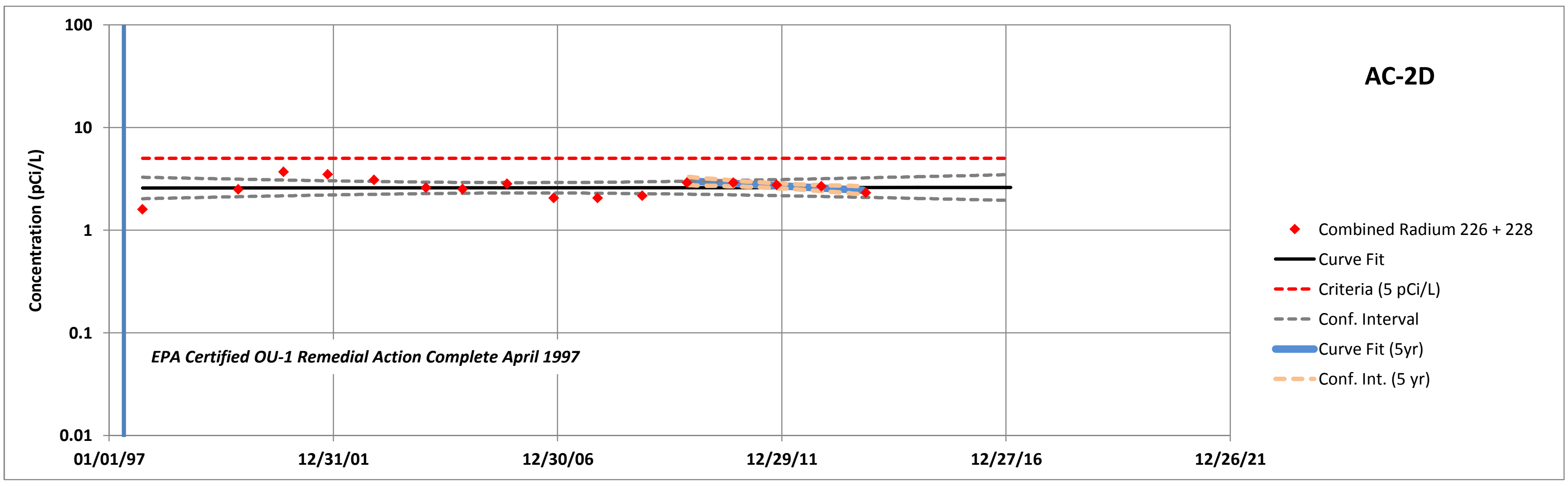


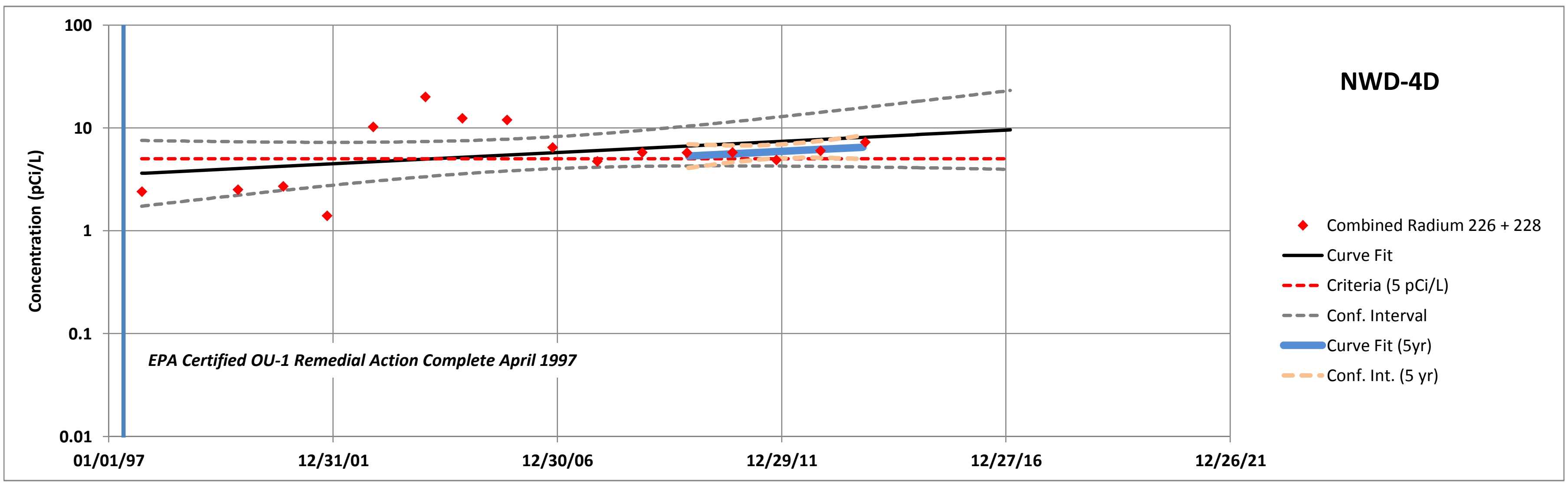
Figure 19

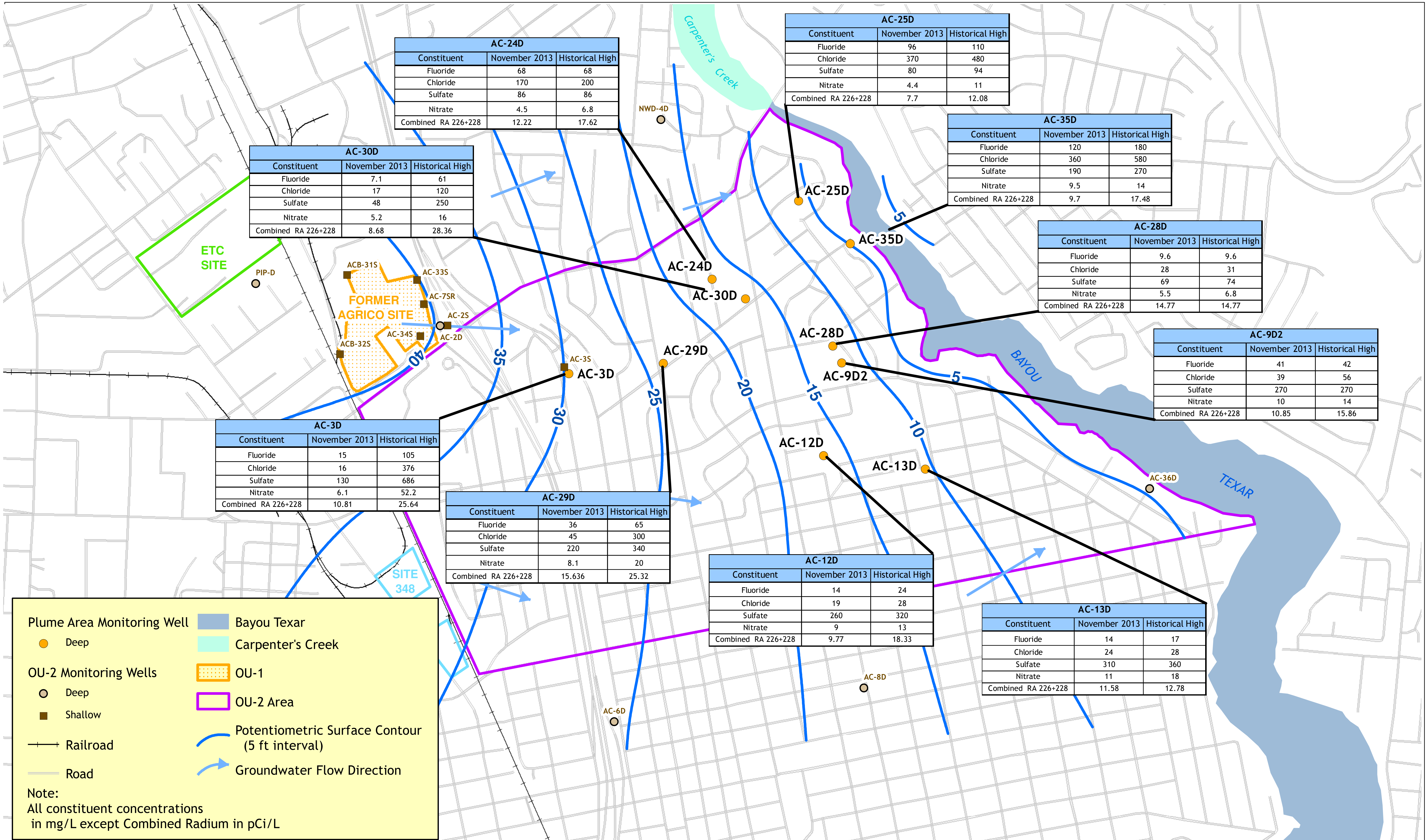
Combined Radium 226 + 228 Trend Plots for Main Producing Zone Monitoring Wells in Upgradient Area

Agrico Site
Pensacola, Florida









AC-24D

Constituent	November 2013	Historical High
Fluoride	68	68
Chloride	170	200
Sulfate	86	86
Nitrate	4.5	6.8
Combined RA 226+228	12.22	17.62

AC-25D

Constituent	November 2013	Historical High
Fluoride	96	110
Chloride	370	480
Sulfate	80	94
Nitrate	4.4	11
Combined RA 226+228	7.7	12.08

AC-35D

Constituent	November 2013	Historical High
Fluoride	120	180
Chloride	360	580
Sulfate	190	270
Nitrate	9.5	14
Combined RA 226+228	9.7	17.48

AC-30D

Constituent	November 2013	Historical High
Fluoride	7.1	61
Chloride	17	120
Sulfate	48	250
Nitrate	5.2	16
Combined RA 226+228	8.68	28.36

AC-28D

Constituent	November 2013	Historical High
Fluoride	9.6	9.6
Chloride	28	31
Sulfate	69	74
Nitrate	5.5	6.8
Combined RA 226+228	14.77	14.77

AC-9D2

Constituent	November 2013	Historical High
Fluoride	41	42
Chloride	39	56
Sulfate	270	270
Nitrate	10	14
Combined RA 226+228	10.85	15.86

AC-3D

Constituent	November 2013	Historical High
Fluoride	15	105
Chloride	16	376
Sulfate	130	686
Nitrate	6.1	52.2
Combined RA 226+228	10.81	25.64

AC-29D

Constituent	November 2013	Historical High
Fluoride	36	65
Chloride	45	300
Sulfate	220	340
Nitrate	8.1	20
Combined RA 226+228	15.636	25.32

AC-12D

Constituent	November 2013	Historical High
Fluoride	14	24
Chloride	19	28
Sulfate	260	320
Nitrate	9	13
Combined RA 226+228	9.77	18.33

AC-13D

Constituent	November 2013	Historical High
Fluoride	14	17
Chloride	24	28
Sulfate	310	360
Nitrate	11	18
Combined RA 226+228	11.58	12.78

OU-1 and OU-2 AGRICO SITE PENSACOLA, FLORIDA

URS

Base Map Data Provided By:
Florida Department of Environmental Protection
and Northwest Florida Water Management District
Aerial Source: Bing Image Server

N W E S

0 500 1,000 2,000 Feet

TRENDS PLOT LOCATIONS MAIN PRODUCING ZONE PLUME AREA

FIGURE 20

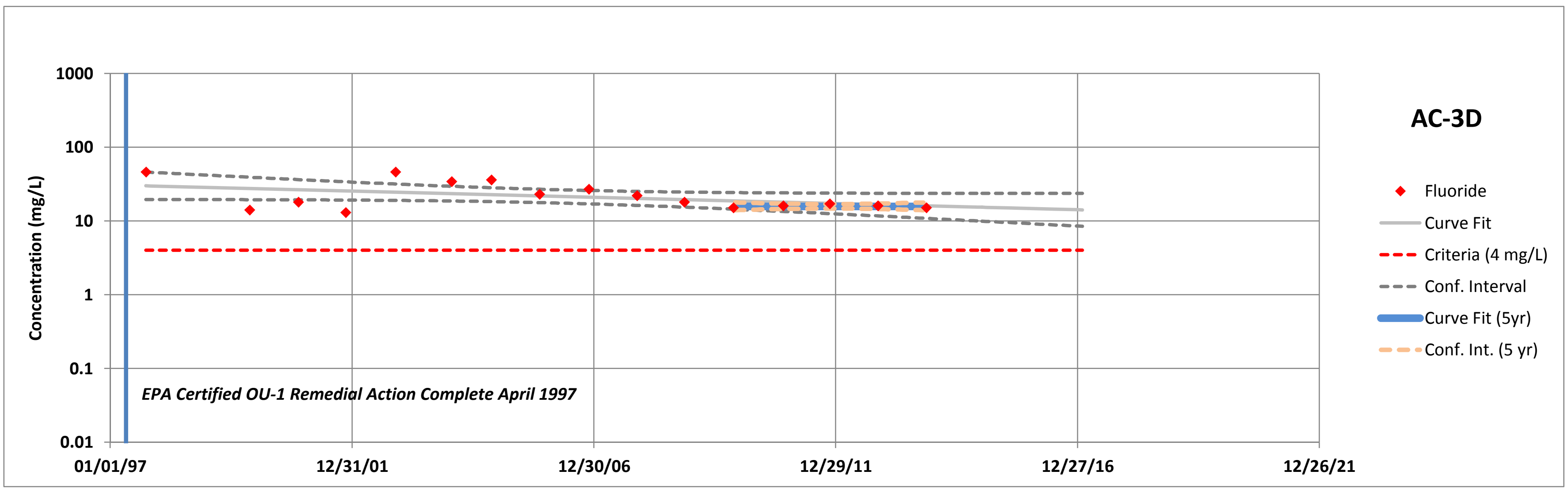
ashlyn_mitchell - Tallahassee - 2/27/2014

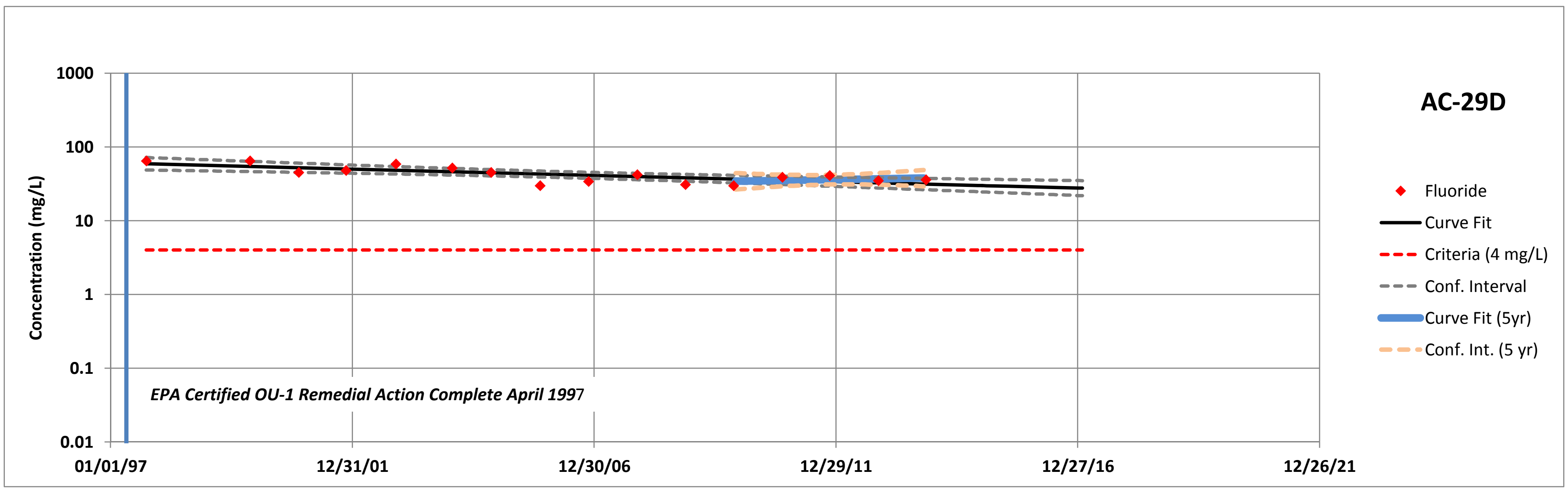
Path: G:\Agrico\ou2\deliverables\aprs\annual_reports\2013\fig_20_trendplots_MPZ_PLUME_TEST.mxd

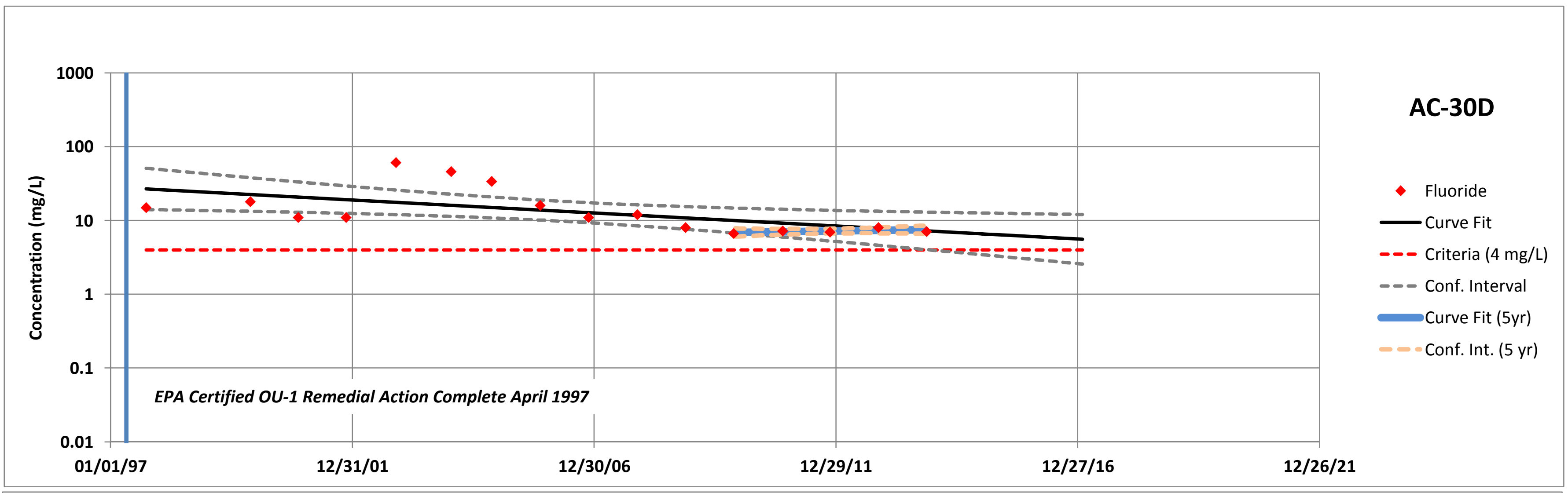
Figure 21

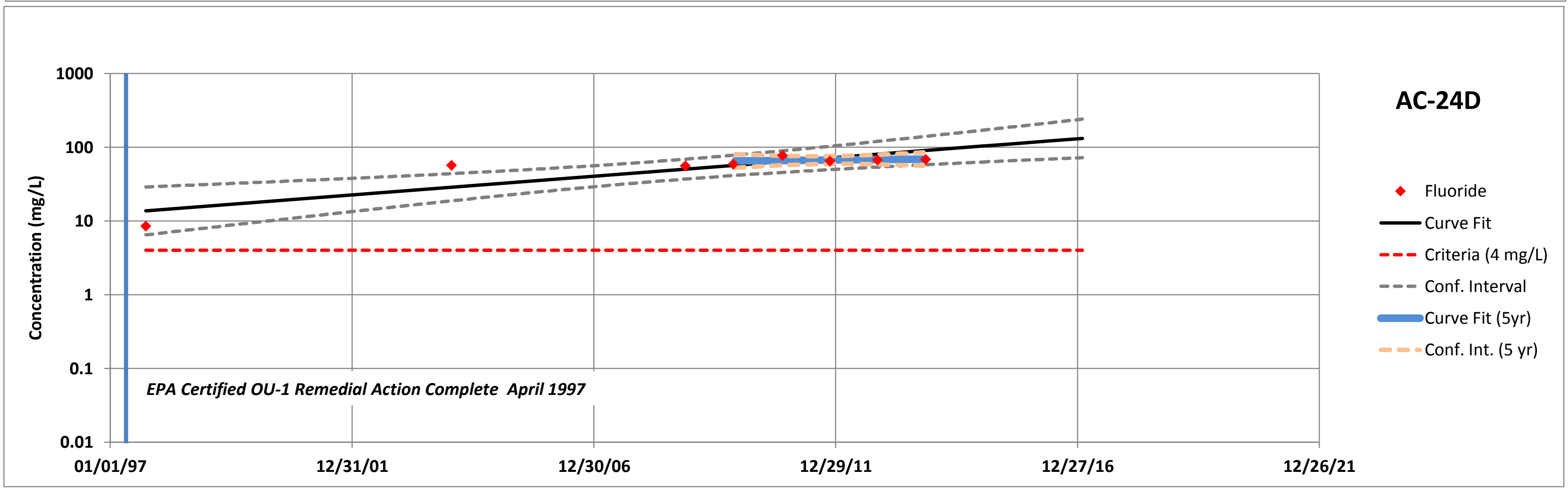
Fluoride Trend Plots for Main Producing Zone Monitoring Wells Inside Plume Area

Agrico Site
Pensacola, Florida









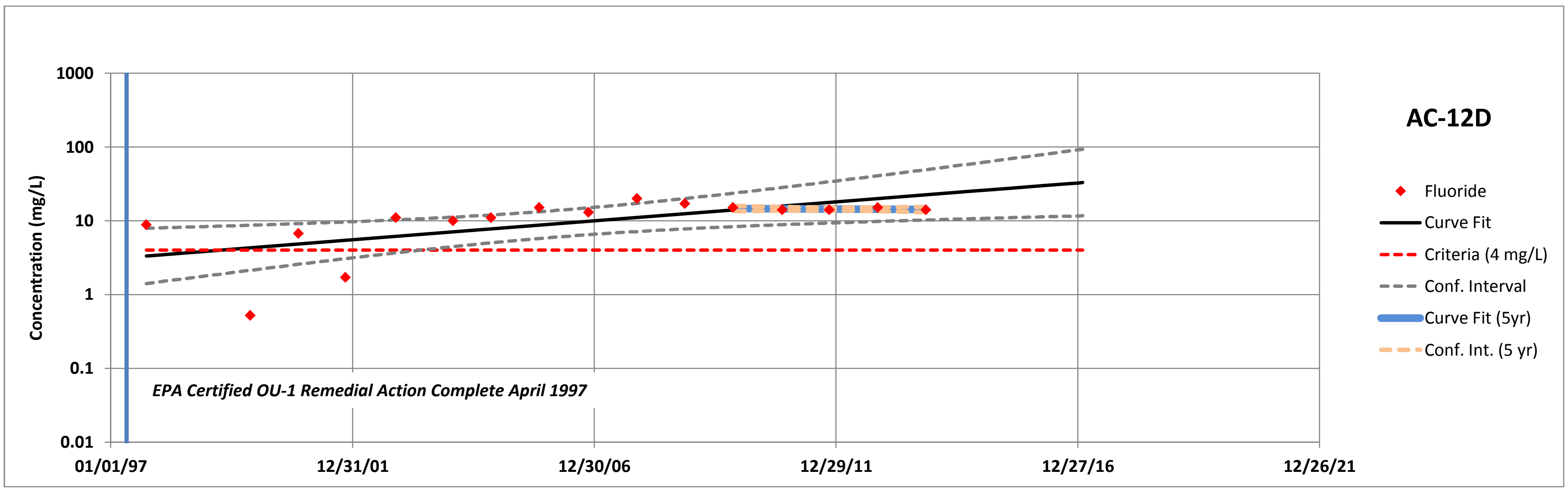
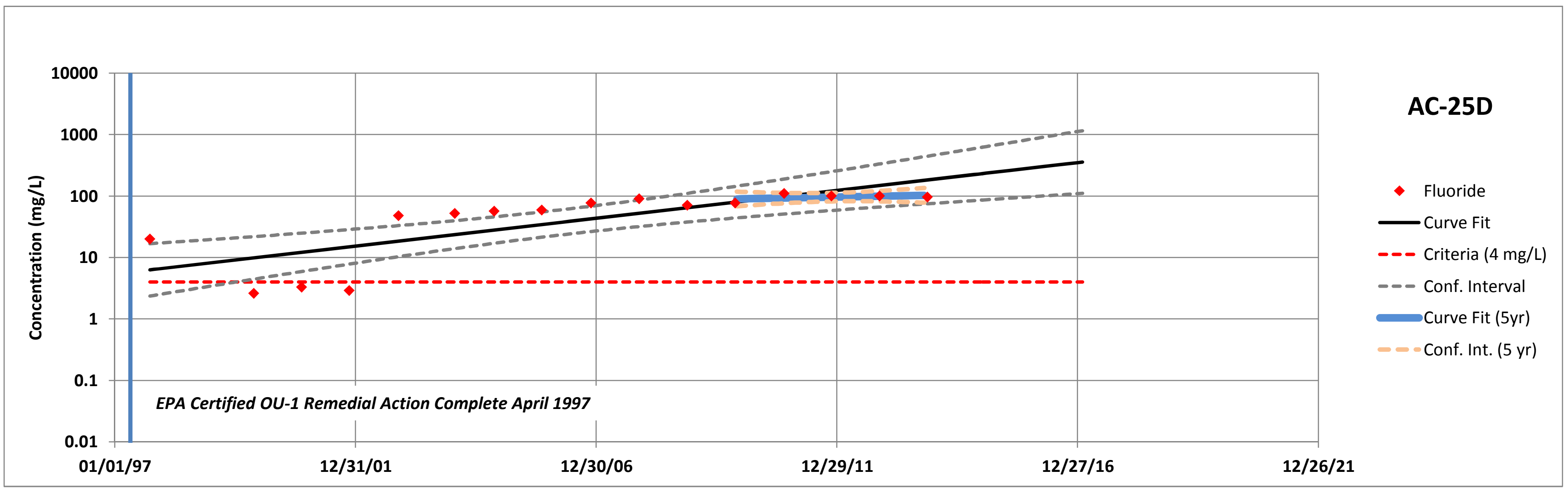
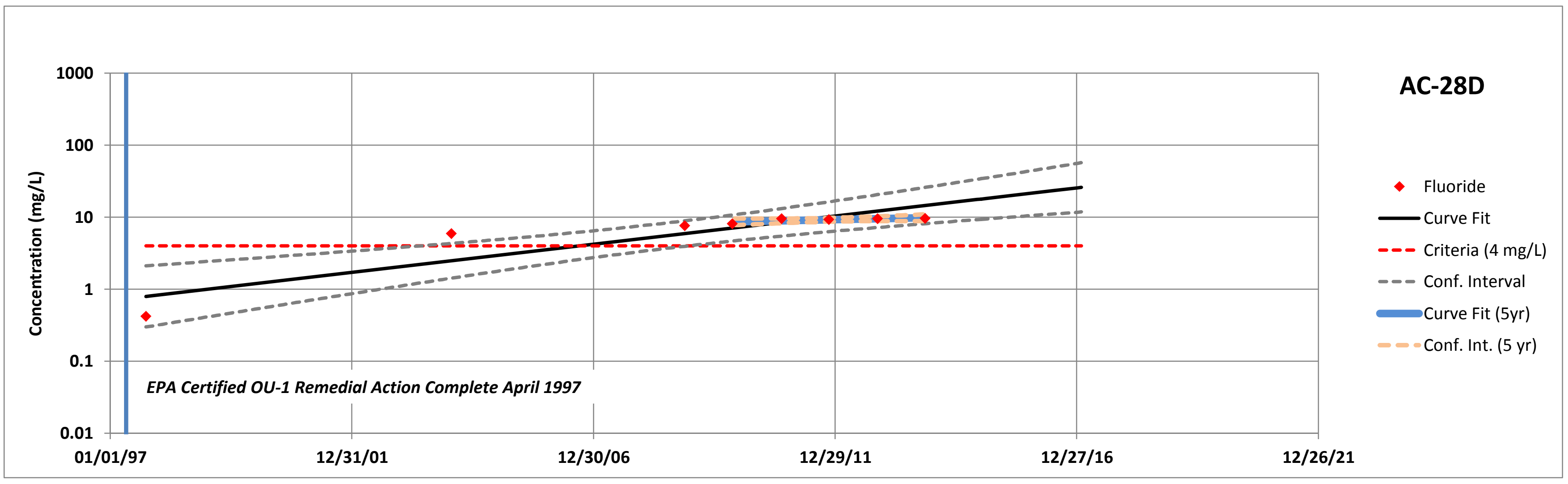


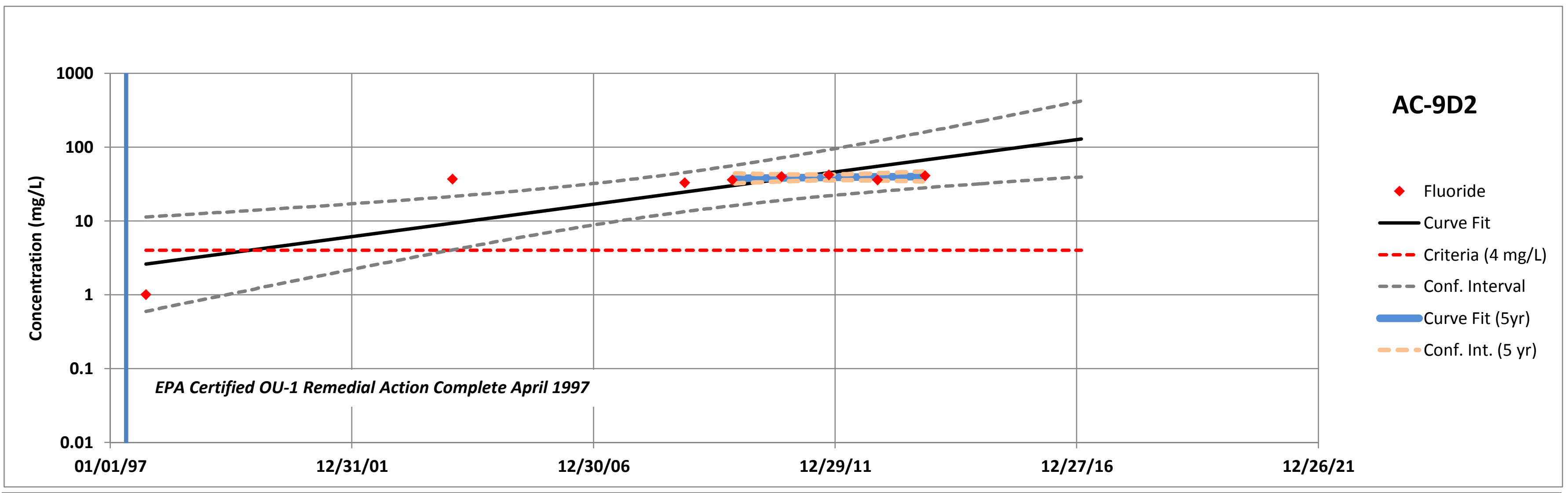
Figure 21 (Cont'd.)

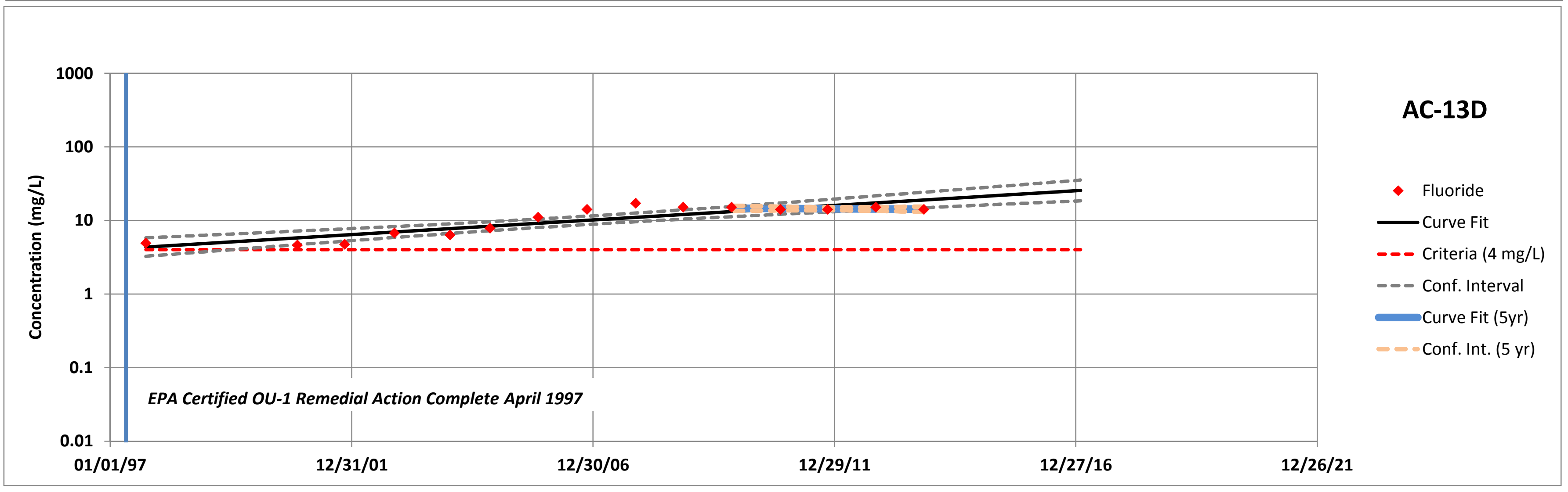
Fluoride Trend Plots for Main Producing Zone Monitoring Wells Inside Plume Area

Agrico Site
Pensacola, Florida









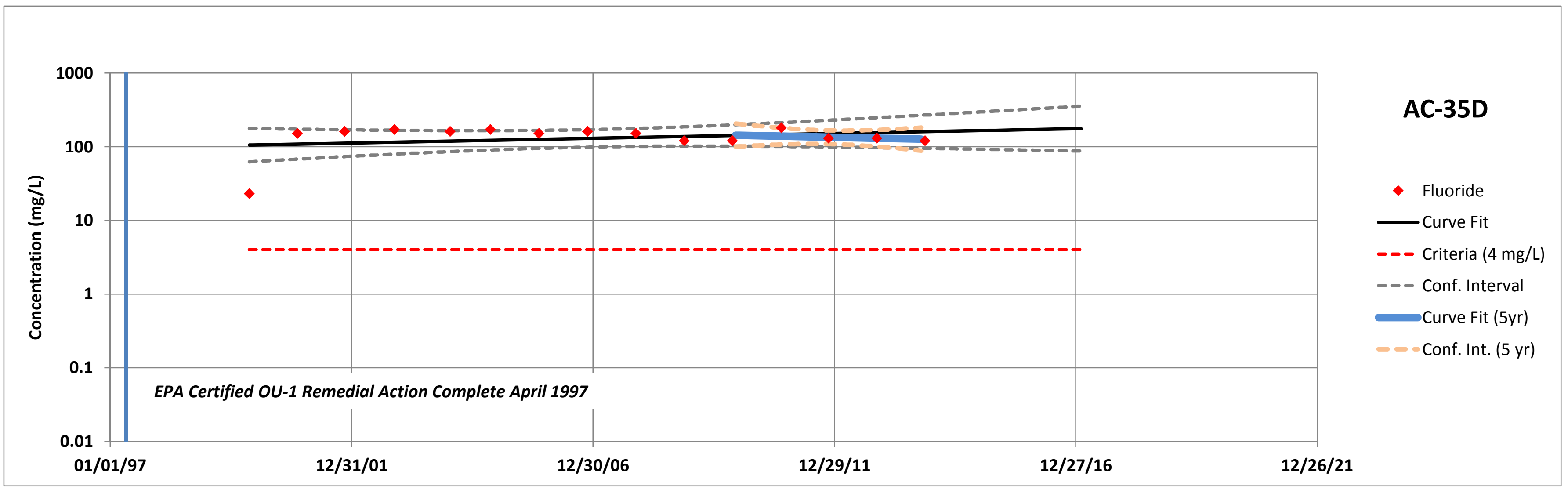
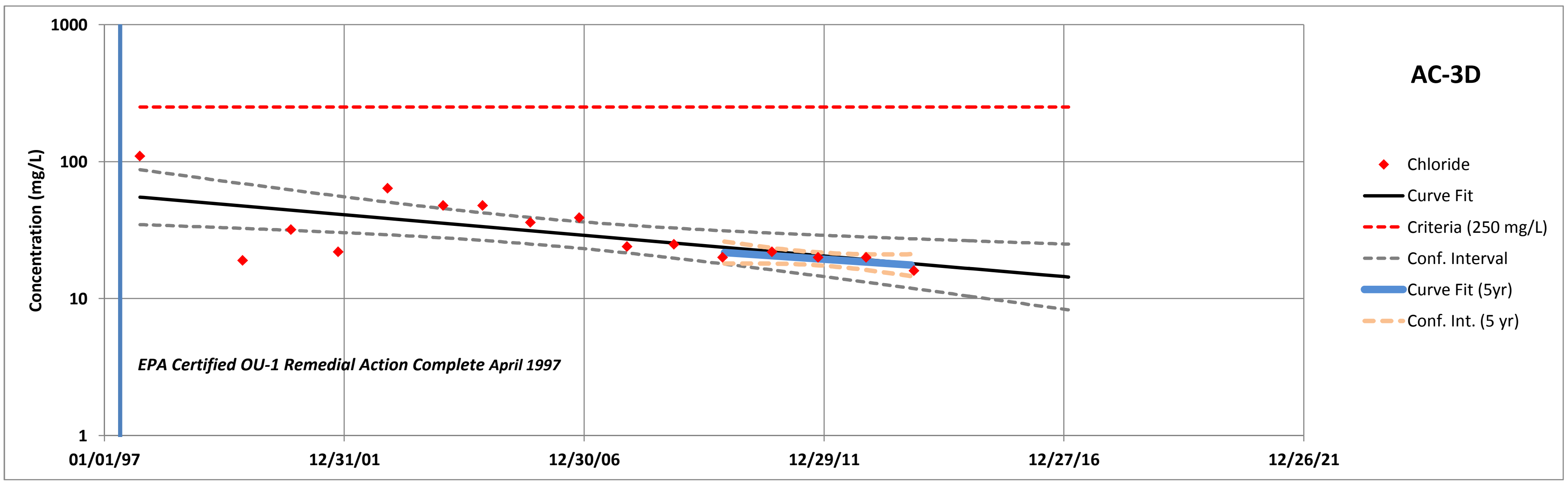
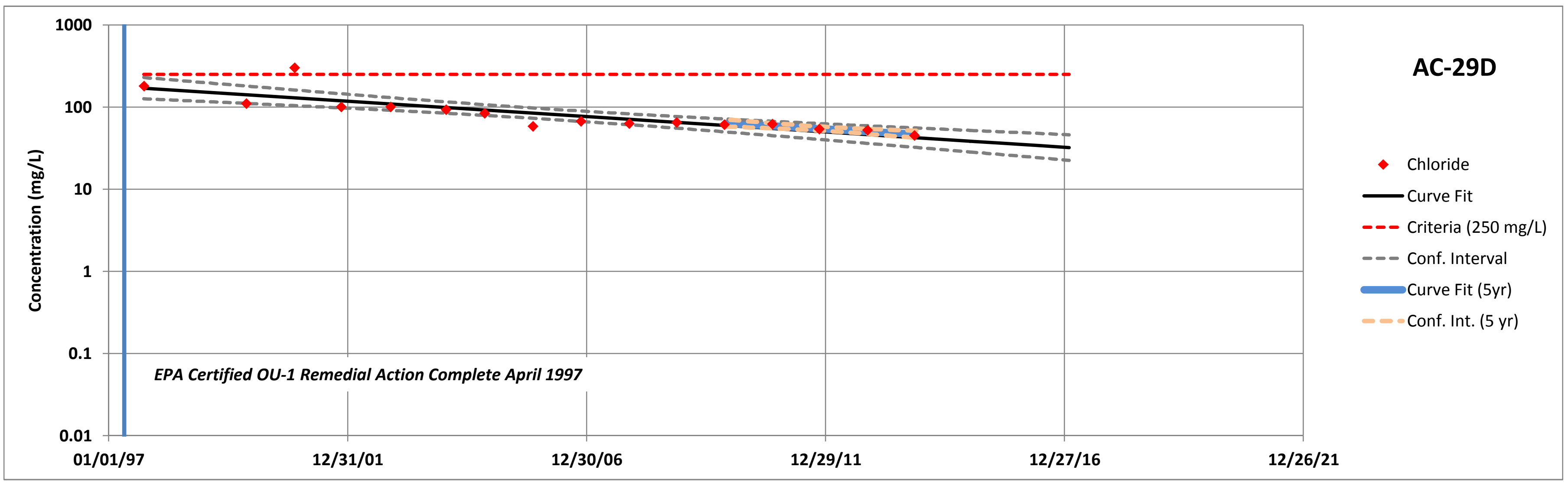


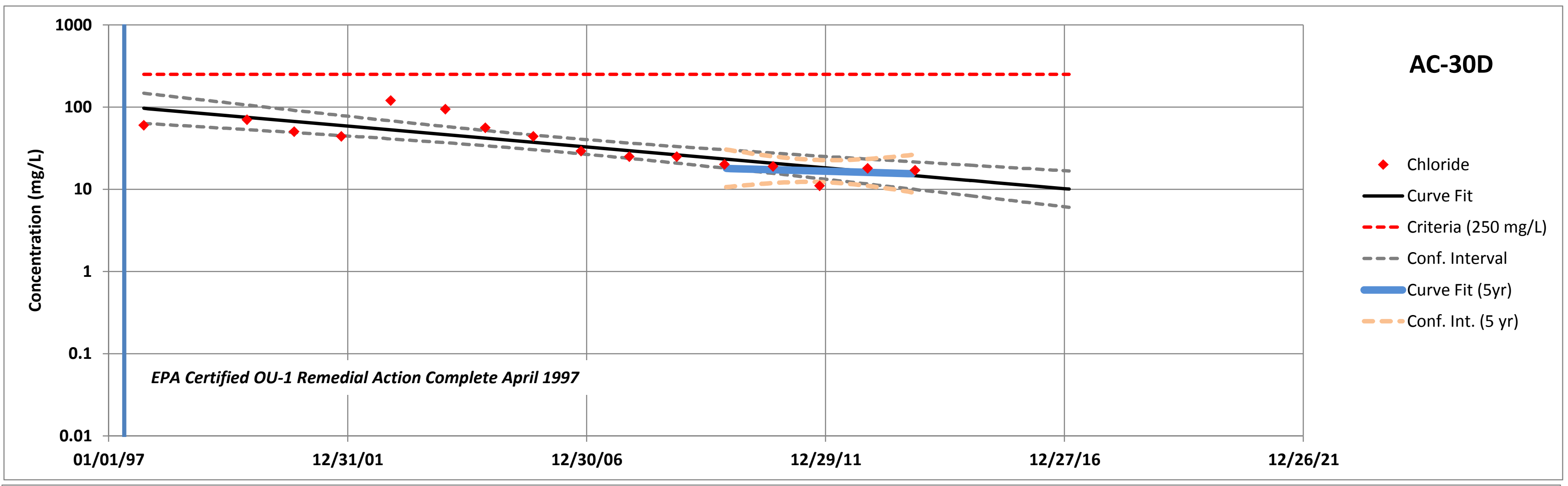
Figure 22

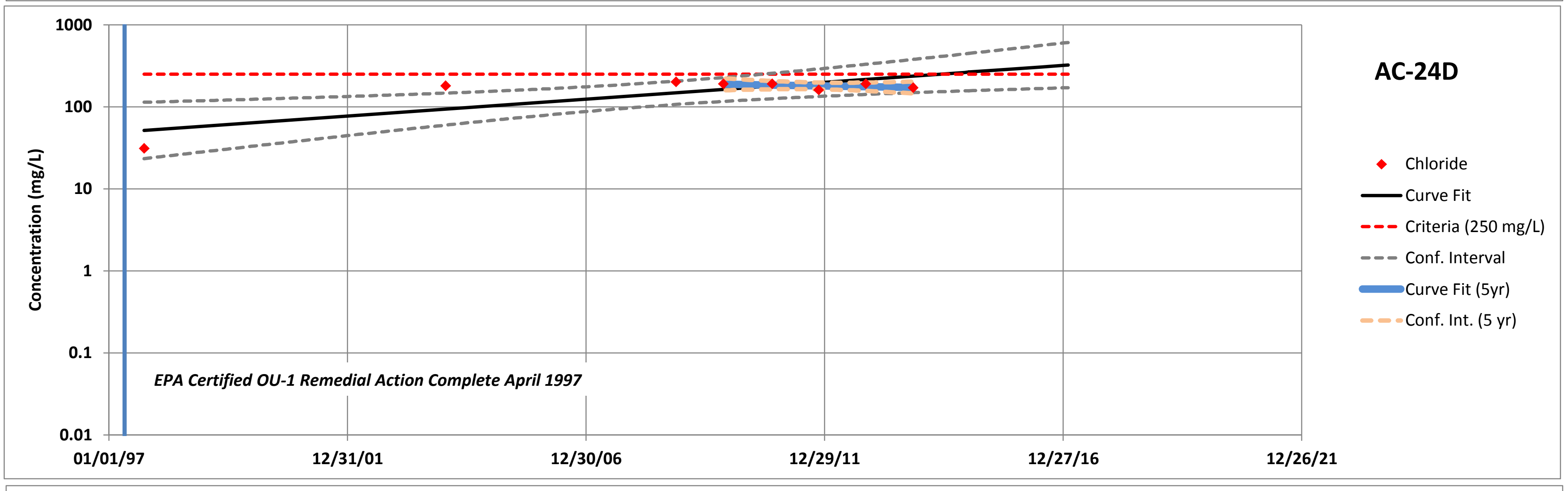
Chloride Trend Plots for Main Producing Zone Monitoring Wells Inside Plume Area

Agrico Site
Pensacola, Florida









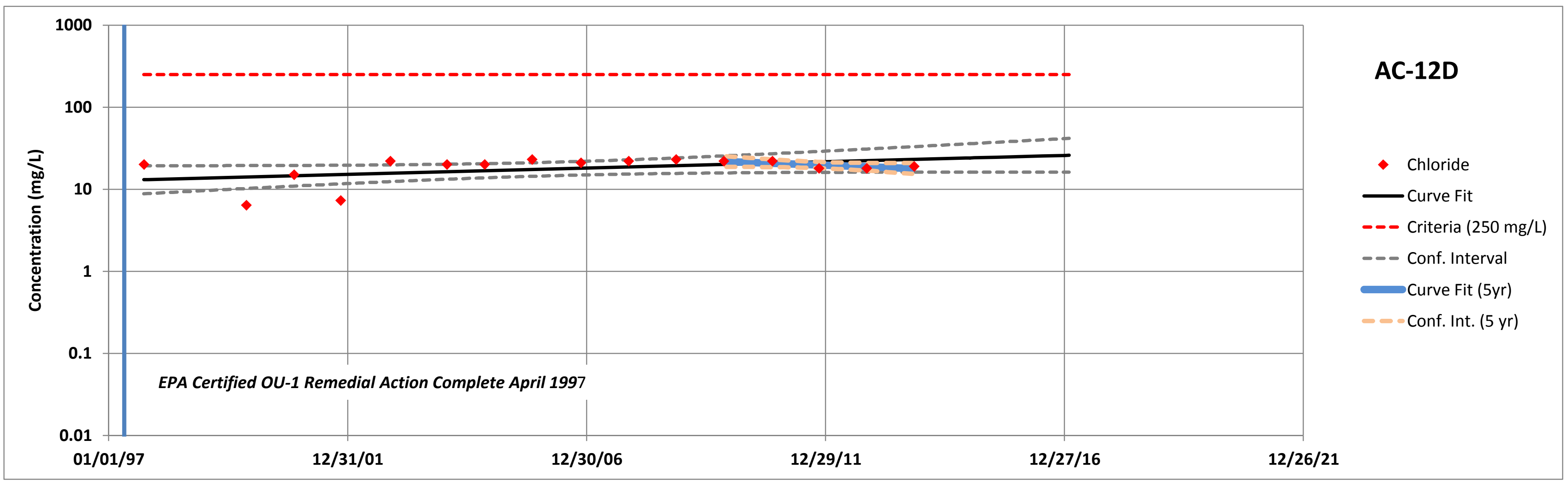
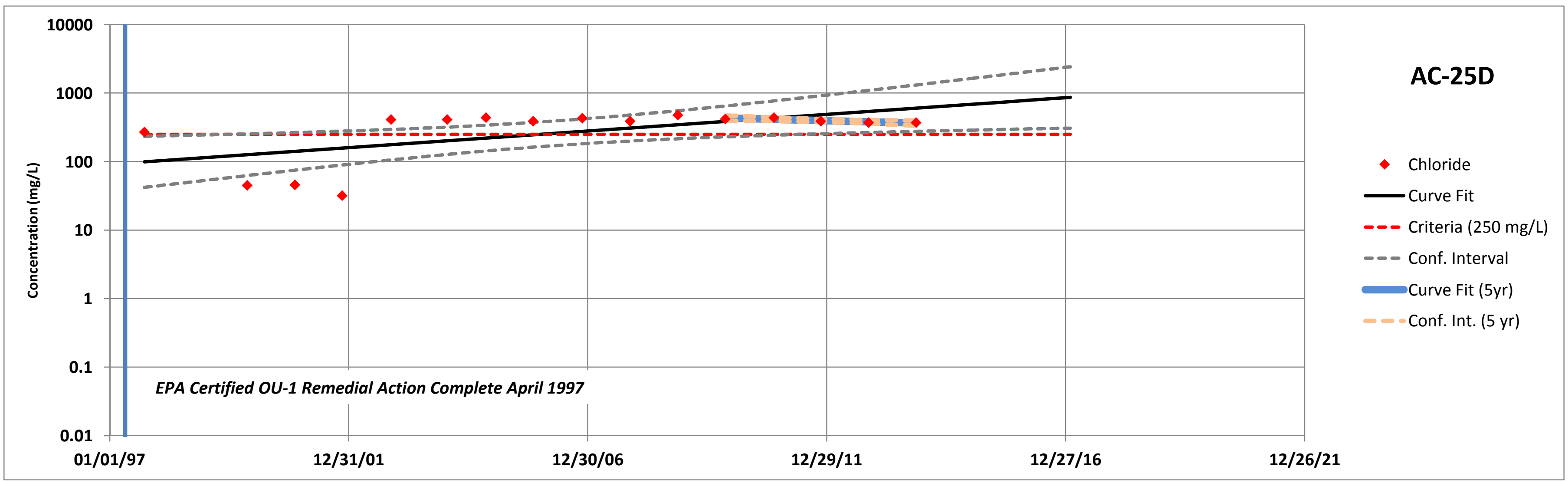
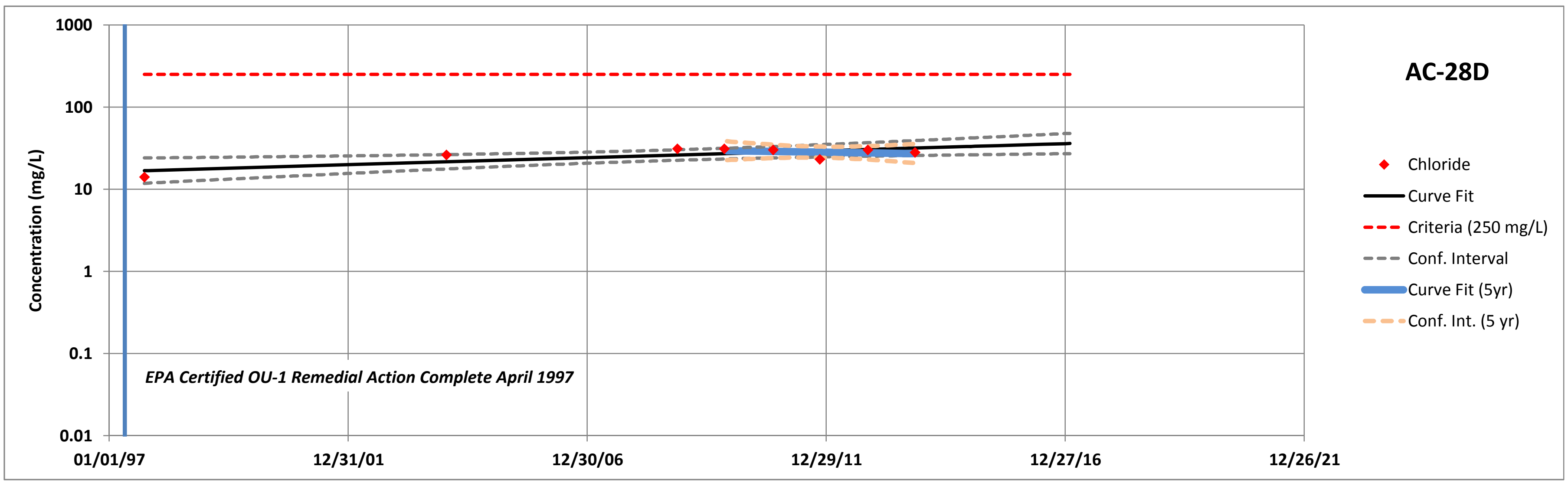


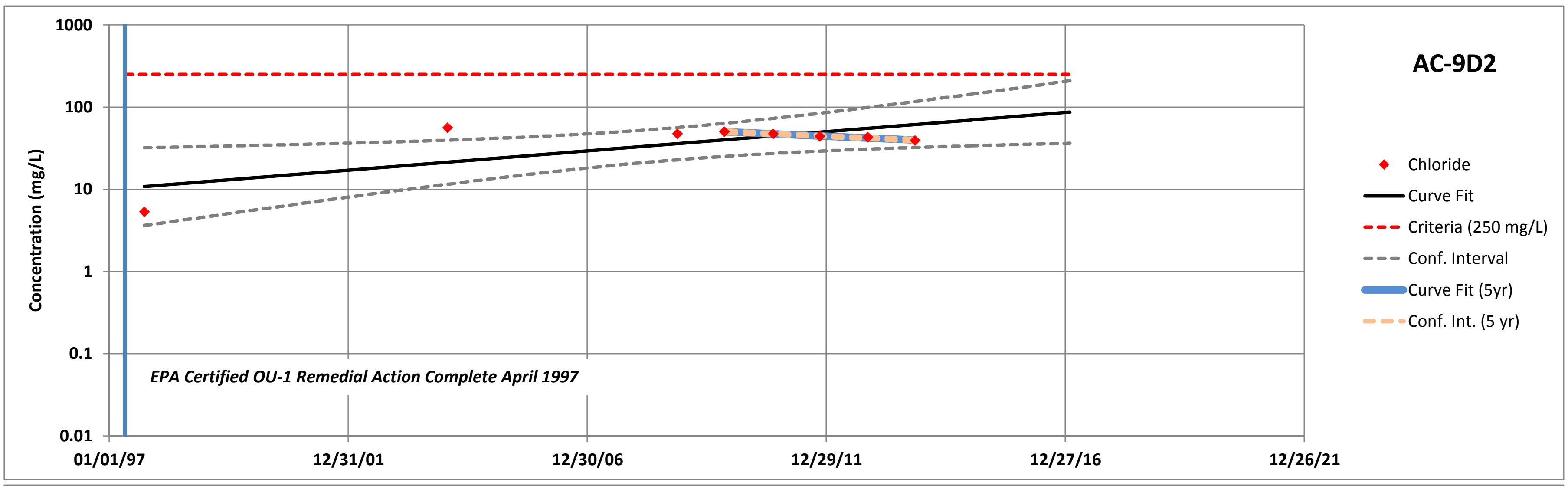
Figure 22 (Cont'd.)

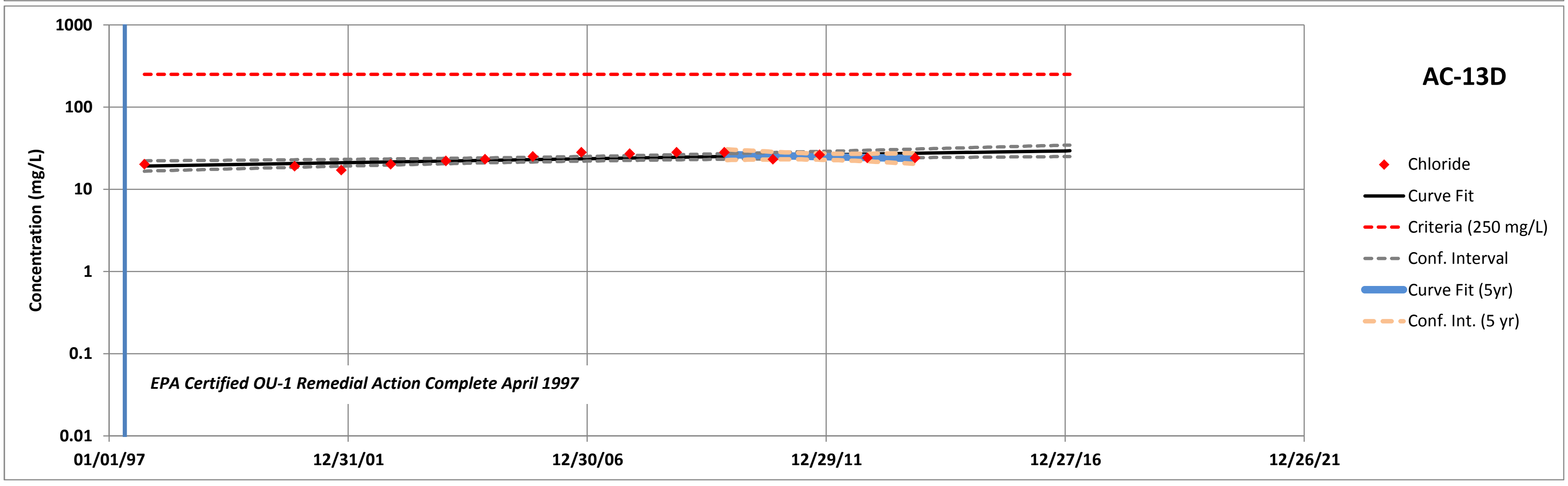
Chloride Trend Plots for Main Producing Zone Monitoring Wells Inside Plume Area

Agrico Site
Pensacola, Florida









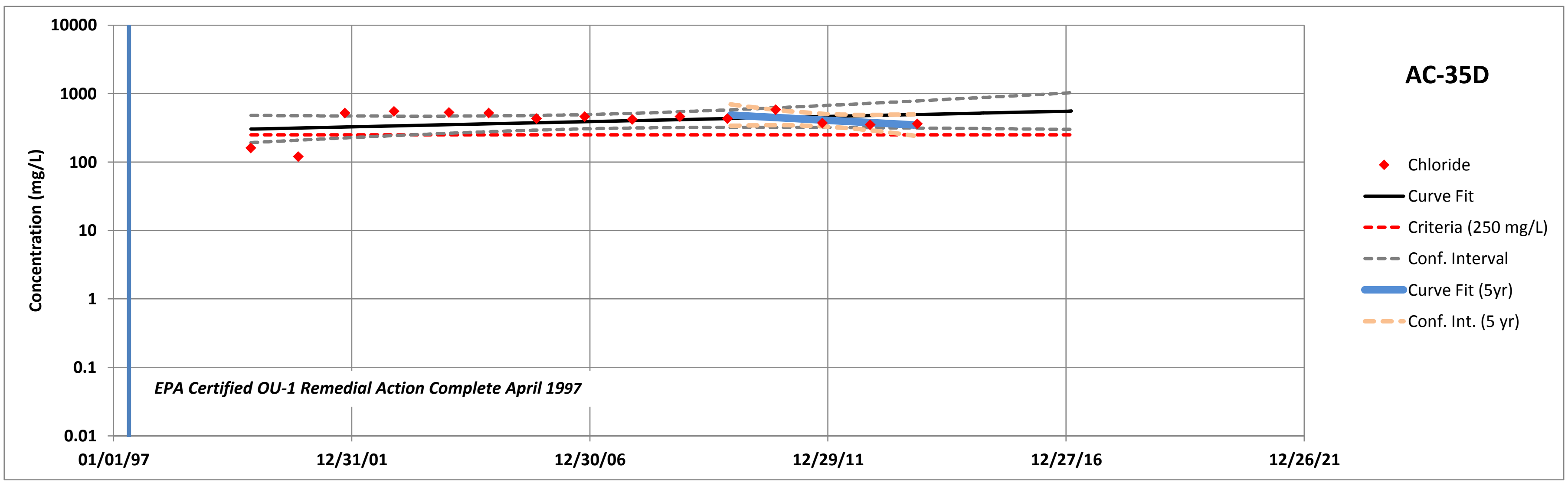
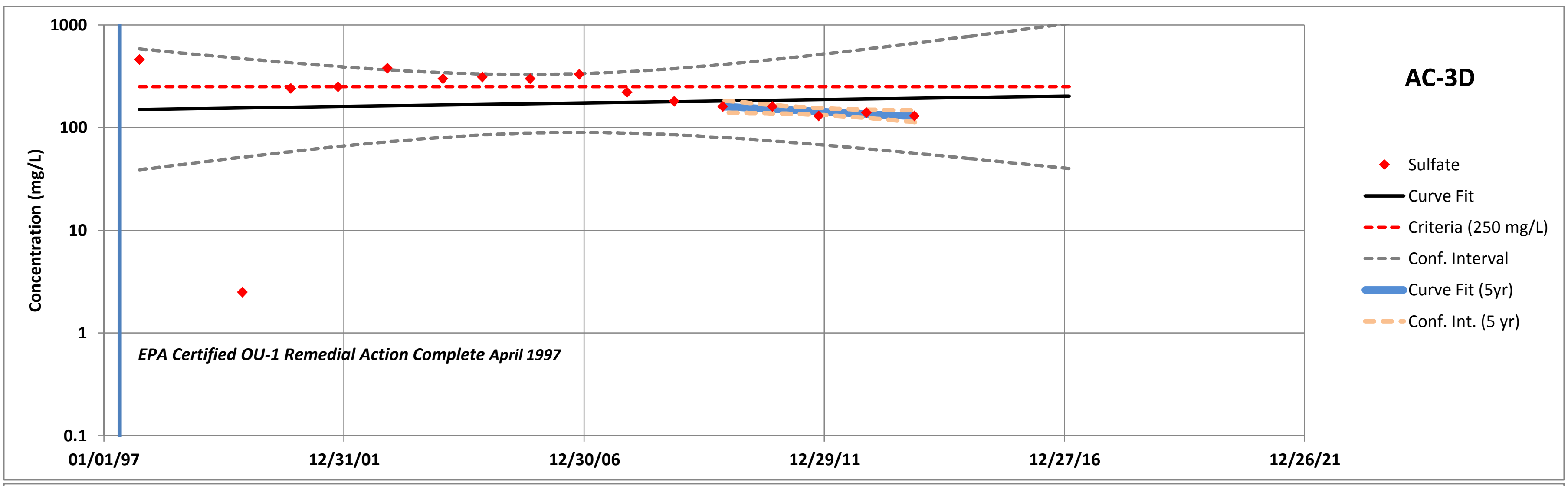
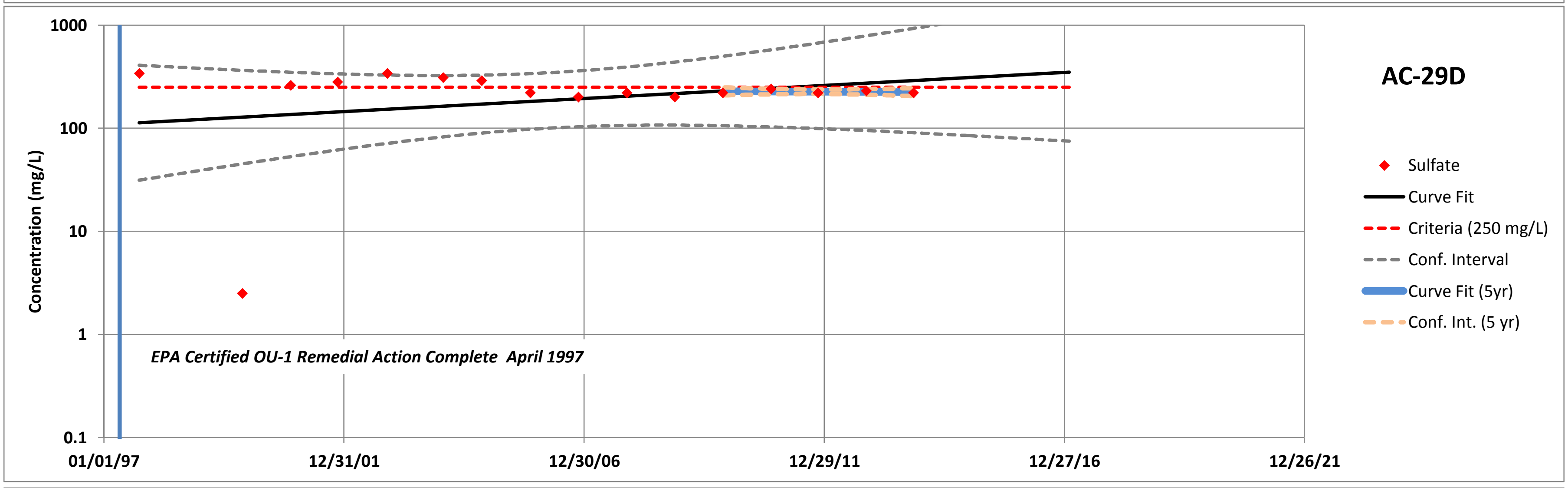


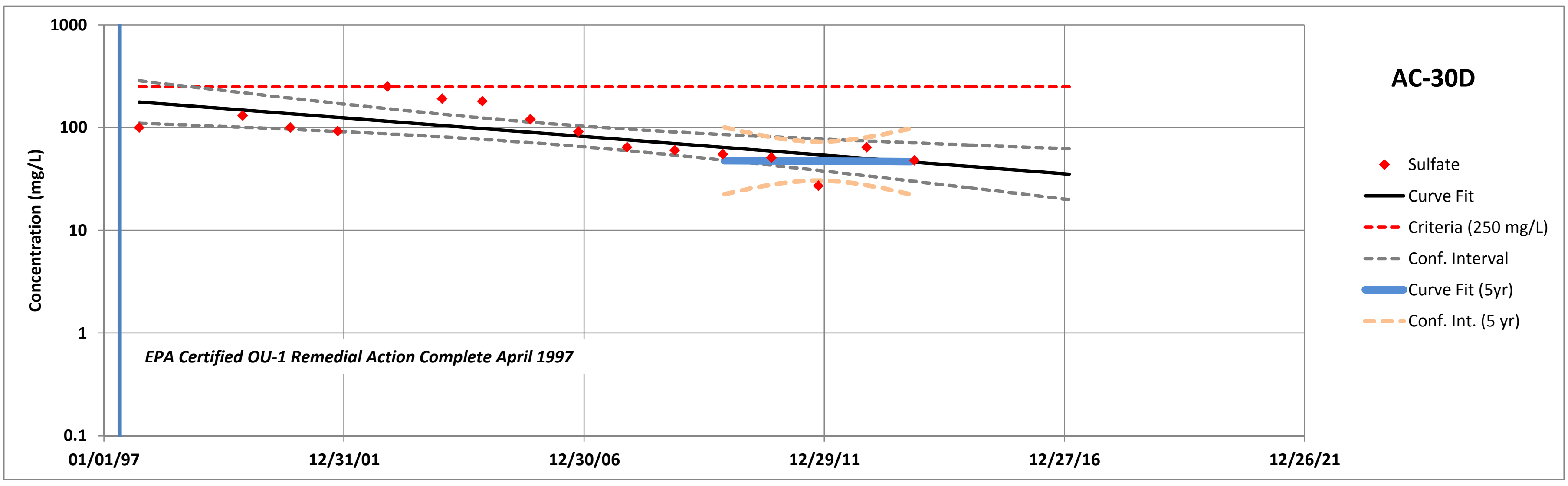
Figure 23

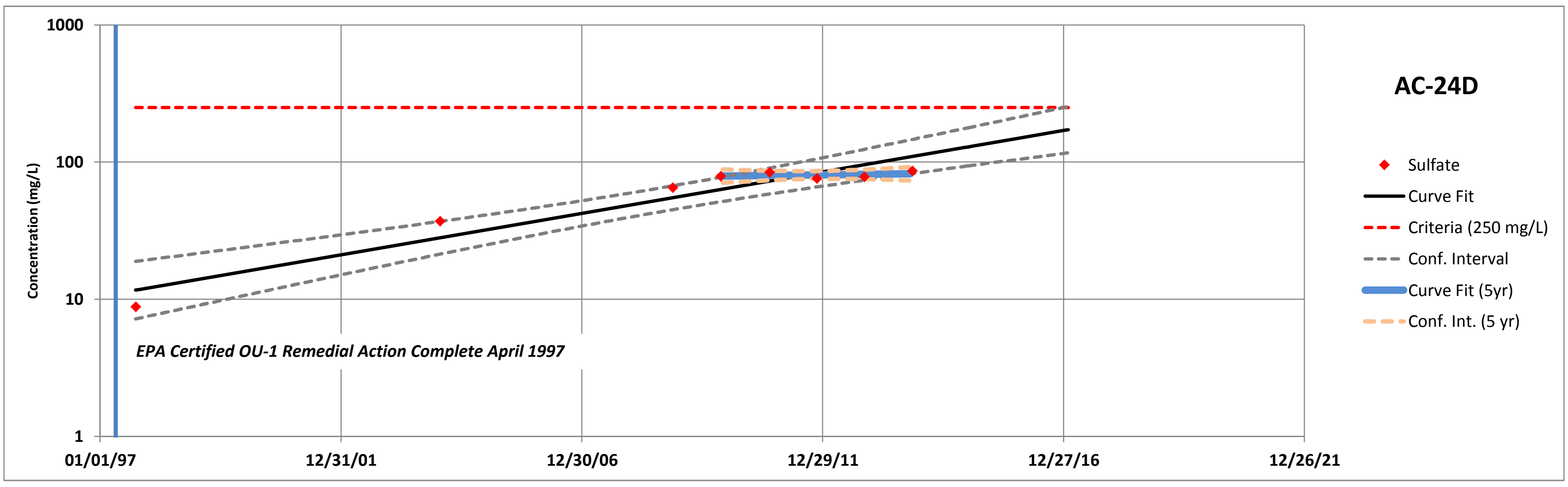
Sulfate Trend Plots for Main Producing Zone Monitoring Wells Inside Plume Area

Agrico Site
Pensacola, Florida









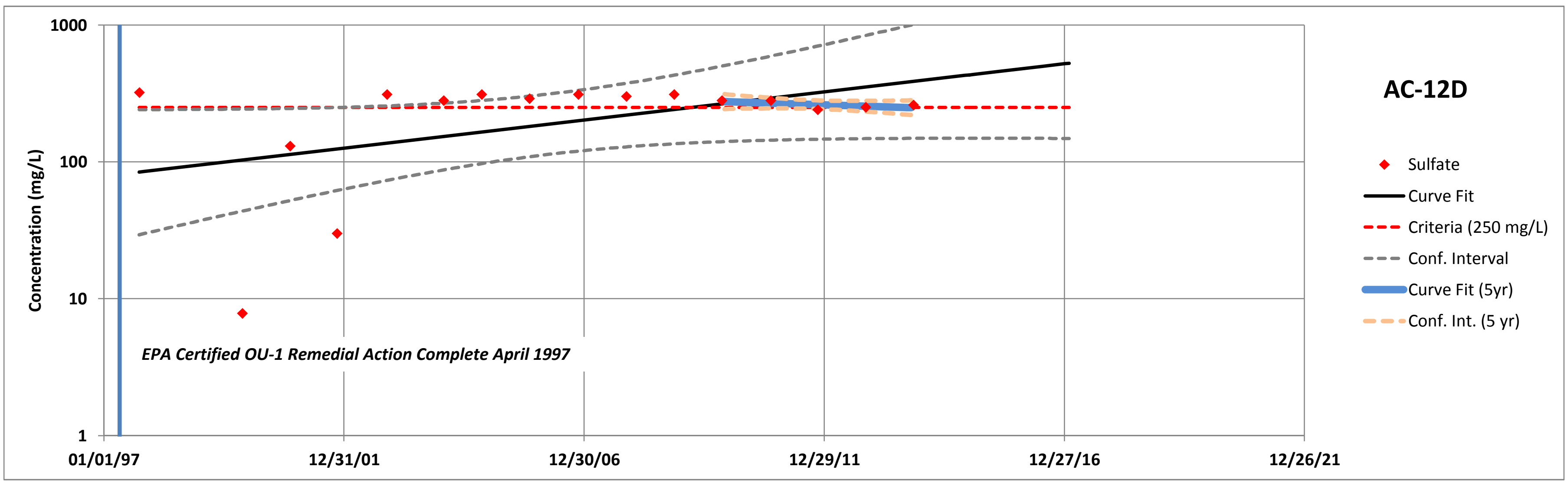
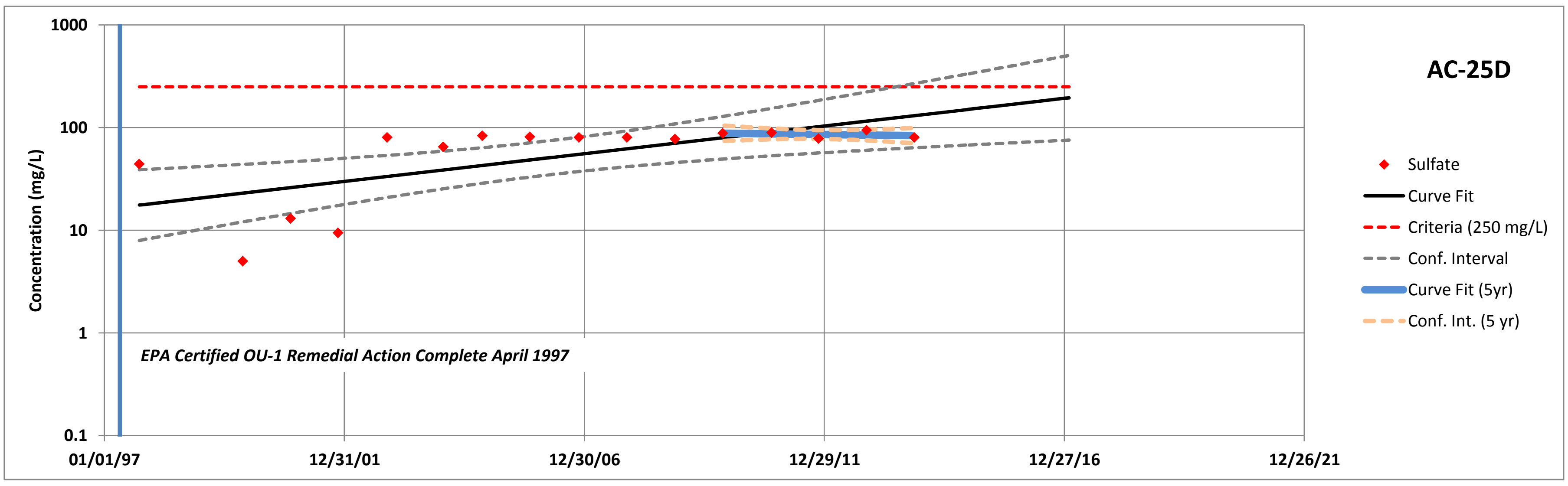
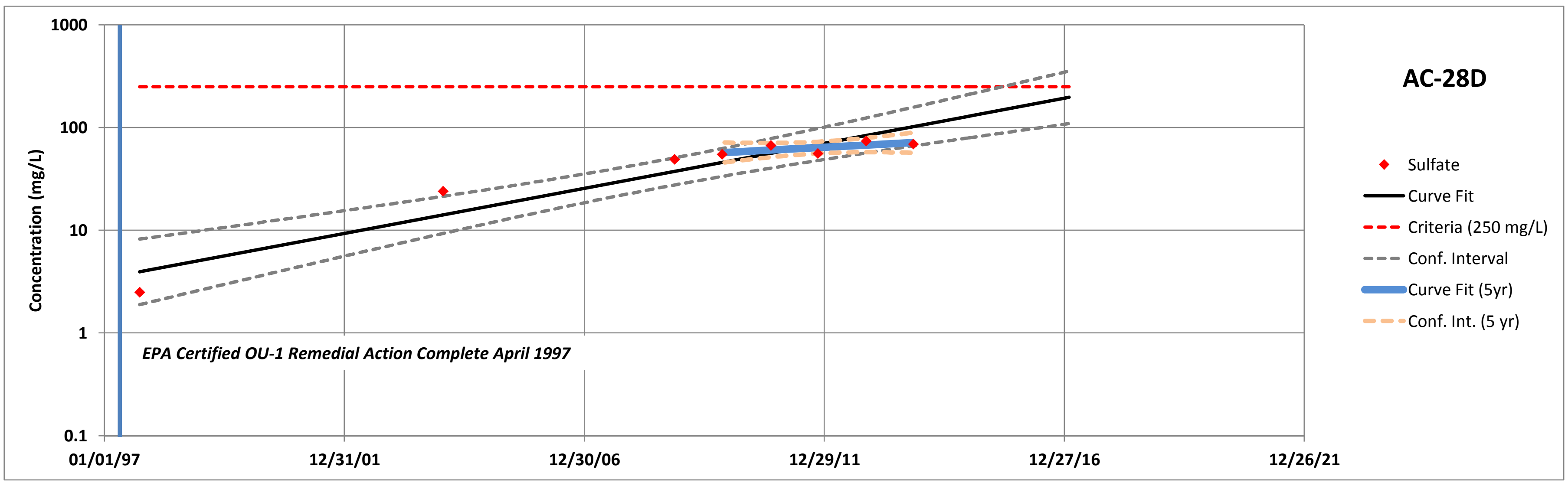


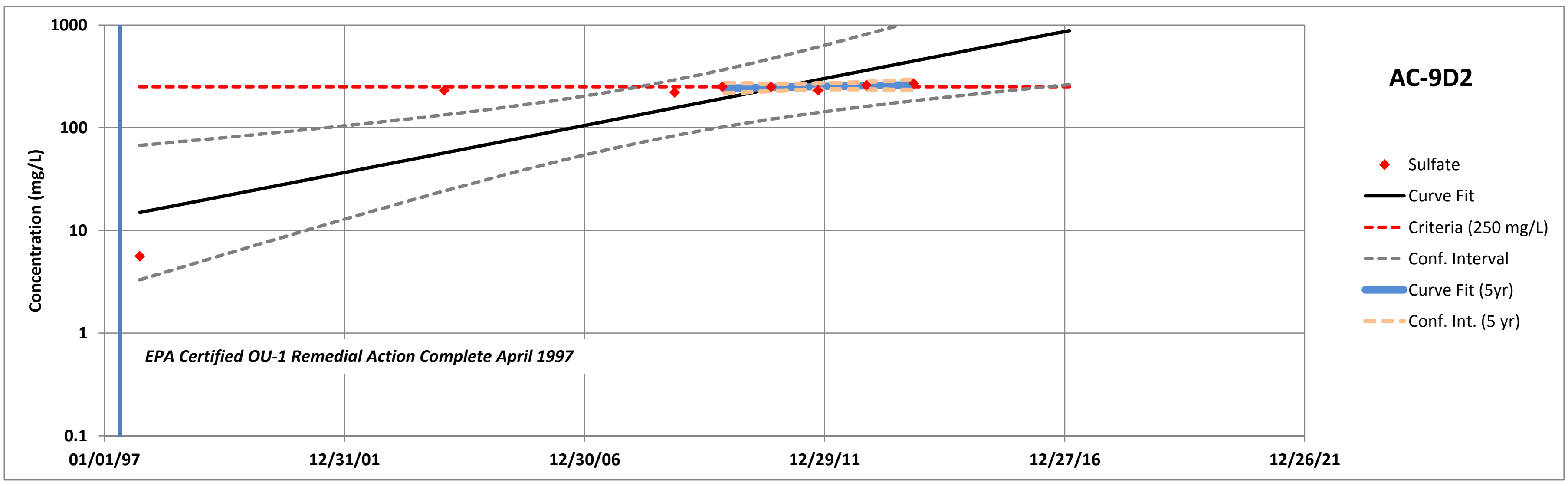
Figure 23 (Cont'd.)

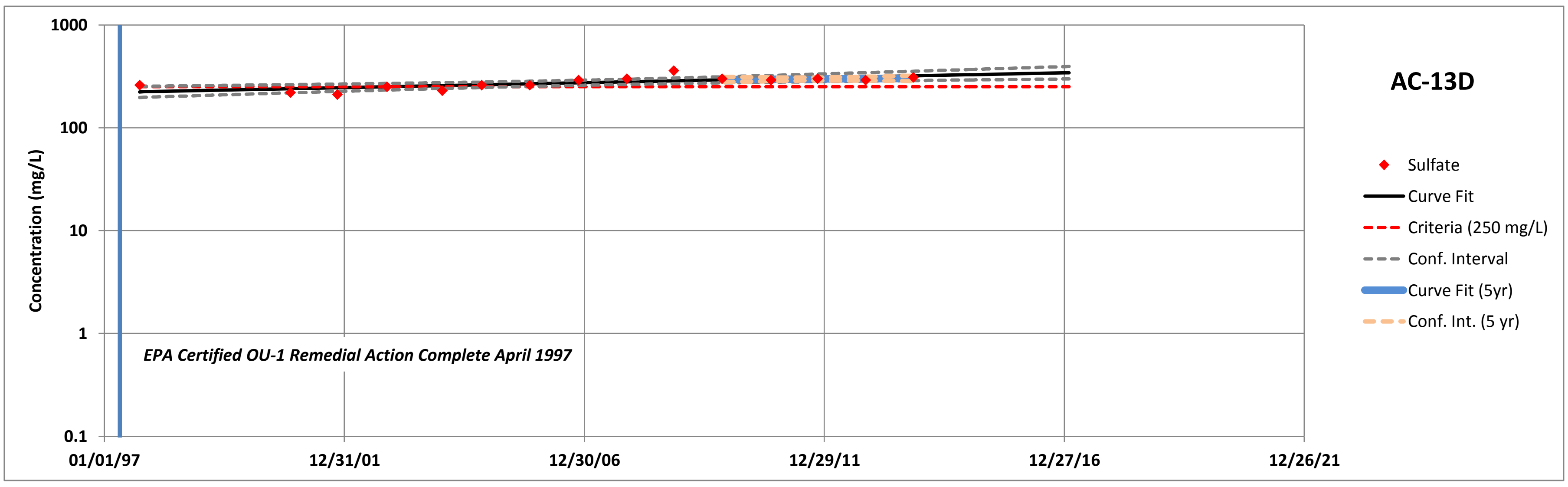
Sulfate Trend Plots for Main Producing Zone Monitoring Wells Inside Plume Area

Agrico Site
Pensacola, Florida









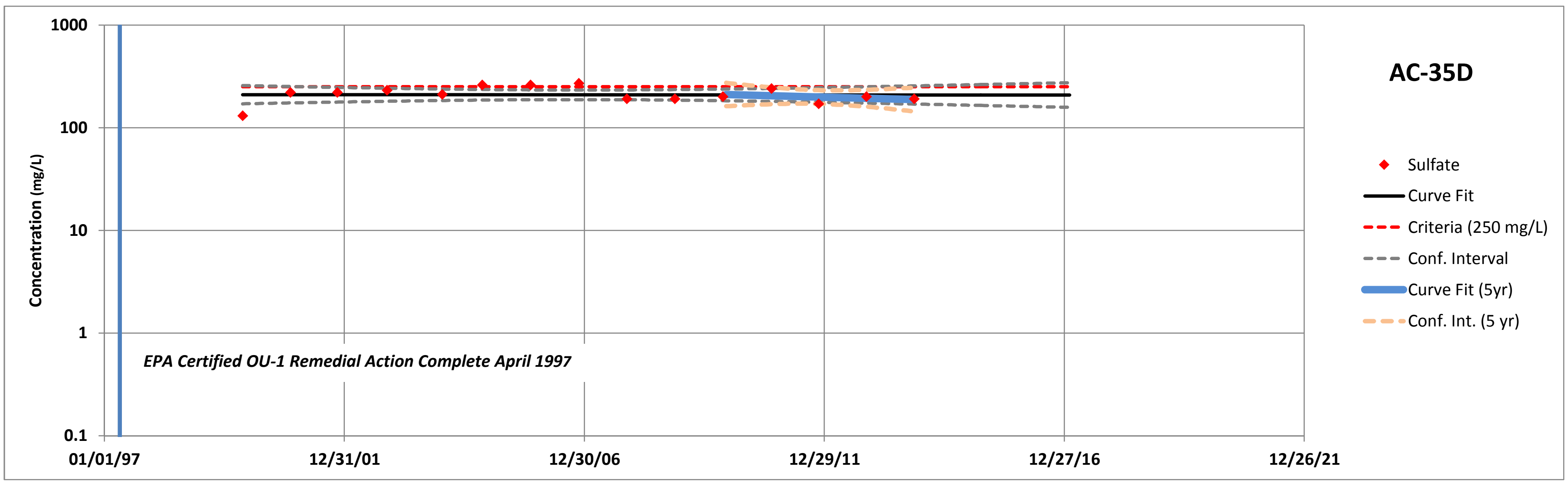
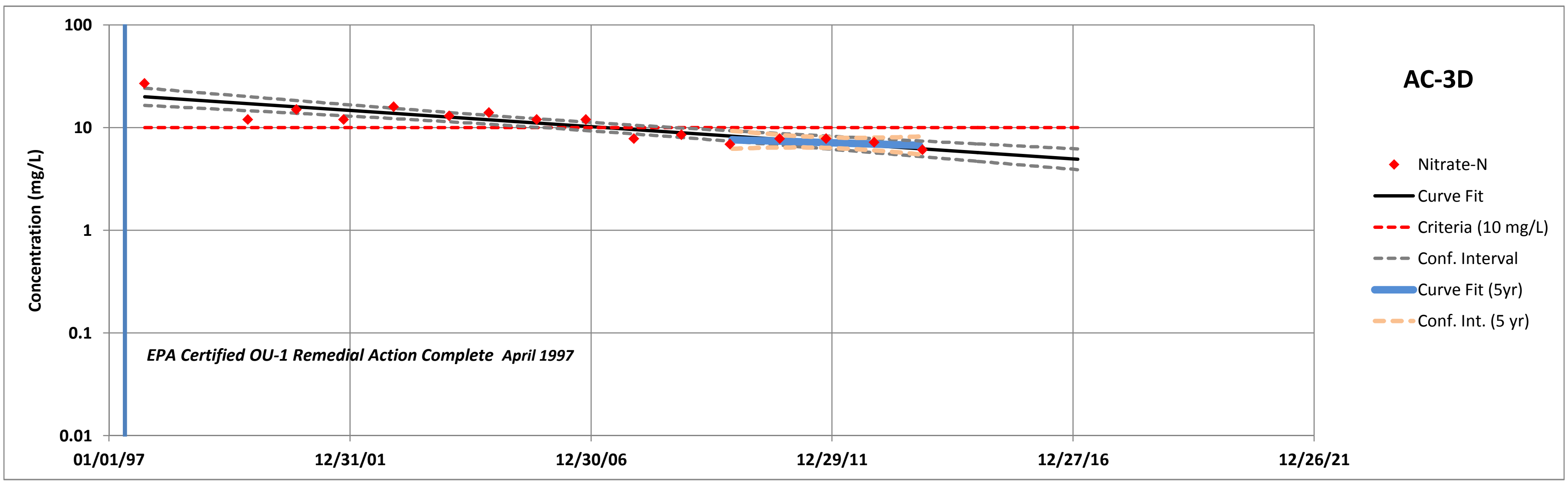
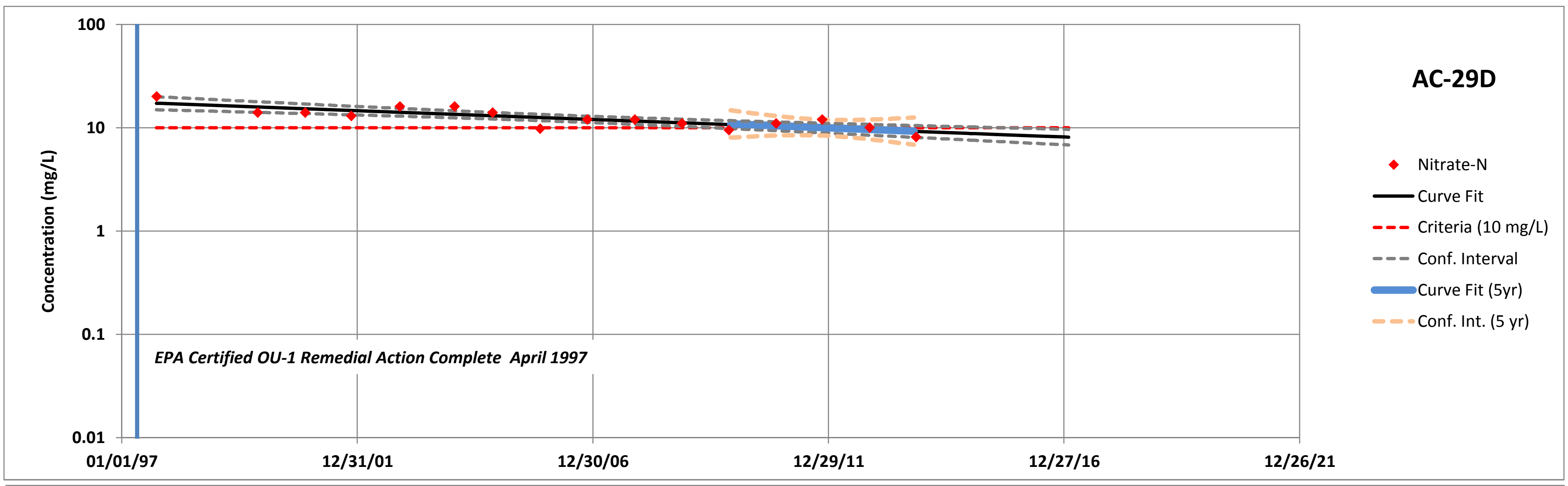


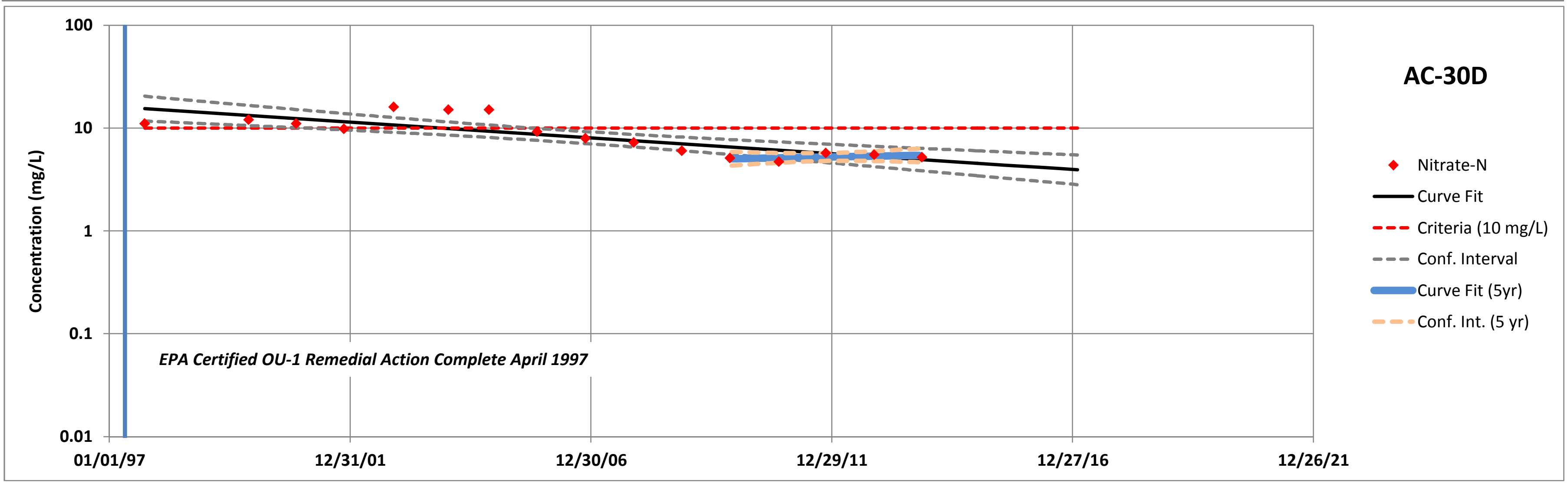
Figure 24

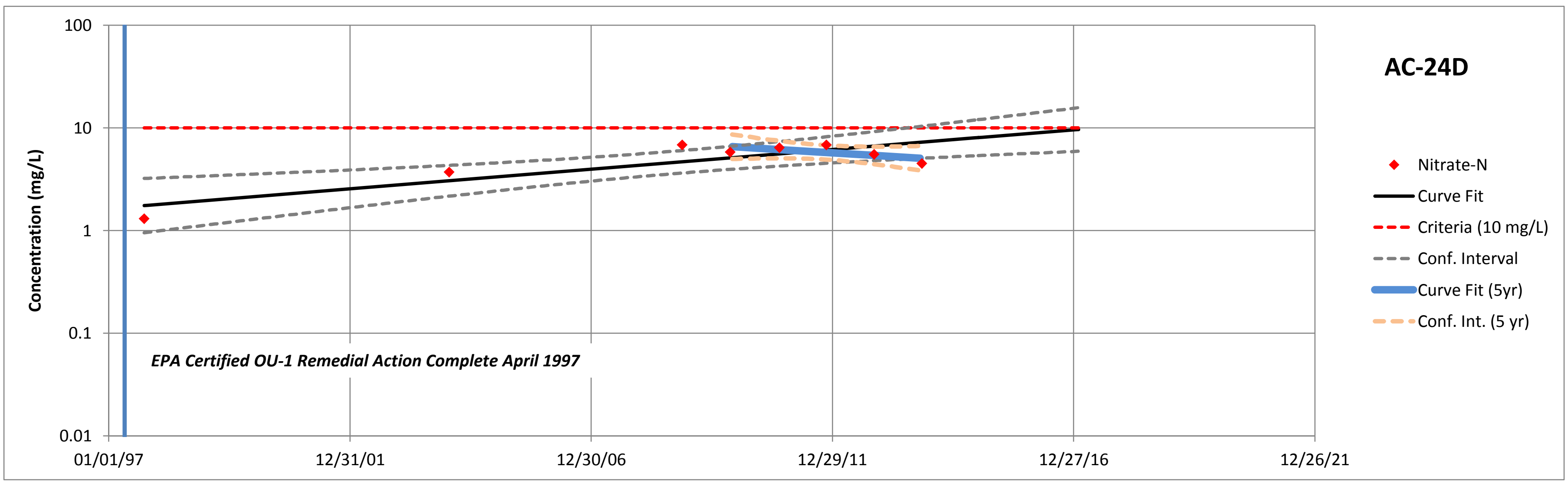
Nitrate-N Trend Plots for Main Producing Zone Monitoring Wells Inside Plume Area

Agrico Site
Pensacola, Florida









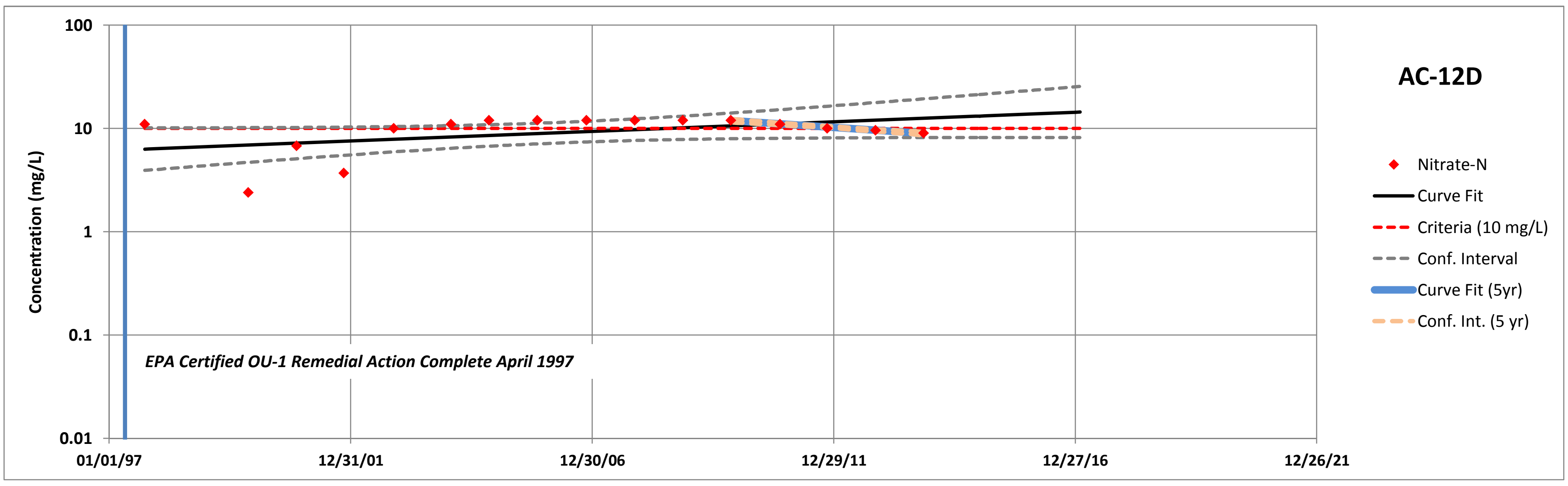
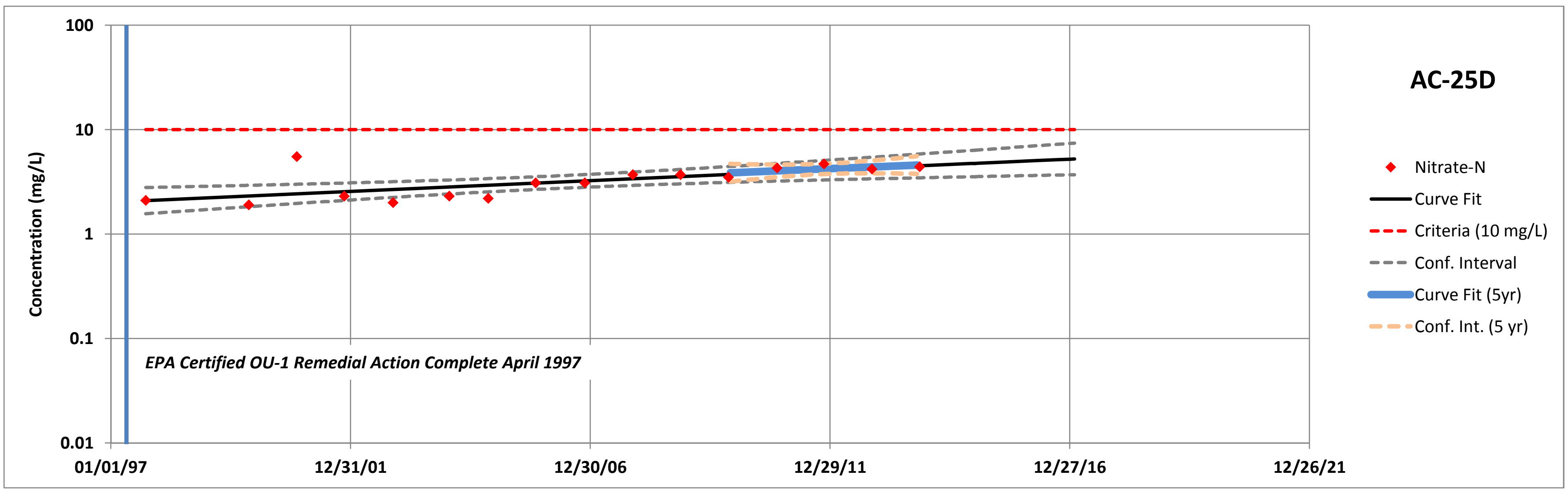
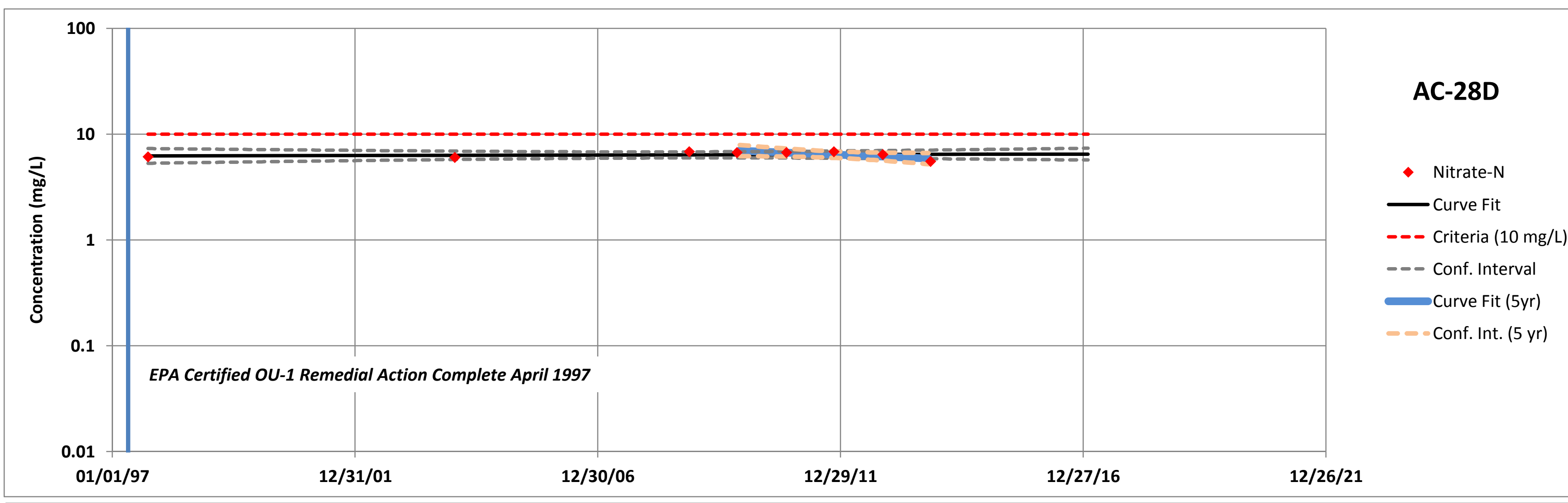


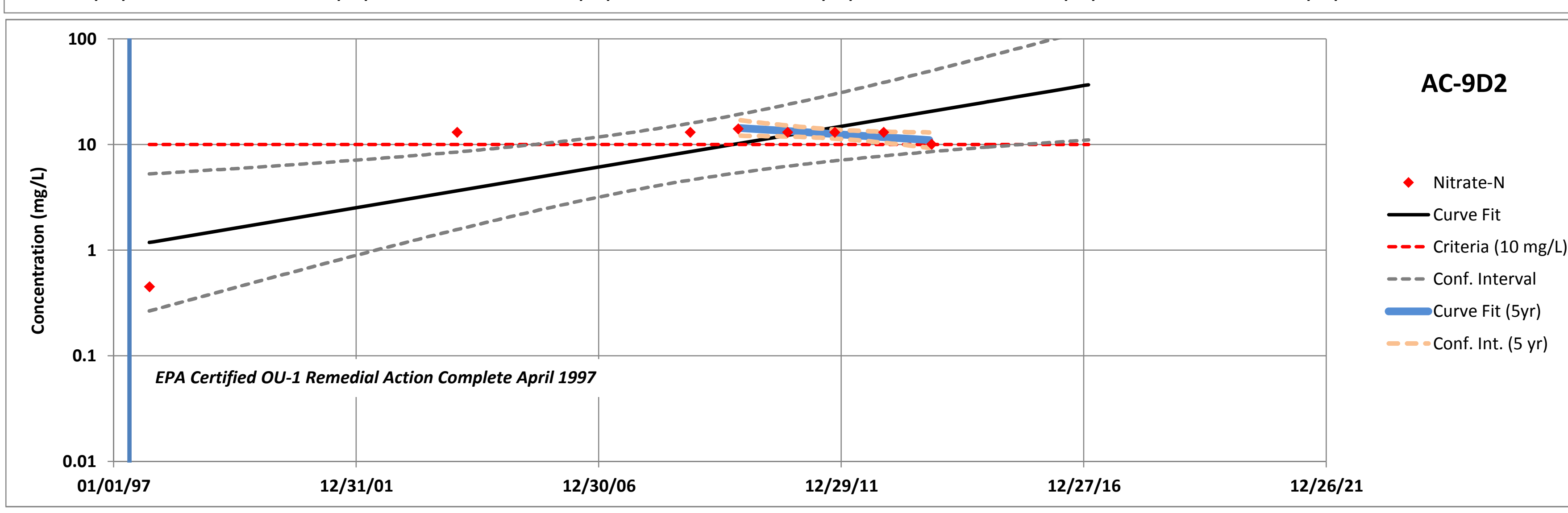
Figure 24 (Cont'd.)

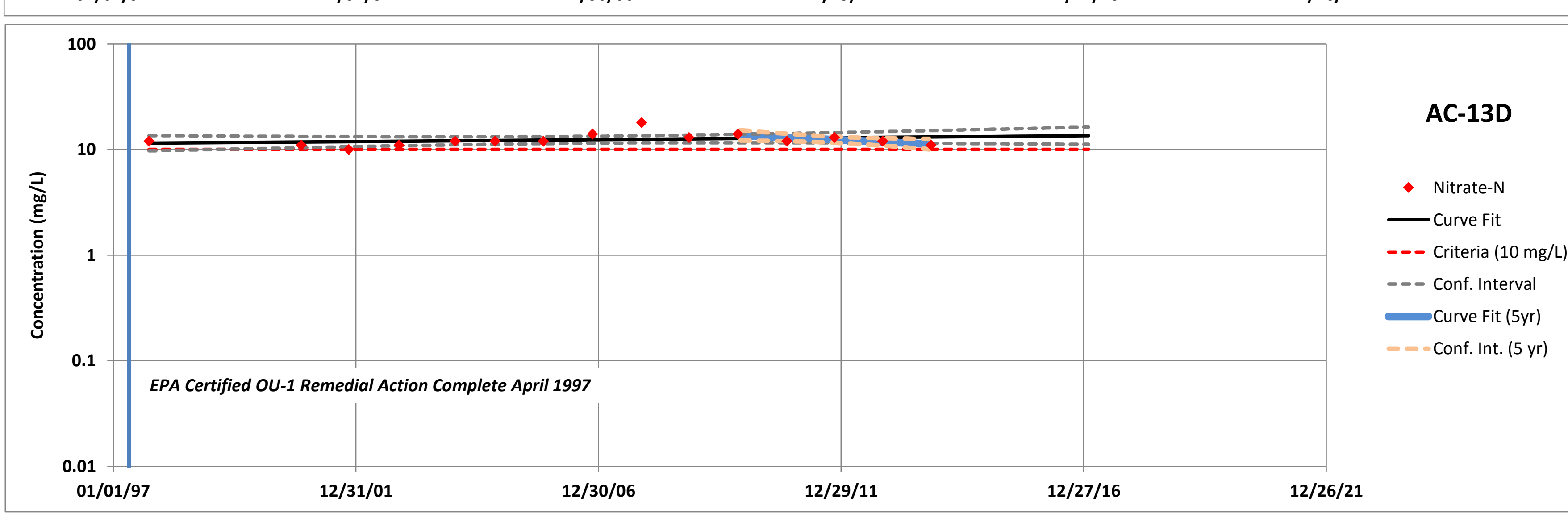
Nitrate-N Trend Plots for Main Producing Zone Monitoring Wells Inside Plume Area

Agrico Site
Pensacola, Florida









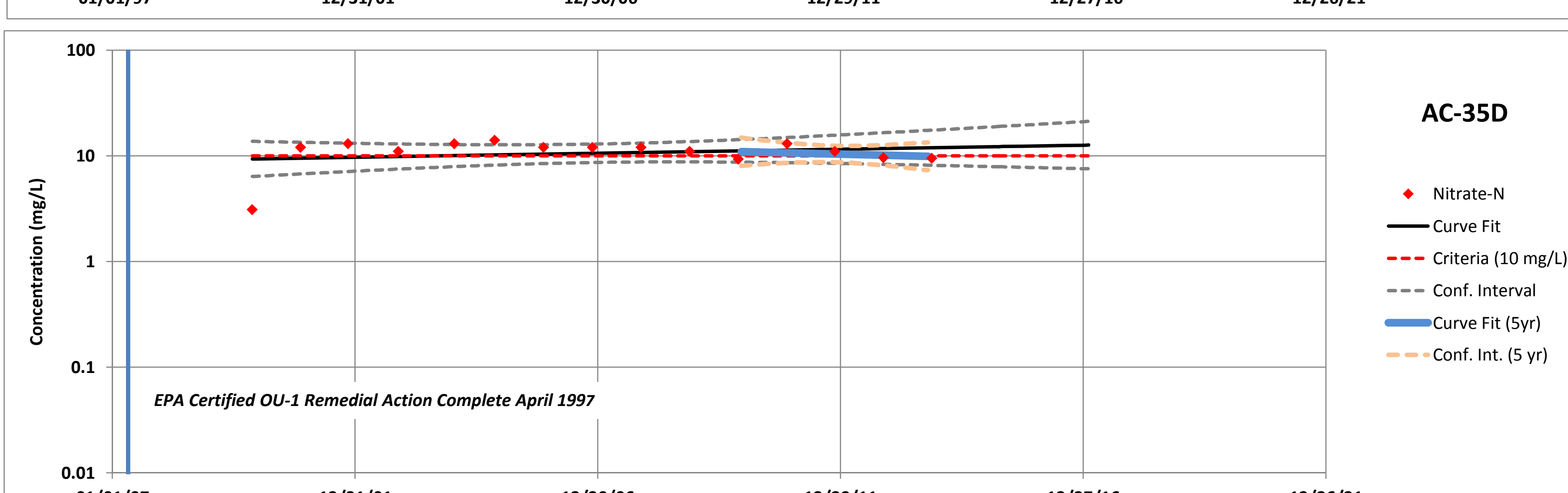
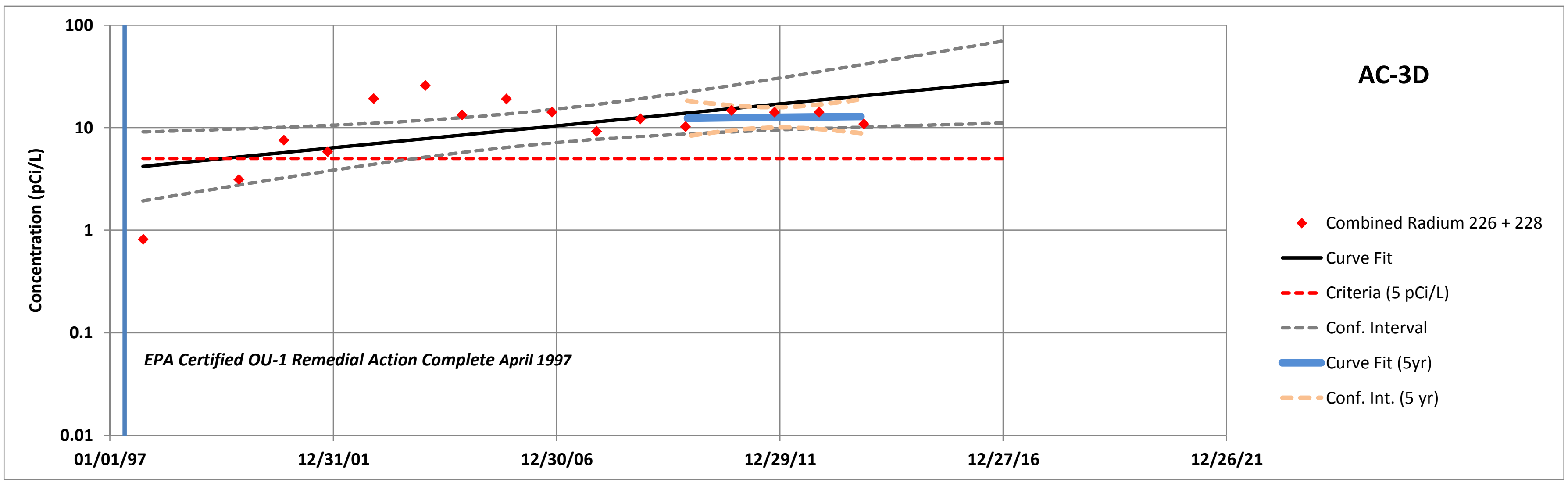
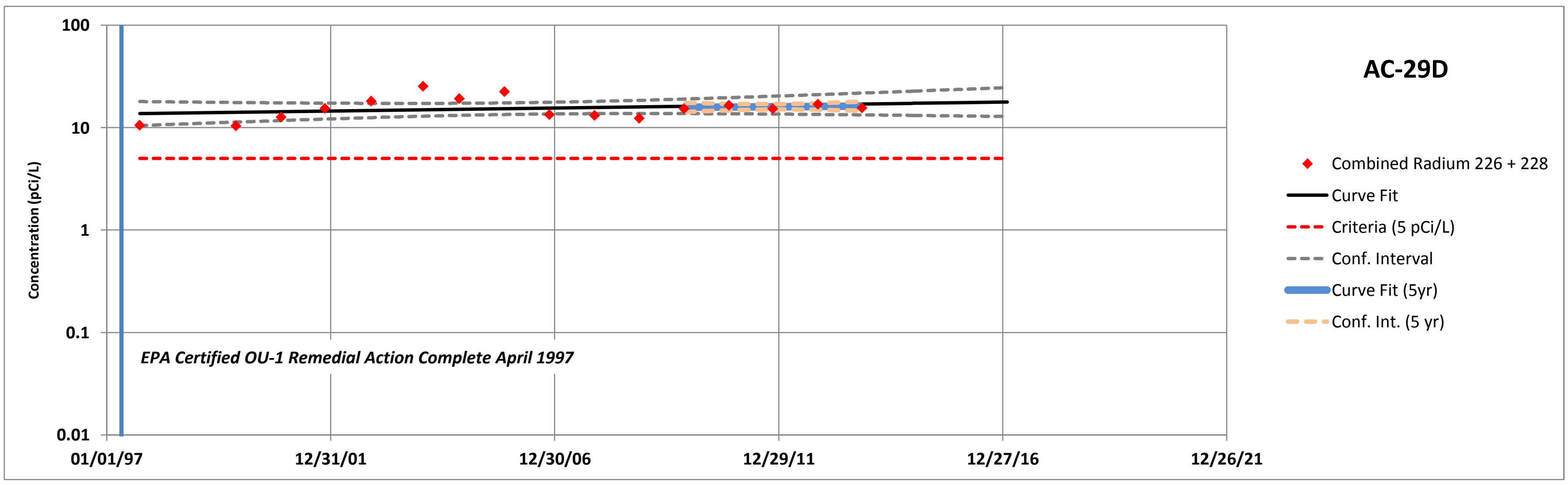


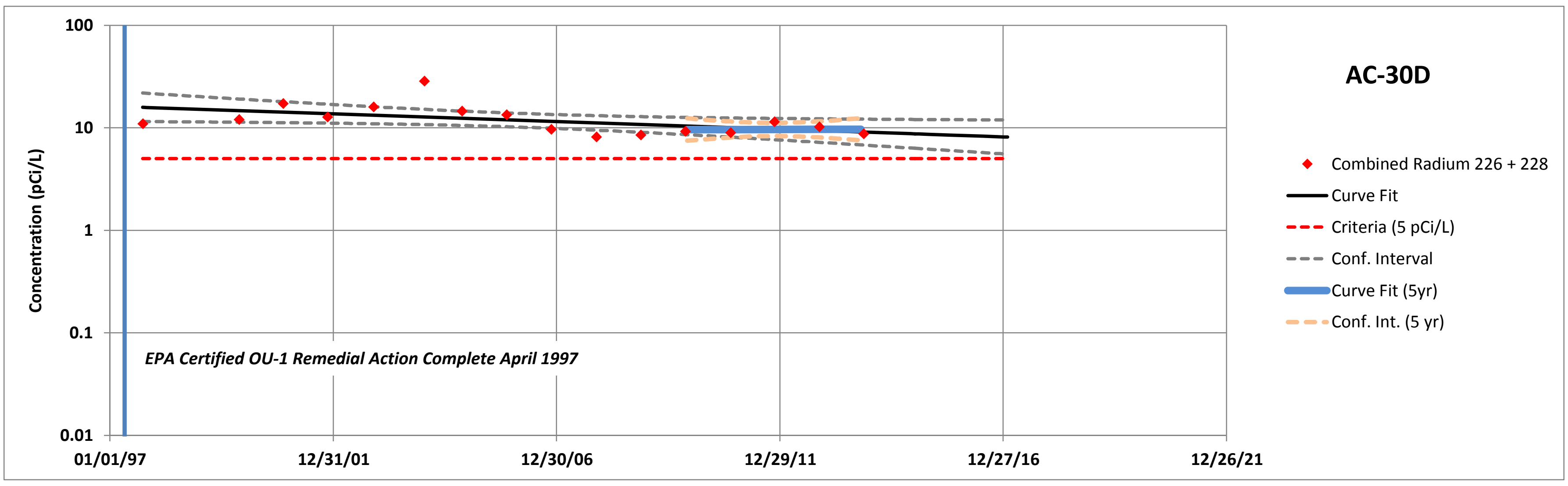
Figure 25

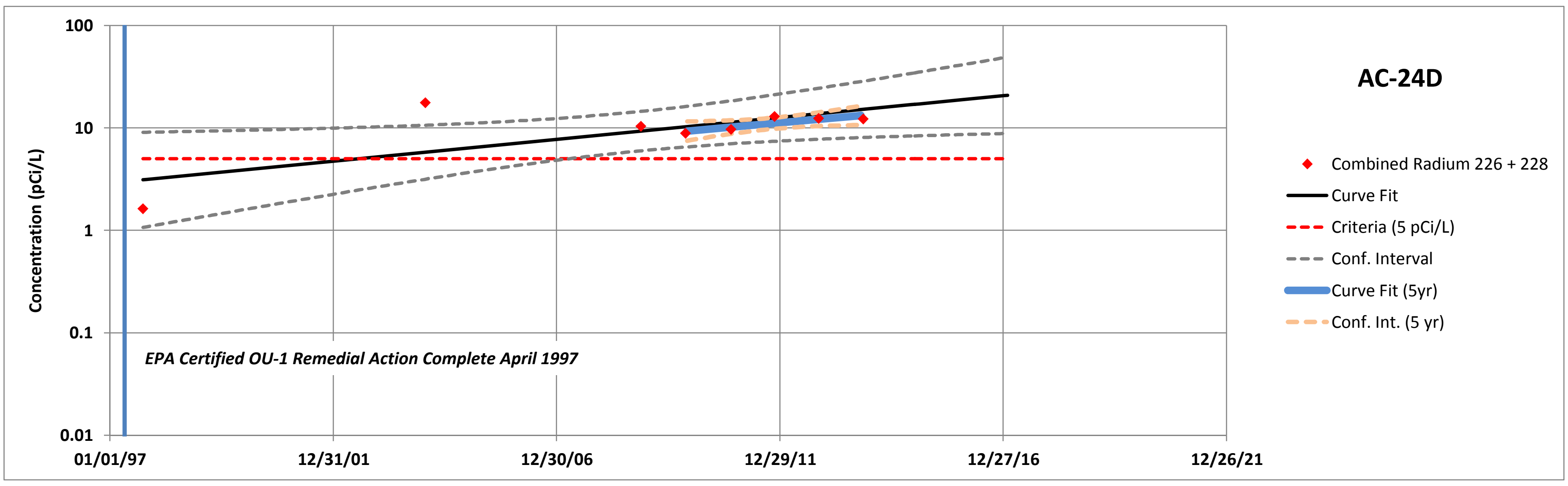
Combined Radium 226+228 Trend Plots for Main Producing Zone Monitoring Wells Inside Plume Area

Agrico Site
Pensacola, Florida









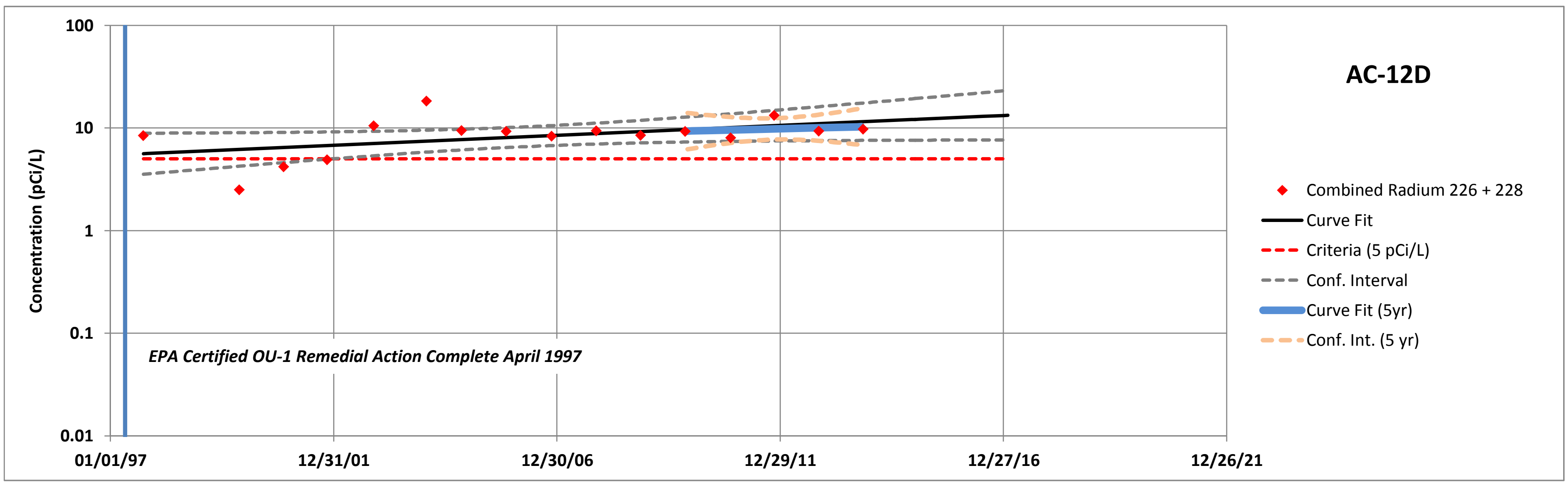
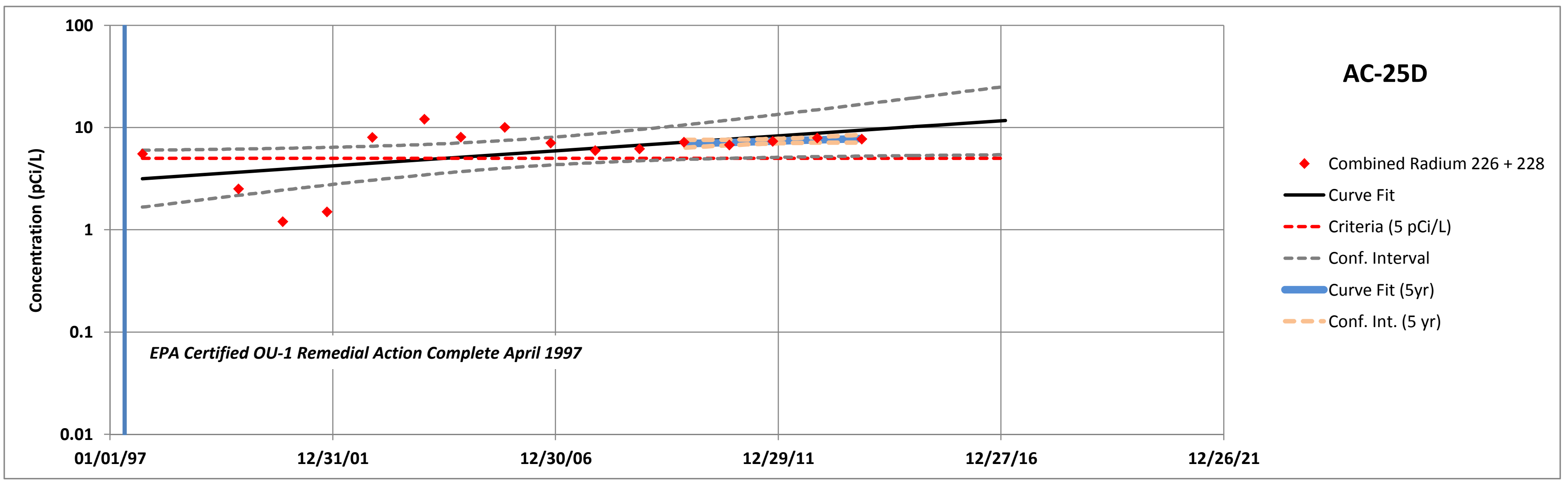
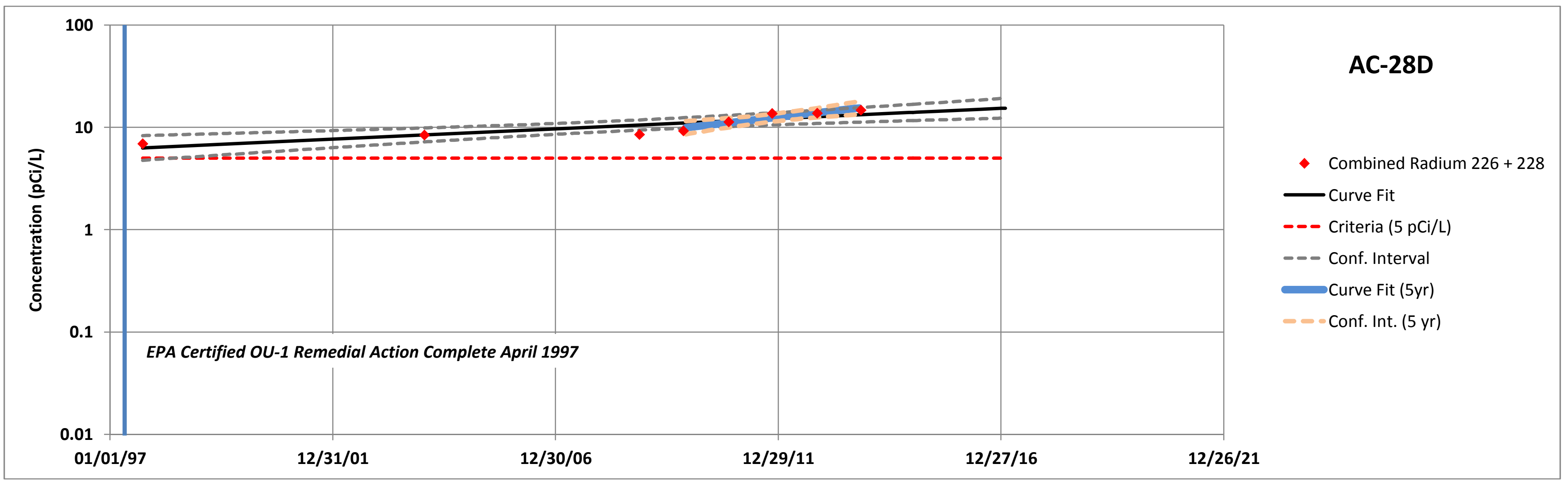


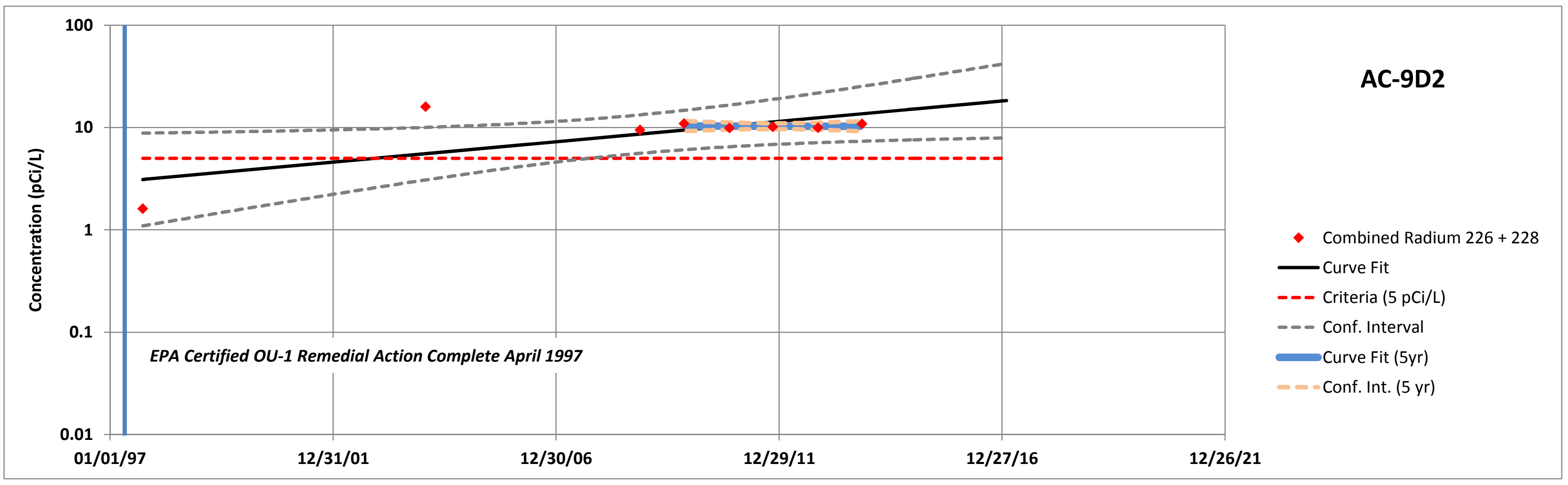
Figure 25 (Cont'd.)

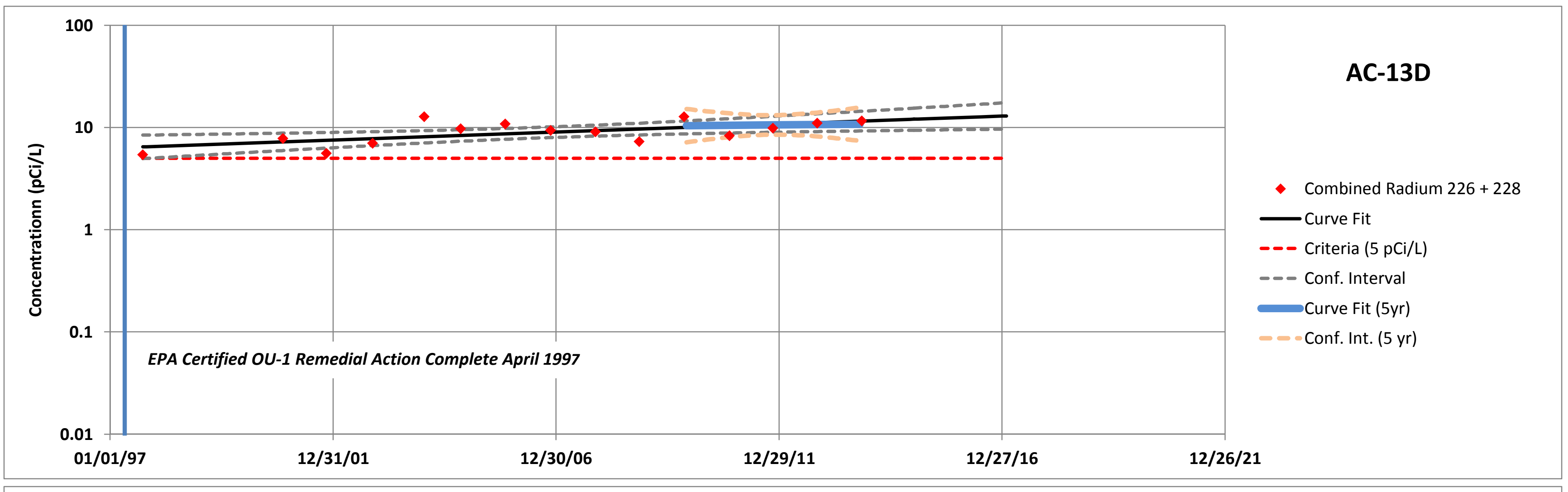
Combined Radium 226+228 Trend Plots for Main Producing Zone Monitoring Wells Inside Plume Area

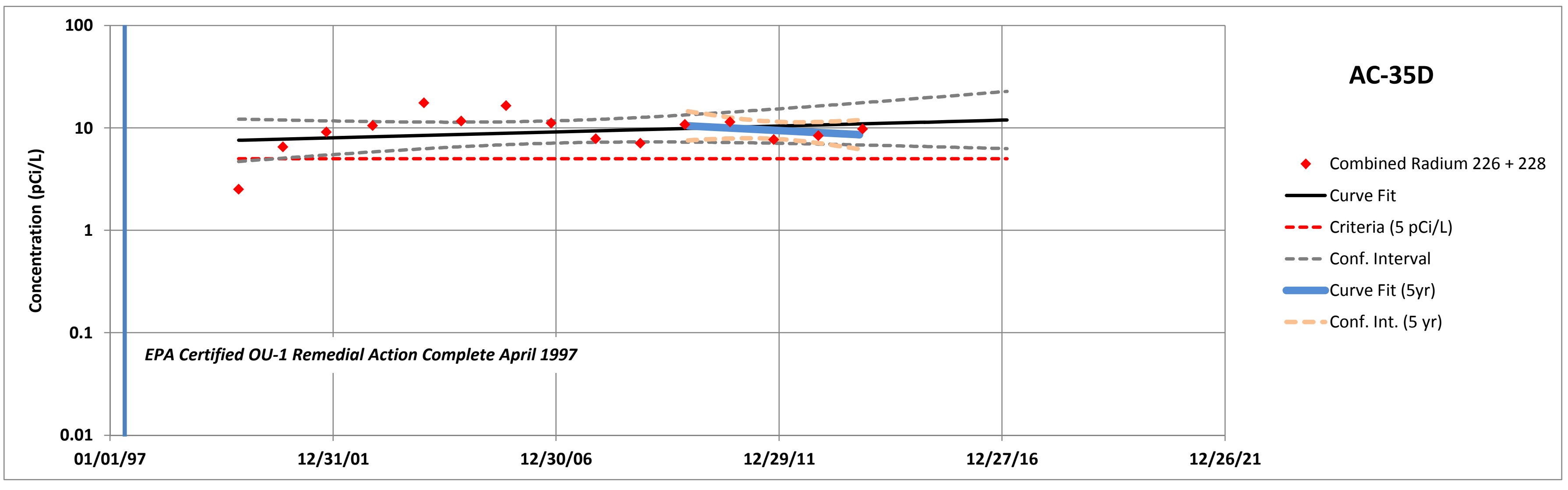
Agrico Site
Pensacola, Florida

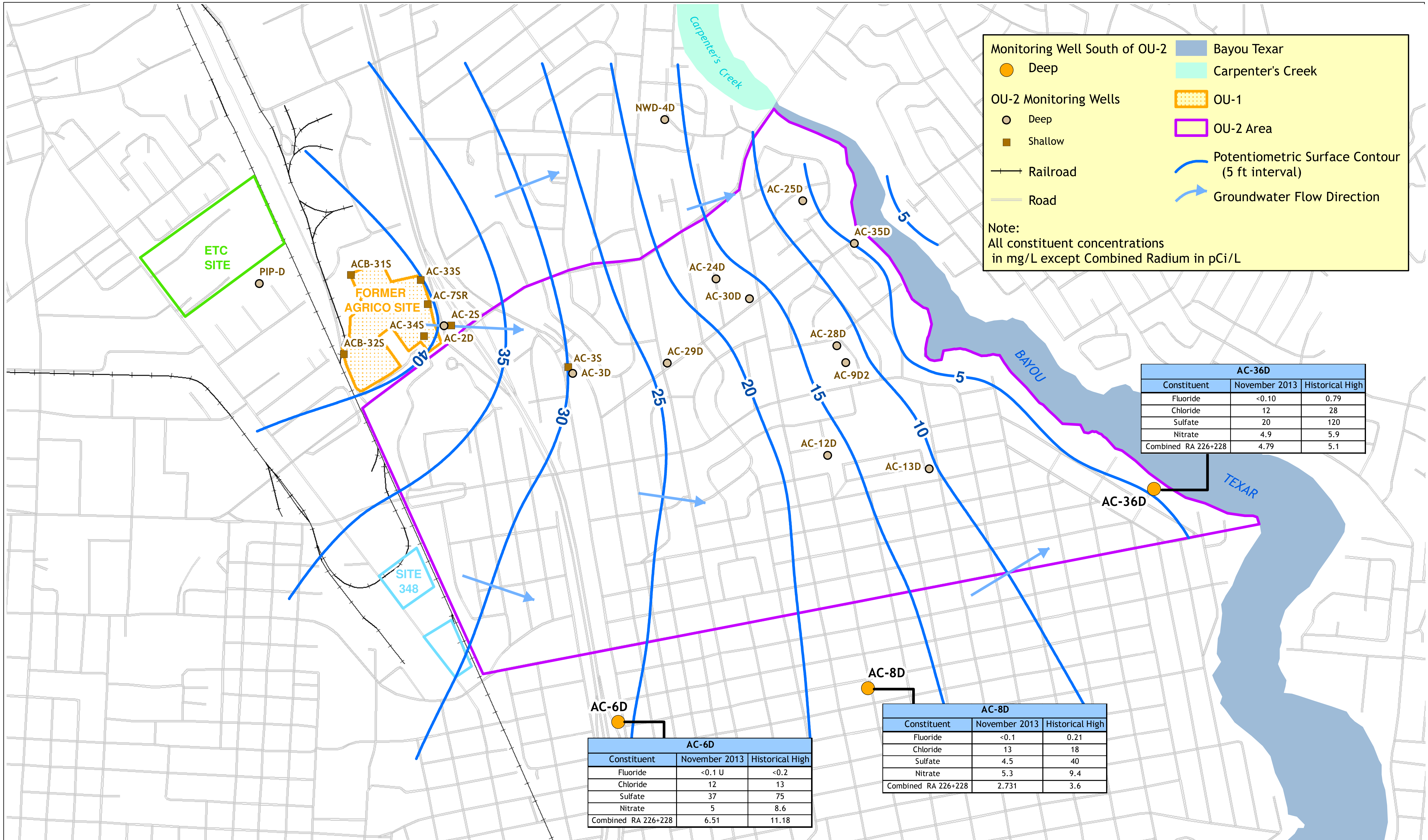












AC-36D

Constituent	November 2013	Historical High
Fluoride	<0.10	0.79
Chloride	12	28
Sulfate	20	120
Nitrate	4.9	5.9
Combined RA 226+228	4.79	5.1

AC-8D

Constituent	November 2013	Historical High
Fluoride	<0.1	0.21
Chloride	13	18
Sulfate	4.5	40
Nitrate	5.3	9.4
Combined RA 226+228	2.731	3.6

AC-6D

Constituent	November 2013	Historical High
Fluoride	<0.1 U	<0.2
Chloride	12	13
Sulfate	37	75
Nitrate	5	8.6
Combined RA 226+228	6.51	11.18

OU-1 and OU-2
AGRICO SITE
PENSACOLA, FLORIDA

URS

Base Map Data Provided By:
Florida Department of Environmental Protection
and Northwest Florida Water Management District
Aerial Source: Bing Image Server

N W E S

0 500 1,000 2,000 Feet

TRENDPLOT LOCATIONS
MAIN PRODUCING ZONE
SOUTH OF OU-2 AREA

FIGURE 26

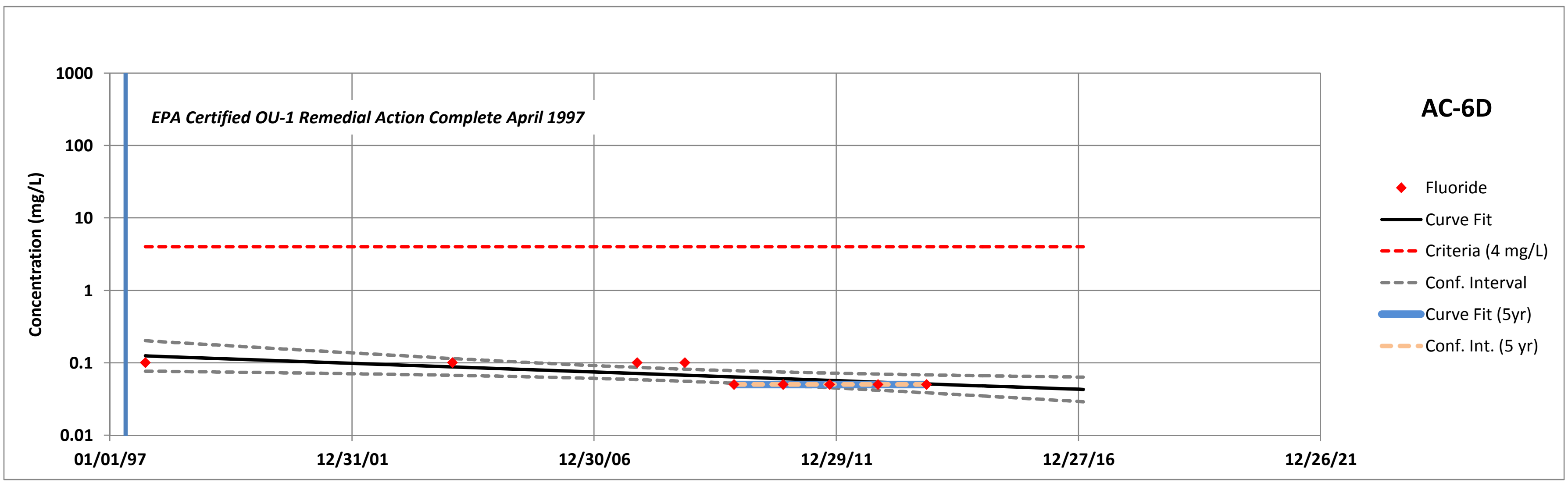
ashlyn_mitchell - Tallahassee - 2/27/2014

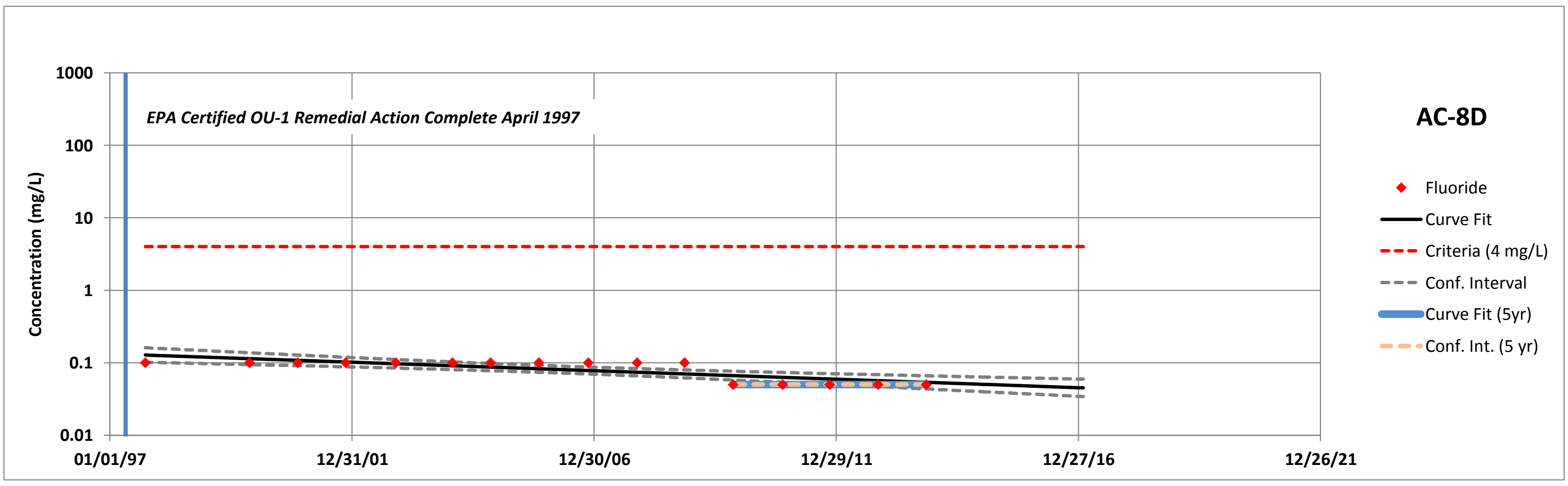
Path: G:\Agrico\ou2\deliverables\aprs\annual_reports\2013\fig_26_trendplots_MPZ_South_TEST.mxd

Figure 27

Fluoride Trend Plots for Main Producing Zone Monitoring Wells South of Plume Area

Agrico Site
Pensacola, Florida





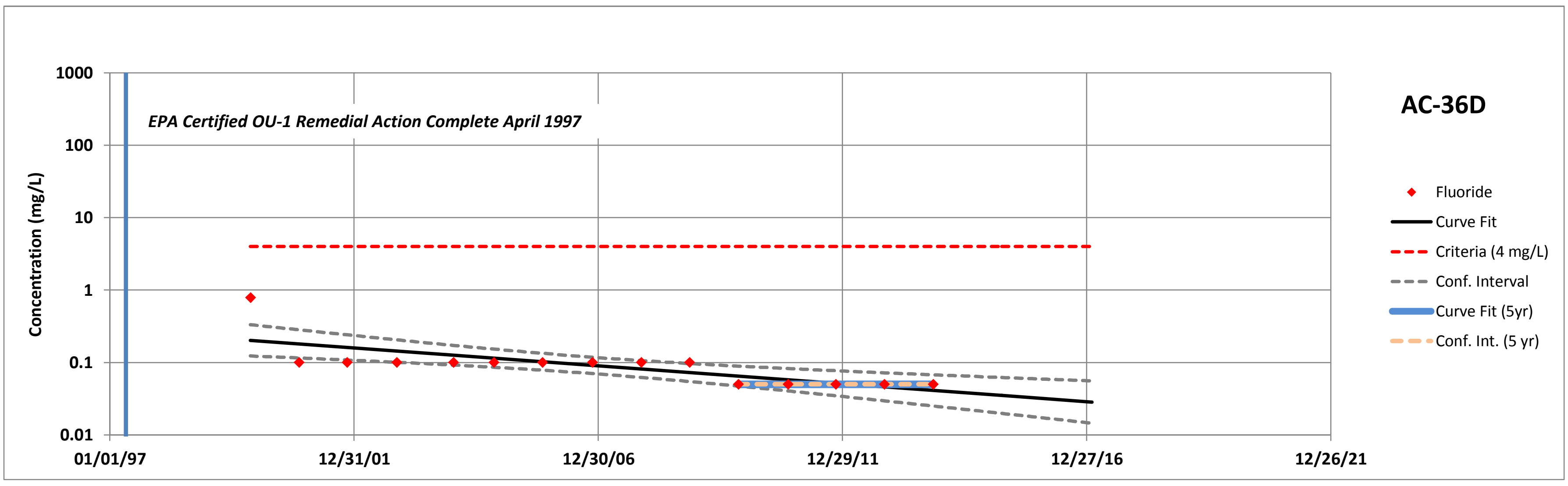
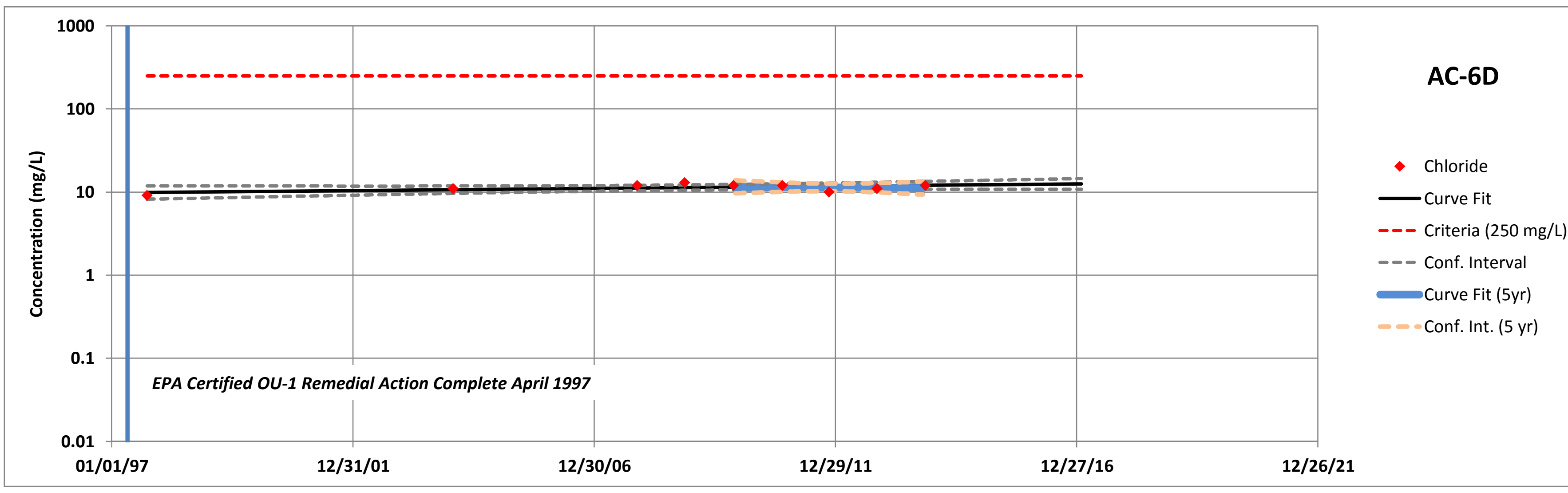
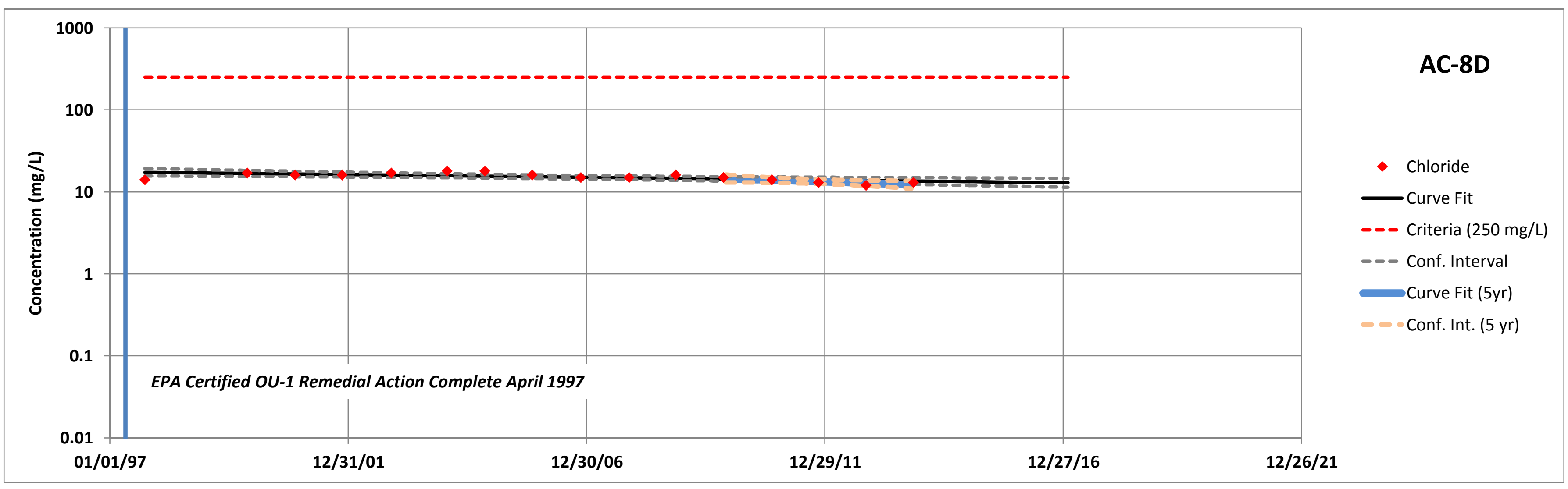


Figure 28

Chloride Trend Plots for Main Producing Zone Monitoring Wells South of Plume Area

Agrico Site
Pensacola, Florida





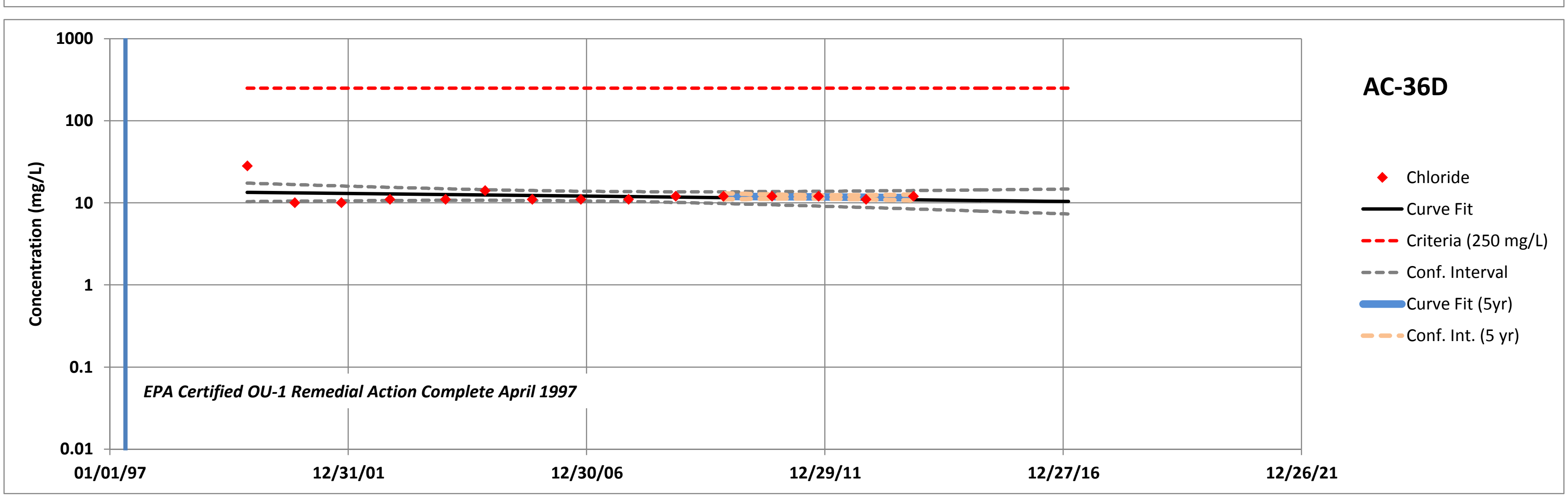
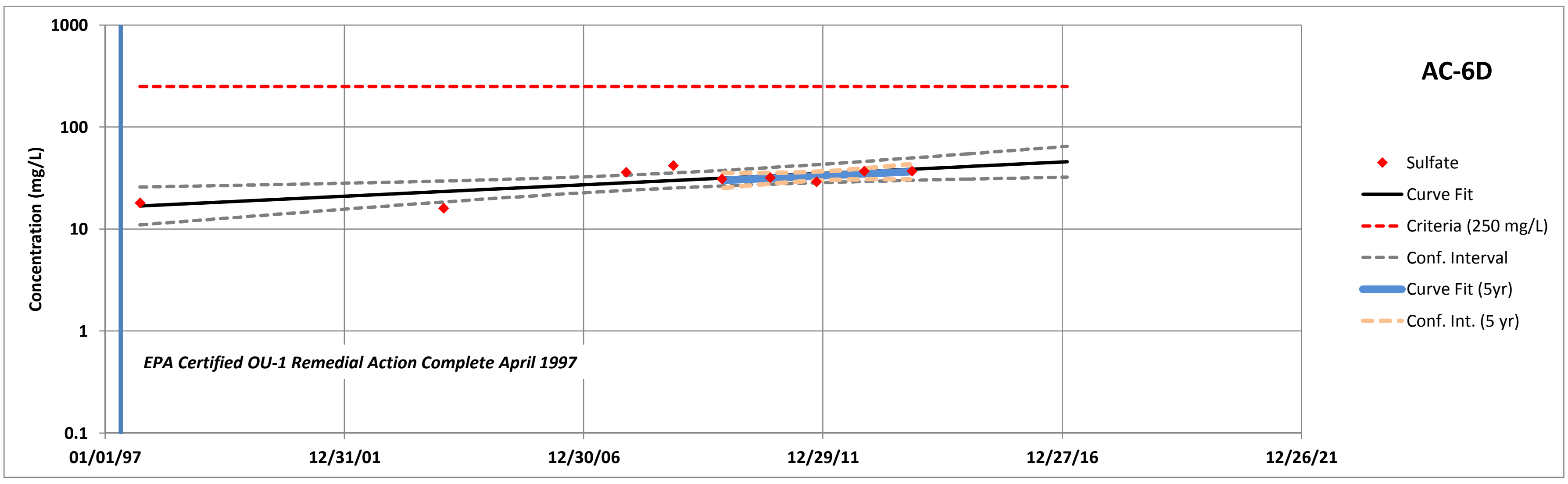
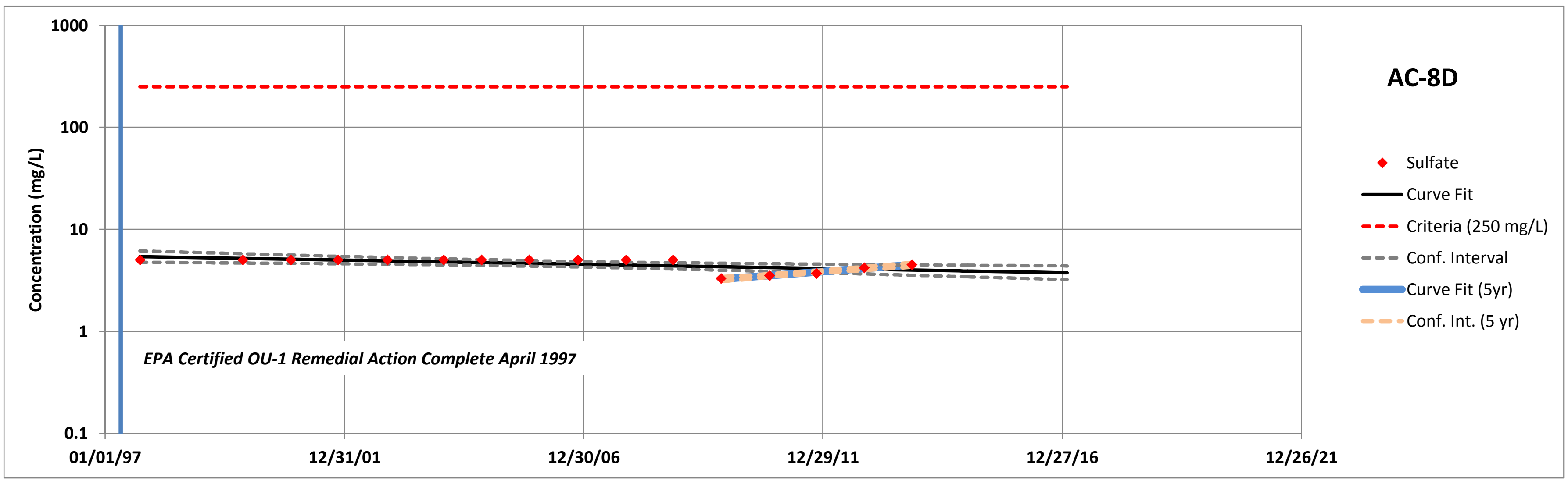


Figure 29

Sulfate Trend Plots for Main Producing Zone Monitoring Wells South of Plume Area

Agrico Site
Pensacola, Florida





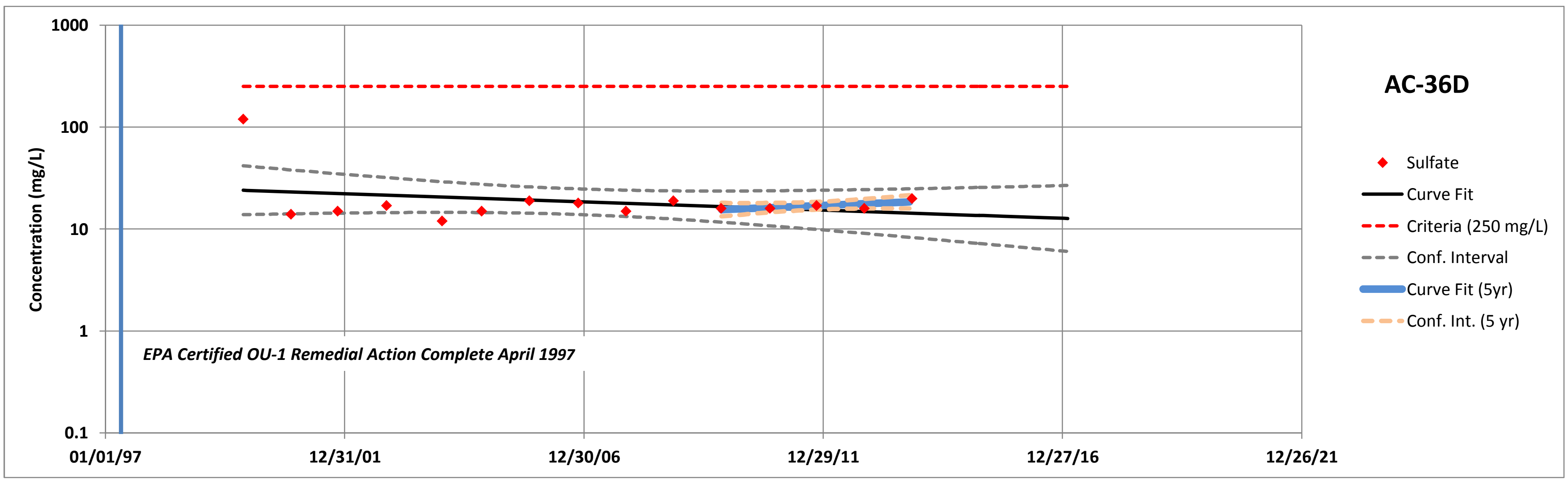
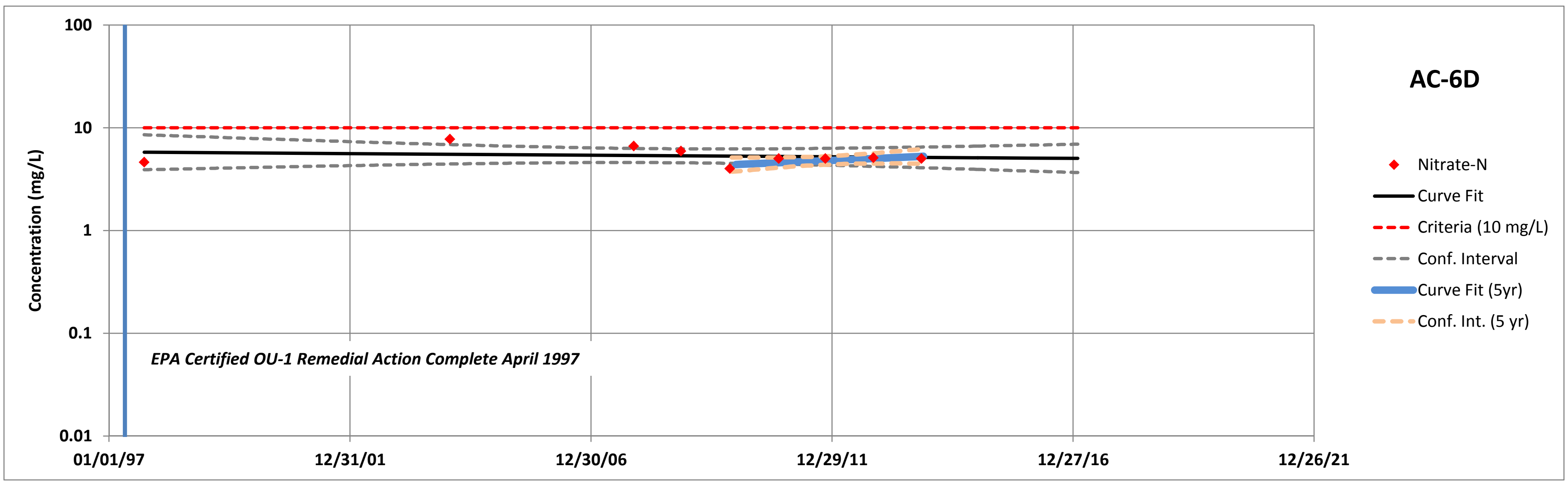
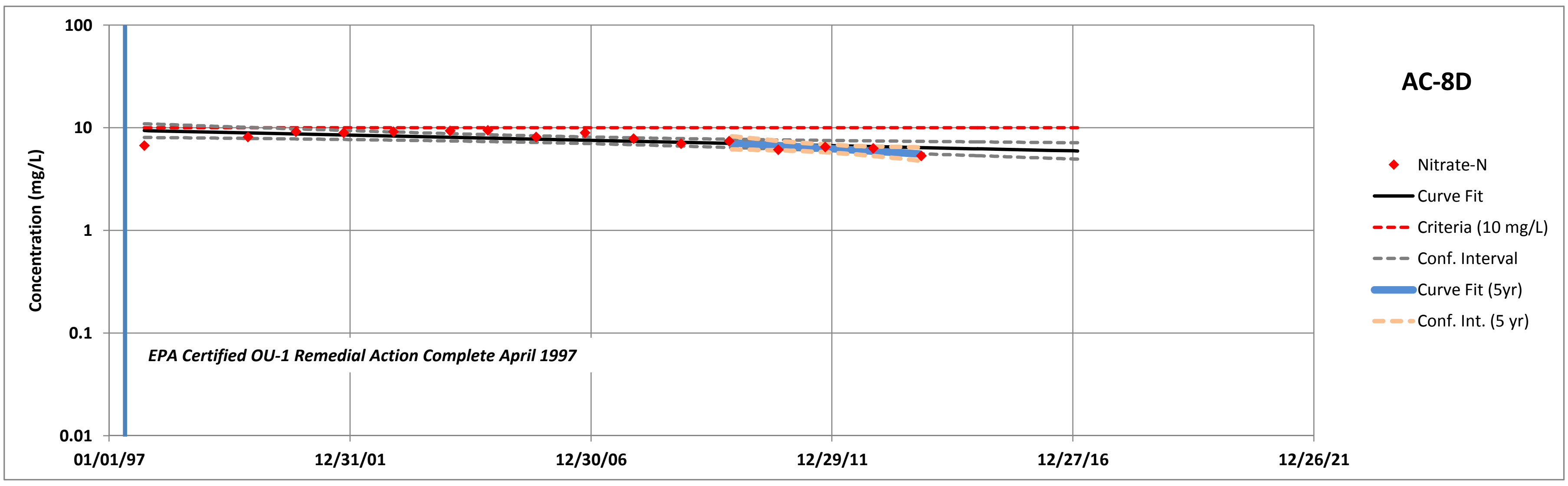


Figure 30

Nitrate-N Trend Plots for Main Producing Zone Monitoring Wells South of Plume Area

Agrico Site
Pensacola, Florida





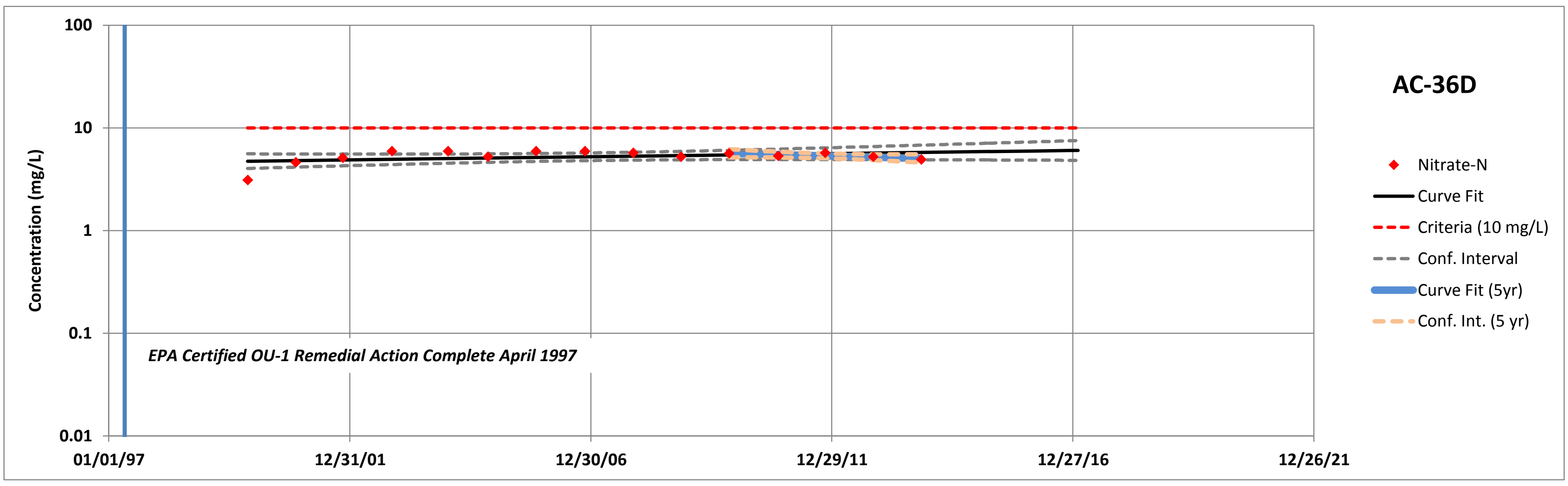
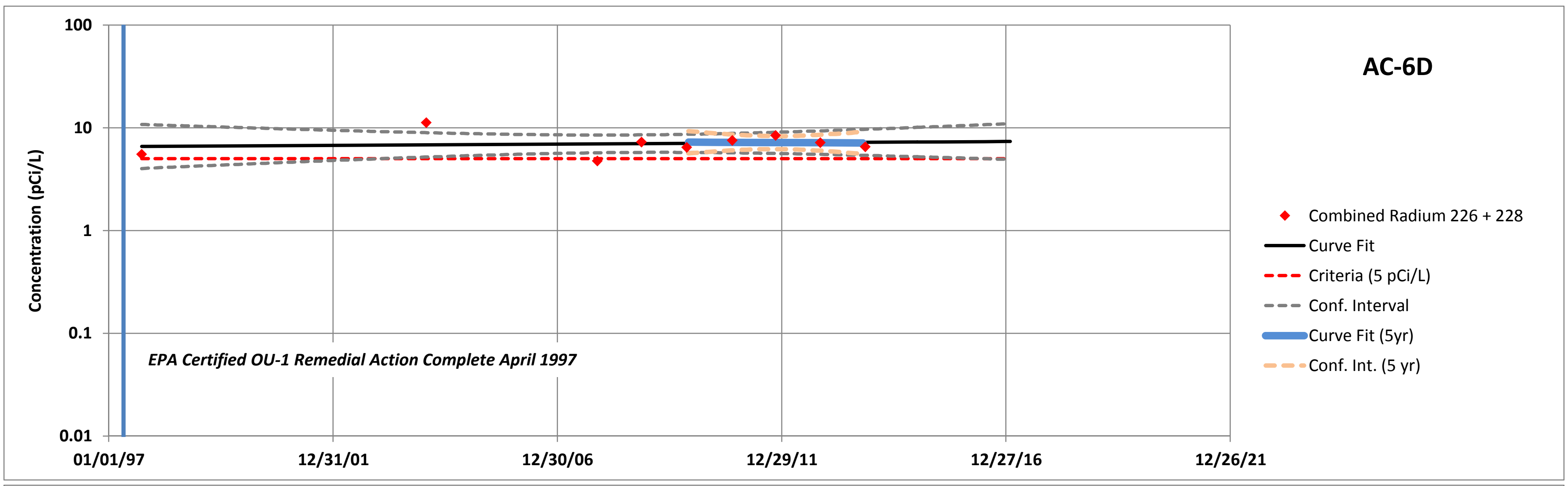
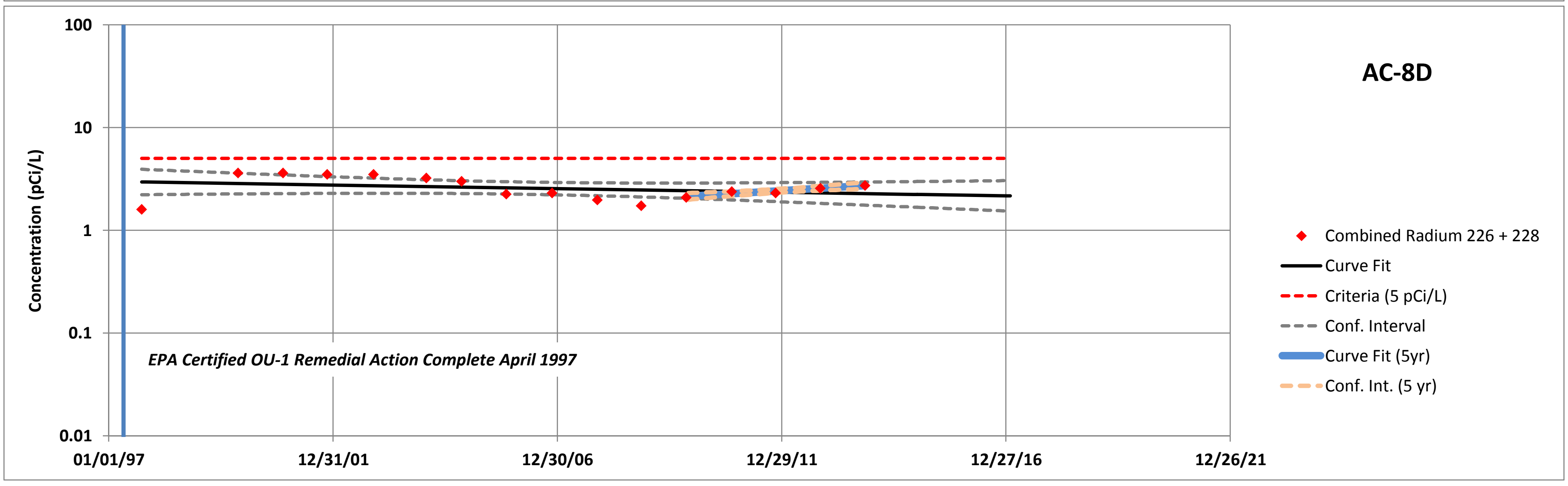


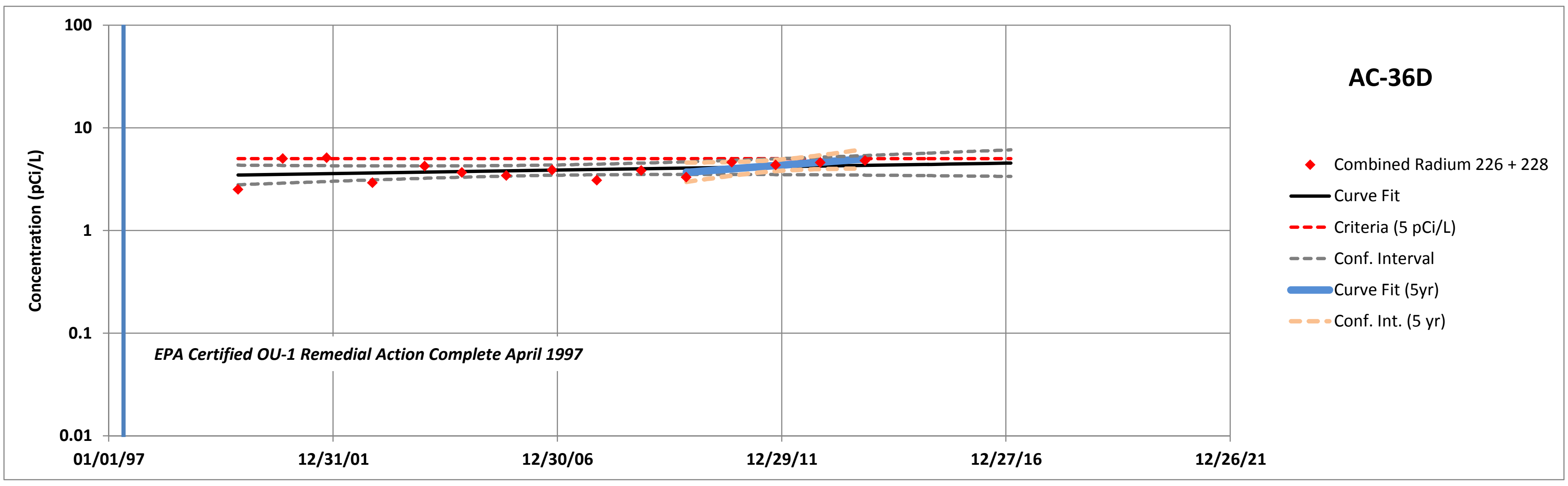
Figure 31

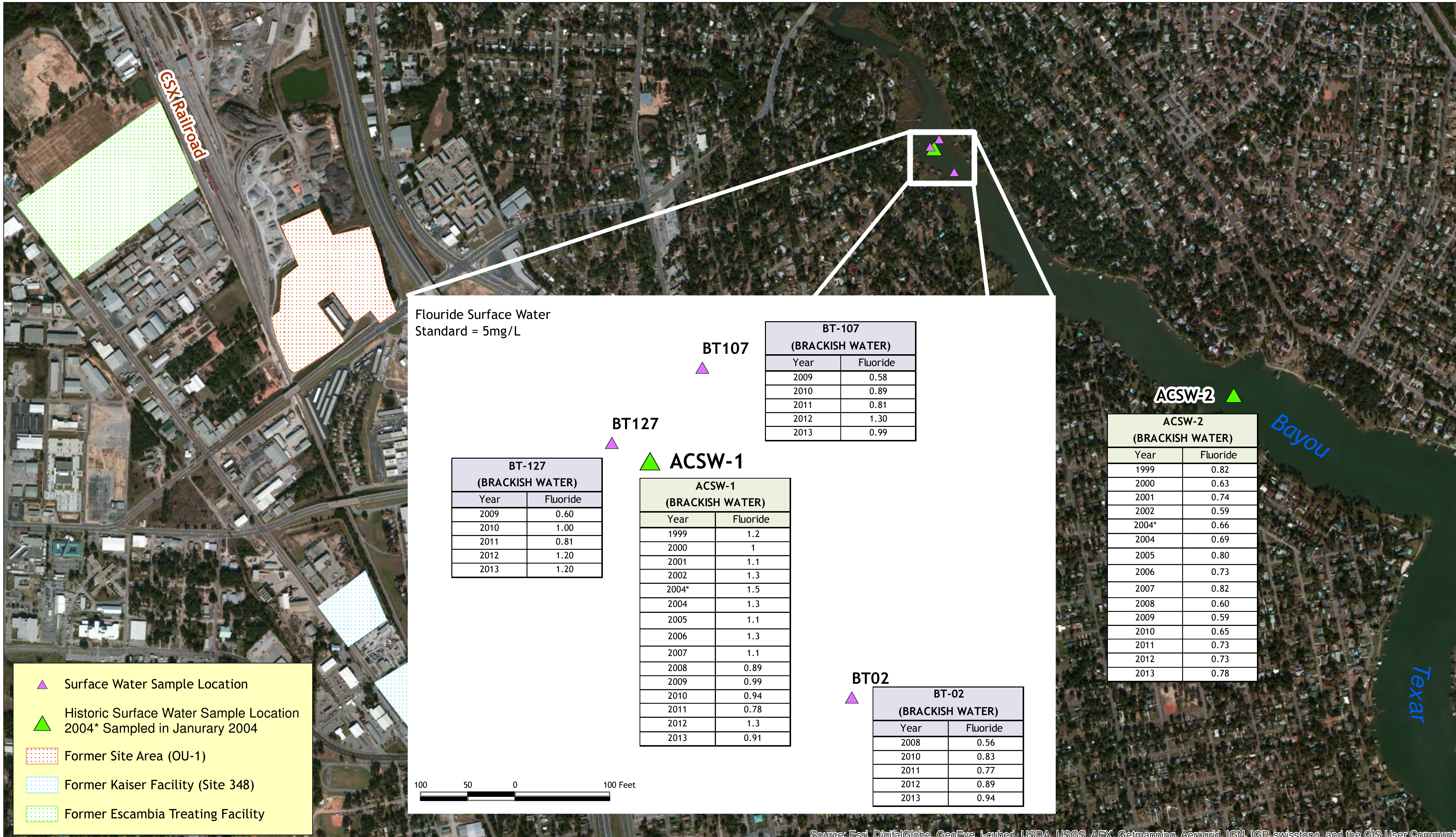
Combined Radium 226 + 228 Trend Plots for Main Producing Zone Monitoring Wells South of Plume Area

Agrico Site
Pensacola, Florida









BT-107 (BRACKISH WATER)

Year	Fluoride
2009	0.58
2010	0.89
2011	0.81
2012	1.30
2013	0.99

BT-127 (BRACKISH WATER)

Year	Fluoride
2009	0.60
2010	1.00
2011	0.81
2012	1.20
2013	1.20

ACSW-1 (BRACKISH WATER)

Year	Fluoride
1999	1.2
2000	1
2001	1.1
2002	1.3
2004*	1.5
2004	1.3
2005	1.1
2006	1.3
2007	1.1
2008	0.89
2009	0.99
2010	0.94
2011	0.78
2012	1.3
2013	0.91

BT-02 (BRACKISH WATER)

Year	Fluoride
2008	0.56
2010	0.83
2011	0.77
2012	0.89
2013	0.94

ACSW-2 (BRACKISH WATER)

Year	Fluoride
1999	0.82
2000	0.63
2001	0.74
2002	0.59
2004*	0.66
2004	0.69
2005	0.80
2006	0.73
2007	0.82
2008	0.60
2009	0.59
2010	0.65
2011	0.73
2012	0.73
2013	0.78

OU-1 and OU-2
AGRICO SITE
PENSACOLA, FLORIDA

URS

Base Map Data Provided By:
Florida Department of Environmental Protection
and Northwest Florida Water Management District
Aerial Source: ESRI

1,200 600 0 1,200 Feet

Coordinate System: UTM, Zone 16, NAD27

FLUORIDE CONCENTRATIONS (mg/L) NEAR BOTTOM SURFACE WATER

FIGURE 32

ashlyn_mitchell - Tallahassee - 2/27/2014

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APPENDIX A

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Tel: (850)878-3994

TestAmerica Job ID: 640-45696-1
Client Project/Site: Agrico

For:
URS Corporation
1625 Summit Lake Drive
Suite 200
Tallahassee, Florida 32317

Attn: Mr. Jeff Wagner

Amy Marks

Authorized for release by:
12/23/2013 2:44:31 PM

Amy Marks, Project Manager II
(850)878-3994
amy.marks@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 640-45696-1

Laboratory: TestAmerica Tallahassee

Narrative

Job Narrative
640-45696-1

Comments
No additional comments.

Receipt
The samples were received on 11/6/2013 at 9:40 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 2.2º C.

General Chemistry
No analytical or quality issues were noted.

Subcontract Work
Methods Radium 226 by EPA Method 903.1, Radium 228 by EPA Method 904.0: These methods were subcontracted to TestAmerica Richland.

Client Sample ID: ACB-32S — Lab Sample ID: 640-45696-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	1.2		0.50		mg/L	1		300.0	Total/NA
Sulfate	2.8		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	0.34		0.050		mg/L	1		353.2	Total/NA
Nitrate as N	0.34		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: ACB-31S — Lab Sample ID: 640-45696-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	3.1		0.50		mg/L	1		300.0	Total/NA
Sulfate	36		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	2.4		0.10		mg/L	2		353.2	Total/NA
Nitrate as N	2.4		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-33S — Lab Sample ID: 640-45696-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.7		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.78		0.10		mg/L	1		300.0	Total/NA
Sulfate	20		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	0.24		0.050		mg/L	1		353.2	Total/NA
Nitrate as N	0.24		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-34S — Lab Sample ID: 640-45696-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	4.1		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.77		0.10		mg/L	1		300.0	Total/NA
Sulfate	52		1.0		mg/L	2		300.0	Total/NA
Nitrate Nitrite as N	2.1		0.10		mg/L	2		353.2	Total/NA
Nitrate as N	2.1		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-7SR — Lab Sample ID: 640-45696-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.0		0.50		mg/L	1		300.0	Total/NA
Fluoride	2.4		0.10		mg/L	1		300.0	Total/NA
Sulfate	28		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	1.4		0.050		mg/L	1		353.2	Total/NA
Nitrate as N	1.4		0.010		mg/L	1		Nitrate by calc	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client Sample ID: ACB-32S

Date Collected: 11/05/13 08:21
Date Received: 11/06/13 09:40

Lab Sample ID: 640-45696-1
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1.2**		0.50		mg/L			11/25/13 12:32	1
Fluoride	<0.10		0.10		mg/L			11/25/13 12:32	1
Sulfate	**2.8**		0.50		mg/L			11/25/13 12:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**0.34**		0.050		mg/L			11/09/13 11:32	1
Nitrate as N	**0.34**		0.010		mg/L			11/14/13 13:31	1

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45696-1

Client Sample ID: ACB-31S
Date Collected: 11/05/13 09:09
Date Received: 11/06/13 09:40

Lab Sample ID: 640-45696-2
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**3.1**		0.50		mg/L			11/25/13 12:44	1
Fluoride	<0.10		0.10		mg/L			11/25/13 12:44	1
Sulfate	**36**		0.50		mg/L			11/25/13 12:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**2.4**		0.10		mg/L			11/09/13 11:43	2
Nitrate as N	**2.4**		0.010		mg/L			11/14/13 13:31	1

Client: URS Corporation | TestAmerica Job ID: 640-45696-1
Project/Site: Agrico

Client Sample ID: AC-33S | **Lab Sample ID: 640-45696-3**

Date Collected: 11/05/13 10:00 | **Matrix: Water**

Date Received: 11/06/13 09:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.7		0.50		mg/L			11/25/13 12:57	1
Fluoride	0.78		0.10		mg/L			11/25/13 12:57	1
Sulfate	20		0.50		mg/L			11/25/13 12:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.24		0.050		mg/L			11/09/13 11:21	1
Nitrate as N	0.24		0.010		mg/L			11/14/13 13:31	1

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45696-1

Client Sample ID: AC-34S

Lab Sample ID: 640-45696-4

Date Collected: 11/05/13 10:28
Date Received: 11/06/13 09:40

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.1		0.50		mg/L			11/25/13 13:21	1
Fluoride	0.77		0.10		mg/L			11/25/13 13:21	1
Sulfate	52		1.0		mg/L			11/26/13 12:53	2

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	2.1		0.10		mg/L			11/09/13 11:40	2
Nitrate as N	2.1		0.010		mg/L			11/14/13 13:31	1

Client Sample ID: AC-7SR

Lab Sample ID: 640-45696-5

Date Collected: 11/05/13 11:14

Matrix: Water

Date Received: 11/06/13 09:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.0		0.50		mg/L			11/25/13 13:34	1
Fluoride	2.4		0.10		mg/L			11/25/13 13:34	1
Sulfate	28		0.50		mg/L			11/25/13 13:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.4		0.050		mg/L			11/09/13 12:06	1
Nitrate as N	1.4		0.010		mg/L			11/14/13 13:31	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 680-304943/5
Matrix: Water
Analysis Batch: 304943

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.50		0.50		mg/L			11/25/13 10:29	1
Fluoride	<0.10		0.10		mg/L			11/25/13 10:29	1
Sulfate	<0.50		0.50		mg/L			11/25/13 10:29	1

Lab Sample ID: LCS 680-304943/6
Matrix: Water
Analysis Batch: 304943

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.99		mg/L		100	90 - 110
Fluoride	2.00	2.03		mg/L		102	90 - 110
Sulfate	10.0	9.91		mg/L		99	90 - 110

Lab Sample ID: LCSD 680-304943/7
Matrix: Water
Analysis Batch: 304943

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	9.98		mg/L		100	90 - 110	0	30
Fluoride	2.00	2.03		mg/L		102	90 - 110	0	30
Sulfate	10.0	9.88		mg/L		99	90 - 110	0	30

Lab Sample ID: MB 680-305132/5
Matrix: Water
Analysis Batch: 305132

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<0.50		0.50		mg/L			11/26/13 12:03	1

Lab Sample ID: LCS 680-305132/6
Matrix: Water
Analysis Batch: 305132

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	10.0	9.93		mg/L		99	90 - 110

Lab Sample ID: LCSD 680-305132/7
Matrix: Water
Analysis Batch: 305132

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	10.0	9.91		mg/L		99	90 - 110	0	30

Lab Sample ID: 640-45696-4 MS
Matrix: Water
Analysis Batch: 305132

Client Sample ID: AC-34S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	52		20.0	73.7		mg/L		106	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 640-45696-4 MSD
Matrix: Water
Analysis Batch: 305132

Client Sample ID: AC-34S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	52		20.0	72.3		mg/L		100	80 - 120	2	30

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-302463/13
Matrix: Water
Analysis Batch: 302463

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/09/13 11:07	1

Lab Sample ID: LCS 680-302463/14
Matrix: Water
Analysis Batch: 302463

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	0.997	1.04		mg/L		104	90 - 110

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45696-1

HPLC/IC

Analysis Batch: 304943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45696-1	ACB-32S	Total/NA	Water	300.0	
640-45696-2	ACB-31S	Total/NA	Water	300.0	
640-45696-3	AC-33S	Total/NA	Water	300.0	
640-45696-4	AC-34S	Total/NA	Water	300.0	
640-45696-5	AC-7SR	Total/NA	Water	300.0	
LCS 680-304943/6	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-304943/7	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-304943/5	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 305132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45696-4	AC-34S	Total/NA	Water	300.0	
640-45696-4 MS	AC-34S	Total/NA	Water	300.0	
640-45696-4 MSD	AC-34S	Total/NA	Water	300.0	
LCS 680-305132/6	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305132/7	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305132/5	Method Blank	Total/NA	Water	300.0	

General Chemistry

Analysis Batch: 105891

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45696-1	ACB-32S	Total/NA	Water	Nitrate by calc	
640-45696-2	ACB-31S	Total/NA	Water	Nitrate by calc	
640-45696-3	AC-33S	Total/NA	Water	Nitrate by calc	
640-45696-4	AC-34S	Total/NA	Water	Nitrate by calc	
640-45696-5	AC-7SR	Total/NA	Water	Nitrate by calc	

Analysis Batch: 302463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45696-1	ACB-32S	Total/NA	Water	353.2	
640-45696-2	ACB-31S	Total/NA	Water	353.2	
640-45696-3	AC-33S	Total/NA	Water	353.2	
640-45696-4	AC-34S	Total/NA	Water	353.2	
640-45696-5	AC-7SR	Total/NA	Water	353.2	
LCS 680-302463/14	Lab Control Sample	Total/NA	Water	353.2	
MB 680-302463/13	Method Blank	Total/NA	Water	353.2	

Client Sample ID: ACB-32S

Lab Sample ID: 640-45696-1
Date Collected: 11/05/13 08:21
Matrix: Water
Date Received: 11/06/13 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	304943	11/25/13 12:32	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		1	302463	11/09/13 11:32	CRW	TAL SAV

Client Sample ID: ACB-31S

Lab Sample ID: 640-45696-2
Date Collected: 11/05/13 09:09
Matrix: Water
Date Received: 11/06/13 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	304943	11/25/13 12:44	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		2	302463	11/09/13 11:43	CRW	TAL SAV

Client Sample ID: AC-33S

Lab Sample ID: 640-45696-3
Date Collected: 11/05/13 10:00
Matrix: Water
Date Received: 11/06/13 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	304943	11/25/13 12:57	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		1	302463	11/09/13 11:21	CRW	TAL SAV

Client Sample ID: AC-34S

Lab Sample ID: 640-45696-4
Date Collected: 11/05/13 10:28
Matrix: Water
Date Received: 11/06/13 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	304943	11/25/13 13:21	PAT	TAL SAV
Total/NA	Analysis	300.0		2	305132	11/26/13 12:53	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		2	302463	11/09/13 11:40	CRW	TAL SAV

Client Sample ID: AC-7SR

Lab Sample ID: 640-45696-5
Date Collected: 11/05/13 11:14
Matrix: Water
Date Received: 11/06/13 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	304943	11/25/13 13:34	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		1	302463	11/09/13 12:06	CRW	TAL SAV

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

Certification Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45696-1

Laboratory: TestAmerica Tallahassee

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E81005	06-30-14
Georgia	State Program	4		06-30-14
Louisiana	NELAP	6	30663	06-30-14
New Jersey	NELAP	2	FL012	06-30-14
Texas	NELAP	6	T104704459-11-2	03-31-14
USDA	Federal		P330-08-00158	08-05-14

Laboratory: TestAmerica Richland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA	IHLAP		187436	08-01-15
Arizona	State Program	9	AZ0709	07-02-14
California	NELAP	9	E87829	05-31-14
Colorado	State Program	8	N/A	09-30-14
Florida	NELAP	4	E87829	06-30-14
Hawaii	State Program	9	N/A	01-09-14
L-A-B	DoD ELAP		L2291	06-30-14
Michigan	State Program	5	N/A	08-13-14
Nevada	State Program	9	WA011162014	07-31-14
New Mexico	State Program	6	WA00023	01-09-14
Oregon	NELAP	10	WA100002	01-09-14
Pennsylvania	NELAP	3	68-04849	08-31-14
Tennessee	State Program	4	TN04011	08-13-14
Texas	NELAP	6	T104704493-10-1	12-31-13
USDA	Federal		P330-11-00043	01-25-14
Utah	NELAP	8	QUAN8	01-09-14 *
Virginia	State Program	3	00100	06-30-14
Washington	State Program	10	WA01116	08-14-14
Washington (CLIA)	State Program	10	50D0661626	06-30-15

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-14
California	NELAP	9	3217CA	07-31-14
Colorado	State Program	8	N/A	12-31-13 *
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13 *
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	06-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Iowa	State Program	7	353	07-01-15
Kentucky	State Program	4	90084	12-31-13 *
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	30690	06-30-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13 *
Massachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-14
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	04-01-14
North Carolina DENR	State Program	4	269	12-31-13 *
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-14
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14 *
South Carolina	State Program	4	98001	06-30-14
Tennessee	State Program	4	TN02961	06-30-14
Texas	NELAP	6	T104704185-08-TX	11-30-14
USDA	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13 *
West Virginia DEP	State Program	3	94	06-30-14
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Method Summary

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
Nitrate by calc	Nitrogen, Nitrate-Nitrite	SM	TAL TAL
Rad 226-Method 903.1 (Richland)	RAD-226 (RCH)	NONE	TAL RCH
Rad 228-Method 904.0 (Richland)	RAD-228 (RCH)	NONE	TAL RCH

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

Sample Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45696-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
640-45696-1	ACB-32S	Water	11/05/13 08:21	11/06/13 09:40
640-45696-2	ACB-31S	Water	11/05/13 09:09	11/06/13 09:40
640-45696-3	AC-33S	Water	11/05/13 10:00	11/06/13 09:40
640-45696-4	AC-34S	Water	11/05/13 10:28	11/06/13 09:40
640-45696-5	AC-7SR	Water	11/05/13 11:14	11/06/13 09:40

Analytical Data Package Prepared For

TestAmerica Tallahassee

Radiochemical Analysis By

TestAmerica Inc

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARL

Data Package Contains 17 *Pages*

Report No.: 58103

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
47481		AC-33S(640-45696-3)	J3K080428-3	M2GLX1AA	9M2GLX10	3317030
		AC-33S(640-45696-3)	J3K080428-3	M2GLX1AC	9M2GLX10	3317031
		AC-34S(640-45696-4)	J3K080428-4	M2GL01AA	9M2GL010	3317030
		AC-34S(640-45696-4)	J3K080428-4	M2GL01AC	9M2GL010	3317031
		AC-7SR(640-45696-5)	J3K080428-5	M2GL11AA	9M2GL110	3317030
		AC-7SR(640-45696-5)	J3K080428-5	M2GL11AC	9M2GL110	3317031
		ACB-31S(640-45696-2)	J3K080428-2	M2GLW1AA	9M2GLW10	3317030
		ACB-31S(640-45696-2)	J3K080428-2	M2GLW1AC	9M2GLW10	3317031
		ACB-32S(640-45696-1)	J3K080428-1	M2GLV1AA	9M2GLV10	3317030
		ACB-32S(640-45696-1)	J3K080428-1	M2GLV1AC	9M2GLV10	3317031

Certificate of Analysis

December 17, 2013

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301

Attention: Amy Marks

Date Received by Lab	:	November 7, 2012
Sample Number/Matrix	:	Five (5) Waters
SDG Number	:	47481
Chain Of Custody	:	640-62475.1
Project	:	Agrico
Project Number	:	640-45696-1

CASE NARRATIVE

I. Introduction

On November 7, 2012, five water samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt, the samples were assigned the TestAmerica identification numbers as described on the cover page of the Analytical Data Package. The samples were assigned to Lot Number J3K080428.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Gas Proportional Counting
Radium-228 by method RL-RA-001
Alpha Scintillation Counting
Radium-226 by method RL-RA-001

TestAmerica Tallahassee
December 17, 2013

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the “Comments” section.

V. Comments

Gas Proportional Counting

Radium-228 by method RL-RA-001:
The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

Alpha Scintillation Counting

Radium-226 by method RL-RA-001:
Sample AC-32S was counted on a cell that showed the calibration to be expired. However, the expiration was supposed to have been extended to 12-31-13. The QC manager made the correction and extended the expiration. Data is accepted. Except as noted, the LCS, batch blank, sample and sample duplicate results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Erika Jordan
2013.12.20
14:45:09 -08'00'

Erika Jordan
Manager of Project Management

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in “NIST Technical Note 1297, 1994 Edition”. The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c *the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Date: 17-Dec-13

Report No. : 58103

SDG No: 47481

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
3317030 E903.1									
	AC-33S(640-45696-3)								
	M2GLX1AA	RADIUM-226	0.410 +- 0.20	J	pCi/L	92%	0.24	1.0	
	AC-34S(640-45696-4)								
	M2GL01AA	RADIUM-226	0.218 +- 0.14	J	pCi/L	90%	0.217	1.0	
	AC-7SR(640-45696-5)								
	M2GL11AA	RADIUM-226	0.172 +- 0.16	U	pCi/L	97%	0.275	1.0	
	ACB-31S(640-45696-2)								
	M2GLW1AA	RADIUM-226	0.184 +- 0.17	U	pCi/L	100%	0.283	1.0	
	ACB-32S(640-45696-1)								
	M2GLV1AA	RADIUM-226	0.290 +- 0.16	J	pCi/L	92%	0.211	1.0	
	ACB-32S(640-45696-1) DUP								
	M2GLV1AD	RADIUM-226	0.0268 +- 0.14	U	pCi/L	93%	0.28	1.0	2.5
3317031 E904.0									
	AC-33S(640-45696-3)								
	M2GLX1AC	RADIUM-228	2.07 +- 0.47	V	pCi/L	82%	0.526	1.0	
	AC-34S(640-45696-4)								
	M2GL01AC	RADIUM-228	0.927 +- 0.36	J	pCi/L	79%	0.586	1.0	
	AC-7SR(640-45696-5)								
	M2GL11AC	RADIUM-228	1.09 +- 0.36	V	pCi/L	87%	0.548	1.0	
	ACB-31S(640-45696-2)								
	M2GLW1AC	RADIUM-228	4.15 +- 0.74	V	pCi/L	87%	0.792	1.0	
	ACB-32S(640-45696-1)								
	M2GLV1AC	RADIUM-228	0.517 +- 0.43	U	pCi/L	79%	0.899	1.0	
	ACB-32S(640-45696-1) DUP								
	M2GLV1AE	RADIUM-228	0.804 +- 0.38	J	pCi/L	82%	0.732	1.0	1.0

No. of Results: 12

TestAmerica Inc

rptSTLRchSaSummary2 V5.2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

V Qual - Detected.

QC Results Summary
TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Date: 17-Dec-13

Report No. : 58103 **SDG No.:** 47481

Batch / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
E903.1								
3317030 BLANK QC,								
M2HDM1AA	RADIUM-226	0.0431 +- 0.080	U	pCi/L	100%			0.156
3317030 LCS,								
M2HDM1AC	RADIUM-226	9.79 +- 2.4	V	pCi/L	96%	99%	0.0	0.233
E904.0								
3317031 BLANK QC,								
M2HDN1AA	RADIUM-228	0.455 +- 0.25	U	pCi/L	88%			0.484
3317031 LCS,								
M2HDN1AC	RADIUM-228	12.2 +- 1.6	V	pCi/L	85%	125%	0.3	0.736

No. of Results: 4

TestAmerica Inc

rptSTLRchQcSummary V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc **SDG:** 47481 **Collection Date:** 11/5/2013 10:00:00 AM
Lot-Sample No.: J3K080428-3 **Report No. :** 58103 **Received Date:** 11/7/2013 10:30:00 AM
Client Sample ID: AC-33S(640-45696-3) **COC No. :** 640-62475.1 **Matrix:** WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2GLX1AA	**Report DB ID:**	9M2GLX10					
RADIUM-226	0.410	J	0.17	0.20	0.24	pCi/L	92%	*(1.7)*	12/6/13 02:42 p		0.8882	ASC6RD
						0.107	1.0	*(4.)*			L	
Batch: 3317031	E904.0			**Work Order:**	M2GLX1AC	**Report DB ID:**	9M2GLX10					
RADIUM-228	2.07	V	0.41	0.47	0.526	pCi/L	82%	*(3.9)*	12/10/13 02:02 p		0.8882	GPC2B
						0.228	1.0	*(8.7)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc
Lot-Sample No.: J3K080428-4
Client Sample ID: AC-34S(640-45696-4)

SDG: 47481
Report No. : 58103
COC No. : 640-62475.1

Collection Date: 11/5/2013 10:28:00 AM
Received Date: 11/7/2013 10:30:00 AM
Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2GL01AA		**Report DB ID:** 9M2GL010					
RADIUM-226	**0.218**	J	0.14	0.14	0.217	pCi/L	90%	*(1.)*	12/6/13 02:41 p		0.8847	ASC7HA
						0.096	1.0	*(3.)*			L	
Batch: 3317031	E904.0			**Work Order:**	M2GL01AC		**Report DB ID:** 9M2GL010					
RADIUM-228	**0.927**	J	0.34	0.36	0.586	pCi/L	79%	*(1.6)*	12/10/13 02:02 p		0.8847	GPC2C
						0.255	1.0	*(5.2)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47481	**Collection Date:**	11/5/2013 11:14:00 AM
Lot-Sample No.:	**J3K080428-5**	**Report No. :**	58103	**Received Date:**	11/7/2013 10:30:00 AM
Client Sample ID:	**AC-7SR(640-45696-5)**	**COC No. :**	640-62475.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2GL11AA		**Report DB ID:** 9M2GL110					
RADIUM-226	0.172	U	0.15	0.16	0.275	pCi/L	97%	*0.63*	12/6/13 02:42 p		0.8393	ASC8HD
						0.124	1.0	*(2.2)*			L	
Batch: 3317031	E904.0			**Work Order:**	M2GL11AC		**Report DB ID:** 9M2GL110					
RADIUM-228	1.09	V	0.34	0.36	0.548	pCi/L	87%	*(2.)*	12/10/13 02:02 p		0.8393	GPC2D
						0.237	1.0	*(6.)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc | **SDG:** 47481 | **Collection Date:** 11/5/2013 9:09:00 AM

Lot-Sample No.: J3K080428-2 | **Report No. :** 58103 | **Received Date:** 11/7/2013 10:30:00 AM

Client Sample ID: ACB-31S(640-45696-2) | **COC No. :** 640-62475.1 | **Matrix:** WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2GLW1AA		**Report DB ID:**	9M2GLW10				
RADIUM-226	**0.184**	U	0.16	0.17	0.283	pCi/L	100%	*0.65*	12/6/13 02:42 p		0.8393	ASC5UC
						0.126	1.0	*(2.2)*			L	
Batch: 3317031	E904.0			**Work Order:**	M2GLW1AC		**Report DB ID:**	9M2GLW10				
RADIUM-228	**4.15**	V	0.57	0.74	0.792	pCi/L	87%	*(5.2)*	12/10/13 02:02 p		0.8394	GPC1D
						0.366	1.0	*(11.3)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47481	**Collection Date:**	11/5/2013 8:21:00 AM
Lot-Sample No.:	**J3K080428-1**	**Report No. :**	58103	**Received Date:**	11/7/2013 10:30:00 AM
Client Sample ID:	**ACB-32S(640-45696-1)**	**COC No. :**	640-62475.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2GLV1AA	**Report DB ID:**	9M2GLV10					
RADIUM-226	**0.290**	J	0.14	0.16	0.211	pCi/L	92%	*(1.4)*	12/6/13 02:42 p		0.8772	ASC1HB
						0.0925	1.0	*(3.7)*			L	
Batch: 3317031	E904.0			**Work Order:**	M2GLV1AC	**Report DB ID:**	9M2GLV10					
RADIUM-228	**0.517**	U	0.43	0.43	0.899	pCi/L	79%	*0.58*	12/10/13 02:02 p		0.8772	GPC1A
						0.418	1.0	*(2.4)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM II

Date: 17-Dec-13

DUPLICATE RESULTS

Lab Name: TestAmerica Inc | **SDG:** 47481 | **Collection Date:** 11/5/2013 8:21:00 AM

Lot-Sample No.: J3K080428-1 | **Report No. :** 58103 | **Received Date:** 11/7/2013 10:30:00 AM

Client Sample ID: ACB-32S(640-45696-1) DUP | **COC No. :** 640-62475.1 | **Matrix:** WATER W

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030 E903.1				**Work Order:** M2GLV1AD		**Report DB ID:** M2GLV1DR			**Orig Sa DB ID:** 9M2GLV10			
RADIUM-226	0.0268	U	0.14	0.14	0.28	pCi/L	93%	0.1	12/6/13 02:42 p		0.9015	ASC2HA
	0.29	J	**RER2 2.5**			1.0		0.39			L	
Batch: 3317031 E904.0				**Work Order:** M2GLV1AE		**Report DB ID:** M2GLV1ER			**Orig Sa DB ID:** 9M2GLV10			
RADIUM-228	0.804	J	0.36	0.38	0.732	pCi/L	82%	(1.1)	12/10/13 02:02 p		0.9015	GPC1B
	0.517	U	**RER2 1.0**			1.0		(4.2)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchDupV5.2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

BLANK RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc **SDG:** 47481

Matrix: WATER **Report No. :** 58103

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2HDM1AA		**Report DB ID:**	M2HDM1AB				
RADIUM-226	0.0431	U	0.080	0.080	0.156	pCi/L	100%	0.28	12/6/13 02:53 p		1.003	ASCKMF
					0.0665	1.0		(1.1)			L	
Batch: 3317031	E904.0			**Work Order:**	M2HDN1AA		**Report DB ID:**	M2HDN1AB				
RADIUM-228	0.455	U	0.24	0.25	0.484	pCi/L	88%	0.94	12/10/13 02:02 p		1.003	GPC4D
					0.212	1.0		(3.6)			L	

No. of Results: 2 **Comments:**

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc **SDG:** 47481

Matrix: WATER **Report No. :** 58103

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2HDM1AC		**Report DB ID:**	M2HDM1CS					
RADIUM-226	9.79	V	0.61	2.4	0.233	pCi/L	96%	9.92	0.1	99%	12/6/13 02:55 p	1.003	ASCMRA
							Rec Limits:	75	125	0.0		L	
Batch: 3317031	E904.0			**Work Order:**	M2HDN1AC		**Report DB ID:**	M2HDN1CS					
RADIUM-228	12.2	V	0.78	1.6	0.736	pCi/L	85%	9.74	0.11	125%	12/10/13 02:02 p	1.003	GPC6B
							Rec Limits:	75	125	0.3		L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchLcs
V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
V Qual - Detected.

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-62475.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: amy.marks@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 640-45696-1
Address: 2800 George Washington Way,	Due Date Requested: 12/3/2013			
City: Richland	TAT Requested (days):			
State, Zip: WA, 99352				
Phone: 509-375-3131(Tel) 509-375-5590(Fax)	PO #:			
Email:	WO #:			
Project Name: Agrico	Project #: 64000434			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT/ Rad 228-Method 904.0 (Richland)	SUBCONTRACT/ Rad 226-Method 903.1 (Richland)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
ACB-32S (640-45696-1) m26LV	11/5/13	08:21 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
ACB-31S (640-45696-2) m26LW	11/5/13	09:09 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
AC-33S (640-45696-3) m26LX	11/5/13	10:00 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
AC-34S (640-45696-4) m26L0	11/5/13	10:28 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
AC-7SR (640-45696-5) m26L1	11/5/13	11:14 Eastern		Water			X	X	2	Project MS/MSD assigned by client.

J3K080428
SDG-47481
Due 12-5-13

J3K080428

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 11/6/13 1404	Company: TAL	Received by: Back 11-8-13 received on	Date/Time: 11-7-13 1030	Company: TAL
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

14 13 12 11 10 9 8 7 6 5 4 3 2 1

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 11-7-13 | 1030 Container GM Screen Result: (Airlock) 20 cpm Initials[B]
Sample GM Screen Result (Sample Receiving) 40 cpm Initials[B]

Client: STL-T SDG #: ~~474476~~ 474481 B11-7-13 SAF #: NA[B]

Lot Number: J3K080428

Chain of Custody # 640-62475.1

Shipping Container ID or Air Bill Number : NA[B]

Samples received inside shipping container/cooler/box Yes [B] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: 2.2 °C NA [ ]
4. Vermiculite/packing materials is NA [ ] Wet [B] Ice Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [B] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 5
7. Containers received: 10 x LP
8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]
9. Samples have: ____ tape B hazard labels ____ custody seals B appropriate sample labels
10. Matrix: ____ A (FLT, Wipe, Solid, Soil) B I (Water) ____ S (Air, Niosh 7400) ____ T (Biological, Ni-63)
11. Samples:
    B are in good condition ____ are leaking ____ are broken
    ____ have air bubbles (Only for samples requiring no head space) ____ Other
12. Sample pH appropriate for analysis requested Yes [B] No [ ] NA [ ]
    (If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [B]
14. Description of anomalies (include sample numbers): NA [B]
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [B]
    *For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: [signature] Date: 11-7-13

Client Notification needed? Yes [ ] No [ ] Date:
By:
Person contacted:

[X] No action necessary; process as is

Project Manager [signature] Date 11/11/13

LS-023 Rev. 17, 05/13

Page 1 of 1

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: E. Mann / D. Hilton	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-41766-6826.4
Client Contact: Mr. Jeff Wagner	Phone: 850 643 6461	E-Mail: amy.marks@testamericainc.com		Page: Page 4 of 4
Company: URS Corporation				Job #: 640-45696
Address: 1625 Summit Lake Drive Suite 200	Due Date Requested:			
City: Tallahassee	TAT Requested (days):			
State, Zip: FL, 32317				
Phone:	PO #: ~~[illegible]~~ 12806318.00000			
Email: jeffry_wagner@urscorp.com	WO #:			
Project Name: Agrico Annual	Project #: 64000434			
Site: Florida	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA
M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2SO3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - ph 4-5; Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT - 904 - Rad228/ 903-Rad226 (Richland)	353.2 - Nitrate as N	SM4500_NO2_B - Nitrate as N	300_ORGFM_28D - Chloride, Fluoride and Sulfate	6010B - Arsenic	300_ORGFM_28D - Fluoride	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	S	N	N	D	N		
ACB - 32s	11/5/13	0821	G	W	N	N	2	1	1	1				
ACB - 31s	↓	0909	↓	↓	↓	↓	↓	↓	↓	↓				
AC - 33s	↓	1000	↓	↓	↓	↓	↓	↓	↓	↓				
AC - 34s	↓	1028	↓	↓	↓	↓	↓	↓	↓	↓				
AC - 7SR	↓	1114	↓	↓	↓	↓	↓	↓	↓	↓				

640-45696 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ______ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date: 10/24/13	Time: 0925	Method of Shipment:	
Relinquished by:	Date/Time: 11/5/13 1703	Company: Fed Ex	Received by:	Date/Time: 11/6/13 0845	Company: TAT
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.2°C

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Tel: (850)878-3994

TestAmerica Job ID: 640-45718-1
Client Project/Site: Agrico

For:
URS Corporation
1625 Summit Lake Drive
Suite 200
Tallahassee, Florida 32317

Attn: Mr. Jeff Wagner

Amy Marks

Authorized for release by:
12/23/2013 2:48:35 PM

Amy Marks, Project Manager II
(850)878-3994
amy.marks@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Job ID: 640-45718-1

Laboratory: TestAmerica Tallahassee

Narrative

Job Narrative
640-45718-1

Comments
No additional comments.

Receipt
The samples were received on 11/7/2013 at 10:15 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 2.1º C.

General Chemistry
No analytical or quality issues were noted.

Subcontract Work
Methods Radium 226 by EPA Method 903.1, Radium 228 by EPA Method 904.0: These methods were subcontracted to TestAmerica Richland.

Detection Summary

Client Sample ID: AC-8D — Lab Sample ID: 640-45718-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	13		0.50		mg/L	1		300.0	Total/NA
Sulfate	4.5		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	5.3		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	5.3		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-36D — Lab Sample ID: 640-45718-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12		0.50		mg/L	1		300.0	Total/NA
Sulfate	20		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	4.9		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	4.9		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-13D — Lab Sample ID: 640-45718-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	24		0.50		mg/L	1		300.0	Total/NA
Fluoride	14		0.20		mg/L	2		300.0	Total/NA
Sulfate	310		5.0		mg/L	10		300.0	Total/NA
Nitrate Nitrite as N	11		0.50		mg/L	10		353.2	Total/NA
Nitrate as N	11		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-12D — Lab Sample ID: 640-45718-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	19		0.50		mg/L	1		300.0	Total/NA
Fluoride	14		0.20		mg/L	2		300.0	Total/NA
Sulfate	260		5.0		mg/L	10		300.0	Total/NA
Nitrate Nitrite as N	9.0		0.50		mg/L	10		353.2	Total/NA
Nitrate as N	9.0		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-28D — Lab Sample ID: 640-45718-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	28		0.50		mg/L	1		300.0	Total/NA
Fluoride	9.6		0.20		mg/L	2		300.0	Total/NA
Sulfate	69		1.0		mg/L	2		300.0	Total/NA
Nitrate Nitrite as N	5.5		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	5.5		0.010		mg/L	1		Nitrate by calc	Total/NA

This Detection Summary does not include radiochemical test results.

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45718-1

Client Sample ID: AC-8D
Date Collected: 11/06/13 08:39
Date Received: 11/07/13 10:15

Lab Sample ID: 640-45718-1
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**13**		0.50		mg/L			11/27/13 18:23	1
Fluoride	<0.10		0.10		mg/L			11/27/13 18:23	1
Sulfate	**4.5**		0.50		mg/L			11/27/13 18:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**5.3**		0.25		mg/L			11/09/13 12:05	5
Nitrate as N	**5.3**		0.010		mg/L			11/14/13 13:31	1

Client Sample ID: AC-36D

Date Collected: 11/06/13 09:54
Date Received: 11/07/13 10:15

Lab Sample ID: 640-45718-2

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**12**		0.50		mg/L			11/27/13 19:03	1
Fluoride	<0.10		0.10		mg/L			11/27/13 19:03	1
Sulfate	**20**		0.50		mg/L			11/27/13 19:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**4.9**		0.25		mg/L			11/09/13 12:02	5
Nitrate as N	**4.9**		0.010		mg/L			11/14/13 13:31	1

Client Sample Results

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45718-1

Client Sample ID: AC-13D

Lab Sample ID: 640-45718-3

Date Collected: 11/06/13 12:37
Matrix: Water
Date Received: 11/07/13 10:15

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	24		0.50		mg/L			11/27/13 19:17	1
Fluoride	14		0.20		mg/L			11/29/13 16:02	2
Sulfate	310		5.0		mg/L			11/29/13 16:15	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	11		0.50		mg/L			11/09/13 11:31	10
Nitrate as N	11		0.010		mg/L			11/14/13 13:31	1

Client Sample ID: AC-12D

Lab Sample ID: 640-45718-4

Date Collected: 11/06/13 13:01

Matrix: Water

Date Received: 11/07/13 10:15

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19		0.50		mg/L			11/27/13 19:30	1
Fluoride	14		0.20		mg/L			11/29/13 16:28	2
Sulfate	260		5.0		mg/L			11/29/13 16:42	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	9.0		0.50		mg/L			11/09/13 11:15	10
Nitrate as N	9.0		0.010		mg/L			11/14/13 13:31	1

Client Sample ID: AC-28D

Lab Sample ID: 640-45718-5

Date Collected: 11/06/13 16:11
Matrix: Water
Date Received: 11/07/13 10:15

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	28		0.50		mg/L			11/27/13 20:36	1
Fluoride	9.6		0.20		mg/L			11/29/13 16:55	2
Sulfate	69		1.0		mg/L			11/29/13 16:55	2

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	5.5		0.25		mg/L			11/09/13 11:57	5
Nitrate as N	5.5		0.010		mg/L			11/14/13 13:31	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 680-305362/8
Matrix: Water
Analysis Batch: 305362

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.50		0.50		mg/L			11/27/13 12:50	1
Fluoride	<0.10		0.10		mg/L			11/27/13 12:50	1
Sulfate	<0.50		0.50		mg/L			11/27/13 12:50	1

Lab Sample ID: LCS 680-305362/9
Matrix: Water
Analysis Batch: 305362

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.2		mg/L		102	90 - 110
Fluoride	2.00	2.15		mg/L		107	90 - 110
Sulfate	10.0	10.4		mg/L		104	90 - 110

Lab Sample ID: LCSD 680-305362/10
Matrix: Water
Analysis Batch: 305362

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.3		mg/L		103	90 - 110	1	30
Fluoride	2.00	2.17		mg/L		109	90 - 110	1	30
Sulfate	10.0	10.5		mg/L		105	90 - 110	1	30

Lab Sample ID: 640-45718-1 MS
Matrix: Water
Analysis Batch: 305362

Client Sample ID: AC-8D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	13		10.0	23.4		mg/L		103	80 - 120
Fluoride	<0.10		2.00	2.02		mg/L		101	80 - 120
Sulfate	4.5		10.0	15.0		mg/L		105	80 - 120

Lab Sample ID: 640-45718-1 MSD
Matrix: Water
Analysis Batch: 305362

Client Sample ID: AC-8D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	13		10.0	23.3		mg/L		103	80 - 120	0	30
Fluoride	<0.10		2.00	2.03		mg/L		102	80 - 120	1	30
Sulfate	4.5		10.0	15.1		mg/L		106	80 - 120	0	30

Lab Sample ID: MB 680-305419/40
Matrix: Water
Analysis Batch: 305419

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.50		0.50		mg/L			11/27/13 19:56	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 680-305419/41
Matrix: Water
Analysis Batch: 305419

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.3		mg/L		103	90 - 110

Lab Sample ID: LCSD 680-305419/42
Matrix: Water
Analysis Batch: 305419

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.3		mg/L		103	90 - 110	1	30

Lab Sample ID: MB 680-305552/6
Matrix: Water
Analysis Batch: 305552

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.10		0.10		mg/L			11/29/13 15:08	1
Sulfate	<0.50		0.50		mg/L			11/29/13 15:08	1

Lab Sample ID: LCS 680-305552/7
Matrix: Water
Analysis Batch: 305552

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	2.00	2.13		mg/L		107	90 - 110
Sulfate	10.0	10.4		mg/L		104	90 - 110

Lab Sample ID: LCSD 680-305552/8
Matrix: Water
Analysis Batch: 305552

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	2.00	2.15		mg/L		107	90 - 110	1	30
Sulfate	10.0	10.5		mg/L		105	90 - 110	1	30

Lab Sample ID: 640-45718-5 MS
Matrix: Water
Analysis Batch: 305552

Client Sample ID: AC-28D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	9.6		4.00	13.3		mg/L		93	80 - 120
Sulfate	69		20.0	89.2		mg/L		100	80 - 120

Lab Sample ID: 640-45718-5 MSD
Matrix: Water
Analysis Batch: 305552

Client Sample ID: AC-28D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	9.6		4.00	13.3		mg/L		93	80 - 120	0	30
Sulfate	69		20.0	88.8		mg/L		98	80 - 120	0	30

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-302463/13
Matrix: Water
Analysis Batch: 302463

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/09/13 11:07	1

Lab Sample ID: LCS 680-302463/14
Matrix: Water
Analysis Batch: 302463

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	0.997	1.04		mg/L		104	90 - 110

HPLC/IC

Analysis Batch: 305362

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45718-1	AC-8D	Total/NA	Water	300.0	
640-45718-1 MS	AC-8D	Total/NA	Water	300.0	
640-45718-1 MSD	AC-8D	Total/NA	Water	300.0	
640-45718-2	AC-36D	Total/NA	Water	300.0	
640-45718-3	AC-13D	Total/NA	Water	300.0	
640-45718-4	AC-12D	Total/NA	Water	300.0	
LCS 680-305362/9	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305362/10	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305362/8	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 305419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45718-5	AC-28D	Total/NA	Water	300.0	
LCS 680-305419/41	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305419/42	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305419/40	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 305552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45718-3	AC-13D	Total/NA	Water	300.0	
640-45718-3	AC-13D	Total/NA	Water	300.0	
640-45718-4	AC-12D	Total/NA	Water	300.0	
640-45718-4	AC-12D	Total/NA	Water	300.0	
640-45718-5	AC-28D	Total/NA	Water	300.0	
640-45718-5 MS	AC-28D	Total/NA	Water	300.0	
640-45718-5 MSD	AC-28D	Total/NA	Water	300.0	
LCS 680-305552/7	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305552/8	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305552/6	Method Blank	Total/NA	Water	300.0	

General Chemistry

Analysis Batch: 105891

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45718-1	AC-8D	Total/NA	Water	Nitrate by calc	
640-45718-2	AC-36D	Total/NA	Water	Nitrate by calc	
640-45718-3	AC-13D	Total/NA	Water	Nitrate by calc	
640-45718-4	AC-12D	Total/NA	Water	Nitrate by calc	
640-45718-5	AC-28D	Total/NA	Water	Nitrate by calc	

Analysis Batch: 302463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45718-1	AC-8D	Total/NA	Water	353.2	
640-45718-2	AC-36D	Total/NA	Water	353.2	
640-45718-3	AC-13D	Total/NA	Water	353.2	
640-45718-4	AC-12D	Total/NA	Water	353.2	
640-45718-5	AC-28D	Total/NA	Water	353.2	
LCS 680-302463/14	Lab Control Sample	Total/NA	Water	353.2	
MB 680-302463/13	Method Blank	Total/NA	Water	353.2	

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Client Sample ID: AC-8D

Lab Sample ID: 640-45718-1

Date Collected: 11/06/13 08:39
Date Received: 11/07/13 10:15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305362	11/27/13 18:23	VAS	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		5	302463	11/09/13 12:05	CRW	TAL SAV

Client Sample ID: AC-36D

Lab Sample ID: 640-45718-2

Date Collected: 11/06/13 09:54
Date Received: 11/07/13 10:15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305362	11/27/13 19:03	VAS	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		5	302463	11/09/13 12:02	CRW	TAL SAV

Client Sample ID: AC-13D

Lab Sample ID: 640-45718-3

Date Collected: 11/06/13 12:37
Date Received: 11/07/13 10:15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305362	11/27/13 19:17	VAS	TAL SAV
Total/NA	Analysis	300.0		2	305552	11/29/13 16:02	VAS	TAL SAV
Total/NA	Analysis	300.0		10	305552	11/29/13 16:15	VAS	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		10	302463	11/09/13 11:31	CRW	TAL SAV

Client Sample ID: AC-12D

Lab Sample ID: 640-45718-4

Date Collected: 11/06/13 13:01
Date Received: 11/07/13 10:15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305362	11/27/13 19:30	VAS	TAL SAV
Total/NA	Analysis	300.0		2	305552	11/29/13 16:28	VAS	TAL SAV
Total/NA	Analysis	300.0		10	305552	11/29/13 16:42	VAS	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		10	302463	11/09/13 11:15	CRW	TAL SAV

Client Sample ID: AC-28D

Lab Sample ID: 640-45718-5

Date Collected: 11/06/13 16:11
Date Received: 11/07/13 10:15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305419	11/27/13 20:36	VAS	TAL SAV

Client Sample ID: AC-28D
Date Collected: 11/06/13 16:11
Date Received: 11/07/13 10:15

Lab Sample ID: 640-45718-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		2	305552	11/29/13 16:55	VAS	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		5	302463	11/09/13 11:57	CRW	TAL SAV

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Laboratory: TestAmerica Tallahassee

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E81005	06-30-14
Georgia	State Program	4		06-30-14
Louisiana	NELAP	6	30663	06-30-14
New Jersey	NELAP	2	FL012	06-30-14
Texas	NELAP	6	T104704459-11-2	03-31-14
USDA	Federal		P330-08-00158	08-05-14

Laboratory: TestAmerica Richland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA	IHLAP		187436	08-01-15
Arizona	State Program	9	AZ0709	07-02-14
California	NELAP	9	E87829	05-31-14
Colorado	State Program	8	N/A	09-30-14
Florida	NELAP	4	E87829	06-30-14
Hawaii	State Program	9	N/A	01-09-14
L-A-B	DoD ELAP		L2291	06-30-14
Michigan	State Program	5	N/A	08-13-14
Nevada	State Program	9	WA011162014	07-31-14
New Mexico	State Program	6	WA00023	01-09-14
Oregon	NELAP	10	WA100002	01-09-14
Pennsylvania	NELAP	3	68-04849	08-31-14
Tennessee	State Program	4	TN04011	08-13-14
Texas	NELAP	6	T104704493-10-1	12-31-13
USDA	Federal		P330-11-00043	01-25-14
Utah	NELAP	8	QUAN8	01-09-14 *
Virginia	State Program	3	00100	06-30-14
Washington	State Program	10	WA01116	08-14-14
Washington (CLIA)	State Program	10	50D0661626	06-30-15

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-14
California	NELAP	9	3217CA	07-31-14
Colorado	State Program	8	N/A	12-31-13 *
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13 *
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	06-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Iowa	State Program	7	353	07-01-15
Kentucky	State Program	4	90084	12-31-13 *
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	30690	06-30-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13 *
Massachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-14
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	04-01-14
North Carolina DENR	State Program	4	269	12-31-13 *
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-14
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14 *
South Carolina	State Program	4	98001	06-30-14
Tennessee	State Program	4	TN02961	06-30-14
Texas	NELAP	6	T104704185-08-TX	11-30-14
USDA	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13 *
West Virginia DEP	State Program	3	94	06-30-14
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
Nitrate by calc	Nitrogen, Nitrate-Nitrite	SM	TAL TAL
Rad 226-Method 903.1 (Richland)	RAD-226 (RCH)	NONE	TAL RCH
Rad 228-Method 904.0 (Richland)	RAD-228 (RCH)	NONE	TAL RCH

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

Sample Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45718-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
640-45718-1	AC-8D	Water	11/06/13 08:39	11/07/13 10:15
640-45718-2	AC-36D	Water	11/06/13 09:54	11/07/13 10:15
640-45718-3	AC-13D	Water	11/06/13 12:37	11/07/13 10:15
640-45718-4	AC-12D	Water	11/06/13 13:01	11/07/13 10:15
640-45718-5	AC-28D	Water	11/06/13 16:11	11/07/13 10:15

Analytical Data Package Prepared For

TestAmerica Tallahassee

Radiochemical Analysis By

TestAmerica Inc

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARL

Data Package Contains 17 *Pages*

Report No.: 58104

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
47488		AC-12D(640-45718-4)	J3K090403-4	M2GN41AA	9M2GN410	3317030
		AC-12D(640-45718-4)	J3K090403-4	M2GN41AC	9M2GN410	3317031
		AC-13D(640-45718-3)	J3K090403-3	M2GN31AA	9M2GN310	3317030
		AC-13D(640-45718-3)	J3K090403-3	M2GN31AC	9M2GN310	3317031
		AC-28D(640-45718-5)	J3K090403-5	M2GN51AA	9M2GN510	3317030
		AC-28D(640-45718-5)	J3K090403-5	M2GN51AC	9M2GN510	3317031
		AC-36D(640-45718-2)	J3K090403-2	M2GN21AA	9M2GN210	3317030
		AC-36D(640-45718-2)	J3K090403-2	M2GN21AC	9M2GN210	3317031
		AC-8D(640-45718-1)	J3K090403-1	M2GN11AA	9M2GN110	3317030
		AC-8D(640-45718-1)	J3K090403-1	M2GN11AC	9M2GN110	3317031

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

December 17, 2013

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301

Attention: Amy Marks

Date Received by Lab	:	November 8, 2012
Sample Number/Matrix	:	Five (5) Waters
SDG Number	:	47488
Chain Of Custody	:	640-62518.1
Project	:	Agrico
Project Number	:	640-45718-1

CASE NARRATIVE

I. Introduction

On November 7, 2012, five water samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt, the samples were assigned the TestAmerica identification numbers as described on the cover page of the Analytical Data Package. The samples were assigned to Lot Number J3K090403.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Gas Proportional Counting
Radium-228 by method RL-RA-001
Alpha Scintillation Counting
Radium-226 by method RL-RA-001

1 2 3 4 5 6 7 8 9 10 11 12 13 14

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the “Comments” section.

V. Comments

Gas Proportional Counting

Radium-228 by method RL-RA-001:
The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

Alpha Scintillation Counting

Radium-226 by method RL-RA-001:
The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:


Erika Jordan
2013.12.20
14:45:34 -08'00'

Erika Jordan
Manager of Project Management

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c *the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

TestAmerica Inc TARL

Date: 17-Dec-13

Ordered by Method, Batch No., Client Sample ID.

Report No. : 58104 **SDG No:** 47488

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
3317030 E903.1									
	AC-12D(640-45718-4)								
	M2GN41AA	RADIUM-226	1.27 +- 0.40	V	pCi/L	95%	0.224	1.0	
	AC-13D(640-45718-3)								
	M2GN31AA	RADIUM-226	1.98 +- 0.50	V	pCi/L	87%	0.236	1.0	
	AC-28D(640-45718-5)								
	M2GN51AA	RADIUM-226	3.57 +- 1.0	V	pCi/L	78%	0.226	1.0	
	AC-36D(640-45718-2)								
	M2GN21AA	RADIUM-226	1.73 +- 0.53	V	pCi/L	96%	0.222	1.0	
	AC-8D(640-45718-1)								
	M2GN11AA	RADIUM-226	0.941 +- 0.37	J	pCi/L	96%	0.339	1.0	
	ACB-32S(640-45696-1) DUP								
	M2GLV1AD	RADIUM-226	0.0268 +- 0.14	U	pCi/L	93%	0.28	1.0	2.5
3317031 E904.0									
	AC-12D(640-45718-4)								
	M2GN41AC	RADIUM-228	8.50 +- 1.2	V	pCi/L	85%	0.563	1.0	
	AC-13D(640-45718-3)								
	M2GN31AC	RADIUM-228	9.60 +- 1.4	V	pCi/L	77%	0.532	1.0	
	AC-28D(640-45718-5)								
	M2GN51AC	RADIUM-228	11.2 +- 1.6	V	pCi/L	71%	0.955	1.0	
	AC-36D(640-45718-2)								
	M2GN21AC	RADIUM-228	3.06 +- 0.59	V	pCi/L	86%	0.535	1.0	
	AC-8D(640-45718-1)								
	M2GN11AC	RADIUM-228	1.79 +- 0.45	V	pCi/L	86%	0.56	1.0	
	ACB-32S(640-45696-1) DUP								
	M2GLV1AE	RADIUM-228	0.804 +- 0.38	J	pCi/L	82%	0.732	1.0	1.0

No. of Results: 12

TestAmerica Inc

rptSTLRchSaSummary2 V5.2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

V Qual - Detected.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

QC Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Date: 17-Dec-13

Report No. : 58104 **SDG No.:** 47481

Batch / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
E903.1								
3317030 BLANK QC,								
M2HDM1AA	RADIUM-226	0.0431 +- 0.080	U	pCi/L	100%			0.156
3317030 LCS,								
M2HDM1AC	RADIUM-226	9.79 +- 2.4	V	pCi/L	96%	99%	0.0	0.233
E904.0								
3317031 BLANK QC,								
M2HDN1AA	RADIUM-228	0.455 +- 0.25	U	pCi/L	88%			0.484
3317031 LCS,								
M2HDN1AC	RADIUM-228	12.2 +- 1.6	V	pCi/L	85%	125%	0.3	0.736

No. of Results: 4

TestAmerica Inc

rptSTLRchQcSummary V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47488	**Collection Date:**	11/6/2013 1:01:00 PM
Lot-Sample No.:	**J3K090403-4**	**Report No. :**	58104	**Received Date:**	11/8/2013 10:10:00 AM
Client Sample ID:	**AC-12D(640-45718-4)**	**COC No. :**	640-62518.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030 E903.1				**Work Order:**	M2GN41AA	**Report DB ID:**	9M2GN410					
RADIUM-226	**1.27**	V	0.25	0.40	0.224	pCi/L	95%	*(5.7)*	12/6/13 02:54 p		0.905	ASCDUE
						0.0989	1.0	*(6.4)*			L	
Batch: 3317031 E904.0				**Work Order:**	M2GN41AC	**Report DB ID:**	9M2GN410					
RADIUM-228	**8.50**	V	0.73	1.2	0.563	pCi/L	85%	*(15.1)*	12/10/13 02:02 p		0.905	GPC4B
						0.248	1.0	*(13.8)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47488	**Collection Date:**	11/6/2013 12:37:00 PM
Lot-Sample No.:	**J3K090403-3**	**Report No. :**	58104	**Received Date:**	11/8/2013 10:10:00 AM
Client Sample ID:	**AC-13D(640-45718-3)**	**COC No. :**	640-62518.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2GN31AA	**Report DB ID:**	9M2GN310					
RADIUM-226	**1.98**	V	0.31	0.50	0.236	pCi/L	87%	*(8.4)*	12/6/13 02:53 p		0.8817	ASCBMD
						0.104	1.0	*(7.8)*			L	
Batch: 3317031	E904.0			**Work Order:**	M2GN31AC	**Report DB ID:**	9M2GN310					
RADIUM-228	**9.60**	V	0.81	1.4	0.532	pCi/L	77%	*(18.)*	12/10/13 02:02 p		0.8817	GPC3D
						0.229	1.0	*(14.2)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	TestAmerica Inc	**SDG:**	47488	**Collection Date:**	11/6/2013 4:11:00 PM
Lot-Sample No.:	J3K090403-5	**Report No. :**	58104	**Received Date:**	11/8/2013 10:10:00 AM
Client Sample ID:	AC-28D(640-45718-5)	**COC No. :**	640-62518.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2GN51AA		**Report DB ID:** 9M2GN510					
RADIUM-226	3.57	V	0.42	1.0	0.226	pCi/L	78%	*(15.8)*	12/6/13 02:54 p		0.8687	ASCFRM
						0.0975	1.0	*(6.8)*			L	
Batch: 3317031	E904.0			**Work Order:**	M2GN51AC		**Report DB ID:** 9M2GN510					
RADIUM-228	11.2	V	0.98	1.6	0.955	pCi/L	71%	*(11.8)*	12/10/13 02:02 p		0.8686	GPC4C
						0.435	1.0	*(13.9)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47488	**Collection Date:**	11/6/2013 9:54:00 AM
Lot-Sample No.:	**J3K090403-2**	**Report No. :**	58104	**Received Date:**	11/8/2013 10:10:00 AM
Client Sample ID:	**AC-36D(640-45718-2)**	**COC No. :**	640-62518.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030 E903.1				**Work Order:**	M2GN21AA	**Report DB ID:**	9M2GN210					
RADIUM-226	**1.73**	V	0.29	0.53	0.222	pCi/L	96%	*(7.8)*	12/6/13 02:42 p		0.8587	ASCASB
						0.0972	1.0	*(6.5)*			L	
Batch: 3317031 E904.0				**Work Order:**	M2GN21AC	**Report DB ID:**	9M2GN210					
RADIUM-228	**3.06**	V	0.47	0.59	0.535	pCi/L	86%	*(5.7)*	12/10/13 02:02 p		0.8587	GPC3C
						0.234	1.0	*(10.3)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I
SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47488	**Collection Date:**	11/6/2013 8:39:00 AM
Lot-Sample No.:	**J3K090403-1**	**Report No. :**	58104	**Received Date:**	11/8/2013 10:10:00 AM
Client Sample ID:	**AC-8D(640-45718-1)**	**COC No. :**	640-62518.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030 E903.1				**Work Order:**	M2GN11AA		**Report DB ID:** 9M2GN110					
RADIUM-226	**0.941**	J	0.27	0.37	0.339	pCi/L	96%	*(2.8)*	12/6/13 02:41 p		0.8492	ASC9RA
						0.152	1.0	*(5.1)*			L	
Batch: 3317031 E904.0				**Work Order:**	M2GN11AC		**Report DB ID:** 9M2GN110					
RADIUM-228	**1.79**	V	0.40	0.45	0.56	pCi/L	86%	*(3.2)*	12/10/13 02:02 p		0.8491	GPC3A
						0.245	1.0	*(8.)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM II

Date: 17-Dec-13

DUPLICATE RESULTS

Lab Name: TestAmerica Inc
Lot-Sample No.: J3K080428-1
Client Sample ID: ACB-32S(640-45696-1) DUP

SDG: 47481
Report No. : 58104
COC No. : 640-62475.1

Collection Date: 11/5/2013 8:21:00 AM
Received Date: 11/7/2013 10:30:00 AM
Matrix: WATER W

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030 E903.1				**Work Order:** M2GLV1AD		**Report DB ID:** M2GLV1DR			**Orig Sa DB ID:** 9M2GLV10			
RADIUM-226	0.0268	U	0.14	0.14	0.28	pCi/L	93%	0.1	12/6/13 02:42 p		0.9015	ASC2HA
	0.29	J	**RER2 2.5**			1.0		0.39			L	
Batch: 3317031 E904.0				**Work Order:** M2GLV1AE		**Report DB ID:** M2GLV1ER			**Orig Sa DB ID:** 9M2GLV10			
RADIUM-228	0.804	J	0.36	0.38	0.732	pCi/L	82%	(1.1)	12/10/13 02:02 p		0.9015	GPC1B
	0.517	U	**RER2 1.0**			1.0		(4.2)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchDupV5.2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

BLANK RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc **SDG:** 47481

Matrix: WATER **Report No. :** 58104

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2HDM1AA		**Report DB ID:**	M2HDM1AB				
RADIUM-226	0.0431	U	0.080	0.080	0.156	pCi/L	100%	0.28	12/6/13 02:53 p		1.003	ASCKMF
					0.0665	1.0		(1.1)			L	
Batch: 3317031	E904.0			**Work Order:**	M2HDN1AA		**Report DB ID:**	M2HDN1AB				
RADIUM-228	0.455	U	0.24	0.25	0.484	pCi/L	88%	0.94	12/10/13 02:02 p		1.003	GPC4D
					0.212	1.0		(3.6)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchBlank
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc **SDG:** 47481

Matrix: WATER **Report No. :** 58104

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3317030	E903.1			**Work Order:**	M2HDM1AC		**Report DB ID:**	M2HDM1CS					
RADIUM-226	9.79	V	0.61	2.4	0.233	pCi/L	96%	9.92	0.1	99%	12/6/13 02:55 p	1.003	ASCMRA
							Rec Limits:	75	125	0.0		L	
Batch: 3317031	E904.0			**Work Order:**	M2HDN1AC		**Report DB ID:**	M2HDN1CS					
RADIUM-228	12.2	V	0.78	1.6	0.736	pCi/L	85%	9.74	0.11	125%	12/10/13 02:02 p	1.003	GPC6B
							Rec Limits:	75	125	0.3		L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchLcs
V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
V Qual - Detected.

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)

Client Contact: Shipping/Receiving
Company: TestAmerica Laboratories, Inc.
Address: 2800 George Washington Way,
City: Richland
State, Zip: WA, 99352
Phone: 509-375-3131(Tel) 509-375-5590(Fax)
Email:
Project Name: Agrico
Site:

Sampler:
Phone:
Due Date Requested: 12/4/2013
TAT Requested (days):
PO #:
WO #:
Project #: 64000434
SSOW#:

Lab PM: Marks, Amy
E-Mail: amy.marks@testamericainc.com
Carrier Tracking No(s):

COC No: 640-62518.1
Page: Page 1 of 1
Job #: 640-45718-1

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT/ Rad 226-Method 903.1 (Richland)	SUBCONTRACT/ Rad 228-Method 904.0 (Richland)	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
AC-8D (640-45718-1) m2bN1	11/6/13	08:39 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
AC-36D (640-45718-2) m2bN2	11/6/13	09:54 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
AC-13D (640-45718-3) m2bN3	11/6/13	12:37 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
AC-12D (640-45718-4) m2bN4	11/6/13	13:01 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
AC-28D (640-45718-5) m2bN5	11/6/13	16:11 Eastern		Water			X	X	2	Project MS/MSD assigned by client.

J3K090403
SDG 4N4?
Due 12-6-13

J3K090403

Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*
Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Jonnie Carpenter	11/7/13 1550	TA	J Bock	11-8-13 1010	TALR

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 11-8-13 | 1010 Container GM Screen Result: (Airlock) 20 cpm Initials[JB]
Sample GM Screen Result (Sample Receiving) 20 cpm Initials[JB]

Client: STL-T SDG #: 47488 SAF #: NA[JB]

Lot Number: J3K090403

Chain of Custody # 640-62518.1

Shipping Container ID or Air Bill Number : NA[JB]

Samples received inside shipping container/cooler/box Yes[JB] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [JB]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [JB]
3. Cooler temperature: ______ °C NA [J]
4. Vermiculite/packing materials is NA [ ] Wet[JB] Ice Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [JB] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 5
7. Containers received: 10 x LP
8. Sample holding times exceeded? NA [ ] Yes [ ] No [JB]
9. Samples have: ____ tape JB hazard labels ____ custody seals JB appropriate sample labels
10. Matrix: ____ A (FLT, Wipe, Solid, Soil) JB I (Water) ____ S (Air, Niosh 7400) ____ T (Biological, Ni-63)
11. Samples:
JB are in good condition ____ are leaking ____ are broken
____ have air bubbles (Only for samples requiring no head space) ____ Other ________
12. Sample pH appropriate for analysis requested Yes [JB] No [ ] NA [ ]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [JB]
14. Description of anomalies (include sample numbers): NA [JB]
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [JB]
*For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: [signature] Date: 11-8-13

Client Notification needed? Yes [ ] No [ ] Date:
By:
Person contacted:

[X] No action necessary; process as is

Project Manager [signature] Date 11-11-13

LS-023 Rev. 17, 05/13

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Ellmann, Dettilton	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-41766-6826.3
Client Contact: Mr. Jeff Wagner	Phone: 850 643 6741	E-Mail: amy.marks@testamericainc.com		Page: Page 3 of 4
Company: URS Corporation				Job #: 640-45718
Address: 1625 Summit Lake Drive Suite 200	Due Date Requested:			
City: Tallahassee	TAT Requested (days):			
State, Zip: FL, 32317				
Phone:	PO #: 12805561			
Email: jeffry_wagner@urscorp.com	WO #:			
Project Name: Agrico Annual	Project #: 64000434			
Site: Florida	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT - 904 - Rad228/ 903-Rad226 (Richland)	353.2 - Nitrate as N	SM4500_NO2_B - Nitrate as N	300_ORGFM_28D - Chloride, Fluoride and Sulfate	6010B - Arsenic	300_ORGFM_28D - Fluoride	Total Number of containers	Special Instructions/Note:
				Preservation Code:			D	S	N	N	D	N		
AC-8D	11.06.13	0839	G	W			2	1	1	1				
AC-36D	11.06.13	0954	G	W			2	1	1	1				
AC-13D	11.06.13	1237	G	W			2	1	1	1				
AC-12D	11.06.13	1301	G	W			2	1	1	1				
AC-28D	11.06.13	1611	G	W			2	1	1	1				

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

640-45718 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date: 10/24/13	Time: 0925	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time: 11/6/13 1730	Company: Fed Ex	Received by:	Date/Time: 11/7/13 1015	Company: TAT
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: △ Yes △ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 2.1°C

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Tel: (850)878-3994

TestAmerica Job ID: 640-45732-1
Client Project/Site: Agrico

For:
URS Corporation
1625 Summit Lake Drive
Suite 200
Tallahassee, Florida 32317

Attn: Mr. Jeff Wagner

Amy Marks

Authorized for release by:
12/23/2013 2:51:40 PM

Amy Marks, Project Manager II
(850)878-3994
amy.marks@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Job ID: 640-45732-1

Laboratory: TestAmerica Tallahassee

Narrative

Job Narrative
640-45732-1

Comments
No additional comments.

Receipt
The samples were received on 11/8/2013 at 9:30 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 0.9º C.

General Chemistry
No analytical or quality issues were noted.

Subcontract Work
Methods Radium 226 by EPA Method 903.1, Radium 228 by EPA Method 904.0: These methods were subcontracted to TestAmerica Richland.

Detection Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45732-1

Client Sample ID: AC-6D

Lab Sample ID: 640-45732-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12		0.50		mg/L	1		300.0	Total/NA
Sulfate	37		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	5.0		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	5.0		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-9D2

Lab Sample ID: 640-45732-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	39		0.50		mg/L	1		300.0	Total/NA
Fluoride	41		1.0		mg/L	10		300.0	Total/NA
Sulfate	270		5.0		mg/L	10		300.0	Total/NA
Nitrate Nitrite as N	10		0.50		mg/L	10		353.2	Total/NA
Nitrate as N	10		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-29D

Lab Sample ID: 640-45732-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	45		1.0		mg/L	2		300.0	Total/NA
Fluoride	36		0.50		mg/L	5		300.0	Total/NA
Sulfate	220		2.5		mg/L	5		300.0	Total/NA
Nitrate Nitrite as N	8.1		0.50		mg/L	10		353.2	Total/NA
Nitrate as N	8.1		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-24D

Lab Sample ID: 640-45732-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	170		2.0		mg/L	4		300.0	Total/NA
Fluoride	68		1.0		mg/L	10		300.0	Total/NA
Sulfate	86		2.0		mg/L	4		300.0	Total/NA
Nitrate Nitrite as N	4.5		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	4.5		0.010		mg/L	1		Nitrate by calc	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: AC-6D

Lab Sample ID: 640-45732-1

Date Collected: 11/07/13 09:27
Matrix: Water
Date Received: 11/08/13 09:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**12**		0.50		mg/L			11/27/13 22:12	1
Fluoride	<0.10		0.10		mg/L			11/27/13 22:12	1
Sulfate	**37**		0.50		mg/L			11/27/13 22:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**5.0**		0.25		mg/L			11/12/13 12:39	5
Nitrate as N	**5.0**		0.010		mg/L			11/14/13 13:31	1

Client Sample ID: AC-9D2

Date Collected: 11/07/13 12:06
Date Received: 11/08/13 09:30

Lab Sample ID: 640-45732-2
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	39		0.50		mg/L			11/27/13 22:49	1
Fluoride	41		1.0		mg/L			11/27/13 23:02	10
Sulfate	270		5.0		mg/L			11/27/13 23:02	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	10		0.50		mg/L			11/12/13 12:05	10
Nitrate as N	10		0.010		mg/L			11/14/13 13:31	1

Client Sample Results

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45732-1

Client Sample ID: AC-29D

Date Collected: 11/07/13 14:30
Date Received: 11/08/13 09:30

Lab Sample ID: 640-45732-3
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	45		1.0		mg/L			11/27/13 23:14	2
Fluoride	36		0.50		mg/L			11/27/13 23:26	5
Sulfate	220		2.5		mg/L			11/27/13 23:26	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	8.1		0.50		mg/L			11/12/13 11:59	10
Nitrate as N	8.1		0.010		mg/L			11/14/13 13:31	1

Client Sample ID: AC-24D

Lab Sample ID: 640-45732-4

Date Collected: 11/07/13 15:50
Matrix: Water
Date Received: 11/08/13 09:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	170		2.0		mg/L			11/27/13 23:39	4
Fluoride	68		1.0		mg/L			12/02/13 14:44	10
Sulfate	86		2.0		mg/L			11/27/13 23:39	4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	4.5		0.25		mg/L			11/12/13 16:48	5
Nitrate as N	4.5		0.010		mg/L			11/14/13 13:31	1

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45732-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 680-305401/91
Matrix: Water
Analysis Batch: 305401

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.50		0.50		mg/L			11/27/13 21:35	1
Fluoride	<0.10		0.10		mg/L			11/27/13 21:35	1
Sulfate	<0.50		0.50		mg/L			11/27/13 21:35	1

Lab Sample ID: LCS 680-305401/58
Matrix: Water
Analysis Batch: 305401

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.93		mg/L		99	90 - 110
Fluoride	2.00	2.05		mg/L		103	90 - 110
Sulfate	10.0	10.2		mg/L		102	90 - 110

Lab Sample ID: LCSD 680-305401/59
Matrix: Water
Analysis Batch: 305401

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	9.96		mg/L		100	90 - 110	0	30
Fluoride	2.00	2.06		mg/L		103	90 - 110	0	30
Sulfate	10.0	10.2		mg/L		102	90 - 110	0	30

Lab Sample ID: 640-45732-1 MS
Matrix: Water
Analysis Batch: 305401

Client Sample ID: AC-6D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	12		10.0	22.8		mg/L		106	80 - 120
Fluoride	<0.10		2.00	2.13		mg/L		106	80 - 120
Sulfate	37		10.0	47.3		mg/L		103	80 - 120

Lab Sample ID: 640-45732-1 MSD
Matrix: Water
Analysis Batch: 305401

Client Sample ID: AC-6D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	12		10.0	22.5		mg/L		103	80 - 120	1	30
Fluoride	<0.10		2.00	2.13		mg/L		106	80 - 120	0	30
Sulfate	37		10.0	46.9		mg/L		99	80 - 120	1	30

Lab Sample ID: MB 680-305688/5
Matrix: Water
Analysis Batch: 305688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.10		0.10		mg/L			12/02/13 13:05	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 680-305688/6
Matrix: Water
Analysis Batch: 305688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	2.00	2.06		mg/L		103	90 - 110

Lab Sample ID: LCSD 680-305688/7
Matrix: Water
Analysis Batch: 305688

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	2.00	2.07		mg/L		103	90 - 110	0	30

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-302800/13
Matrix: Water
Analysis Batch: 302800

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/12/13 11:16	1

Lab Sample ID: LCS 680-302800/14
Matrix: Water
Analysis Batch: 302800

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	0.997	1.05		mg/L		105	90 - 110

Lab Sample ID: LCSD 680-302800/19
Matrix: Water
Analysis Batch: 302800

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate Nitrite as N	0.997	1.05		mg/L		105	90 - 110	0	10

Lab Sample ID: MB 680-302899/13
Matrix: Water
Analysis Batch: 302899

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/12/13 16:31	1

Lab Sample ID: LCS 680-302899/17
Matrix: Water
Analysis Batch: 302899

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	0.997	1.04		mg/L		104	90 - 110

HPLC/IC

Analysis Batch: 305401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45732-1	AC-6D	Total/NA	Water	300.0	
640-45732-1 MS	AC-6D	Total/NA	Water	300.0	
640-45732-1 MSD	AC-6D	Total/NA	Water	300.0	
640-45732-2	AC-9D2	Total/NA	Water	300.0	
640-45732-2	AC-9D2	Total/NA	Water	300.0	
640-45732-3	AC-29D	Total/NA	Water	300.0	
640-45732-3	AC-29D	Total/NA	Water	300.0	
640-45732-4	AC-24D	Total/NA	Water	300.0	
LCS 680-305401/58	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305401/59	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305401/91	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 305688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45732-4	AC-24D	Total/NA	Water	300.0	
LCS 680-305688/6	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305688/7	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305688/5	Method Blank	Total/NA	Water	300.0	

General Chemistry

Analysis Batch: 105891

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45732-1	AC-6D	Total/NA	Water	Nitrate by calc	
640-45732-2	AC-9D2	Total/NA	Water	Nitrate by calc	
640-45732-3	AC-29D	Total/NA	Water	Nitrate by calc	
640-45732-4	AC-24D	Total/NA	Water	Nitrate by calc	

Analysis Batch: 302800

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45732-1	AC-6D	Total/NA	Water	353.2	
640-45732-2	AC-9D2	Total/NA	Water	353.2	
640-45732-3	AC-29D	Total/NA	Water	353.2	
LCS 680-302800/14	Lab Control Sample	Total/NA	Water	353.2	
LCSD 680-302800/19	Lab Control Sample Dup	Total/NA	Water	353.2	
MB 680-302800/13	Method Blank	Total/NA	Water	353.2	

Analysis Batch: 302899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45732-4	AC-24D	Total/NA	Water	353.2	
LCS 680-302899/17	Lab Control Sample	Total/NA	Water	353.2	
MB 680-302899/13	Method Blank	Total/NA	Water	353.2	

Client Sample ID: AC-6D
Date Collected: 11/07/13 09:27
Date Received: 11/08/13 09:30

Lab Sample ID: 640-45732-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305401	11/27/13 22:12	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		5	302800	11/12/13 12:39	CRW	TAL SAV

Client Sample ID: AC-9D2
Date Collected: 11/07/13 12:06
Date Received: 11/08/13 09:30

Lab Sample ID: 640-45732-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305401	11/27/13 22:49	PAT	TAL SAV
Total/NA	Analysis	300.0		10	305401	11/27/13 23:02	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		10	302800	11/12/13 12:05	CRW	TAL SAV

Client Sample ID: AC-29D
Date Collected: 11/07/13 14:30
Date Received: 11/08/13 09:30

Lab Sample ID: 640-45732-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		2	305401	11/27/13 23:14	PAT	TAL SAV
Total/NA	Analysis	300.0		5	305401	11/27/13 23:26	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		10	302800	11/12/13 11:59	CRW	TAL SAV

Client Sample ID: AC-24D
Date Collected: 11/07/13 15:50
Date Received: 11/08/13 09:30

Lab Sample ID: 640-45732-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		4	305401	11/27/13 23:39	PAT	TAL SAV
Total/NA	Analysis	300.0		10	305688	12/02/13 14:44	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		5	302899	11/12/13 16:48	CRW	TAL SAV

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

Certification Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45732-1

Laboratory: TestAmerica Tallahassee

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E81005	06-30-14
Georgia	State Program	4		06-30-14
Louisiana	NELAP	6	30663	06-30-14
New Jersey	NELAP	2	FL012	06-30-14
Texas	NELAP	6	T104704459-11-2	03-31-14
USDA	Federal		P330-08-00158	08-05-14

Laboratory: TestAmerica Richland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA	IHLAP		187436	08-01-15
Arizona	State Program	9	AZ0709	07-02-14
California	NELAP	9	E87829	05-31-14
Colorado	State Program	8	N/A	09-30-14
Florida	NELAP	4	E87829	06-30-14
Hawaii	State Program	9	N/A	01-09-14
L-A-B	DoD ELAP		L2291	06-30-14
Michigan	State Program	5	N/A	08-13-14
Nevada	State Program	9	WA011162014	07-31-14
New Mexico	State Program	6	WA00023	01-09-14
Oregon	NELAP	10	WA100002	01-09-14
Pennsylvania	NELAP	3	68-04849	08-31-14
Tennessee	State Program	4	TN04011	08-13-14
Texas	NELAP	6	T104704493-10-1	12-31-13
USDA	Federal		P330-11-00043	01-25-14
Utah	NELAP	8	QUAN8	01-09-14 *
Virginia	State Program	3	00100	06-30-14
Washington	State Program	10	WA01116	08-14-14
Washington (CLIA)	State Program	10	50D0661626	06-30-15

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-14
California	NELAP	9	3217CA	07-31-14
Colorado	State Program	8	N/A	12-31-13 *
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13 *
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	06-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45732-1

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Iowa	State Program	7	353	07-01-15
Kentucky	State Program	4	90084	12-31-13 *
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	30690	06-30-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13 *
Massachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-14
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	04-01-14
North Carolina DENR	State Program	4	269	12-31-13 *
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-14
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14 *
South Carolina	State Program	4	98001	06-30-14
Tennessee	State Program	4	TN02961	06-30-14
Texas	NELAP	6	T104704185-08-TX	11-30-14
USDA	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13 *
West Virginia DEP	State Program	3	94	06-30-14
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Method Summary

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
Nitrate by calc	Nitrogen, Nitrate-Nitrite	SM	TAL TAL
Rad 226-Method 903.1 (Richland)	RAD-226 (RCH)	NONE	TAL RCH
Rad 228-Method 904.0 (Richland)	RAD-228 (RCH)	NONE	TAL RCH

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
640-45732-1	AC-6D	Water	11/07/13 09:27	11/08/13 09:30
640-45732-2	AC-9D2	Water	11/07/13 12:06	11/08/13 09:30
640-45732-3	AC-29D	Water	11/07/13 14:30	11/08/13 09:30
640-45732-4	AC-24D	Water	11/07/13 15:50	11/08/13 09:30

Analytical Data Package Prepared For

TestAmerica Tallahassee

Radiochemical Analysis By

TestAmerica Inc

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARL

Data Package Contains 16 *Pages*

Report No.: 58100

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
47495		AC-24D(640-45732-4)	J3K120416-4	M2G6K1AA	9M2G6K10	3317040
		AC-24D(640-45732-4)	J3K120416-4	M2G6K1AC	9M2G6K10	3317041
		AC-29D(640-45732-3)	J3K120416-3	M2G6H1AA	9M2G6H10	3317040
		AC-29D(640-45732-3)	J3K120416-3	M2G6H1AC	9M2G6H10	3317041
		AC-6D(640-45732-1)	J3K120416-1	M2G6F1AA	9M2G6F10	3317040
		AC-6D(640-45732-1)	J3K120416-1	M2G6F1AC	9M2G6F10	3317041
		AC-9D2(640-45732-2)	J3K120416-2	M2G6G1AA	9M2G6G10	3317040
		AC-9D2(640-45732-2)	J3K120416-2	M2G6G1AC	9M2G6G10	3317041

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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Certificate of Analysis

December 17, 2013

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301

Attention: Amy Marks

Date Received by Lab	:	November 9, 2012
Sample Number/Matrix	:	Four (4) Waters
SDG Number	:	47495
Chain Of Custody	:	640-62548.1
Project	:	Agrico
Project Number	:	640-45732-1

CASE NARRATIVE

I. Introduction

On November 9, 2012, four water samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt, the samples were assigned the TestAmerica identification numbers as described on the cover page of the Analytical Data Package. The samples were assigned to Lot Number J3K120416.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Gas Proportional Counting
Radium-228 by method RL-RA-001
Alpha Scintillation Counting
Radium-226 by method RL-RA-001

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

V. Comments

Gas Proportional Counting

Radium-228 by method RL-RA-001:
The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

Alpha Scintillation Counting

Radium-226 by method RL-RA-001:
The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Erika Jordan
Erika Jordan
2013.12.20
14:44:45 -08'00'

Erika Jordan
Manager of Project Management

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in “NIST Technical Note 1297, 1994 Edition”. The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c *the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2 + TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Date: 17-Dec-13

Report No. : 58100

SDG No: 47495

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
3317040 E903.1									
	AC-24D(640-45732-4)								
	M2G6K1AA	RADIUM-226	2.02 +- 0.53	V	pCi/L	100%	0.24	1.0	
	AC-29D(640-45732-3)								
	M2G6H1AA	RADIUM-226	0.836 +- 0.27	J	pCi/L	100%	0.157	1.0	
	AC-6D(640-45732-1)								
	M2G6F1AA	RADIUM-226	3.65 +- 0.83	V	pCi/L	90%	0.278	1.0	
	AC-9D2(640-45732-2)								
	M2G6G1AA	RADIUM-226	1.59 +- 0.40	V	pCi/L	97%	0.183	1.0	
	EQ BLNK-1(640-45742-1) DUP								
	M2G561AE	RADIUM-226	-0.0182 +- 0.10	U	pCi/L	96%	0.223	1.0	1.0
3317041 E904.0									
	AC-24D(640-45732-4)								
	M2G6K1AC	RADIUM-228	10.2 +- 1.4	V	pCi/L	89%	0.568	1.0	
	AC-29D(640-45732-3)								
	M2G6H1AC	RADIUM-228	14.8 +- 2.0	V	pCi/L	89%	0.57	1.0	
	AC-6D(640-45732-1)								
	M2G6F1AC	RADIUM-228	2.86 +- 0.60	V	pCi/L	78%	0.626	1.0	
	AC-9D2(640-45732-2)								
	M2G6G1AC	RADIUM-228	9.26 +- 1.3	V	pCi/L	85%	0.564	1.0	
	EQ BLNK-1(640-45742-1) DUP								
	M2G561AD	RADIUM-228	0.339 +- 0.38	U	pCi/L	84%	0.804	1.0	0.6

No. of Results: 10

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

V Qual - Detected.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

QC Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Date: 17-Dec-13

Report No. : 58100 **SDG No.:** 47494

Batch / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
E903.1								
3317040 BLANK QC,								
M2HE61AA	RADIUM-226	0.00443 +- 0.097	U	pCi/L	80%			0.206
3317040 LCS,								
M2HE61AC	RADIUM-226	10.4 +- 2.1	V	pCi/L	85%	104%	0.0	0.222
E904.0								
3317041 BLANK QC,								
M2HE81AA	RADIUM-228	0.236 +- 0.26	U	pCi/L	70%			0.559
3317041 LCS,								
M2HE81AC	RADIUM-228	11.2 +- 1.5	V	pCi/L	73%	115%	0.1	0.495

No. of Results: 4

TestAmerica Inc

rptSTLRchQcSummary V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47495	**Collection Date:**	11/7/2013 3:50:00 PM
Lot-Sample No.:	**J3K120416-4**	**Report No. :**	58100	**Received Date:**	11/9/2013 11:30:00 AM
Client Sample ID:	**AC-24D(640-45732-4)**	**COC No. :**	640-62548.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040	E903.1			**Work Order:**	M2G6K1AA		**Report DB ID:**	9M2G6K10				
RADIUM-226	2.02	V	0.29	0.53	0.24	pCi/L	100%	*(8.4)*	12/9/13 09:29 p		0.8631	ASCMMA
						0.108	1.0	*(7.6)*			L	
Batch: 3317041	E904.0			**Work Order:**	M2G6K1AC		**Report DB ID:**	9M2G6K10				
RADIUM-228	10.2	V	0.79	1.4	0.568	pCi/L	89%	*(17.9)*	12/11/13 02:12 p		0.8631	GPC3A
						0.251	1.0	*(14.5)*			L	

No. of Results: 2 **Comments:**

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TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

12/23/2013

FORM I
SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47495	**Collection Date:**	11/7/2013 2:30:00 PM
Lot-Sample No.:	**J3K120416-3**	**Report No. :**	58100	**Received Date:**	11/9/2013 11:30:00 AM
Client Sample ID:	**AC-29D(640-45732-3)**	**COC No. :**	640-62548.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040	E903.1			**Work Order:**	M2G6H1AA	**Report DB ID:**	9M2G6H10					
RADIUM-226	**0.836**	J	0.18	0.27	0.157	pCi/L	100%	*(5.3)*	12/9/13 09:28 p		0.8243	ASCFAC
						0.0677	1.0	*(6.3)*			L	
Batch: 3317041	E904.0			**Work Order:**	M2G6H1AC	**Report DB ID:**	9M2G6H10					
RADIUM-228	**14.8**	V	0.97	2.0	0.57	pCi/L	89%	*(25.9)*	12/11/13 02:12 p		0.8243	GPC2D
						0.249	1.0	*(15.1)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47495	**Collection Date:**	11/7/2013 9:27:00 AM
Lot-Sample No.:	**J3K120416-1**	**Report No. :**	58100	**Received Date:**	11/9/2013 11:30:00 AM
Client Sample ID:	**AC-6D(640-45732-1)**	**COC No. :**	640-62548.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040 E903.1				**Work Order:** M2G6F1AA		**Report DB ID:** 9M2G6F10						
RADIUM-226	**3.65**	V	0.42	0.83	0.278	pCi/L	90%	*(13.1)*	12/9/13 09:28 p		0.8161	ASCBMA
						0.125	1.0	*(8.8)*			L	
Batch: 3317041 E904.0				**Work Order:** M2G6F1AC		**Report DB ID:** 9M2G6F10						
RADIUM-228	**2.86**	V	0.51	0.60	0.626	pCi/L	78%	*(4.6)*	12/11/13 02:12 p		0.8161	GPC2B
						0.273	1.0	*(9.5)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I
SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47495	**Collection Date:**	11/7/2013 12:06:00 PM
Lot-Sample No.:	**J3K120416-2**	**Report No. :**	58100	**Received Date:**	11/9/2013 11:30:00 AM
Client Sample ID:	**AC-9D2(640-45732-2)**	**COC No. :**	640-62548.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040 E903.1				**Work Order:**	M2G6G1AA	**Report DB ID:**	9M2G6G10					
RADIUM-226	**1.59**	V	0.24	0.40	0.183	pCi/L	97%	*(8.7)*	12/9/13 09:29 p		0.919	ASCDMB
						0.0803	1.0	*(7.9)*			L	
Batch: 3317041 E904.0				**Work Order:**	M2G6G1AC	**Report DB ID:**	9M2G6G10					
RADIUM-228	**9.26**	V	0.76	1.3	0.564	pCi/L	85%	*(16.4)*	12/11/13 02:12 p		0.9189	GPC2C
						0.249	1.0	*(14.1)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM II

Date: 17-Dec-13

DUPLICATE RESULTS

Lab Name: TestAmerica Inc **SDG:** 47494 **Collection Date:** 11/8/2013 7:17:00 AM

Lot-Sample No.: J3K120415-1 **Report No. :** 58100 **Received Date:** 11/9/2013 11:30:00 AM

Client Sample ID: EQ BLNK-1(640-45742-1) DUP **COC No. :** 640-62573.1 **Matrix:** WATER W

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040	E903.1			**Work Order:**	M2G561AE	**Report DB ID:**	M2G561ER		**Orig Sa DB ID:** 9M2G5610			
RADIUM-226	-0.0182	U	0.10	0.10	0.223	pCi/L	96%	-0.08	12/9/13 09:28 p		0.818	ASC6MB
	0.0704	U	**RER2**	**1.0**		1.0		-0.36			L	
Batch: 3317041	E904.0			**Work Order:**	M2G561AD	**Report DB ID:**	M2G561DR		**Orig Sa DB ID:** 9M2G5610			
RADIUM-228	0.339	U	0.32	0.38	0.804	pCi/L	84%	0.42	12/11/13 02:12 p		0.818	GPC1B
	0.177	U	**RER2**	**0.6**		1.0		(1.8)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchDupV5.2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

BLANK RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc
Matrix: WATER

SDG: 47494
Report No. : 58100

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040	E903.1			**Work Order:**	M2HE61AA		**Report DB ID:**	M2HE61AB				
RADIUM-226	0.00443	U	0.097	0.097	0.206	pCi/L	80%	0.02	12/9/13 09:05 p		1.0029	ASCNMA
					0.091	1.0		0.09			L	
Batch: 3317041	E904.0			**Work Order:**	M2HE81AA		**Report DB ID:**	M2HE81AB				
RADIUM-228	0.236	U	0.24	0.26	0.559	pCi/L	70%	0.42	12/11/13 02:12 p		1.0019	GPC3B
					0.245	1.0		(1.8)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchBlank
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc **SDG:** 47494

Matrix: WATER **Report No. :** 58100

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3317040	E903.1			**Work Order:**	M2HE61AC		**Report DB ID:**	M2HE61CS					
RADIUM-226	10.4	V	0.61	2.1	0.222	pCi/L	85%	9.96	0.1	104%	12/9/13 09:06 p	1.0029	ASCPMC
							Rec Limits:	75	125	0.0		L	
Batch: 3317041	E904.0			**Work Order:**	M2HE81AC		**Report DB ID:**	M2HE81CS					
RADIUM-228	11.2	V	0.82	1.5	0.495	pCi/L	73%	9.75	0.11	115%	12/11/13 02:12 p	1.0018	GPC3C
							Rec Limits:	75	125	0.1		L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchLcs
V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
V Qual - Detected.

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-62548.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: amy.marks@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 640-45732-1
Address: 2800 George Washington Way,	Due Date Requested: 12/5/2013			
City: Richland	TAT Requested (days):			
State, Zip: WA, 99352				
Phone: 509-375-3131(Tel) 509-375-5590(Fax)	PO #:			
Email:	WO #:			
Project Name: Agrico	Project #: 64000434			
Site:	SSOW#:			

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT/ Rad 226-Method 903.1 (Richland)	SUBCONTRACT/ Rad 228-Method 904.0 (Richland)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
AC-6D (640-45732-1) m2b6f	11/7/13	09:27 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
AC-9D2 (640-45732-2) m2b66	11/7/13	12:06 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
AC-29D (640-45732-3) m2b6H	11/7/13	14:30 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
AC-24D (640-45732-4) m2b6K	11/7/13	15:50 Eastern		Water			X	X	2	Project MS/MSD assigned by client.

J3K120416
SDG-47495
Due 12-6-13

J3K120416

Possible Hazard Identification
Unconfirmed

Sample Disposal *(A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For ______ Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Jonnie Carpenter	Date/Time: 11/8/13 1615	Company: TAL	Received by: Jack J Bock	Date/Time: 11-9-13	Company: TALR
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 11-9-13 | 1130 Container GM Screen Result: (Airlock) 20 cpm Initials [B]
Sample GM Screen Result (Sample Receiving) 20 cpm Initials [B]

Client: STL-T SDG #: 47495 SAF #: NA [B]

Lot Number: J3K120416

Chain of Custody # 640-62548.1

Shipping Container ID or Air Bill Number : NA [B]

Samples received inside shipping container/cooler/box Yes [B] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: ____°C NA [B]
4. Vermiculite/packing materials is NA [ ] Wet [B] Ice Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [B] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 4
7. Containers received: 4 x LP
8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]
9. Samples have: ____tape B hazard labels ____custody seals B appropriate sample labels
10. Matrix: ____A (FLT, Wipe, Solid, Soil) B I (Water) ____S (Air, Niosh 7400) ____T (Biological, Ni-63)
11. Samples:
B are in good condition ____are leaking ____are broken
____have air bubbles (Only for samples requiring no head space) ____Other ____
12. Sample pH appropriate for analysis requested Yes [B] No [ ] NA [ ]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [B]
14. Description of anomalies (include sample numbers): NA [B]
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [B]
*For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: [signature] Date: 11-12-13

Client Notification needed? Yes [ ] No [ ] Date:
By:
Person contacted:

[X] No action necessary; process as is

Project Manager Erika Jord Date 11-13-13

LS-023 Rev. 17, 05/13

Page 1 of 1

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: E.Mann / D.Hilton	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-41766-6826.2
Client Contact: Mr. Jeff Wagner	Phone: 850 ~~89~~ 643 6461	E-Mail: amy.marks@testamericainc.com		Page: Page ~~2 of 3~~ 1
Company: URS Corporation				Job #: 640-45732
Address: 1625 Summit Lake Drive Suite 200	Due Date Requested:			
City: Tallahassee	TAT Requested (days):			
State, Zip: FL, 32317				
Phone:	PO #: 12805561			
Email: jeffry_wagner@urscorp.com	WO #: 12806318.00000			
Project Name: Agrico Annual	Project #: 64000434			
Site: Florida	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT - 904 - Rad228/ 903-Rad226 (Richland)	353.2 - Nitrate as N	SM4500_NO2_B - Nitrate as N	300_ORGFM_28D - Chloride, Fluoride and Sulfate	6010B - Arsenic	300_ORGFM_28D - Fluoride	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	S	N	N	D	N		
AC-6D	11/7/13	0927	G	W	N	N	2	1	1	1				
AC-9D2	↓	1206	↓	↓	↓	↓	↓	↓	↓	↓				
AC-29D	↓	1430	↓	↓	↓	↓	↓	↓	↓	↓				
AC-24D	↓	1550	↓	↓	↓	↓	↓	↓	↓	↓				

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

640-45732 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ________ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: [signature]	Date: 10/24/13	Time: 0925	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 11/7/13 1730	Company	Received by: [signature]	Date/Time: 11/8/13 0930	Company: TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: △ Yes △ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.5°C

12/23/2013

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Tel: (850)878-3994

TestAmerica Job ID: 640-45742-1
Client Project/Site: Agrico

For:
URS Corporation
1625 Summit Lake Drive
Suite 200
Tallahassee, Florida 32317

Attn: Mr. Jeff Wagner

Amy Marks

Authorized for release by:
12/23/2013 2:54:03 PM

Amy Marks, Project Manager II
(850)878-3994
amy.marks@testamericainc.com

LINKS

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45742-1

Job ID: 640-45742-1

Laboratory: TestAmerica Tallahassee

Narrative

Job Narrative
640-45742-1

Comments
No additional comments.

Receipt
The samples were received on 11/8/2013 at 1:01 PM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 1.4º C.

General Chemistry
No analytical or quality issues were noted.

Subcontract Work
Methods Radium 226 by EPA Method 903.1, Radium 228 by EPA Method 904.0: These methods were subcontracted to TestAmerica Richland.

Detection Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45742-1

Client Sample ID: EQ BLNK-1

Lab Sample ID: 640-45742-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	0.69		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.31		0.10		mg/L	1		300.0	Total/NA

Client Sample ID: NWD-4D

Lab Sample ID: 640-45742-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	8.2		0.50		mg/L	1		300.0	Total/NA
Sulfate	53		1.0		mg/L	2		300.0	Total/NA

Client Sample ID: DUP-1

Lab Sample ID: 640-45742-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.9		0.50		mg/L	1		300.0	Total/NA
Sulfate	53		1.0		mg/L	2		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45742-1

Client Sample ID: EQ BLNK-1
Date Collected: 11/08/13 07:17
Date Received: 11/08/13 13:01

Lab Sample ID: 640-45742-1
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.69**		0.50		mg/L			11/27/13 20:20	1
Fluoride	**0.31**		0.10		mg/L			11/27/13 20:20	1
Sulfate	<0.50		0.50		mg/L			11/27/13 20:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/12/13 12:41	1
Nitrate as N	<0.010		0.010		mg/L			11/14/13 13:31	1

Client Sample ID: NWD-4D

Lab Sample ID: 640-45742-2

Date Collected: 11/08/13 08:12
Matrix: Water
Date Received: 11/08/13 13:01

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**8.2**		0.50		mg/L			11/27/13 20:33	1
Fluoride	<0.10		0.10		mg/L			11/27/13 20:33	1
Sulfate	**53**		1.0		mg/L			12/02/13 13:55	2

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/12/13 12:09	1
Nitrate as N	<0.010		0.010		mg/L			11/14/13 13:31	1

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45742-1

Client Sample ID: DUP-1

Date Collected: 11/08/13 00:00
Date Received: 11/08/13 13:01

Lab Sample ID: 640-45742-3
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**7.9**		0.50		mg/L			11/27/13 20:45	1
Fluoride	<0.10		0.10		mg/L			11/27/13 20:45	1
Sulfate	**53**		1.0		mg/L			12/02/13 14:32	2

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/12/13 12:17	1
Nitrate as N	<0.010		0.010		mg/L			11/14/13 13:31	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 680-305378/30
Matrix: Water
Analysis Batch: 305378

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.50		0.50		mg/L			11/27/13 14:00	1
Fluoride	<0.10		0.10		mg/L			11/27/13 14:00	1
Sulfate	<0.50		0.50		mg/L			11/27/13 14:00	1

Lab Sample ID: LCS 680-305378/31
Matrix: Water
Analysis Batch: 305378

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.88		mg/L		99	90 - 110
Fluoride	2.00	2.02		mg/L		101	90 - 110
Sulfate	10.0	9.97		mg/L		100	90 - 110

Lab Sample ID: LCSD 680-305378/32
Matrix: Water
Analysis Batch: 305378

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	9.84		mg/L		98	90 - 110	0	30
Fluoride	2.00	2.01		mg/L		101	90 - 110	0	30
Sulfate	10.0	9.94		mg/L		99	90 - 110	0	30

Lab Sample ID: MB 680-305688/5
Matrix: Water
Analysis Batch: 305688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<0.50		0.50		mg/L			12/02/13 13:05	1

Lab Sample ID: LCS 680-305688/6
Matrix: Water
Analysis Batch: 305688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	10.0	10.3		mg/L		103	90 - 110

Lab Sample ID: LCSD 680-305688/7
Matrix: Water
Analysis Batch: 305688

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	10.0	10.2		mg/L		102	90 - 110	1	30

Lab Sample ID: 640-45742-2 MS
Matrix: Water
Analysis Batch: 305688

Client Sample ID: NWD-4D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	53		20.0	74.5		mg/L		110	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 640-45742-2 MSD
Matrix: Water
Analysis Batch: 305688

Client Sample ID: NWD-4D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	53		20.0	73.3		mg/L		104	80 - 120	2	30

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-302801/13
Matrix: Water
Analysis Batch: 302801

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/12/13 12:07	1

Lab Sample ID: LCS 680-302801/14
Matrix: Water
Analysis Batch: 302801

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	0.997	1.06		mg/L		106	90 - 110

Lab Sample ID: 640-45742-2 MS
Matrix: Water
Analysis Batch: 302801

Client Sample ID: NWD-4D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	<0.050		0.997	1.03		mg/L		102	90 - 110

Lab Sample ID: 640-45742-2 MSD
Matrix: Water
Analysis Batch: 302801

Client Sample ID: NWD-4D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate Nitrite as N	<0.050		0.997	1.04		mg/L		103	90 - 110	1	10

HPLC/IC

Analysis Batch: 305378

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45742-1	EQ BLNK-1	Total/NA	Water	300.0	
640-45742-2	NWD-4D	Total/NA	Water	300.0	
640-45742-3	DUP-1	Total/NA	Water	300.0	
LCS 680-305378/31	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305378/32	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305378/30	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 305688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45742-2	NWD-4D	Total/NA	Water	300.0	
640-45742-2 MS	NWD-4D	Total/NA	Water	300.0	
640-45742-2 MSD	NWD-4D	Total/NA	Water	300.0	
640-45742-3	DUP-1	Total/NA	Water	300.0	
LCS 680-305688/6	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305688/7	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305688/5	Method Blank	Total/NA	Water	300.0	

General Chemistry

Analysis Batch: 105891

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45742-1	EQ BLNK-1	Total/NA	Water	Nitrate by calc	
640-45742-2	NWD-4D	Total/NA	Water	Nitrate by calc	
640-45742-3	DUP-1	Total/NA	Water	Nitrate by calc	

Analysis Batch: 302801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45742-1	EQ BLNK-1	Total/NA	Water	353.2	
640-45742-2	NWD-4D	Total/NA	Water	353.2	
640-45742-2 MS	NWD-4D	Total/NA	Water	353.2	
640-45742-2 MSD	NWD-4D	Total/NA	Water	353.2	
640-45742-3	DUP-1	Total/NA	Water	353.2	
LCS 680-302801/14	Lab Control Sample	Total/NA	Water	353.2	
MB 680-302801/13	Method Blank	Total/NA	Water	353.2	

Client Sample ID: EQ BLNK-1 Lab Sample ID: 640-45742-1

Date Collected: 11/08/13 07:17 **Matrix: Water**
Date Received: 11/08/13 13:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305378	11/27/13 20:20	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		1	302801	11/12/13 12:41	CRW	TAL SAV

Client Sample ID: NWD-4D Lab Sample ID: 640-45742-2

Date Collected: 11/08/13 08:12 **Matrix: Water**
Date Received: 11/08/13 13:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305378	11/27/13 20:33	PAT	TAL SAV
Total/NA	Analysis	300.0		2	305688	12/02/13 13:55	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		1	302801	11/12/13 12:09	CRW	TAL SAV

Client Sample ID: DUP-1 Lab Sample ID: 640-45742-3

Date Collected: 11/08/13 00:00 **Matrix: Water**
Date Received: 11/08/13 13:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305378	11/27/13 20:45	PAT	TAL SAV
Total/NA	Analysis	300.0		2	305688	12/02/13 14:32	PAT	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	105891	11/14/13 13:31	TJW	TAL TAL
Total/NA	Analysis	353.2		1	302801	11/12/13 12:17	CRW	TAL SAV

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

Certification Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45742-1

Laboratory: TestAmerica Tallahassee

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E81005	06-30-14
Georgia	State Program	4		06-30-14
Louisiana	NELAP	6	30663	06-30-14
New Jersey	NELAP	2	FL012	06-30-14
Texas	NELAP	6	T104704459-11-2	03-31-14
USDA	Federal		P330-08-00158	08-05-14

Laboratory: TestAmerica Richland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA	IHLAP		187436	08-01-15
Arizona	State Program	9	AZ0709	07-02-14
California	NELAP	9	E87829	05-31-14
Colorado	State Program	8	N/A	09-30-14
Florida	NELAP	4	E87829	06-30-14
Hawaii	State Program	9	N/A	01-09-14
L-A-B	DoD ELAP		L2291	06-30-14
Michigan	State Program	5	N/A	08-13-14
Nevada	State Program	9	WA011162014	07-31-14
New Mexico	State Program	6	WA00023	01-09-14
Oregon	NELAP	10	WA100002	01-09-14
Pennsylvania	NELAP	3	68-04849	08-31-14
Tennessee	State Program	4	TN04011	08-13-14
Texas	NELAP	6	T104704493-10-1	12-31-13
USDA	Federal		P330-11-00043	01-25-14
Utah	NELAP	8	QUAN8	01-09-14 *
Virginia	State Program	3	00100	06-30-14
Washington	State Program	10	WA01116	08-14-14
Washington (CLIA)	State Program	10	50D0661626	06-30-15

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-14
California	NELAP	9	3217CA	07-31-14
Colorado	State Program	8	N/A	12-31-13 *
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13 *
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	06-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Iowa	State Program	7	353	07-01-15
Kentucky	State Program	4	90084	12-31-13 *
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	30690	06-30-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13 *
Massachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-14
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	04-01-14
North Carolina DENR	State Program	4	269	12-31-13 *
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-14
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14 *
South Carolina	State Program	4	98001	06-30-14
Tennessee	State Program	4	TN02961	06-30-14
Texas	NELAP	6	T104704185-08-TX	11-30-14
USDA	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13 *
West Virginia DEP	State Program	3	94	06-30-14
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
Nitrate by calc	Nitrogen, Nitrate-Nitrite	SM	TAL TAL
Rad 226-Method 903.1 (Richland)	RAD-226 (RCH)	NONE	TAL RCH
Rad 228-Method 904.0 (Richland)	RAD-228 (RCH)	NONE	TAL RCH

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

Sample Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45742-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
640-45742-1	EQ BLNK-1	Water	11/08/13 07:17	11/08/13 13:01
640-45742-2	NWD-4D	Water	11/08/13 08:12	11/08/13 13:01
640-45742-3	DUP-1	Water	11/08/13 00:00	11/08/13 13:01

Analytical Data Package Prepared For

TestAmerica Tallahassee

Radiochemical Analysis By

TestAmerica Inc

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARL

Data Package Contains 15 *Pages*

Report No.: 58099

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
47494		DUP-1(640-45742-3)	J3K120415-3	M2G6C1AA	9M2G6C10	3317040
		DUP-1(640-45742-3)	J3K120415-3	M2G6C1AC	9M2G6C10	3317041
		EQ BLNK-1(640-45742-1)	J3K120415-1	M2G561AA	9M2G5610	3317040
		EQ BLNK-1(640-45742-1)	J3K120415-1	M2G561AC	9M2G5610	3317041
		NWD-4D(640-45742-2)	J3K120415-2	M2G591AA	9M2G5910	3317040
		NWD-4D(640-45742-2)	J3K120415-2	M2G591AC	9M2G5910	3317041

Certificate of Analysis

December 17, 2013

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301

Attention: Amy Marks

Date Received by Lab	:	November 9, 2012
Sample Number/Matrix	:	Three (3) Waters
SDG Number	:	47494
Chain Of Custody	:	640-62573.1
Project	:	Agrico
Project Number	:	640-45742-1

CASE NARRATIVE

I. Introduction

On November 9, 2012, three water samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt, the samples were assigned the TestAmerica identification numbers as described on the cover page of the Analytical Data Package. The samples were assigned to Lot Number J3K120415.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Gas Proportional Counting
Radium-228 by method RL-RA-001
Alpha Scintillation Counting
Radium-226 by method RL-RA-001

TestAmerica Tallahassee
December 17, 2013

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the “Comments” section.

V. Comments

Gas Proportional Counting

Radium-228 by method RL-RA-001:
The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

Alpha Scintillation Counting

Radium-226 by method RL-RA-001:
The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Erika Jordan
2013.12.20
14:44:19
-08'00'

Erika Jordan
Manager of Project Management

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in “NIST Technical Note 1297, 1994 Edition”. The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/? n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c *the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Date: 17-Dec-13

Sample Results Summary
TestAmerica Inc TARL
Ordered by Method, Batch No., Client Sample ID.

Report No. : 58099 **SDG No:** 47494

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
3317040 E903.1									
	DUP-1(640-45742-3)								
	M2G6C1AA	RADIUM-226	2.40 +- 0.64	V	pCi/L	98%	0.241	1.0	
	EQ BLNK-1(640-45742-1)								
	M2G561AA	RADIUM-226	0.0704 +- 0.14	U	pCi/L	100%	0.263	1.0	
	EQ BLNK-1(640-45742-1) DUP								
	M2G561AE	RADIUM-226	-0.0182 +- 0.10	U	pCi/L	96%	0.223	1.0	1.0
	NWD-4D(640-45742-2)								
	M2G591AA	RADIUM-226	2.05 +- 0.60	V	pCi/L	93%	0.21	1.0	
3317041 E904.0									
	DUP-1(640-45742-3)								
	M2G6C1AC	RADIUM-228	5.20 +- 0.83	V	pCi/L	88%	0.736	1.0	
	EQ BLNK-1(640-45742-1)								
	M2G561AC	RADIUM-228	0.177 +- 0.37	U	pCi/L	91%	0.815	1.0	
	EQ BLNK-1(640-45742-1) DUP								
	M2G561AD	RADIUM-228	0.339 +- 0.38	U	pCi/L	84%	0.804	1.0	0.6
	NWD-4D(640-45742-2)								
	M2G591AC	RADIUM-228	5.20 +- 0.86	V	pCi/L	81%	0.841	1.0	

No. of Results: 8

TestAmerica Inc

rptSTLRchSaSummary2 V5.2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

V Qual - Detected.

QC Results Summary
TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Date: 17-Dec-13

Report No. : 58099 **SDG No.:** 47494

Batch / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
E903.1								
3317040 BLANK QC,								
M2HE61AA	RADIUM-226	0.00443 +- 0.097	U	pCi/L	80%			0.206
3317040 LCS,								
M2HE61AC	RADIUM-226	10.4 +- 2.1	V	pCi/L	85%	104%	0.0	0.222
E904.0								
3317041 BLANK QC,								
M2HE81AA	RADIUM-228	0.236 +- 0.26	U	pCi/L	70%			0.559
3317041 LCS,								
M2HE81AC	RADIUM-228	11.2 +- 1.5	V	pCi/L	73%	115%	0.1	0.495

No. of Results: 4

TestAmerica Inc

rptSTLRchQcSummary V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc
Lot-Sample No.: J3K120415-3
Client Sample ID: DUP-1(640-45742-3)

SDG: 47494
Report No. : 58099
COC No. : 640-62573.1

Collection Date: 11/8/2013
Received Date: 11/9/2013 11:30:00 AM
Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040	E903.1			**Work Order:**	M2G6C1AA		**Report DB ID:** 9M2G6C10					
RADIUM-226	2.40	V	0.31	0.64	0.241	pCi/L	98%	*(10.)*	12/9/13 09:28 p		0.8881	ASC9HB
						0.109	1.0	*(7.5)*			L	
Batch: 3317041	E904.0			**Work Order:**	M2G6C1AC		**Report DB ID:** 9M2G6C10					
RADIUM-228	5.20	V	0.58	0.83	0.736	pCi/L	88%	*(7.1)*	12/11/13 02:12 p		0.8882	GPC1D
						0.341	1.0	*(12.6)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47494	**Collection Date:**	11/8/2013 7:17:00 AM
Lot-Sample No.:	**J3K120415-1**	**Report No. :**	58099	**Received Date:**	11/9/2013 11:30:00 AM
Client Sample ID:	**EQ BLNK-1(640-45742-1)**	**COC No. :**	640-62573.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040	E903.1			**Work Order:**	M2G561AA		**Report DB ID:** 9M2G5610					
RADIUM-226	0.0704	U	0.14	0.14	0.263	pCi/L	100%	*0.27*	12/9/13 09:28 p		0.8348	ASC5HB
						0.119	1.0	*(1.)*			L	
Batch: 3317041	E904.0			**Work Order:**	M2G561AC		**Report DB ID:** 9M2G5610					
RADIUM-228	0.177	U	0.31	0.37	0.815	pCi/L	91%	*0.22*	12/11/13 02:12 p		0.8348	GPC1A
						0.379	1.0	*0.97*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 17-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47494	**Collection Date:**	11/8/2013 8:12:00 AM
Lot-Sample No.:	**J3K120415-2**	**Report No. :**	58099	**Received Date:**	11/9/2013 11:30:00 AM
Client Sample ID:	**NWD-4D(640-45742-2)**	**COC No. :**	640-62573.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040	E903.1			**Work Order:**	M2G591AA	**Report DB ID:**	9M2G5910					
RADIUM-226	**2.05**	V	0.29	0.60	0.21	pCi/L	93%	*(9.7)*	12/9/13 09:29 p		0.8754	ASCJUA
						0.0929	1.0	*(6.8)*			L	
Batch: 3317041	E904.0			**Work Order:**	M2G591AC	**Report DB ID:**	9M2G5910					
RADIUM-228	**5.20**	V	0.63	0.86	0.841	pCi/L	81%	*(6.2)*	12/11/13 02:12 p		0.8755	GPC1C
						0.39	1.0	*(12.1)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM II

Date: 17-Dec-13

DUPLICATE RESULTS

Lab Name:	**TestAmerica Inc**	**SDG:**	47494	**Collection Date:**	11/8/2013 7:17:00 AM
Lot-Sample No.:	**J3K120415-1**	**Report No. :**	58099	**Received Date:**	11/9/2013 11:30:00 AM
Client Sample ID:	**EQ BLNK-1(640-45742-1) DUP**	**COC No. :**	640-62573.1	**Matrix:**	WATER W

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040 E903.1				**Work Order:** M2G561AE		**Report DB ID:** M2G561ER			**Orig Sa DB ID:** 9M2G5610			
RADIUM-226	-0.0182	U	0.10	0.10	0.223	pCi/L	96%	-0.08	12/9/13 09:28 p		0.818	ASC6MB
	0.0704	U	**RER2**	**1.0**		1.0		-0.36			L	
Batch: 3317041 E904.0				**Work Order:** M2G561AD		**Report DB ID:** M2G561DR			**Orig Sa DB ID:** 9M2G5610			
RADIUM-228	0.339	U	0.32	0.38	0.804	pCi/L	84%	0.42	12/11/13 02:12 p		0.818	GPC1B
	0.177	U	**RER2**	**0.6**		1.0		(1.8)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchDupV5.
2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

BLANK RESULTS

Date: 17-Dec-13

Lab Name: TestAmerica Inc **SDG:** 47494

Matrix: WATER **Report No. :** 58099

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3317040	E903.1			**Work Order:**	M2HE61AA		**Report DB ID:**	M2HE61AB				
RADIUM-226	0.00443	U	0.097	0.097	0.206	pCi/L	80%	0.02	12/9/13 09:05 p		1.0029	ASCNMA
					0.091	1.0		0.09			L	
Batch: 3317041	E904.0			**Work Order:**	M2HE81AA		**Report DB ID:**	M2HE81AB				
RADIUM-228	0.236	U	0.24	0.26	0.559	pCi/L	70%	0.42	12/11/13 02:12 p		1.0019	GPC3B
					0.245	1.0		(1.8)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchBlank
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 17-Dec-13

Lab Name: **TestAmerica Inc** **SDG:** 47494

Matrix: WATER **Report No. :** 58099

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3317040	E903.1			**Work Order:**	M2HE61AC		**Report DB ID:**	M2HE61CS					
RADIUM-226	10.4	V	0.61	2.1	0.222	pCi/L	85%	9.96	0.1	104%	12/9/13 09:06 p	1.0029	ASCPMC
							Rec Limits:	75	125	0.0		L	
Batch: 3317041	E904.0			**Work Order:**	M2HE81AC		**Report DB ID:**	M2HE81CS					
RADIUM-228	11.2	V	0.82	1.5	0.495	pCi/L	73%	9.75	0.11	115%	12/11/13 02:12 p	1.0018	GPC3C
							Rec Limits:	75	125	0.1		L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchLcs
V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
V Qual - Detected.

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-62573.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: amy.marks@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 640-45742-1
Address: 2800 George Washington Way,	Due Date Requested: 12/5/2013			
City: Richland	TAT Requested (days):			
State, Zip: WA, 99352				
Phone: 509-375-3131(Tel) 509-375-5590(Fax)	PO #:			
Email:	WO #:			
Project Name: Agrico	Project #: 64000434			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT/ Rad 226-Method 903.1 (Richland)	SUBCONTRACT/ Rad 228-Method 904.0 (Richland)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
EQ BLNK-1 (640-45742-1) M2b56	11/8/13	07:17 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
NWD-4D (640-45742-2) M2b59	11/8/13	08:12 Eastern		Water			X	X	2	Project MS/MSD assigned by client.
DUP-1 (640-45742-3) M2b6C	11/8/13	Eastern		Water			X	X	2	Project MS/MSD assigned by client.

J3K120415
SDG-47494
Due 12-6-13

J3K120415

Possible Hazard Identification Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:		Time:		Method of Shipment:
Relinquished by: Jannie Carpenter	Date/Time: 11/8/13 1615	Company: TAL	Received by: J Bock J. Bock	Date/Time: 11-9-13	Company: TALR
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 11-9-13 | 1130 Container GM Screen Result: (Airlock) 20 cpm Initials[JB]
Sample GM Screen Result (Sample Receiving) 20 cpm Initials[JB]

Client: STL-T SDG #: 47494 SAF #: NA[JB]

Lot Number: J3K120415

Chain of Custody # 640-62573.1

Shipping Container ID or Air Bill Number : NA[JB]

Samples received inside shipping container/cooler/box Yes[JB] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal[JB]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [JB]
3. Cooler temperature: ____ °C NA [JB]
4. Vermiculite/packing materials is NA [ ] Wet[JB] Ice Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [JB] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 3
7. Containers received: 6x1L
8. Sample holding times exceeded? NA [ ] Yes [ ] No[JB]
9. Samples have: ____ tape JB hazard labels ____ custody seals JB appropriate sample labels
10. Matrix: ____ A (FLT, Wipe, Solid, Soil) JB I (Water) ____ S (Air, Niosh 7400) ____ T (Biological, Ni-63)
11. Samples:
JB are in good condition ____ are leaking ____ are broken
____ have air bubbles (Only for samples requiring no head space) ____ Other ____
12. Sample pH appropriate for analysis requested Yes [JB] No [ ] NA [ ]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [JB]
14. Description of anomalies (include sample numbers): NA [JB]
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No[JB]
*For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: [signature] Date: 11-12-13

Client Notification needed? Yes [ ] No [ ] Date:
By:
Person contacted:

[X] No action necessary; process as is

Project Manager [signature] Date 11-13-13

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TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information

Client Contact: Mr. Jeff Wagner	Sampler: E. Mann, D. Hilton	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-41766-6826.1
	Phone: 850 643 6461	E-Mail: amy.marks@testamericainc.com		Page: Page ~~total~~ 1
Company: URS Corporation				Job #: 640-45742
Address: 1625 Summit Lake Drive Suite 200	Due Date Requested:			
City: Tallahassee	TAT Requested (days):			
State, Zip: FL, 32317				
Phone:	PO #: 12805561			
Email: jeffry_wagner@urscorp.com	WO #: 12806318.00000			
Project Name: Agrico Annual	Project #: 64000434			
Site:	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT - 904 - Rad228/ 903-Rad226 (Richland)	353.2 - Nitrate as N	SM4500_NO2_B - Nitrate as N	300_ORGFM_28D - Chloride, Fluoride and Sulfate	6010B - Arsenic	300_ORGFM_28D - Fluoride	Total Number of containers	Special Instructions/Note:
				Preservation Code:			D	S	N	N	D	N		
EQ BLNK-1	11/8/13	0717	G	W	N	N	2	1	1	1				
NWD-4D	↓	0812	↓	↓	↓	↓	↓	↓	↓	↓				
DUP-1	↓		↓	↓	↓	↓	↓	↓	↓	↓				

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

640-45742 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ______ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: [signature]	Date: 10/24/13		Time: 0925	Method of Shipment:
Relinquished by: [signature]	Date/Time: 11/08/13 1301	Company: URS	Received by: [signature]	Date/Time: 11/08/13 1301	Company: TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 1.4°C

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Tel: (850)878-3994

TestAmerica Job ID: 640-45756-1
Client Project/Site: Agrico

For:
URS Corporation
1625 Summit Lake Drive
Suite 200
Tallahassee, Florida 32317

Attn: Mr. Jeff Wagner

Amy Marks

Authorized for release by:
12/23/2013 2:40:23 PM

Amy Marks, Project Manager II
(850)878-3994
amy.marks@testamericainc.com

LINKS

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www.testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Qualifiers

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 640-45756-1

Laboratory: TestAmerica Tallahassee

Narrative

Job Narrative
640-45756-1

Comments
No additional comments.

Receipt
The samples were received on 11/12/2013 at 9:00 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 1.3º C.

General Chemistry
Method 300.0: The following samples were diluted due to the abundance of target analytes: ACSW-1 (640-45756-1), ACSW-2 (640-45756-2), BT-02 (640-45756-5), BT-107 (640-45756-3), and BT-127 (640-45756-4). Elevated reporting limits (RLs) are provided.

Method 340.2: The following samples were originally analyzed for Fluoride within holding time by method 300.0; however, the samples were re-analyzed undiluted outside of holding time by method 340.2 in order to achieve project required reporting limits: ACSW-1 (640-45756-1), ACSW-2 (640-45756-2), BT-02 (640-45756-5), BT-107 (640-45756-3), BT-127 (640-45756-4). All out of hold results have been qualified with a "H" flag and reported.

No other analytical or quality issues were noted.

Subcontract Work
Methods Radium 226 by EPA Method 903.1, Radium 228 by EPA Method 904.0: These methods were subcontracted to TestAmerica Richland.

Detection Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45756-1

Client Sample ID: ACSW-1

Lab Sample ID: 640-45756-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	8700		250		mg/L	500		300.0	Total/NA
Sulfate	1200		25		mg/L	50		300.0	Total/NA
Fluoride	0.91	H	0.10		mg/L	1		340.2	Total/NA
Nitrate Nitrite as N	0.47		0.050		mg/L	1		353.2	Total/NA
Nitrate as N	0.47		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: ACSW-2

Lab Sample ID: 640-45756-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	13000		250		mg/L	500		300.0	Total/NA
Sulfate	1800		25		mg/L	50		300.0	Total/NA
Fluoride	0.78	H	0.10		mg/L	1		340.2	Total/NA
Nitrate Nitrite as N	0.19		0.050		mg/L	1		353.2	Total/NA
Nitrate as N	0.19		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: BT-107

Lab Sample ID: 640-45756-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.99	H	0.10		mg/L	1		340.2	Total/NA

Client Sample ID: BT-127

Lab Sample ID: 640-45756-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	1.2	H	0.10		mg/L	1		340.2	Total/NA

Client Sample ID: BT-02

Lab Sample ID: 640-45756-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.94	H	0.10		mg/L	1		340.2	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: ACSW-1
Date Collected: 11/11/13 14:00
Date Received: 11/12/13 09:00

Lab Sample ID: 640-45756-1
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8700		250		mg/L			12/03/13 20:23	500
Sulfate	1200		25		mg/L			12/04/13 17:35	50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.91	H	0.10		mg/L			12/18/13 11:45	1
Nitrate Nitrite as N	0.47		0.050		mg/L			11/14/13 12:55	1
Nitrate as N	0.47		0.010		mg/L			12/02/13 10:54	1

Client Sample Results

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45756-1

Client Sample ID: ACSW-2

Lab Sample ID: 640-45756-2

Date Collected: 11/11/13 15:05
Date Received: 11/12/13 09:00

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13000		250		mg/L			12/03/13 20:48	500
Sulfate	1800		25		mg/L			12/04/13 18:00	50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.78	H	0.10		mg/L			12/18/13 11:45	1
Nitrate Nitrite as N	0.19		0.050		mg/L			11/14/13 12:51	1
Nitrate as N	0.19		0.010		mg/L			12/02/13 10:54	1

Client Sample ID: BT-107
Lab Sample ID: 640-45756-3
Date Collected: 11/11/13 14:30
Matrix: Water
Date Received: 11/12/13 09:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.99	H	0.10		mg/L			12/18/13 11:45	1

Client Sample ID: BT-127
Lab Sample ID: 640-45756-4

Date Collected: 11/11/13 14:40
Matrix: Water
Date Received: 11/12/13 09:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**1.2**	**H**	0.10		mg/L			12/18/13 11:45	1

Client Sample Results

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45756-1

Client Sample ID: BT-02
Date Collected: 11/11/13 14:51
Date Received: 11/12/13 09:00

Lab Sample ID: 640-45756-5
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.94	H	0.10		mg/L			12/18/13 11:45	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 680-305939/20
Matrix: Water
Analysis Batch: 305939

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.50		0.50		mg/L			12/03/13 14:48	1

Lab Sample ID: LCS 680-305939/21
Matrix: Water
Analysis Batch: 305939

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.0		mg/L		100	90 - 110

Lab Sample ID: LCSD 680-305939/22
Matrix: Water
Analysis Batch: 305939

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.0		mg/L		100	90 - 110	0	30

Lab Sample ID: MB 680-306102/16
Matrix: Water
Analysis Batch: 306102

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<0.50		0.50		mg/L			12/04/13 14:23	1

Lab Sample ID: LCS 680-306102/17
Matrix: Water
Analysis Batch: 306102

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	10.0	10.4		mg/L		104	90 - 110

Lab Sample ID: LCSD 680-306102/18
Matrix: Water
Analysis Batch: 306102

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	10.0	10.4		mg/L		104	90 - 110	0	30

Method: 340.2 - Fluoride

Lab Sample ID: LCS 400-202106/2
Matrix: Water
Analysis Batch: 202106

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	1.00	1.09		mg/L		109	90 - 110

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-303255/13
Matrix: Water
Analysis Batch: 303255

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/14/13 12:23	1

Lab Sample ID: LCS 680-303255/14
Matrix: Water
Analysis Batch: 303255

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	0.997	1.01		mg/L		101	90 - 110

HPLC/IC

Analysis Batch: 305939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45756-1	ACSW-1	Total/NA	Water	300.0	
640-45756-2	ACSW-2	Total/NA	Water	300.0	
LCS 680-305939/21	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305939/22	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305939/20	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 306102

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45756-1	ACSW-1	Total/NA	Water	300.0	
640-45756-2	ACSW-2	Total/NA	Water	300.0	
LCS 680-306102/17	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-306102/18	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-306102/16	Method Blank	Total/NA	Water	300.0	

General Chemistry

Analysis Batch: 106215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45756-1	ACSW-1	Total/NA	Water	Nitrate by calc	
640-45756-2	ACSW-2	Total/NA	Water	Nitrate by calc	

Analysis Batch: 202106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45756-1	ACSW-1	Total/NA	Water	340.2	
640-45756-2	ACSW-2	Total/NA	Water	340.2	
640-45756-3	BT-107	Total/NA	Water	340.2	
640-45756-4	BT-127	Total/NA	Water	340.2	
640-45756-5	BT-02	Total/NA	Water	340.2	
LCS 400-202106/2	Lab Control Sample	Total/NA	Water	340.2	

Analysis Batch: 303255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45756-1	ACSW-1	Total/NA	Water	353.2	
640-45756-2	ACSW-2	Total/NA	Water	353.2	
LCS 680-303255/14	Lab Control Sample	Total/NA	Water	353.2	
MB 680-303255/13	Method Blank	Total/NA	Water	353.2	

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Client Sample ID: ACSW-1

Lab Sample ID: 640-45756-1
Date Collected: 11/11/13 14:00
Matrix: Water
Date Received: 11/12/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		500	305939	12/03/13 20:23	PAT	TAL SAV
Total/NA	Analysis	300.0		50	306102	12/04/13 17:35	PAT	TAL SAV
Total/NA	Analysis	340.2		1	202106	12/18/13 11:45	SLT	TAL PEN
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		1	303255	11/14/13 12:55	CRW	TAL SAV

Client Sample ID: ACSW-2

Lab Sample ID: 640-45756-2
Date Collected: 11/11/13 15:05
Matrix: Water
Date Received: 11/12/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		500	305939	12/03/13 20:48	PAT	TAL SAV
Total/NA	Analysis	300.0		50	306102	12/04/13 18:00	PAT	TAL SAV
Total/NA	Analysis	340.2		1	202106	12/18/13 11:45	SLT	TAL PEN
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		1	303255	11/14/13 12:51	CRW	TAL SAV

Client Sample ID: BT-107

Lab Sample ID: 640-45756-3
Date Collected: 11/11/13 14:30
Matrix: Water
Date Received: 11/12/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	340.2		1	202106	12/18/13 11:45	SLT	TAL PEN

Client Sample ID: BT-127

Lab Sample ID: 640-45756-4
Date Collected: 11/11/13 14:40
Matrix: Water
Date Received: 11/12/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	340.2		1	202106	12/18/13 11:45	SLT	TAL PEN

Client Sample ID: BT-02

Lab Sample ID: 640-45756-5
Date Collected: 11/11/13 14:51
Matrix: Water
Date Received: 11/12/13 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	340.2		1	202106	12/18/13 11:45	SLT	TAL PEN

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

Certification Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45756-1

Laboratory: TestAmerica Tallahassee

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E81005	06-30-14
Georgia	State Program	4		06-30-14
Louisiana	NELAP	6	30663	06-30-14
New Jersey	NELAP	2	FL012	06-30-14
Texas	NELAP	6	T104704459-11-2	03-31-14
USDA	Federal		P330-08-00158	08-05-14

Laboratory: TestAmerica Pensacola

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40150	06-30-14
Arizona	State Program	9	AZ0710	01-11-14
Arkansas DEQ	State Program	6	88-0689	09-01-14
Florida	NELAP	4	E81010	06-30-14
Georgia	State Program	4	N/A	06-30-14
Illinois	NELAP	5	200041	10-09-13 *
Iowa	State Program	7	367	08-01-14
Kansas	NELAP	7	E-10253	10-31-14
Kentucky (UST)	State Program	4	53	06-30-14
Louisiana	NELAP	6	30976	06-30-14
Maryland	State Program	3	233	09-30-14
Massachusetts	State Program	1	M-FL094	06-30-14
Michigan	State Program	5	9912	05-04-14
New Jersey	NELAP	2	FL006	06-30-14
North Carolina DENR	State Program	4	314	12-31-13
Oklahoma	State Program	6	9810	08-31-14
Pennsylvania	NELAP	3	68-00467	01-31-14
Rhode Island	State Program	1	LAO00307	12-31-13
South Carolina	State Program	4	96026	06-30-13 *
Tennessee	State Program	4	TN02907	06-30-14
Texas	NELAP	6	T104704286-12-5	09-30-14
USDA	Federal		P330-13-00193	07-01-16
Virginia	NELAP	3	460166	06-14-14
West Virginia DEP	State Program	3	136	06-30-14

Laboratory: TestAmerica Richland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA	IHLAP		187436	08-01-15
Arizona	State Program	9	AZ0709	07-02-14
California	NELAP	9	E87829	05-31-14
Colorado	State Program	8	N/A	09-30-14
Florida	NELAP	4	E87829	06-30-14
Hawaii	State Program	9	N/A	01-09-14
L-A-B	DoD ELAP		L2291	06-30-14
Michigan	State Program	5	N/A	08-13-14
Nevada	State Program	9	WA011162014	07-31-14
New Mexico	State Program	6	WA00023	01-09-14
Oregon	NELAP	10	WA100002	01-09-14

* Expired certification is currently pending renewal and is considered valid.

Certification Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45756-1

Laboratory: TestAmerica Richland (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Pennsylvania	NELAP	3	68-04849	08-31-14
Tennessee	State Program	4	TN04011	08-13-14
Texas	NELAP	6	T104704493-10-1	12-31-13
USDA	Federal		P330-11-00043	01-25-14
Utah	NELAP	8	QUAN8	01-09-14 *
Virginia	State Program	3	00100	06-30-14
Washington	State Program	10	WA01116	08-14-14
Washington (CLIA)	State Program	10	50D0661626	06-30-15

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-14
California	NELAP	9	3217CA	07-31-14
Colorado	State Program	8	N/A	12-31-13 *
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13 *
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	06-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-14
Iowa	State Program	7	353	07-01-15
Kentucky	State Program	4	90084	12-31-13 *
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	30690	06-30-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13 *
Massachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-14
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	04-01-14
North Carolina DENR	State Program	4	269	12-31-14 *
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-14
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14 *
South Carolina	State Program	4	98001	06-30-14
Tennessee	State Program	4	TN02961	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704185-08-TX	11-30-14
USDA	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13 *
West Virginia DEP	State Program	3	94	06-30-14
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL SAV
340.2	Fluoride	MCAWW	TAL PEN
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
Nitrate by calc	Nitrogen, Nitrate-Nitrite	SM	TAL TAL
Rad 226-Method 903.1 (Richland)	RAD-226 (RCH)	NONE	TAL RCH
Rad 228-Method 904.0 (Richland)	RAD-228 (RCH)	NONE	TAL RCH

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

Sample Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45756-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
640-45756-1	ACSW-1	Water	11/11/13 14:00	11/12/13 09:00
640-45756-2	ACSW-2	Water	11/11/13 15:05	11/12/13 09:00
640-45756-3	BT-107	Water	11/11/13 14:30	11/12/13 09:00
640-45756-4	BT-127	Water	11/11/13 14:40	11/12/13 09:00
640-45756-5	BT-02	Water	11/11/13 14:51	11/12/13 09:00

Analytical Data Package Prepared For

TestAmerica Tallahassee

Radiochemical Analysis By

TestAmerica Inc

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARL

Data Package Contains 14 *Pages*

Report No.: 58115

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
47502		ACSW-1(640-45756-1)	J3K140417-1	M2HRM1AA	9M2HRM10	3319024
		ACSW-1(640-45756-1)	J3K140417-1	M2HRM1AC	9M2HRM10	3319025
		ACSW-2(640-45756-2)	J3K140417-2	M2HRN1AA	9M2HRN10	3319024
		ACSW-2(640-45756-2)	J3K140417-2	M2HRN1AC	9M2HRN10	3319025

Certificate of Analysis

December 18, 2013

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301

Attention: Amy Marks

Date Received by Lab	:	November 13, 2012
Sample Number/Matrix	:	Two (2) Waters
SDG Number	:	47502
Chain Of Custody	:	640-62607.1
Project	:	Agrico
Project Number	:	640-45756-1

CASE NARRATIVE

I. Introduction

On November 13, 2012, two water samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt, the samples were assigned the TestAmerica identification numbers as described on the cover page of the Analytical Data Package. The samples were assigned to Lot Number J3K140417.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Gas Proportional Counting
Radium-228 by method RL-RA-001
Alpha Scintillation Counting
Radium-226 by method RL-RA-001

TestAmerica Tallahassee
December 18, 2013

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

V. Comments

Gas Proportional Counting

<u>Radium-228 by method RL-RA-001:</u>
The analytical batch was re-milked to verify sample activities. The re-milk results confirm the initial run. The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

Alpha Scintillation Counting

<u>Radium-226 by method RL-RA-001:</u>
The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Erika Jordan
2013.12.18
14:16:02
-08'00'

Erika Jordan
Manager of Project Management

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in “NIST Technical Note 1297, 1994 Edition”. The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c *the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt(TPUs^2 + TPUd^2)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Date: 18-Dec-13

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 58115 **SDG No:** 47502

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
3319024 E903.1									
	ACSW-1(640-45756-1)								
	M2HRM1AA	RADIUM-226	0.292 +- 0.17	J	pCi/L	92%	0.247	1.0	
	ACSW-1(640-45756-1) DUP								
	M2HRM1AD	RADIUM-226	0.406 +- 0.18	J	pCi/L	93%	0.208	1.0	0.9
	ACSW-2(640-45756-2)								
	M2HRN1AA	RADIUM-226	0.242 +- 0.12	J	pCi/L	100%	0.152	1.0	
3319025 E904.0									
	ACSW-1(640-45756-1)								
	M2HRM1AC	RADIUM-228	1.12 +- 0.44	V	pCi/L	81%	0.806	1.0	
	ACSW-1(640-45756-1) DUP								
	M2HRM1AE	RADIUM-228	0.959 +- 0.42	J	pCi/L	84%	0.802	1.0	0.5
	ACSW-2(640-45756-2)								
	M2HRN1AC	RADIUM-228	0.967 +- 0.41	J	pCi/L	89%	0.779	1.0	

No. of Results: 6

TestAmerica Inc

rptSTLRchSaSummary2 V5.2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

V Qual - Detected.

QC Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Date: 18-Dec-13

Report No. : 58115 **SDG No.:** 47502

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
E903.1								
3319024 BLANK QC,								
M2HW61AA	RADIUM-226	0.0472 +- 0.076	U	pCi/L	92%			0.144
3319024 LCS,								
M2HW61AC	RADIUM-226	9.41 +- 2.6	V	pCi/L	97%	95%	-0.1	0.132
E904.0								
3319025 BLANK QC,								
M2HW81AA	RADIUM-228	0.133 +- 0.24	U	pCi/L	83%			0.543
3319025 LCS,								
M2HW81AC	RADIUM-228	8.92 +- 1.2	V	pCi/L	87%	91%	-0.1	0.43

No. of Results: 4

TestAmerica Inc

rptSTLRchQcSummary V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 18-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47502	**Collection Date:**	11/11/2013 2:00:00 PM
Lot-Sample No.:	**J3K140417-1**	**Report No. :**	58115	**Received Date:**	11/13/2013 3:00:00 PM
Client Sample ID:	**ACSW-1(640-45756-1)**	**COC No. :**	640-62607.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3319024	E903.1			**Work Order:**	M2HRM1AA		**Report DB ID:** 9M2HRM10					
RADIUM-226	0.292	J	0.15	0.17	0.247	pCi/L	92%	*(1.2)*	12/14/13 05:28 p		0.9187	ASC5HB
						0.113	1.0	*(3.4)*			L	
Batch: 3319025	E904.0			**Work Order:**	M2HRM1AC		**Report DB ID:** 9M2HRM10					
RADIUM-228	1.12	V	0.41	0.44	0.806	pCi/L	81%	*(1.4)*	12/17/13 01:50 p		0.9187	GPC1B
						0.374	1.0	*(5.1)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 18-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47502	**Collection Date:**	11/11/2013 3:05:00 PM
Lot-Sample No.:	**J3K140417-2**	**Report No. :**	58115	**Received Date:**	11/13/2013 3:00:00 PM
Client Sample ID:	**ACSW-2(640-45756-2)**	**COC No. :**	640-62607.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3319024	E903.1			**Work Order:**	M2HRN1AA		**Report DB ID:** 9M2HRN10					
RADIUM-226	**0.242**	J	0.11	0.12	0.152	pCi/L	100%	*(1.6)*	12/14/13 05:30 p		0.8665	ASCEHB
						0.0657	1.0	*(4.)*			L	
Batch: 3319025	E904.0			**Work Order:**	M2HRN1AC		**Report DB ID:** 9M2HRN10					
RADIUM-228	**0.967**	J	0.39	0.41	0.779	pCi/L	89%	*(1.2)*	12/17/13 01:50 p		0.8667	GPC1D
						0.362	1.0	*(4.7)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM II

Date: 18-Dec-13

DUPLICATE RESULTS

Lab Name:	**TestAmerica Inc**	**SDG:**	47502	**Collection Date:**	11/11/2013 2:00:00 PM
Lot-Sample No.:	**J3K140417-1**	**Report No. :**	58115	**Received Date:**	11/13/2013 3:00:00 PM
Client Sample ID:	**ACSW-1(640-45756-1) DUP**	**COC No. :**	640-62607.1	**Matrix:**	WATER W

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3319024 E903.1				**Work Order:** M2HRM1AD		**Report DB ID:** M2HRM1DR			**Orig Sa DB ID:** 9M2HRM10			
RADIUM-226	0.406	J	0.15	0.18	0.208	pCi/L	93%	(2.)	12/14/13 05:28 p		0.9136	ASCDUE
	0.292	J	**RER2 0.9**			1.0		(4.5)			L	
Batch: 3319025 E904.0				**Work Order:** M2HRM1AE		**Report DB ID:** M2HRM1ER			**Orig Sa DB ID:** 9M2HRM10			
RADIUM-228	0.959	J	0.40	0.42	0.802	pCi/L	84%	(1.2)	12/17/13 01:50 p		0.9135	GPC1C
	1.12	V	**RER2 0.5**			1.0		(4.5)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchDupV5.2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
V Qual - Detected.

FORM II

BLANK RESULTS

Date: 18-Dec-13

Lab Name: **TestAmerica Inc** **SDG:** 47502

Matrix: WATER **Report No. :** 58115

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3319024	E903.1			**Work Order:**	M2HW61AA		**Report DB ID:**	M2HW61AB				
RADIUM-226	0.0472	U	0.075	0.076	0.144	pCi/L	92%	0.33	12/14/13 05:28 p		1.0109	ASCFRM
					0.062	1.0		(1.2)			L	
Batch: 3319025	E904.0			**Work Order:**	M2HW81AA		**Report DB ID:**	M2HW81AB				
RADIUM-228	0.133	U	0.22	0.24	0.543	pCi/L	83%	0.24	12/17/13 01:51 p		1.0109	GPC2A
					0.24	1.0		(1.1)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchBlank
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 18-Dec-13

Lab Name: **TestAmerica Inc** | **SDG:** 47502

Matrix: WATER | **Report No. :** 58115

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3319024	E903.1			**Work Order:**	M2HW61AC		**Report DB ID:**	M2HW61CS					
RADIUM-226	9.41	V	0.50	2.6	0.132	pCi/L	97%	9.96	0.1	95%	12/14/13 05:28 p	1.0023	ASCHMA
							Rec Limits:	75	125	-0.1		L	
Batch: 3319025	E904.0			**Work Order:**	M2HW81AC		**Report DB ID:**	M2HW81CS					
RADIUM-228	8.92	V	0.69	1.2	0.43	pCi/L	87%	9.75	0.11	91%	12/17/13 01:51 p	1.0023	GPC2B
							Rec Limits:	75	125	-0.1		L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchLcs
V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
V Qual - Detected.

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-62607.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: amy.marks@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 640-45756-1
Address: 2800 George Washington Way,	Due Date Requested: 12/9/2013			
City: Richland	TAT Requested (days):			
State, Zip: WA, 99352				
Phone: 509-375-3131(Tel) 509-375-5590(Fax)	PO #:			
Email:	WO #:			
Project Name: Agrico	Project #: 64000434			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT/ Rad 226-Method 903.1 (Richland)	SUBCONTRACT/ Rad 228-Method 904.0 (Richland)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
ACSW-1 (640-45756-1) M2HRM	11/11/13	14:00 Eastern		Water			X	X	2	
ACSW-2 (640-45756-2) M2HRW	11/11/13	15:05 Eastern		Water			X	X	2	

J3K140417
SDG-47502
Due 12-11-13

J3K140417

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ________ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 11/12/13 1659	Company: TAL	Received by: J. Sock J. Sock	Date/Time: 11-13-13 1500	Company: TAUR
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 11-13-13 | 1500 Container GM Screen Result: (Airlock) 40 cpm Initials[B]
Sample GM Screen Result (Sample Receiving) 20 cpm Initials[B]

Client: STL-T SDG #: 47502 SAF #: NA[B]

Lot Number: J3K140417

Chain of Custody # 640-62607.1

Shipping Container ID or Air Bill Number : NA[B]

Samples received inside shipping container/cooler/box Yes [B] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: ______ °C NA[B]
4. Vermiculite/packing materials is NA [ ] Wet [B] Ice Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [B] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 2
7. Containers received: 4x Lp
8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]
9. Samples have: ____ tape B hazard labels ____ custody seals B appropriate sample labels
10. Matrix: ____ A (FLT, Wipe, Solid, Soil) ____ I (Water) ____ S (Air, Niosh 7400) ____ T (Biological, Ni-63)
11. Samples:
B are in good condition ____ are leaking ____ are broken
____ have air bubbles (Only for samples requiring no head space) ____ Other ____
12. Sample pH appropriate for analysis requested Yes [B] No [ ] NA [ ]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [B]
14. Description of anomalies (include sample numbers): NA[B]
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [B]
*For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: Juei Bach Date: 11-14-13

Client Notification needed? Yes [ ] No [ ] Date: ____
By: ____
Person contacted: ____

[X] No action necessary; process as is

Project Manager Erika Ord Date 11-15-13

LS-023 Rev. 17, 05/13

Page 1 of 1

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: E. Mann, D. Hilton	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-41766-6826.4
Client Contact: Mr. Jeff Wagner	Phone: 850 643 6461	E-Mail: amy.marks@testamericainc.com		Page: Page 4 of 4
Company: URS Corporation				Job #: 640-45756
Address: 1625 Summit Lake Drive Suite 200	Due Date Requested:			
City: Tallahassee	TAT Requested (days):			
State, Zip: FL, 32317				
Phone: 850-402-6409(Tel)	PO #: 12805561			
Email: jeffry_wagner@urscorp.com	WO #: 12806318.00000			
Project Name: Agrico Annual	Project #: 64000434			
Site: Florida	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT - 904.0 - Rad228/ 903.1-Rad226 (Richland)	353.2 - Nitrate as N	SM4500_NO2_B - Nitrate as N	300_ORGFM_28D - Chloride, Fluoride and Sulfate	6010B - Arsenic	300_ORGFM_28D - Fluoride	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	S	N	N	D	N		
ACSW-1	11/11/13	1400	G	W	N	N	2	1	1	1				
ACSW-2		1505					2	1	1	1				
BT-107		1430										1		
BT-127		1440										1		
BT-02		1451										1		

640-45756 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements:

1.3 °C

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	
Relinquished by: [signature]	Date/Time: 11/11/13 1730	Company: Fed Ex	Received by: [signature] Carpenter	Date/Time: 11/12/13 0900	Company: TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

12/23/2013

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Tel: (850)878-3994

TestAmerica Job ID: 640-45777-1

Client Project/Site: Agrico

For:
URS Corporation
1625 Summit Lake Drive
Suite 200
Tallahassee, Florida 32317

Attn: Mr. Jeff Wagner

Authorized for release by:
12/23/2013 4:40:19 PM

Amy Marks, Project Manager II
(850)878-3994
amy.marks@testamericainc.com

LINKS

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Have a Question? Ask The Expert

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45777-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 640-45777-1

Laboratory: TestAmerica Tallahassee

Narrative

Job Narrative
640-45777-1

Comments
No additional comments.

Receipt
The samples were received on 11/13/2013 at 9:20 AM. The samples arrived in good condition, properly preserved, and on ice. The temperatures of the 2 coolers at receipt time were 1.3º C and 1.5º C.

Except:

The Chain-of-Custody (COC) was not relinquished prior to receipt at the laboratory.

Metals
No analytical or quality issues were noted.

General Chemistry
Method 300.0: The matrix spike (MS) and matrix spike duplicate (MSD) associated with batch 305706 recovered above the calibration range for Fluoride due to an abundance of the target analyte present at greater than 4 times the matrix spike concentration in the parent sample. Control limits are not applicable. The associated laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) met acceptance criteria; therefore, the results have been reported and qualified.

No other analytical or quality issues were noted.

Subcontract Work
Methods Radium 226 by EPA Method 903.1, Radium 228 by EPA Method 904.0: These methods were subcontracted to TestAmerica Richland.

Detection Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45777-1

Client Sample ID: AC-3D

Lab Sample ID: 640-45777-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	16		0.50		mg/L	1		300.0	Total/NA
Fluoride	15		0.40		mg/L	4		300.0	Total/NA
Sulfate	130		2.0		mg/L	4		300.0	Total/NA
Nitrate Nitrite as N	6.1		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	6.1		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-3S

Lab Sample ID: 640-45777-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	2.4		0.50		mg/L	1		300.0	Total/NA
Sulfate	17		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	1.5		0.050		mg/L	1		353.2	Total/NA
Nitrate as N	1.5		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-30D

Lab Sample ID: 640-45777-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	17		0.50		mg/L	1		300.0	Total/NA
Fluoride	7.1		0.10		mg/L	1		300.0	Total/NA
Sulfate	48		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	5.2		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	5.2		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-2D

Lab Sample ID: 640-45777-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.0		0.50		mg/L	1		300.0	Total/NA
Fluoride	2.3		0.10		mg/L	1		300.0	Total/NA
Sulfate	17		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	5.3		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	5.3		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-2S

Lab Sample ID: 640-45777-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	3.8		0.50		mg/L	1		300.0	Total/NA
Fluoride	36		0.50		mg/L	5		300.0	Total/NA
Sulfate	59		1.0		mg/L	2		300.0	Total/NA
Arsenic	0.016		0.010		mg/L	1		6010B	Total Recoverable
Nitrate Nitrite as N	3.3		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	3.3		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: AC-25D

Lab Sample ID: 640-45777-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	370		5.0		mg/L	10		300.0	Total/NA
Fluoride	96		2.0		mg/L	20		300.0	Total/NA
Sulfate	80		1.0		mg/L	2		300.0	Total/NA
Nitrate Nitrite as N	4.4		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	4.4		0.010		mg/L	1		Nitrate by calc	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DUP-2

Lab Sample ID: 640-45777-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	3.7		1.0		mg/L	2		300.0	Total/NA
Fluoride	43		1.0		mg/L	10		300.0	Total/NA
Sulfate	60		1.0		mg/L	2		300.0	Total/NA
Arsenic	0.015		0.010		mg/L	1		6010B	Total Recoverable
Nitrate Nitrite as N	3.3		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	3.3		0.010		mg/L	1		Nitrate by calc	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: AC-3D

Date Collected: 11/12/13 08:35
Date Received: 11/13/13 09:20

Lab Sample ID: 640-45777-1
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16		0.50		mg/L			12/02/13 15:58	1
Fluoride	15		0.40		mg/L			12/02/13 16:11	4
Sulfate	130		2.0		mg/L			12/02/13 16:11	4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	6.1		0.25		mg/L			11/16/13 13:56	5
Nitrate as N	6.1		0.010		mg/L			12/02/13 10:54	1

Client Sample ID: AC-3S
Date Collected: 11/12/13 09:36
Date Received: 11/13/13 09:20

Lab Sample ID: 640-45777-2
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2.4**		0.50		mg/L			12/02/13 16:24	1
Fluoride	<0.10		0.10		mg/L			12/02/13 16:24	1
Sulfate	**17**		0.50		mg/L			12/02/13 16:24	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.010		0.010		mg/L		11/14/13 11:55	11/15/13 12:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**1.5**		0.050		mg/L			11/16/13 13:05	1
Nitrate as N	**1.5**		0.010		mg/L			12/02/13 10:54	1

Client Sample Results

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45777-1

Client Sample ID: AC-30D
Date Collected: 11/12/13 11:42
Date Received: 11/13/13 09:20

Lab Sample ID: 640-45777-3
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17		0.50		mg/L			12/02/13 17:04	1
Fluoride	7.1		0.10		mg/L			12/02/13 17:04	1
Sulfate	48		0.50		mg/L			12/02/13 17:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	5.2		0.25		mg/L			11/16/13 13:13	5
Nitrate as N	5.2		0.010		mg/L			12/02/13 10:54	1

Client Sample ID: AC-2D

Lab Sample ID: 640-45777-4

Date Collected: 11/12/13 14:13
Matrix: Water
Date Received: 11/13/13 09:20

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.0		0.50		mg/L			12/02/13 18:11	1
Fluoride	2.3		0.10		mg/L			12/02/13 18:11	1
Sulfate	17		0.50		mg/L			12/02/13 18:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	5.3		0.25		mg/L			11/16/13 13:58	5
Nitrate as N	5.3		0.010		mg/L			12/02/13 10:54	1

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45777-1

Client Sample ID: AC-2S
Date Collected: 11/12/13 14:37
Date Received: 11/13/13 09:20

Lab Sample ID: 640-45777-5
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.8		0.50		mg/L			12/02/13 18:24	1
Fluoride	36		0.50		mg/L			12/04/13 14:16	5
Sulfate	59		1.0		mg/L			12/02/13 18:38	2

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.016		0.010		mg/L		11/14/13 11:55	11/15/13 12:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	3.3		0.25		mg/L			11/16/13 13:16	5
Nitrate as N	3.3		0.010		mg/L			12/02/13 10:54	1

Client Sample ID: AC-25D

Lab Sample ID: 640-45777-6

Date Collected: 11/12/13 16:43
Date Received: 11/13/13 09:20

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	370		5.0		mg/L			12/02/13 19:18	10
Fluoride	96		2.0		mg/L			12/03/13 16:44	20
Sulfate	80		1.0		mg/L			12/02/13 18:51	2

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	4.4		0.25		mg/L			11/16/13 14:01	5
Nitrate as N	4.4		0.010		mg/L			12/02/13 10:54	1

Client Sample Results

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45777-1

Client Sample ID: DUP-2

Lab Sample ID: 640-45777-7

Date Collected: 11/12/13 00:00
Date Received: 11/13/13 09:20

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.7		1.0		mg/L			12/02/13 20:24	2
Fluoride	43		1.0		mg/L			12/02/13 20:51	10
Sulfate	60		1.0		mg/L			12/02/13 20:24	2

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.015		0.010		mg/L		11/14/13 11:55	11/15/13 12:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	3.3		0.25		mg/L			11/16/13 14:04	5
Nitrate as N	3.3		0.010		mg/L			12/02/13 10:54	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 680-305706/2
Matrix: Water
Analysis Batch: 305706

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.50		0.50		mg/L			12/02/13 13:46	1
Fluoride	<0.10		0.10		mg/L			12/02/13 13:46	1
Sulfate	<0.50		0.50		mg/L			12/02/13 13:46	1

Lab Sample ID: LCS 680-305706/3
Matrix: Water
Analysis Batch: 305706

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.8		mg/L		108	90 - 110
Fluoride	2.00	2.20		mg/L		110	90 - 110
Sulfate	10.0	10.9		mg/L		109	90 - 110

Lab Sample ID: LCSD 680-305706/4
Matrix: Water
Analysis Batch: 305706

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.7		mg/L		107	90 - 110	0	30
Fluoride	2.00	2.19		mg/L		109	90 - 110	1	30
Sulfate	10.0	10.9		mg/L		109	90 - 110	0	30

Lab Sample ID: 640-45777-2 MS
Matrix: Water
Analysis Batch: 305706

Client Sample ID: AC-3S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.4		10.0	12.7		mg/L		103	80 - 120
Fluoride	<0.10		2.00	2.12		mg/L		104	80 - 120
Sulfate	17		10.0	27.7		mg/L		103	80 - 120

Lab Sample ID: 640-45777-2 MSD
Matrix: Water
Analysis Batch: 305706

Client Sample ID: AC-3S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	2.4		10.0	12.7		mg/L		103	80 - 120	0	30
Fluoride	<0.10		2.00	2.12		mg/L		105	80 - 120	0	30
Sulfate	17		10.0	27.7		mg/L		103	80 - 120	0	30

Lab Sample ID: 640-45777-6 MS
Matrix: Water
Analysis Batch: 305706

Client Sample ID: AC-25D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	370		100	472		mg/L		101	80 - 120
Fluoride	95		20.0	112	E 4	mg/L		87	80 - 120
Sulfate	82		100	187		mg/L		105	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 640-45777-6 MSD
Matrix: Water
Analysis Batch: 305706

Client Sample ID: AC-25D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	370		100	473		mg/L		101	80 - 120	0	30
Fluoride	95		20.0	113	E 4	mg/L		90	80 - 120	1	30
Sulfate	82		100	189		mg/L		107	80 - 120	1	30

Lab Sample ID: MB 680-305937/8
Matrix: Water
Analysis Batch: 305937

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.10		0.10		mg/L			12/03/13 15:24	1

Lab Sample ID: LCS 680-305937/9
Matrix: Water
Analysis Batch: 305937

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	2.00	2.04		mg/L		102	90 - 110

Lab Sample ID: LCSD 680-305937/10
Matrix: Water
Analysis Batch: 305937

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	2.00	2.06		mg/L		103	90 - 110	1	30

Lab Sample ID: 640-45777-6 MS
Matrix: Water
Analysis Batch: 305937

Client Sample ID: AC-25D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	96		40.0	135		mg/L		98	80 - 120

Lab Sample ID: 640-45777-6 MSD
Matrix: Water
Analysis Batch: 305937

Client Sample ID: AC-25D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	96		40.0	134		mg/L		97	80 - 120	0	30

Lab Sample ID: MB 680-306063/5
Matrix: Water
Analysis Batch: 306063

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.10		0.10		mg/L			12/04/13 10:50	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 680-306063/6
Matrix: Water
Analysis Batch: 306063

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride			2.00	2.07		mg/L		104	90 - 110		

Lab Sample ID: LCSD 680-306063/7
Matrix: Water
Analysis Batch: 306063

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride			2.00	2.10		mg/L		105	90 - 110	1	30

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 660-143374/1-A
Matrix: Water
Analysis Batch: 143421

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 143374

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.010		0.010		mg/L		11/14/13 11:55	11/15/13 10:55	1

Lab Sample ID: LCS 660-143374/2-A
Matrix: Water
Analysis Batch: 143421

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 143374

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic			1.00	0.982		mg/L		98	80 - 120		

Lab Sample ID: 640-45777-2 MS
Matrix: Water
Analysis Batch: 143421

Client Sample ID: AC-3S
Prep Type: Total Recoverable
Prep Batch: 143374

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic	<0.010		1.00	0.992		mg/L		99	80 - 120		

Lab Sample ID: 640-45777-2 MSD
Matrix: Water
Analysis Batch: 143421

Client Sample ID: AC-3S
Prep Type: Total Recoverable
Prep Batch: 143374

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	<0.010		1.00	0.991		mg/L		99	80 - 120	0	20

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-303615/13
Matrix: Water
Analysis Batch: 303615

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/16/13 12:49	1

Method: 353.2 - Nitrogen, Nitrate-Nitrite (Continued)

Lab Sample ID: LCS 680-303615/14
Matrix: Water
Analysis Batch: 303615

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	0.997	1.06		mg/L		107	90 - 110

Lab Sample ID: 640-45777-5 DU
Matrix: Water
Analysis Batch: 303615

Client Sample ID: AC-2S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrate Nitrite as N	3.3		3.33		mg/L		0.2	10

HPLC/IC

Analysis Batch: 305706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45777-1	AC-3D	Total/NA	Water	300.0	
640-45777-1	AC-3D	Total/NA	Water	300.0	
640-45777-2	AC-3S	Total/NA	Water	300.0	
640-45777-2 MS	AC-3S	Total/NA	Water	300.0	
640-45777-2 MSD	AC-3S	Total/NA	Water	300.0	
640-45777-3	AC-30D	Total/NA	Water	300.0	
640-45777-4	AC-2D	Total/NA	Water	300.0	
640-45777-5	AC-2S	Total/NA	Water	300.0	
640-45777-5	AC-2S	Total/NA	Water	300.0	
640-45777-6	AC-25D	Total/NA	Water	300.0	
640-45777-6	AC-25D	Total/NA	Water	300.0	
640-45777-6 MS	AC-25D	Total/NA	Water	300.0	
640-45777-6 MSD	AC-25D	Total/NA	Water	300.0	
640-45777-7	DUP-2	Total/NA	Water	300.0	
640-45777-7	DUP-2	Total/NA	Water	300.0	
LCS 680-305706/3	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305706/4	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305706/2	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 305937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45777-6	AC-25D	Total/NA	Water	300.0	
640-45777-6 MS	AC-25D	Total/NA	Water	300.0	
640-45777-6 MSD	AC-25D	Total/NA	Water	300.0	
LCS 680-305937/9	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305937/10	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305937/8	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 306063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45777-5	AC-2S	Total/NA	Water	300.0	
LCS 680-306063/6	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-306063/7	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-306063/5	Method Blank	Total/NA	Water	300.0	

Metals

Prep Batch: 143374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45777-2	AC-3S	Total Recoverable	Water	3005A	
640-45777-2 MS	AC-3S	Total Recoverable	Water	3005A	
640-45777-2 MSD	AC-3S	Total Recoverable	Water	3005A	
640-45777-5	AC-2S	Total Recoverable	Water	3005A	
640-45777-7	DUP-2	Total Recoverable	Water	3005A	
LCS 660-143374/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 660-143374/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 143421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45777-2	AC-3S	Total Recoverable	Water	6010B	143374

QC Association Summary

Metals (Continued)

Analysis Batch: 143421 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45777-2 MS	AC-3S	Total Recoverable	Water	6010B	143374
640-45777-2 MSD	AC-3S	Total Recoverable	Water	6010B	143374
640-45777-5	AC-2S	Total Recoverable	Water	6010B	143374
640-45777-7	DUP-2	Total Recoverable	Water	6010B	143374
LCS 660-143374/2-A	Lab Control Sample	Total Recoverable	Water	6010B	143374
MB 660-143374/1-A	Method Blank	Total Recoverable	Water	6010B	143374

General Chemistry

Analysis Batch: 106215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45777-1	AC-3D	Total/NA	Water	Nitrate by calc	
640-45777-2	AC-3S	Total/NA	Water	Nitrate by calc	
640-45777-3	AC-30D	Total/NA	Water	Nitrate by calc	
640-45777-4	AC-2D	Total/NA	Water	Nitrate by calc	
640-45777-5	AC-2S	Total/NA	Water	Nitrate by calc	
640-45777-6	AC-25D	Total/NA	Water	Nitrate by calc	
640-45777-7	DUP-2	Total/NA	Water	Nitrate by calc	

Analysis Batch: 303615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45777-1	AC-3D	Total/NA	Water	353.2	
640-45777-2	AC-3S	Total/NA	Water	353.2	
640-45777-3	AC-30D	Total/NA	Water	353.2	
640-45777-4	AC-2D	Total/NA	Water	353.2	
640-45777-5	AC-2S	Total/NA	Water	353.2	
640-45777-5 DU	AC-2S	Total/NA	Water	353.2	
640-45777-6	AC-25D	Total/NA	Water	353.2	
640-45777-7	DUP-2	Total/NA	Water	353.2	
LCS 680-303615/14	Lab Control Sample	Total/NA	Water	353.2	
MB 680-303615/13	Method Blank	Total/NA	Water	353.2	

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45777-1

Client Sample ID: AC-3D

Lab Sample ID: 640-45777-1

Date Collected: 11/12/13 08:35
Matrix: Water
Date Received: 11/13/13 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305706	12/02/13 15:58	CMB	TAL SAV
Total/NA	Analysis	300.0		4	305706	12/02/13 16:11	CMB	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		5	303615	11/16/13 13:56	CRW	TAL SAV

Client Sample ID: AC-3S

Lab Sample ID: 640-45777-2

Date Collected: 11/12/13 09:36
Matrix: Water
Date Received: 11/13/13 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305706	12/02/13 16:24	CMB	TAL SAV
Total Recoverable	Prep	3005A			143374	11/14/13 11:55	SR1	TAL TAM
Total Recoverable	Analysis	6010B		1	143421	11/15/13 12:28	GAF	TAL TAM
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		1	303615	11/16/13 13:05	CRW	TAL SAV

Client Sample ID: AC-30D

Lab Sample ID: 640-45777-3

Date Collected: 11/12/13 11:42
Matrix: Water
Date Received: 11/13/13 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305706	12/02/13 17:04	CMB	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		5	303615	11/16/13 13:13	CRW	TAL SAV

Client Sample ID: AC-2D

Lab Sample ID: 640-45777-4

Date Collected: 11/12/13 14:13
Matrix: Water
Date Received: 11/13/13 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305706	12/02/13 18:11	CMB	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		5	303615	11/16/13 13:58	CRW	TAL SAV

Client Sample ID: AC-2S

Lab Sample ID: 640-45777-5

Date Collected: 11/12/13 14:37
Matrix: Water
Date Received: 11/13/13 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305706	12/02/13 18:24	CMB	TAL SAV
Total/NA	Analysis	300.0		2	305706	12/02/13 18:38	CMB	TAL SAV

Lab Chronicle

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45777-1

Client Sample ID: AC-2S

Lab Sample ID: 640-45777-5
Date Collected: 11/12/13 14:37
Matrix: Water
Date Received: 11/13/13 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		5	306063	12/04/13 14:16	VAS	TAL SAV
Total Recoverable	Prep	3005A			143374	11/14/13 11:55	SR1	TAL TAM
Total Recoverable	Analysis	6010B		1	143421	11/15/13 12:38	GAF	TAL TAM
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		5	303615	11/16/13 13:16	CRW	TAL SAV

Client Sample ID: AC-25D

Lab Sample ID: 640-45777-6
Date Collected: 11/12/13 16:43
Matrix: Water
Date Received: 11/13/13 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		2	305706	12/02/13 18:51	CMB	TAL SAV
Total/NA	Analysis	300.0		10	305706	12/02/13 19:18	CMB	TAL SAV
Total/NA	Analysis	300.0		20	305937	12/03/13 16:44	VAS	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		5	303615	11/16/13 14:01	CRW	TAL SAV

Client Sample ID: DUP-2

Lab Sample ID: 640-45777-7
Date Collected: 11/12/13 00:00
Matrix: Water
Date Received: 11/13/13 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		2	305706	12/02/13 20:24	CMB	TAL SAV
Total/NA	Analysis	300.0		10	305706	12/02/13 20:51	CMB	TAL SAV
Total Recoverable	Prep	3005A			143374	11/14/13 11:55	SR1	TAL TAM
Total Recoverable	Analysis	6010B		1	143421	11/15/13 12:47	GAF	TAL TAM
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		5	303615	11/16/13 14:04	CRW	TAL SAV

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

TAL TAM = TestAmerica Tampa, 6712 Benjamin Road, Suite 100, Tampa, FL 33634, TEL (813)885-7427

Certification Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45777-1

Laboratory: TestAmerica Tallahassee

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E81005	06-30-14
Georgia	State Program	4		06-30-14
Louisiana	NELAP	6	30663	06-30-14
New Jersey	NELAP	2	FL012	06-30-14
Texas	NELAP	6	T104704459-11-2	03-31-14
USDA	Federal		P330-08-00158	08-05-14

Laboratory: TestAmerica Richland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA	IHLAP		187436	08-01-15
Arizona	State Program	9	AZ0709	07-02-14
California	NELAP	9	E87829	05-31-14
Colorado	State Program	8	N/A	09-30-14
Florida	NELAP	4	E87829	06-30-14
Hawaii	State Program	9	N/A	01-09-14
L-A-B	DoD ELAP		L2291	06-30-14
Michigan	State Program	5	N/A	08-13-14
Nevada	State Program	9	WA011162014	07-31-14
New Mexico	State Program	6	WA00023	01-09-14
Oregon	NELAP	10	WA100002	01-09-14
Pennsylvania	NELAP	3	68-04849	08-31-14
Tennessee	State Program	4	TN04011	08-13-14
Texas	NELAP	6	T104704493-10-1	12-31-13
USDA	Federal		P330-11-00043	01-25-14
Utah	NELAP	8	QUAN8	01-09-14 *
Virginia	State Program	3	00100	06-30-14
Washington	State Program	10	WA01116	08-14-14
Washington (CLIA)	State Program	10	50D0661626	06-30-15

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-14
California	NELAP	9	3217CA	07-31-14
Colorado	State Program	8	N/A	12-31-13 *
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13 *
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	06-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Iowa	State Program	7	353	07-01-15
Kentucky	State Program	4	90084	12-31-13 *
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	30690	06-30-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13
Massachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-14
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	04-01-14
North Carolina DENR	State Program	4	269	12-31-14
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-14
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14 *
South Carolina	State Program	4	98001	06-30-14
Tennessee	State Program	4	TN02961	06-30-14
Texas	NELAP	6	T104704185-08-TX	11-30-14
USDA	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13 *
West Virginia DEP	State Program	3	94	06-30-14
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

Laboratory: TestAmerica Tampa

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40610	06-30-14
Florida	NELAP	4	E84282	06-30-14
Georgia	State Program	4	905	06-30-14
USDA	Federal		P330-11-00177	04-20-14

* Expired certification is currently pending renewal and is considered valid.

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL SAV
6010B	Metals (ICP)	SW846	TAL TAM
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
Nitrate by calc	Nitrogen, Nitrate-Nitrite	SM	TAL TAL
Rad 226-Method 903.1 (Richland)	RAD-226 (RCH)	NONE	TAL RCH
Rad 228-Method 904.0 (Richland)	RAD-228 (RCH)	NONE	TAL RCH

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

TAL TAM = TestAmerica Tampa, 6712 Benjamin Road, Suite 100, Tampa, FL 33634, TEL (813)885-7427

Sample Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45777-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
640-45777-1	AC-3D	Water	11/12/13 08:35	11/13/13 09:20
640-45777-2	AC-3S	Water	11/12/13 09:36	11/13/13 09:20
640-45777-3	AC-30D	Water	11/12/13 11:42	11/13/13 09:20
640-45777-4	AC-2D	Water	11/12/13 14:13	11/13/13 09:20
640-45777-5	AC-2S	Water	11/12/13 14:37	11/13/13 09:20
640-45777-6	AC-25D	Water	11/12/13 16:43	11/13/13 09:20
640-45777-7	DUP-2	Water	11/12/13 00:00	11/13/13 09:20

Analytical Data Package Prepared For

TestAmerica Tallahassee

Radiochemical Analysis By

TestAmerica Inc

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARL

Data Package Contains 19 *Pages*

Report No.: 58163

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
47509		AC-25D(640-45777-6)	J3K180407-6	M2JA71AA	9M2JA710	3323018
		AC-25D(640-45777-6)	J3K180407-6	M2JA71AC	9M2JA710	3323019
		AC-2D(640-45777-4)	J3K180407-4	M2JA51AA	9M2JA510	3323018
		AC-2D(640-45777-4)	J3K180407-4	M2JA51AC	9M2JA510	3323019
		AC-2S(640-45777-5)	J3K180407-5	M2JA61AA	9M2JA610	3323018
		AC-2S(640-45777-5)	J3K180407-5	M2JA61AC	9M2JA610	3323019
		AC-30D(640-45777-3)	J3K180407-3	M2JA41AA	9M2JA410	3323018
		AC-30D(640-45777-3)	J3K180407-3	M2JA41AC	9M2JA410	3323019
		AC-3D(640-45777-1)	J3K180407-1	M2JA21AA	9M2JA210	3323018
		AC-3D(640-45777-1)	J3K180407-1	M2JA21AC	9M2JA210	3323019
		AC-3S(640-45777-2)	J3K180407-2	M2JA31AA	9M2JA310	3323018
		AC-3S(640-45777-2)	J3K180407-2	M2JA31AC	9M2JA310	3323019
		DUP-2(640-45777-7)	J3K180407-7	M2JA81AA	9M2JA810	3323018
		DUP-2(640-45777-7)	J3K180407-7	M2JA81AC	9M2JA810	3323019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

December 20, 2013

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301

Attention: Amy Marks

Date Received by Lab	:	November 14, 2012
Sample Number/Matrix	:	Seven (7) Waters
SDG Number	:	47509
Chain Of Custody	:	640-62646.1
Project	:	Agrico
Project Number	:	640-45777-1

CASE NARRATIVE

I. Introduction

On November 14 , 2013, seven water samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt, the samples were assigned the TestAmerica identification numbers as described on the cover page of the Analytical Data Package. The samples were assigned to Lot Number J3K180407.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Gas Proportional Counting
Radium-228 by method RL-RA-001
Alpha Scintillation Counting
Radium-226 by method RL-RA-001

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

V. Comments

Gas Proportional Counting

Radium-228 by method RL-RA-001:
The analytical batch was re-milked to verify sample activities. The re-milk results confirm the initial run. The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

Alpha Scintillation Counting

Radium-226 by method RL-RA-001:
The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Erika Jordan
Erika Jordan
2013.12.23
12:20:24
-08'00'

Erika Jordan
Manager of Project Management

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/? n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, *u_c the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Date: 20-Dec-13

Report No. : 58163 **SDG No:** 47509

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
3323018 E903.1									
	AC-25D(640-45777-6)								
	M2JA71AA	RADIUM-226	2.64 +- 0.75	V	pCi/L	100%	0.199	1.0	
	AC-2D(640-45777-4)								
	M2JA51AA	RADIUM-226	0.887 +- 0.27	J	pCi/L	100%	0.208	1.0	
	AC-2S(640-45777-5)								
	M2JA61AA	RADIUM-226	0.0439 +- 0.13	U	pCi/L	93%	0.255	1.0	
	AC-30D(640-45777-3)								
	M2JA41AA	RADIUM-226	1.80 +- 0.46	V	pCi/L	95%	0.214	1.0	
	AC-3D(640-45777-1)								
	M2JA21AA	RADIUM-226	1.14 +- 0.36	V	pCi/L	100%	0.254	1.0	
	AC-3D(640-45777-1) DUP								
	M2JA21AD	RADIUM-226	1.05 +- 0.36	V	pCi/L	87%	0.258	1.0	0.4
	AC-3S(640-45777-2)								
	M2JA31AA	RADIUM-226	0.229 +- 0.16	U	pCi/L	98%	0.253	1.0	
	DUP-2(640-45777-7)								
	M2JA81AA	RADIUM-226	0.0131 +- 0.12	U	pCi/L	100%	0.247	1.0	
3323019 E904.0									
	AC-25D(640-45777-6)								
	M2JA71AC	RADIUM-228	5.06 +- 0.83	V	pCi/L	87%	0.579	1.0	
	AC-2D(640-45777-4)								
	M2JA51AC	RADIUM-228	1.43 +- 0.41	V	pCi/L	90%	0.586	1.0	
	AC-2S(640-45777-5)								
	M2JA61AC	RADIUM-228	0.273 +- 0.27	U	pCi/L	87%	0.57	1.0	
	AC-30D(640-45777-3)								
	M2JA41AC	RADIUM-228	6.88 +- 1.0	V	pCi/L	86%	0.863	1.0	
	AC-3D(640-45777-1)								
	M2JA21AC	RADIUM-228	9.67 +- 1.3	V	pCi/L	90%	0.825	1.0	
	AC-3D(640-45777-1) DUP								
	M2JA21AE	RADIUM-228	10.7 +- 1.5	V	pCi/L	80%	0.876	1.0	1.0
	AC-3S(640-45777-2)								
	M2JA31AC	RADIUM-228	0.955 +- 0.41	J	pCi/L	90%	0.777	1.0	
	DUP-2(640-45777-7)								
	M2JA81AC	RADIUM-228	0.220 +- 0.23	U	pCi/L	92%	0.492	1.0	

No. of Results: 16

TestAmerica Inc

rptSTLRchSaSummary2 V5.2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

V Qual - Detected.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

QC Results Summary
TestAmerica Inc TARL

Date: 20-Dec-13

Ordered by Method, Batch No, QC Type,.

Report No. : 58163 **SDG No.:** 47509

Batch / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
E903.1								
3323018 BLANK QC,								
M2JF91AA	RADIUM-226	-0.0315 +- 0.076	U	pCi/L	95%			0.177
3323018 LCS,								
M2JF91AC	RADIUM-226	9.22 +- 1.9	V	pCi/L	89%	93%	-0.1	0.156
E904.0								
3323019 BLANK QC,								
M2JGA1AA	RADIUM-228	0.215 +- 0.21	U	pCi/L	85%			0.46
3323019 LCS,								
M2JGA1AC	RADIUM-228	10.1 +- 1.4	V	pCi/L	84%	104%	0.0	0.71

No. of Results: 4

TestAmerica Inc

rptSTLRchQcSummary V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 20-Dec-13

Lab Name: TestAmerica Inc
Lot-Sample No.: J3K180407-6
Client Sample ID: AC-25D(640-45777-6)

SDG: 47509
Report No. : 58163
COC No. : 640-62646.1

Collection Date: 11/12/2013 2:43:00 PM
Received Date: 11/14/2013 10:30:00 AM
Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018 E903.1				**Work Order:**	M2JA71AA	**Report DB ID:**	9M2JA710					
RADIUM-226	**2.64**	V	0.32	0.75	0.199	pCi/L	100%	*(13.3)*	12/16/13 08:52 p		0.9191	ASCASB
						0.0873	1.0	*(7.)*			L	
Batch: 3323019 E904.0				**Work Order:**	M2JA71AC	**Report DB ID:**	9M2JA710					
RADIUM-228	**5.06**	V	0.58	0.83	0.579	pCi/L	87%	*(8.7)*	12/18/13 04:43 p		0.9192	GPC2C
						0.257	1.0	*(12.3)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I
SAMPLE RESULTS

Date: 20-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47509	**Collection Date:**	11/12/2013 2:13:00 PM
Lot-Sample No.:	**J3K180407-4**	**Report No. :**	58163	**Received Date:**	11/14/2013 10:30:00 AM
Client Sample ID:	**AC-2D(640-45777-4)**	**COC No. :**	640-62646.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018	E903.1			**Work Order:**	M2JA51AA		**Report DB ID:** 9M2JA510					
RADIUM-226	**0.887**	J	0.20	0.27	0.208	pCi/L	100%	*(4.3)*	12/16/13 08:52 p		0.8558	ASC7HA
						0.0925	1.0	*(6.5)*			L	
Batch: 3323019	E904.0			**Work Order:**	M2JA51AC		**Report DB ID:** 9M2JA510					
RADIUM-228	**1.43**	V	0.37	0.41	0.586	pCi/L	90%	*(2.4)*	12/18/13 04:43 p		0.8558	GPC2A
						0.259	1.0	*(7.)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 20-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47509	**Collection Date:**	11/12/2013 2:37:00 PM
Lot-Sample No.:	**J3K180407-5**	**Report No. :**	58163	**Received Date:**	11/14/2013 10:30:00 AM
Client Sample ID:	**AC-2S(640-45777-5)**	**COC No. :**	640-62646.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018	E903.1			**Work Order:**	M2JA61AA		**Report DB ID:** 9M2JA610					
RADIUM-226	**0.0439**	U	0.13	0.13	0.255	pCi/L	93%	*0.17*	12/16/13 08:52 p		0.8605	ASC9HC
						0.115	1.0	*0.69*			L	
Batch: 3323019	E904.0			**Work Order:**	M2JA61AC		**Report DB ID:** 9M2JA610					
RADIUM-228	**0.273**	U	0.24	0.27	0.57	pCi/L	87%	*0.48*	12/18/13 04:43 p		0.8605	GPC2B
						0.251	1.0	*(2.)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I
SAMPLE RESULTS

Date: 20-Dec-13

Lab Name:	TestAmerica Inc	**SDG:**	47509	**Collection Date:**	11/12/2013 11:42:00 AM
Lot-Sample No.:	J3K180407-3	**Report No. :**	58163	**Received Date:**	11/14/2013 10:30:00 AM
Client Sample ID:	AC-30D(640-45777-3)	**COC No. :**	640-62646.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018 E903.1				**Work Order:**	M2JA41AA	**Report DB ID:**	9M2JA410					
RADIUM-226	1.80	V	0.27	0.46	0.214	pCi/L	95%	*(8.4)*	12/16/13 08:52 p		0.8488	ASC6MB
						0.0948	1.0	*(7.8)*			L	
Batch: 3323019 E904.0				**Work Order:**	M2JA41AC	**Report DB ID:**	9M2JA410					
RADIUM-228	6.88	V	0.69	1.0	0.863	pCi/L	86%	*(8.)*	12/18/13 04:43 p		0.8487	GPC1D
						0.403	1.0	*(13.3)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 20-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47509	**Collection Date:**	11/12/2013 8:35:00 AM
Lot-Sample No.:	**J3K180407-1**	**Report No. :**	58163	**Received Date:**	11/14/2013 10:30:00 AM
Client Sample ID:	**AC-3D(640-45777-1)**	**COC No. :**	640-62646.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018 E903.1				**Work Order:**	M2JA21AA		**Report DB ID:** 9M2JA210					
RADIUM-226	**1.14**	V	0.24	0.36	0.254	pCi/L	100%	*(4.5)*	12/16/13 08:52 p		0.8049	ASC1HB
						0.115	1.0	*(6.4)*			L	
Batch: 3323019 E904.0				**Work Order:**	M2JA21AC		**Report DB ID:** 9M2JA210					
RADIUM-228	**9.67**	V	0.78	1.3	0.825	pCi/L	90%	*(11.7)*	12/18/13 04:43 p		0.8048	GPC1A
						0.383	1.0	*(14.6)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 20-Dec-13

Lab Name:	TestAmerica Inc	**SDG:**	47509	**Collection Date:**	11/12/2013 9:36:00 AM
Lot-Sample No.:	J3K180407-2	**Report No. :**	58163	**Received Date:**	11/14/2013 10:30:00 AM
Client Sample ID:	AC-3S(640-45777-2)	**COC No. :**	640-62646.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018 E903.1				**Work Order:**	M2JA31AA	**Report DB ID:**	9M2JA310					
RADIUM-226	0.229	U	0.15	0.16	0.253	pCi/L	98%	*0.9*	12/16/13 08:53 p		0.8945	ASC5UC
						0.112	1.0	*(2.8)*			L	
Batch: 3323019 E904.0				**Work Order:**	M2JA31AC	**Report DB ID:**	9M2JA310					
RADIUM-228	0.955	J	0.39	0.41	0.777	pCi/L	90%	*(1.2)*	12/18/13 04:43 p		0.8945	GPC1C
						0.362	1.0	*(4.7)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 20-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47509	**Collection Date:**	11/12/2013
Lot-Sample No.:	**J3K180407-7**	**Report No. :**	58163	**Received Date:**	11/14/2013 10:30:00 AM
Client Sample ID:	**DUP-2(640-45777-7)**	**COC No. :**	640-62646.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018	E903.1			**Work Order:**	M2JA81AA		**Report DB ID:** 9M2JA810					
RADIUM-226	**0.0131**	U	0.12	0.12	0.247	pCi/L 0.112	100% 1.0	*0.05* *0.22*	12/16/13 08:52 p		0.9048 L	ASCBMA
Batch: 3323019	E904.0			**Work Order:**	M2JA81AC		**Report DB ID:** 9M2JA810					
RADIUM-228	**0.220**	U	0.21	0.23	0.492	pCi/L 0.215	92% 1.0	*0.45* *(1.9)*	12/18/13 04:43 p		0.9048 L	GPC2D

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U or < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM II

Date: 20-Dec-13

DUPLICATE RESULTS

Lab Name:	TestAmerica Inc	**SDG:**	47509	**Collection Date:**	11/12/2013 8:35:00 AM
Lot-Sample No.:	J3K180407-1	**Report No. :**	58163	**Received Date:**	11/14/2013 10:30:00 AM
Client Sample ID:	AC-3D(640-45777-1) DUP	**COC No. :**	640-62646.1	**Matrix:**	WATER W

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018 E903.1				**Work Order:** M2JA21AD		**Report DB ID:** M2JA21DR			**Orig Sa DB ID:** 9M2JA210			
RADIUM-226	1.05	V	0.25	0.36	0.258	pCi/L	87%	(4.1)	12/16/13 08:58 p		0.874	ASC2RC
	1.14	V	**RER2**	**0.4**		1.0		(5.8)			L	
Batch: 3323019 E904.0				**Work Order:** M2JA21AE		**Report DB ID:** M2JA21ER			**Orig Sa DB ID:** 9M2JA210			
RADIUM-228	10.7	V	0.83	1.5	0.876	pCi/L	80%	(12.2)	12/18/13 04:43 p		0.8739	GPC1B
	9.67	V	**RER2**	**1.0**		1.0		(14.7)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc **rptSTLRchDupV5.2.25 A2002**

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
V Qual - Detected.

FORM II

Date: 20-Dec-13

BLANK RESULTS

Lab Name: **TestAmerica Inc** — **SDG:** 47509

Matrix: WATER — **Report No. :** 58163

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018	E903.1			**Work Order:**	M2JF91AA		**Report DB ID:**	M2JF91AB				
RADIUM-226	-0.0315	U	0.076	0.076	0.177	pCi/L	95%	-0.18	12/16/13 09:09 p		1.0024	ASCKAB
					0.0778	1.0		-0.83			L	
Batch: 3323019	E904.0			**Work Order:**	M2JGA1AA		**Report DB ID:**	M2JGA1AB				
RADIUM-228	0.215	U	0.20	0.21	0.46	pCi/L	85%	0.47	12/18/13 04:38 p		1.0025	GPC3D
					0.201	1.0		(2.)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchBlank
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 20-Dec-13

Lab Name: TestAmerica Inc **SDG:** 47509

Matrix: WATER **Report No. :** 58163

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3323018	E903.1			**Work Order:**	M2JF91AC		**Report DB ID:**	M2JF91CS					
RADIUM-226	9.22	V	0.55	1.9	0.156	pCi/L	89%	9.95	0.1	93%	12/16/13 09:09 p	1.0044	ASCNMA
							Rec Limits:	75	125	-0.1		L	
Batch: 3323019	E904.0			**Work Order:**	M2JGA1AC		**Report DB ID:**	M2JGA1CS					
RADIUM-228	10.1	V	0.77	1.4	0.71	pCi/L	84%	9.72	0.11	104%	12/18/13 04:38 p	1.0044	GPC4C
							Rec Limits:	75	125	0.0		L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchLcs
V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
V Qual - Detected.

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-62646.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: amy.marks@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 640-45777-1
Address: 2800 George Washington Way,	Due Date Requested: 12/10/2013			
City: Richland	TAT Requested (days):			
State, Zip: WA, 99352				
Phone: 509-375-3131(Tel) 509-375-5590(Fax)	PO #:			
Email:	WO #:			
Project Name: Agrico	Project #: 64000434			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT/ Rad 228-Method 904.0 (Richland)	SUBCONTRACT/ Rad 226-Method 903.1 (Richland)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
AC-3D (640-45777-1) m2JA2	11/12/13	08:35 Eastern		Water			X	X	2	
AC-3S (640-45777-2) m2JA3	11/12/13	09:36 Eastern		Water			X	X	2	J3K180407
AC-30D (640-45777-3) m2JA4	11/12/13	11:42 Eastern		Water			X	X	2	SDG-47509
AC-2D (640-45777-4) m2JA5	11/12/13	14:13 Eastern		Water			X	X	2	Due 12-12-13
AC-2S (640-45777-5) m2JA6	11/12/13	14:37 Eastern		Water			X	X	2	
AC-25D (640-45777-6) m2JA7	11/12/13	16:43 Eastern		Water			X	X	2	
DUP-2 (640-45777-7) m2JA8	11/12/13	Eastern		Water			X	X	2	

J3K180407

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:		Time:	Method of Shipment:	
Relinquished by: Jonnee Carpenter	Date/Time: 11/13/13 1540	Company: TAL	Received by: [illegible] Beck	Date/Time: 10-14-13 /1030	Company: TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 11-14-13 / 1030 Container GM Screen Result: (Airlock) 20 cpm Initials [B]
Sample GM Screen Result (Sample Receiving) 60 cpm Initials [B]

Client: STL-T SDG #: 47509 SAF #: NA [B]

Lot Number: J3K180407

Chain of Custody # 640-62646.1

Shipping Container ID or Air Bill Number : NA [B]

Samples received inside shipping container/cooler/box Yes [B] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: ______ °C NA [B]
4. Vermiculite/packing materials is NA [ ] Wet [B] Ice Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [B] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 7
7. Containers received: 14 x 1L
8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]
9. Samples have: ____ tape B hazard labels ____ custody seals B appropriate sample labels
10. Matrix: ____ A (FLT, Wipe, Solid, Soil) B I (Water) ____ S (Air, Niosh 7400) ____ T (Biological, Ni-63)
11. Samples:
B are in good condition ____ are leaking ____ are broken
____ have air bubbles (Only for samples requiring no head space) ____ Other ____
12. Sample pH appropriate for analysis requested Yes [B] No [ ] NA [ ]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [B] No [ ]
14. Description of anomalies (include sample numbers): NA [ ] 12 bottles have the small label on the side w/ AC-30D, but the 2 big labels on the front of bottle have AC-24D which matches I.D on COC
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [ ]
*For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: [signature] Date: 11-18-13

Client Notification needed? Yes [ ] No [ ] Date:
By:
Person contacted:

[ ] No action necessary; process as is

Project Manager [signature] Date 11-18-13

LS-023 Rev. 17, 05/13

Page 1 of 1

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: E.Mann, DCitilton	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-41766-6826.4
Client Contact: Mr. Jeff Wagner	Phone: 850-643-6461	E-Mail: amy.marks@testamericainc.com		Page: Page 4 of 4
Company: URS Corporation				Job #: 640-45777
Address: 1625 Summit Lake Drive Suite 200	Due Date Requested:			
City: Tallahassee	TAT Requested (days):			
State, Zip: FL, 32317				
Phone: 850-402-6409(Tel)	PO #: 12805561			
Email: jeffry_wagner@urscorp.com	WO #: 12806318.00000			
Project Name: Agrico Annual	Project #: 64000434			
Site: Florida	SSOW#:			

Analysis Requested

Preservation Codes:

- A - HCL
- B - NaOH
- C - Zn Acetate
- D - Nitric Acid
- E - NaHSO4
- F - MeOH
- G - Amchlor
- H - Ascorbic Acid
- I - Ice
- J - DI Water
- K - EDTA
- L - EDA
- M - Hexane
- N - None
- O - AsNaO2
- P - Na2O4S
- Q - Na2SO3
- R - Na2S2SO3
- S - H2SO4
- T - TSP Dodecahydrate
- U - Acetone
- V - MCAA
- W - ph 4-5
- Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT - 904.0 - Rad228/ 903.1-Rad226 (Richland)	353.2 - Nitrate as N	SM4500_NO2_B - Nitrate as N	300_ORGFM_28D - Chloride, Fluoride and Sulfate	6010B - Arsenic	300_ORGFM_28D - Fluoride	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	S	N	N	D	N		
AC-3D	111213	0835	G	W	N	N	2	1	1	1				
AC-3S	11.12.13	0936	G	W	N	N	2	1	1	1	1			
AC-30D	11.12.13	1142	G	W	N	N	2	1	1	1				
AC-2D	11.12.13	1413	G	W	N	N	2	1	1	1				
AC-2S	11.12.13	1437	G	W	N	N	2	1	1	1	1			
AC-25D	11.12.13	1643	G	W	N	N	2	1	1	1				
DUP-2	11.12.13		G	W	N	N	2	1	1	1	1			

640-45777 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ______ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
			[signature]	11/12/13 0920	TAC

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 1.3, 1.5

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Tel: (850)878-3994

TestAmerica Job ID: 640-45802-1
Client Project/Site: Agrico

For:
URS Corporation
1625 Summit Lake Drive
Suite 200
Tallahassee, Florida 32317

Attn: Mr. Jeff Wagner

Amy Marks

Authorized for release by:
12/23/2013 4:48:42 PM

Amy Marks, Project Manager II
(850)878-3994
amy.marks@testamericainc.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45802-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
F	MS/MSD Recovery and/or RPD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Job ID: 640-45802-1

Laboratory: TestAmerica Tallahassee

Narrative

Job Narrative
640-45802-1

Comments
No additional comments.

Receipt
The samples were received on 11/14/2013 at 8:17 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 0.9º C.

Metals
No analytical or quality issues were noted.

General Chemistry
Method 300.0: The matrix spike (MS) and matrix spike duplicate (MSD) associated with batch 306063 recovered outside control limits for Fluoride. The associated laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) met acceptance criteria; therefore, the results have been reported and qualified.

No other analytical or quality issues were noted.

Subcontract Work
Methods Radium 226 by EPA Method 903.1, Radium 228 by EPA Method 904.0: These methods were subcontracted to TestAmerica Richland.

Detection Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45802-1

Client Sample ID: EQ BLNK-2

Lab Sample ID: 640-45802-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	0.80		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.31		0.10		mg/L	1		300.0	Total/NA

Client Sample ID: AC-35D

Lab Sample ID: 640-45802-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	360		5.0		mg/L	10		300.0	Total/NA
Fluoride	120		2.0		mg/L	20		300.0	Total/NA
Sulfate	190		5.0		mg/L	10		300.0	Total/NA
Nitrate Nitrite as N	9.5		0.50		mg/L	10		353.2	Total/NA
Nitrate as N	9.5		0.010		mg/L	1		Nitrate by calc	Total/NA

Client Sample ID: PIP-D

Lab Sample ID: 640-45802-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	9.3		0.50		mg/L	1		300.0	Total/NA
Sulfate	5.4		0.50		mg/L	1		300.0	Total/NA
Nitrate Nitrite as N	4.1		0.25		mg/L	5		353.2	Total/NA
Nitrate as N	4.1		0.010		mg/L	1		Nitrate by calc	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: EQ BLNK-2

Lab Sample ID: 640-45802-1

Date Collected: 11/13/13 07:24

Matrix: Water

Date Received: 11/14/13 08:17

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.80**		0.50		mg/L			12/03/13 21:24	1
Fluoride	**0.31**		0.10		mg/L			12/03/13 21:24	1
Sulfate	<0.50		0.50		mg/L			12/03/13 21:24	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.010		0.010		mg/L		11/18/13 09:15	11/19/13 17:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/16/13 12:11	1
Nitrate as N	<0.010		0.010		mg/L			12/02/13 10:54	1

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45802-1

Client Sample ID: AC-35D

Lab Sample ID: 640-45802-2

Date Collected: 11/13/13 08:43

Matrix: Water

Date Received: 11/14/13 08:17

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	360		5.0		mg/L			12/03/13 21:37	10
Fluoride	120		2.0		mg/L			12/04/13 14:29	20
Sulfate	190		5.0		mg/L			12/03/13 21:37	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	9.5		0.50		mg/L			11/16/13 12:26	10
Nitrate as N	9.5		0.010		mg/L			12/02/13 10:54	1

Client Sample ID: PIP-D

Lab Sample ID: 640-45802-3

Date Collected: 11/13/13 11:39
Matrix: Water
Date Received: 11/14/13 08:17

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**9.3**		0.50		mg/L			12/03/13 21:51	1
Fluoride	<0.10		0.10		mg/L			12/03/13 21:51	1
Sulfate	**5.4**		0.50		mg/L			12/03/13 21:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**4.1**		0.25		mg/L			11/16/13 12:23	5
Nitrate as N	**4.1**		0.010		mg/L			12/02/13 10:54	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 680-305967/30
Matrix: Water
Analysis Batch: 305967

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.50		0.50		mg/L			12/03/13 20:17	1
Fluoride	<0.10		0.10		mg/L			12/03/13 20:17	1
Sulfate	<0.50		0.50		mg/L			12/03/13 20:17	1

Lab Sample ID: LCS 680-305967/31
Matrix: Water
Analysis Batch: 305967

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.0		mg/L		100	90 - 110
Fluoride	2.00	2.04		mg/L		102	90 - 110
Sulfate	10.0	10.2		mg/L		102	90 - 110

Lab Sample ID: LCSD 680-305967/32
Matrix: Water
Analysis Batch: 305967

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.0		mg/L		100	90 - 110	0	30
Fluoride	2.00	2.05		mg/L		102	90 - 110	0	30
Sulfate	10.0	10.3		mg/L		103	90 - 110	0	30

Lab Sample ID: MB 680-306063/5
Matrix: Water
Analysis Batch: 306063

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.10		0.10		mg/L			12/04/13 10:50	1

Lab Sample ID: LCS 680-306063/6
Matrix: Water
Analysis Batch: 306063

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	2.00	2.07		mg/L		104	90 - 110

Lab Sample ID: LCSD 680-306063/7
Matrix: Water
Analysis Batch: 306063

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	2.00	2.10		mg/L		105	90 - 110	1	30

Lab Sample ID: 640-45802-2 MS
Matrix: Water
Analysis Batch: 306063

Client Sample ID: AC-35D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	120		40.0	154	F	mg/L		77	80 - 120

QC Sample Results

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45802-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 640-45802-2 MSD
Matrix: Water
Analysis Batch: 306063

Client Sample ID: AC-35D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	120		40.0	154	F	mg/L		79	80 - 120	0	30

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 660-143459/1-A
Matrix: Water
Analysis Batch: 143519

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 143459

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.010		0.010		mg/L		11/18/13 09:15	11/19/13 16:46	1

Lab Sample ID: LCS 660-143459/2-A
Matrix: Water
Analysis Batch: 143519

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 143459

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.00		mg/L		100	80 - 120

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-303614/13
Matrix: Water
Analysis Batch: 303614

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.050		0.050		mg/L			11/16/13 12:05	1

Lab Sample ID: LCS 680-303614/14
Matrix: Water
Analysis Batch: 303614

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate Nitrite as N	0.997	1.06		mg/L		107	90 - 110

1 2 3 4 5 6 7 8 9 10 11 12 13 14

HPLC/IC

Analysis Batch: 305967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45802-1	EQ BLNK-2	Total/NA	Water	300.0	
640-45802-2	AC-35D	Total/NA	Water	300.0	
640-45802-3	PIP-D	Total/NA	Water	300.0	
LCS 680-305967/31	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-305967/32	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-305967/30	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 306063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45802-2	AC-35D	Total/NA	Water	300.0	
640-45802-2 MS	AC-35D	Total/NA	Water	300.0	
640-45802-2 MSD	AC-35D	Total/NA	Water	300.0	
LCS 680-306063/6	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-306063/7	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-306063/5	Method Blank	Total/NA	Water	300.0	

Metals

Prep Batch: 143459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45802-1	EQ BLNK-2	Total Recoverable	Water	3005A	
LCS 660-143459/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 660-143459/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 143519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45802-1	EQ BLNK-2	Total Recoverable	Water	6010B	143459
LCS 660-143459/2-A	Lab Control Sample	Total Recoverable	Water	6010B	143459
MB 660-143459/1-A	Method Blank	Total Recoverable	Water	6010B	143459

General Chemistry

Analysis Batch: 106215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45802-1	EQ BLNK-2	Total/NA	Water	Nitrate by calc	
640-45802-2	AC-35D	Total/NA	Water	Nitrate by calc	
640-45802-3	PIP-D	Total/NA	Water	Nitrate by calc	

Analysis Batch: 303614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
640-45802-1	EQ BLNK-2	Total/NA	Water	353.2	
640-45802-2	AC-35D	Total/NA	Water	353.2	
640-45802-3	PIP-D	Total/NA	Water	353.2	
LCS 680-303614/14	Lab Control Sample	Total/NA	Water	353.2	
MB 680-303614/13	Method Blank	Total/NA	Water	353.2	

Lab Chronicle

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45802-1

Client Sample ID: EQ BLNK-2

Lab Sample ID: 640-45802-1

Date Collected: 11/13/13 07:24
Date Received: 11/14/13 08:17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305967	12/03/13 21:24	VAS	TAL SAV
Total Recoverable	Prep	3005A			143459	11/18/13 09:15	RAG	TAL TAM
Total Recoverable	Analysis	6010B		1	143519	11/19/13 17:12	GAF	TAL TAM
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		1	303614	11/16/13 12:11	CRW	TAL SAV

Client Sample ID: AC-35D

Lab Sample ID: 640-45802-2

Date Collected: 11/13/13 08:43
Date Received: 11/14/13 08:17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10	305967	12/03/13 21:37	VAS	TAL SAV
Total/NA	Analysis	300.0		20	306063	12/04/13 14:29	VAS	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		10	303614	11/16/13 12:26	CRW	TAL SAV

Client Sample ID: PIP-D

Lab Sample ID: 640-45802-3

Date Collected: 11/13/13 11:39
Date Received: 11/14/13 08:17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	305967	12/03/13 21:51	VAS	TAL SAV
Total/NA	Analysis	Nitrate by calc		1	106215	12/02/13 10:54	TJW	TAL TAL
Total/NA	Analysis	353.2		5	303614	11/16/13 12:23	CRW	TAL SAV

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131
TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858
TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994
TAL TAM = TestAmerica Tampa, 6712 Benjamin Road, Suite 100, Tampa, FL 33634, TEL (813)885-7427

Certification Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45802-1

Laboratory: TestAmerica Tallahassee

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E81005	06-30-14
Georgia	State Program	4		06-30-14
Louisiana	NELAP	6	30663	06-30-14
New Jersey	NELAP	2	FL012	06-30-14
Texas	NELAP	6	T104704459-11-2	03-31-14
USDA	Federal		P330-08-00158	08-05-14

Laboratory: TestAmerica Richland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA	IHLAP		187436	08-01-15
Arizona	State Program	9	AZ0709	07-02-14
California	NELAP	9	E87829	05-31-14
Colorado	State Program	8	N/A	09-30-14
Florida	NELAP	4	E87829	06-30-14
Hawaii	State Program	9	N/A	01-09-14
L-A-B	DoD ELAP		L2291	06-30-14
Michigan	State Program	5	N/A	08-13-14
Nevada	State Program	9	WA011162014	07-31-14
New Mexico	State Program	6	WA00023	01-09-14
Oregon	NELAP	10	WA100002	01-09-14
Pennsylvania	NELAP	3	68-04849	08-31-14
Tennessee	State Program	4	TN04011	08-13-14
Texas	NELAP	6	T104704493-10-1	12-31-13
USDA	Federal		P330-11-00043	01-25-14
Utah	NELAP	8	QUAN8	01-09-14 *
Virginia	State Program	3	00100	06-30-14
Washington	State Program	10	WA01116	08-14-14
Washington (CLIA)	State Program	10	50D0661626	06-30-15

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-14
California	NELAP	9	3217CA	07-31-14
Colorado	State Program	8	N/A	12-31-13 *
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	12-31-13 *
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	06-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-14

* Expired certification is currently pending renewal and is considered valid.

Certification Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45802-1

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Iowa	State Program	7	353	07-01-15
Kentucky	State Program	4	90084	12-31-13 *
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	30690	06-30-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-13
Massachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-14
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	04-01-14
North Carolina DENR	State Program	4	269	12-31-14
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-14
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14 *
South Carolina	State Program	4	98001	06-30-14
Tennessee	State Program	4	TN02961	06-30-14
Texas	NELAP	6	T104704185-08-TX	11-30-14
USDA	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia	State Program	3	9950C	12-31-13 *
West Virginia DEP	State Program	3	94	06-30-14
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

Laboratory: TestAmerica Tampa

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40610	06-30-14
Florida	NELAP	4	E84282	06-30-14
Georgia	State Program	4	905	06-30-14
USDA	Federal		P330-11-00177	04-20-14

* Expired certification is currently pending renewal and is considered valid.

Method Summary

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL SAV
6010B	Metals (ICP)	SW846	TAL TAM
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
Nitrate by calc	Nitrogen, Nitrate-Nitrite	SM	TAL TAL
Rad 226-Method 903.1 (Richland)	RAD-226 (RCH)	NONE	TAL RCH
Rad 228-Method 904.0 (Richland)	RAD-228 (RCH)	NONE	TAL RCH

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAL = TestAmerica Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301, TEL (850)878-3994

TAL TAM = TestAmerica Tampa, 6712 Benjamin Road, Suite 100, Tampa, FL 33634, TEL (813)885-7427

Sample Summary

Client: URS Corporation
Project/Site: Agrico

TestAmerica Job ID: 640-45802-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
640-45802-1	EQ BLNK-2	Water	11/13/13 07:24	11/14/13 08:17
640-45802-2	AC-35D	Water	11/13/13 08:43	11/14/13 08:17
640-45802-3	PIP-D	Water	11/13/13 11:39	11/14/13 08:17

Analytical Data Package Prepared For

TestAmerica Tallahassee

Radiochemical Analysis By

TestAmerica Inc

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARL

Data Package Contains __15__ ***Pages***

Report No.: 58164

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
47510		AC-35D(640-45802-2)	J3K180409-2	M2JCF1AA	9M2JCF10	3323018
		AC-35D(640-45802-2)	J3K180409-2	M2JCF1AC	9M2JCF10	3323019
		EQ BLNK-2(640-45802-1)	J3K180409-1	M2JCE1AA	9M2JCE10	3323018
		EQ BLNK-2(640-45802-1)	J3K180409-1	M2JCE1AC	9M2JCE10	3323019
		PIP-D(640-45802-3)	J3K180409-3	M2JCG1AA	9M2JCG10	3323018
		PIP-D(640-45802-3)	J3K180409-3	M2JCG1AC	9M2JCG10	3323019

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

December 20, 2013

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301

Attention: Amy Marks

Date Received by Lab	:	November 15, 2012
Sample Number/Matrix	:	Three (3) Waters
SDG Number	:	47510
Chain Of Custody	:	640-62693.1
Project	:	Agrico
Project Number	:	640-45802-1

CASE NARRATIVE

I. Introduction

On November 15, 2013, three water samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt, the samples were assigned the TestAmerica identification numbers as described on the cover page of the Analytical Data Package. The samples were assigned to Lot Number J3K180409.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Gas Proportional Counting
Radium-228 by method RL-RA-001
Alpha Scintillation Counting
Radium-226 by method RL-RA-001

TestAmerica Tallahassee
December 20, 2013

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

V. Comments

Gas Proportional Counting

Radium-228 by method RL-RA-001:
The analytical batch was re-milked to verify sample activities. The re-milk results confirm the initial run. The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

Alpha Scintillation Counting

Radium-226 by method RL-RA-001:
The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Erika Jordan
Erika Jordan
2013.12.23
12:19:25
-08'00'

Erika Jordan
Manager of Project Management

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/? n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c *the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Date: 20-Dec-13

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 58164

SDG No: 47510

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)			Qual	Units	Tracer Yield	MDL	CRDL	RER2
3323018 E903.1											
	AC-35D(640-45802-2)										
	M2JCF1AA	RADIUM-226	2.01	+-	0.54	V	pCi/L	93%	0.194	1.0	
	AC-3D(640-45777-1) DUP										
	M2JA21AD	RADIUM-226	1.05	+-	0.36	V	pCi/L	87%	0.258	1.0	0.4
	EQ BLNK-2(640-45802-1)										
	M2JCE1AA	RADIUM-226	0.0127	+-	0.10	U	pCi/L	99%	0.21	1.0	
	PIP-D(640-45802-3)										
	M2JCG1AA	RADIUM-226	1.11	+-	0.30	V	pCi/L	95%	0.143	1.0	
3323019 E904.0											
	AC-35D(640-45802-2)										
	M2JCF1AC	RADIUM-228	7.69	+-	1.1	V	pCi/L	84%	0.602	1.0	
	AC-3D(640-45777-1) DUP										
	M2JA21AE	RADIUM-228	10.7	+-	1.5	V	pCi/L	80%	0.876	1.0	1.0
	EQ BLNK-2(640-45802-1)										
	M2JCE1AC	RADIUM-228	0.255	+-	0.24	U	pCi/L	90%	0.515	1.0	
	PIP-D(640-45802-3)										
	M2JCG1AC	RADIUM-228	1.98	+-	0.44	V	pCi/L	86%	0.506	1.0	

No. of Results: 8

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

V Qual - Detected.

QC Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Date: 20-Dec-13

Report No. : 58164 **SDG No.:** 47509

Batch / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
E903.1								
3323018 BLANK QC,								
M2JF91AA	RADIUM-226	-0.0315 +- 0.076	U	pCi/L	95%			0.177
3323018 LCS,								
M2JF91AC	RADIUM-226	9.22 +- 1.9	V	pCi/L	89%	93%	-0.1	0.156
E904.0								
3323019 BLANK QC,								
M2JGA1AA	RADIUM-228	0.215 +- 0.21	U	pCi/L	85%			0.46
3323019 LCS,								
M2JGA1AC	RADIUM-228	10.1 +- 1.4	V	pCi/L	84%	104%	0.0	0.71

No. of Results: 4

TestAmerica Inc

rptSTLRchQcSummary V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 20-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47510	**Collection Date:**	11/13/2013 8:43:00 AM
Lot-Sample No.:	**J3K180409-2**	**Report No. :**	58164	**Received Date:**	11/15/2013 12:30:00 PM
Client Sample ID:	**AC-35D(640-45802-2)**	**COC No. :**	640-62693.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018 E903.1				**Work Order:**	M2JCF1AA	**Report DB ID:**	9M2JCF10					
RADIUM-226	2.01	V	0.29	0.54	0.194	pCi/L	93%	*(10.3)*	12/16/13 09:09 p		0.829	ASCGAB
						0.0842	1.0	*(7.5)*			L	
Batch: 3323019 E904.0				**Work Order:**	M2JCF1AC	**Report DB ID:**	9M2JCF10					
RADIUM-228	7.69	V	0.72	1.1	0.602	pCi/L	84%	*(12.8)*	12/18/13 04:38 p		0.8289	GPC3B
						0.266	1.0	*(13.7)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 20-Dec-13

Lab Name:	**TestAmerica Inc**	**SDG:**	47510	**Collection Date:**	11/13/2013 7:24:00 AM
Lot-Sample No.:	**J3K180409-1**	**Report No. :**	58164	**Received Date:**	11/15/2013 12:30:00 PM
Client Sample ID:	**EQ BLNK-2(640-45802-1)**	**COC No. :**	640-62693.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018	E903.1			**Work Order:**	M2JCE1AA		**Report DB ID:** 9M2JCE10					
RADIUM-226	**0.0127**	U	0.10	0.10	0.21	pCi/L	99%	*0.06*	12/16/13 09:09 p		0.8689	ASCDMB
						0.0935	1.0	*0.25*			L	
Batch: 3323019	E904.0			**Work Order:**	M2JCE1AC		**Report DB ID:** 9M2JCE10					
RADIUM-228	**0.255**	U	0.22	0.24	0.515	pCi/L	90%	*0.5*	12/18/13 04:38 p		0.8689	GPC3A
						0.226	1.0	*(2.1)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM I

SAMPLE RESULTS

Date: 20-Dec-13

Lab Name:	TestAmerica Inc	**SDG:**	47510	**Collection Date:**	11/13/2013 11:39:00 AM
Lot-Sample No.:	J3K180409-3	**Report No. :**	58164	**Received Date:**	11/15/2013 12:30:00 PM
Client Sample ID:	PIP-D(640-45802-3)	**COC No. :**	640-62693.1	**Matrix:**	WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018 E903.1				**Work Order:**	M2JCG1AA	**Report DB ID:**	9M2JCG10					
RADIUM-226	**1.11**	V	0.20	0.30	0.143	pCi/L	95%	*(7.8)*	12/16/13 09:09 p		0.9472	ASCJMB
						0.0608	1.0	*(7.4)*			L	
Batch: 3323019 E904.0				**Work Order:**	M2JCG1AC	**Report DB ID:**	9M2JCG10					
RADIUM-228	**1.98**	V	0.37	0.44	0.506	pCi/L	86%	*(3.9)*	12/18/13 04:38 p		0.9472	GPC3C
						0.223	1.0	*(8.9)*			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V Qual - Detected.

FORM II

Date: 20-Dec-13

DUPLICATE RESULTS

Lab Name:	**TestAmerica Inc**	**SDG:**	47509	**Collection Date:**	11/12/2013 8:35:00 AM
Lot-Sample No.:	**J3K180407-1**	**Report No. :**	58164	**Received Date:**	11/14/2013 10:30:00 AM
Client Sample ID:	**AC-3D(640-45777-1) DUP**	**COC No. :**	640-62646.1	**Matrix:**	WATER W

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018	E903.1			**Work Order:** M2JA21AD		**Report DB ID:** M2JA21DR			**Orig Sa DB ID:** 9M2JA210			
RADIUM-226	1.05	V	0.25	0.36	0.258	pCi/L	87%	(4.1)	12/16/13 08:58 p		0.874	ASC2RC
	1.14	V	**RER2**	**0.4**		1.0		(5.8)			L	
Batch: 3323019	E904.0			**Work Order:** M2JA21AE		**Report DB ID:** M2JA21ER			**Orig Sa DB ID:** 9M2JA210			
RADIUM-228	10.7	V	0.83	1.5	0.876	pCi/L	80%	(12.2)	12/18/13 04:43 p		0.8739	GPC1B
	9.67	V	**RER2**	**1.0**		1.0		(14.7)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchDupV5.2.25 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
V Qual - Detected.

FORM II

BLANK RESULTS

Date: 20-Dec-13

Lab Name: **TestAmerica Inc** **SDG:** 47509

Matrix: WATER **Report No. :** 58164

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3323018	E903.1			**Work Order:**	M2JF91AA		**Report DB ID:**	M2JF91AB				
RADIUM-226	-0.0315	U	0.076	0.076	0.177	pCi/L	95%	-0.18	12/16/13 09:09 p		1.0024	ASCKAB
					0.0778	1.0		-0.83			L	
Batch: 3323019	E904.0			**Work Order:**	M2JGA1AA		**Report DB ID:**	M2JGA1AB				
RADIUM-228	0.215	U	0.20	0.21	0.46	pCi/L	85%	0.47	12/18/13 04:38 p		1.0025	GPC3D
					0.201	1.0		(2.)			L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchBlank
V5.2.25 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

Date: 20-Dec-13

LCS RESULTS

Lab Name: TestAmerica Inc | **SDG:** 47509

Matrix: WATER | **Report No. :** 58164

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3323018	E903.1			**Work Order:**	M2JF91AC		**Report DB ID:**	M2JF91CS					
RADIUM-226	9.22	V	0.55	1.9	0.156	pCi/L	89%	9.95	0.1	93%	12/16/13 09:09 p	1.0044	ASCNMA
							Rec Limits:	75	125	-0.1		L	
Batch: 3323019	E904.0			**Work Order:**	M2JGA1AC		**Report DB ID:**	M2JGA1CS					
RADIUM-228	10.1	V	0.77	1.4	0.71	pCi/L	84%	9.72	0.11	104%	12/18/13 04:38 p	1.0044	GPC4C
							Rec Limits:	75	125	0.0		L	

No. of Results: 2 **Comments:**

TestAmerica Inc
rptSTLRchLcs
V5.2.25 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
V Qual - Detected.

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Marks, Amy	Carrier Tracking No(s):	COC No: 640-62693.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: amy.marks@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 640-45802-1
Address: 2800 George Washington Way,	Due Date Requested: 12/11/2013			
City: Richland	TAT Requested (days):			
State, Zip: WA, 99352				
Phone: 509-375-3131(Tel) 509-375-5590(Fax)	PO #:			
Email:	WO #:			
Project Name: Agrico	Project #: 64000434			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT/ Rad 226-Method 903.1 (Richland)	SUBCONTRACT/ Rad 228-Method 904.0 (Richland)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
EQ BLNK-2 (640-45802-1) M2JCE	11/13/13	07:24 Eastern		Water			X	X	2	
AC-35D (640-45802-2) M2JCF	11/13/13	08:43 Eastern		Water			X	X	2	J3K180409
PIP-D (640-45802-3) M2JCG	11/13/13	11:39 Eastern		Water			X	X	2	SDG-47510
										Due 12-13-13

J3K180409

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by: Jonnie Carpenter	Date/Time: 11/14/13 1650	Company: TAL	Received by: [illegible]	Date/Time: 11-15-13 / 1230	Company: TALR
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 11-15-13 / 1230 Container GM Screen Result: (Airlock) 20 cpm Initials[B]
Sample GM Screen Result (Sample Receiving) 20 cpm Initials[B]

Client: STL-T SDG #: 47510 SAF #: NA [B]

Lot Number: J3K150409

Chain of Custody # 640-62693.1

Shipping Container ID or Air Bill Number : NA [B]

Samples received inside shipping container/cooler/box Yes [B] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: ______ °C NA [B]
4. Vermiculite/packing materials is NA [ ] Wet [B] Dry [ ]
Ice

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [B] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 3
7. Containers received: 6 x 1L
8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]
9. Samples have: ____ tape ____ hazard labels ____ custody seals B appropriate sample labels
10. Matrix: ____ A (FLT, Wipe, Solid, Soil) B I (Water) ____ S (Air, Niosh 7400) ____ T (Biological, Ni-63)
11. Samples:
B are in good condition ____ are leaking ____ are broken
____ have air bubbles (Only for samples requiring no head space) ____ Other ____
12. Sample pH appropriate for analysis requested Yes [B] No [ ] NA [ ]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [B]
14. Description of anomalies (include sample numbers): NA [B]
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [B]
*For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: Jeri Bock Date: 11-15-13

Client Notification needed? Yes [ ] No [ ] Date:
By:
Person contacted:

[X] No action necessary; process as is

Project Manager Erika Gerd Date 11-18-13

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information

Client Contact: Mr. Jeff Wagner
Company: URS Corporation
Address: 1625 Summit Lake Drive Suite 200
City: Tallahassee
State, Zip: FL, 32317
Phone: 850-402-6409(Tel)
Email: jeffry_wagner@urscorp.com
Project Name: Agrico Annual
Site:

Sampler: E. Mann, DC Hilton
Phone: 850-643-6461
Due Date Requested:
TAT Requested (days):
PO #: 12805561
WO #: 12806318.00000
Project #: 64000434
SSOW#:

Lab PM: Marks, Amy
E-Mail: amy.marks@testamericainc.com
Carrier Tracking No(s):

COC No: 640-41766-6826.4
Page: Page 4 of 4
Job #: 640-45802

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT - 904.0 - Rad228/ 903.1-Rad226 (Richland)	353.2 - Nitrate as N	SM4500_NO2_B - Nitrate as N	300_ORGFM_28D - Chloride, Fluoride and Sulfate	6010B - Arsenic	300_ORGFM_28D - Fluoride	Total Number of containers	Special Instructions/Note:
				Preservation Code:			D	S	N	N	D	N		
EQ BLNK-2	11.13.13	0724	G	W	N	N	2	1	1	1	1		6	
AC-35D	11.13.13	0843	G	W	N	N	2	1	1	1			5	
PIP-D	11.13.13	1139	G	W	N	N	2	1	1	1			5	

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)
Other:

640-45802 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ________ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

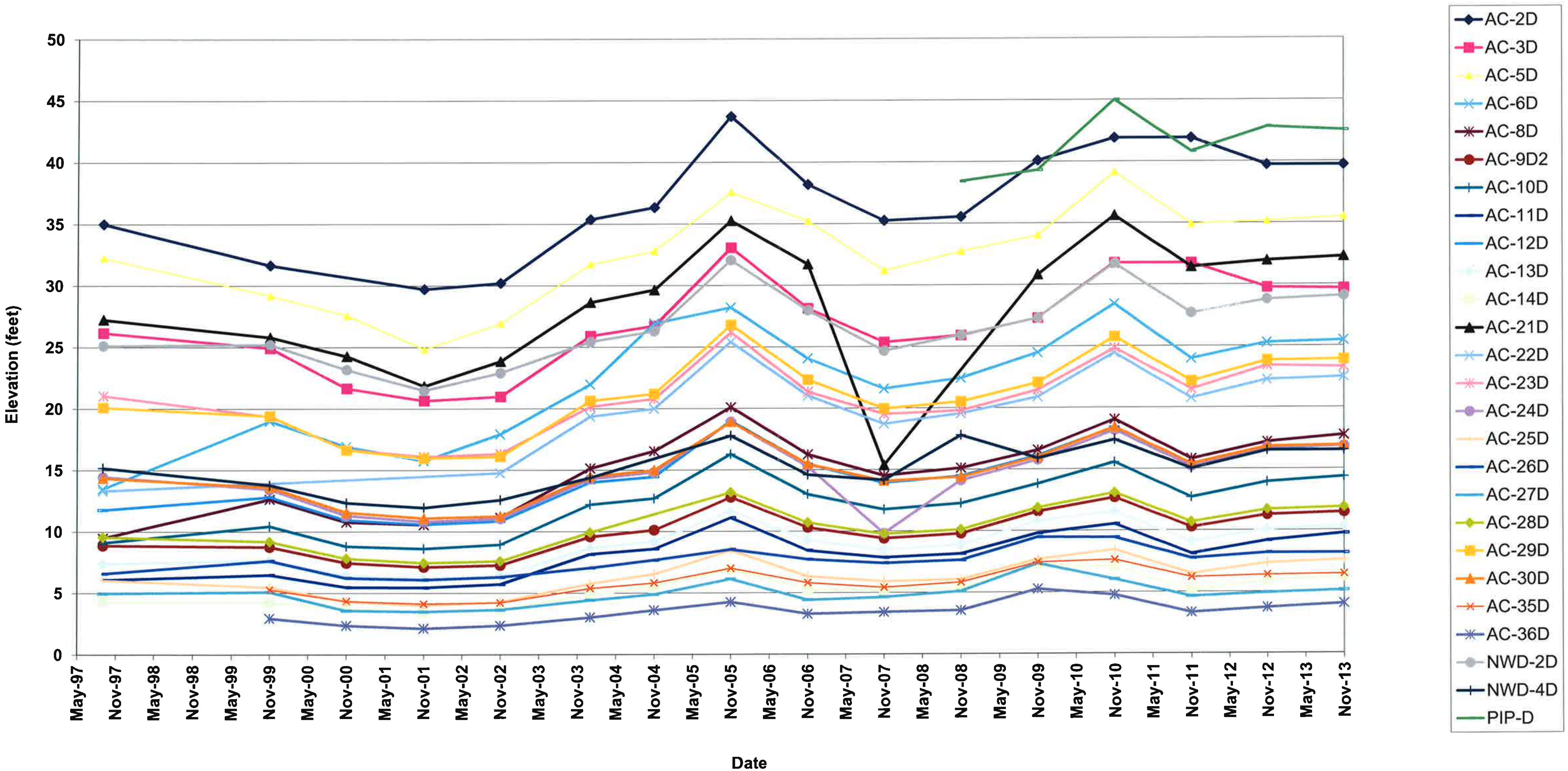
Empty Kit Relinquished by:	Date:		Time:	Method of Shipment:
Relinquished by: DC Hilton	Date/Time: 11.14.13 0817	Company: URS	Received by: Jamie Campbell	Date/Time: 11-14-13 0817	Company: TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 0.9

APPENDIX B

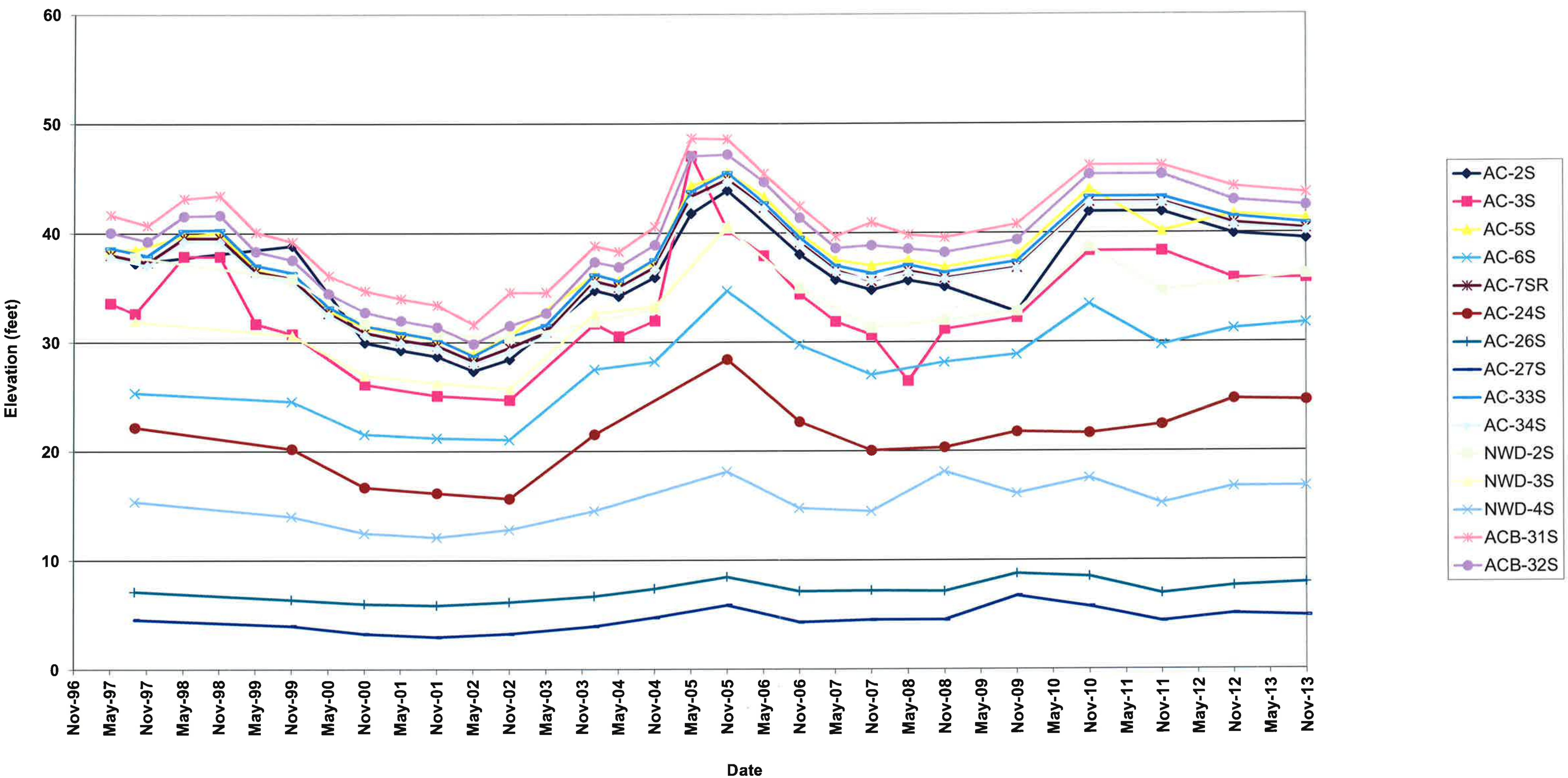
Groundwater Elevation Trend in Main Producing Zone

Agrico Site
Pensacola, FL



Groundwater Elevation Trend in Surficial Zone

Agrico Site
Pensacola, FL

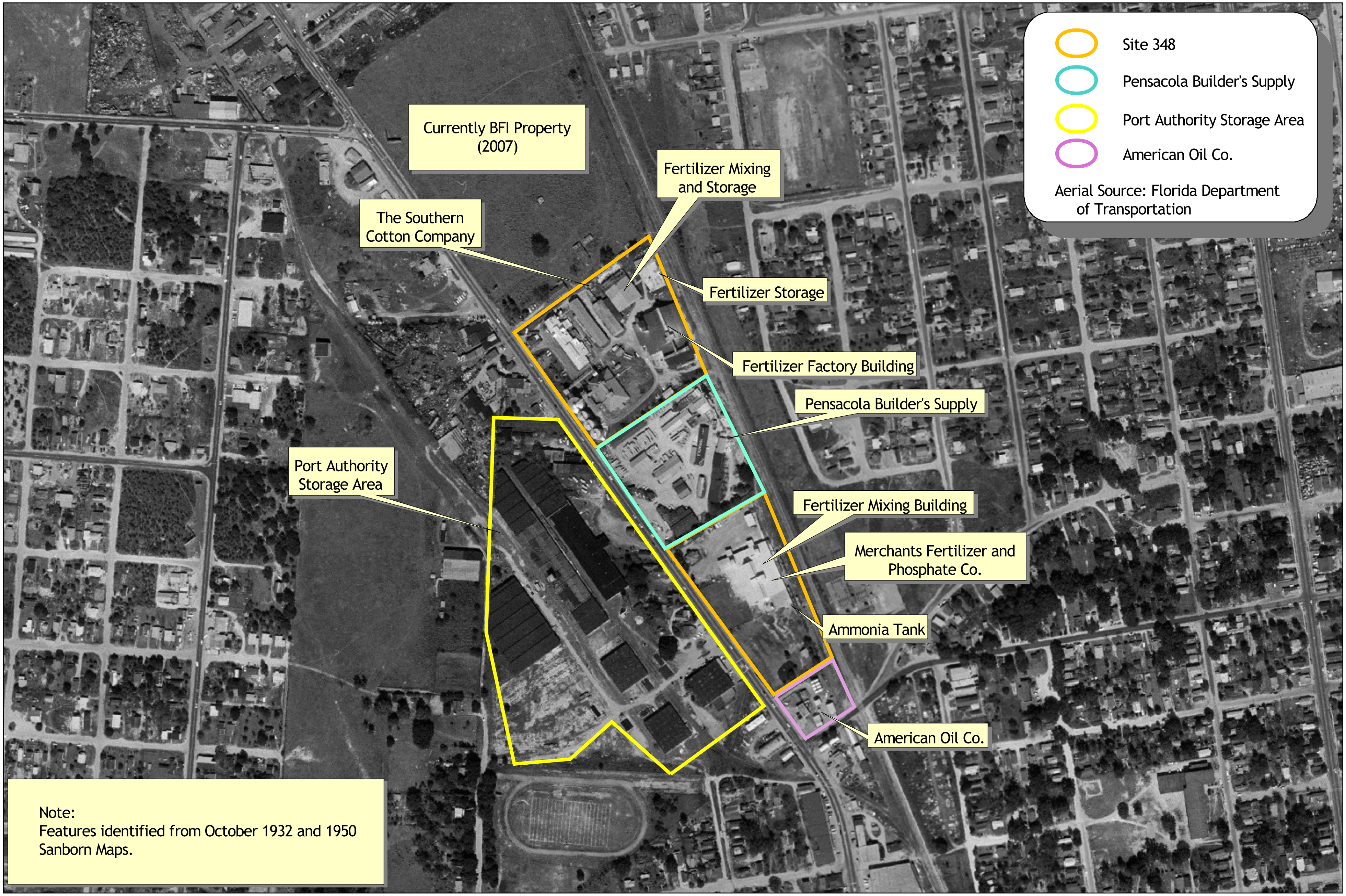


APPENDIX C


1940 Aerial


1951 Aerial


1958 Aerial



Note:
Features identified from October 1932 and 1950 Sanborn Maps.

FORMER AGRICO SITE
PENSACOLA, FLORIDA

URS

400 0 400 Feet

Projection:
Florida Albers, HPGN, Meters

C. Beauvais - Tallahasse - 10/30/07

FIGURE
5

AERIAL VIEW OF OPERATIONS
FOR SITE 348
1961

g:\agricolou2\deliverables\10_2007_historical_aerials.apr


1970 Aerial


1981 Aerial


2004 Aerial

FORMER AGRICO SITE
PENSACOLA, FLORIDA

URS

400 0 400 Feet

Projection:
Florida Albers, HPGN, Meters

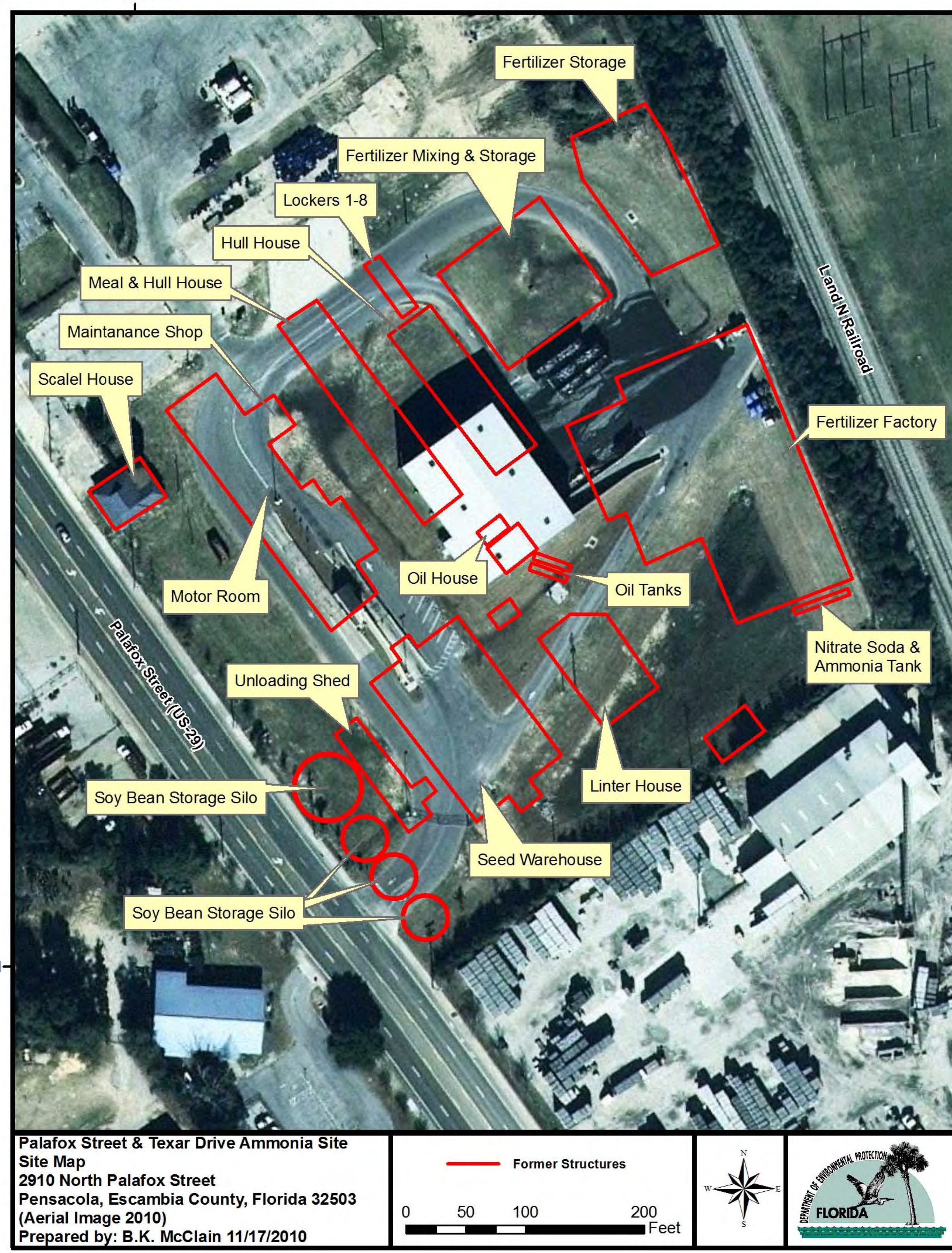
C. Beauvais - Tallahasse - 10/30/07

FIGURE
6

SITE 348
(NO REMEDIATION TO DATE)
2007

g:\agrico\ou2\deliverables\10_2007_historical_aerials.apr

87°13'30"W



Palafox Street & Texar Drive Ammonia Site
Site Map
2910 North Palafox Street
Pensacola, Escambia County, Florida 32503
(Aerial Image 2010)
Prepared by: B.K. McClain 11/17/2010

DEPARTMENT OF ENVIRONMENTAL PROTECTION
FLORIDA

APPENDIX D

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

61 Forsyth Street
Atlanta, Georgia 30303-3104

January 22, 2007

4SD-TSS

MEMORANDUM

SUBJECT: Agrico Site, Pensacola, Florida

FROM: William N. O'Steen, Environmental Scientist
Technical Services Section, Waste Management Division

TO: David Keefer, Remedial Project Manager
Superfund Remedial and Technical Services Branch

This memorandum responds to your request for a review of the document **Evaluation of Long-Term Groundwater monitoring Network, Agrico Site OU-1 and OU-2, Pensacola, Florida.** For your convenience, comments on this document are itemized and are referenced to specific sections or pages of the report, as applicable. If you have any questions about this memorandum or need additional hydrogeologic technical assistance on this project, please contact me.

1. Point 5 in the Executive Summary on page ES-2 should add that the limited extent of the surficial aquifer plume is caused by the significant downward vertical component to contaminant transport. Additionally, a statement should be added that indicates the generally decreasing concentrations in the surficial monitoring zone are a result of Agrico OU-1 source control measures.
2. Point 11 in the Executive Summary on page ES-2 could also note the occurrence of radium in concentrations of concern at other locations in the Pensacola area, outside the area impacted by Agrico contamination.
3. I disagree with wording presented in point 3 on page ES-3 of the Executive Summary. Specifically, I would instead state that the Agrico plume is adequately rather than well defined and remove the term "limited" from the point. The comment about the plume being well defined has applicability elsewhere in the report (e.g. elsewhere on page ES-3; page 8-6). The report should remove the word "well" when referring to the definition of the plume extent and use the word "adequately" instead. This comment is made because of the inherent uncertainty in main producing zone vertical plume zonation and localized areas of relatively high concentration within the overall Agrico plume footprint. These factors are conceptually valid but have not

been confirmed through detailed monitoring of the Agrico plume in the main producing zone at multiple depth intervals at a specific location, or through closely spaced monitoring along a transect at right angles to the generally eastward plume movement that could define localized variations in plume characteristics caused by lateral variations in aquifer hydraulic properties.

4. With regard to point 9 on page ES-3, the text should indicate that the Agrico waste stream is not the principal source of the observed radium. There may be some relatively minor and environmentally inconsequential contribution of radium from Agrico to the radium ground-water contamination observed in the Agrico plume.
5. I concur with recommendations presented on the last two pages of the Executive Summary and later in the summary section of the report.
6. For Figure 9, the plot of the fluoride data for MW-AC-34S shows an increase in fluoride concentrations over the last four sample events, compared to multiple sample events before this period. This increase is a concern and needs to be considered as to its possible causes or implications.
7. Concentration trends at AC-25D are a concern and need further evaluation. Section 8 on page 8-11 does not convey the fact that several key contaminants of concern are at historic high concentrations over the last three AC-25D sample events (reference Figure 10). The change in concentrations at this location need to be discussed in the context of the overall changes in concentrations over time across the plume area, expected concentration changes over time based on a conceptual understanding of the Agrico source, plume, and contaminant transport, and similar factors. The same comment applies to concentration trends at nearby well AC-35D.
8. On page 8-2, the text states that water chemistry at well AC-2S is different from other surficial zone locations. The paragraph then continues by listing individual constituents associated or potentially associated with the Agrico plume and their recently observed concentrations. The wording of the text implies that the listed concentrations are dissimilar from observed concentrations at other surficial aquifer monitoring locations. This situation applies to some, but not all of the listed contaminants. For example, the fluoride concentration at AC-2S is clearly different from fluoride observed at other monitoring wells. Conversely, the chloride concentration at AC-2S is comparable to chloride observed in samples from other shallow monitoring wells. The first sentence needs to identify specific contaminant concentrations that are clearly unique to AC-2S.
9. On page 8-10, the discussion of data from well AC-2D indicates that this well is upgradient of the surficial zone plume diversion area and upgradient of the first occurrence of plume impacts to the main producing zone off-site. These statements may not be entirely correct. In particular, fluoride data from AC-2D indicate some possible impacts from Agrico, although relatively inconsequential. The correct statement may be that AC-2D is at the fringes of vertical plume movement from the surficial zone into the main producing zone. Note that if it is not positioned thusly, the following statement is incorrect (bottom of page 8-9) “This indicates that…attenuation is occurring immediately downgradient of the site.” If AC-2D is completely outside the Agrico plume as indicated on page 8-10, it cannot demonstrate plume attenuation.

10. With regard to the page 8-10 analysis of AC-3D data, results shown on Figure 10 are not clear cut regarding a continuing downward trend in data for several constituents. Following what appears to be a downward trend in constituent concentrations around the time of OU-1 remedy implementation, concentrations of several constituents have either stabilized or increased somewhat compared to historic low levels observed in late 1999. While the combined radium data show a rather dramatic increase to pre-remedial levels over the last few sampling events, all of the other constituents shown on Figure 10 appear to have had stable concentrations over the last few sampling events. The discussion of the AC-3D data needs to more clearly state what is happening with contaminants other than radium.

11. AC-12D data seem to have a similar history as data from AC-3D. Specifically, the data show decreases in constituent concentrations after the OU-1 remedial action, followed by some increases above historic low concentrations. Several contaminants have apparently stabilized at concentrations either less than historic high values or approaching those values. The text describes the trends at AC-12D as cyclic. This characterization may be correct. However, it is not clearly demonstrated.

    The condition of concentrations declining around the time of OU-1 remedy implementation then increasing above historic low levels may also apply to main producing zone wells in addition to AC-3D and AC-12D. If so, it further suggests some widespread factor is responsible for the depressed concentrations observed during the period shortly following OU-1 implementation, rather than the remedial action causing such decreases. This possibility should be considered when evaluating the time-concentration data for the main producing zone.

12. On page 7-4, the text indicates that for NWD-4D, concentrations observed in the well are not related to the Agrico plume, based on documented hydrogeologic evidence. Text on page 8-12 likewise indicates this well is outside the Agrico plume. NWD-4D concentration increases of several constituents associated with the Agrico plume are attributed to some other source. There should be a more specific statement in this document regarding the information that excludes the Agrico contamination as being the cause or a potential cause of concentration increases at NWD-4D.

13. I note that with regard to the Escambia Treating (ETC) naphthalene contamination discussed in Section 9 on page 9-3, subsequent investigation and conceptual model refinement have led EPA to conclude that the apparent sporadic nature of ETC-derived organic contamination is the result of spatially variable, discrete zones of more significant naphthalene transport within the aquifer, and that some of the ETC monitoring wells have apparently been screened at depths that do not coincide with the core of the ETC plume at that location.

14. At the top of page 11-4, the discussion of fluoride concentrations at AC-2S needs revision. Fluoride concentrations have decreased at this location relative to the peak concentration from 2002, but have not steadily decreased since the source was remediated.

cc Scott Sudweeks, Chief, TSS (electronic copy)

Excerpt from November 30, 2006 Technical Memorandum Report – Evaluation of Long-Term Groundwater Monitoring Network Agrico Site, Pensacola, Florida

Key Recommendations

Table 4 of this Report identifies each of the Agrico monitoring wells and describes their purpose and any specific modification recommended to the network. Key recommendations are presented below.

1. Groundwater monitoring is an effective means of evaluating the Agrico natural attenuation remedy and should continue as designed, except for the modifications requested as part of this Report**.**
2. The availability of a groundwater model specifically developed for Escambia County hydrogeology allows for new proposed modeling that could more rigorously simulate aquifer conditions and provide better estimates of time of remediation for the Agrico plume. This tool would provide a means to verify and substantiate future Five-Year Reviews and water quality observations. It is recommended that the modeling, as proposed, be implemented.
3. It is recommended that the OU-2 COCs be added to the OU-1 parameters for all OU-1 surficial zone monitoring wells to assist in the demonstration that the surficial zone of the aquifer is cleaning up. Therefore, the OU-1 analytes would include lead, arsenic, fluoride, chloride, sulfate, nitrate, radium 226, and radium 228. Since the OU-1 network is sampled biannually, it is recommended that the extended analyte list apply only to the November event to coincide with the annual event for the OU-2 wells. Following the next Five-Year Review, the monitoring network would again be evaluated and recommendations for modifications suggested.
4. It is recommended that the analysis for nitrate + nitrite (Method 353.2) be discontinued and replaced with analysis for nitrate, as nitrogen (Method 353.2), reporting nitrate only. Nitrite was analyzed for in all groundwater samples during the January 2004 sampling event and found to be below detection levels. In the past, it has been argued that the performance standard should be the lower nitrite drinking water standard, but since nitrite is not present, the performance standard of 10 milligrams per liter (mg/L) is the appropriate standard, since it is applicable to nitrate.
5. It is recommended that the use of selected surficial zone long-term monitoring wells as long-term monitoring wells be discontinued, and they be changed to periodic monitoring locations. The locations are such that the surficial zone plume will not be transported to these areas. These locations include **NWD-2S**, **AC-24S**, **AC-26S**, **NWD-4S**, and **AC-5S. NWD-**2S was destroyed as of November 2006**.** A replacement well is not recommended.
6. Future monitoring results outside the southern edge of the Agrico plume should be closely scrutinized due to the possibility of the Kaiser main producing zone plume potentially impacting this downgradient area, including the groundwater discharge to Bayou Texar. The wells to be closely evaluated for trends are **AC-8D** and **AC-36D**.

7. It is highly recommended that FDEP continue their assessment of the Kaiser site and fully define the extent of impacts for both the surficial and main producing zones of the aquifer.
8. Due to the uncertainty and unknowns associated with the radium 228 concentrations, it is recommended that joint discussions with EPA be held to discuss a suitable path forward for this constituent. There are aspects of the radium results that must be more thoroughly evaluated before a conclusion can be reached as to whether concentrations are increasing. It must also be evaluated whether some mechanism other than the former site conditions is the cause of the elevated radium 228 concentrations. These other factors need to be evaluated, since they may impact the time for remediation.
9. It is recommended that radium analyses be performed by STL-Richland for at least the next five years to avoid results potentially influenced by analysis techniques used by different laboratories. Consistent use of a single laboratory over a five-year period will allow better assessment of data trends for radium 228 and radium 226. This may also address the reason for the large variability over time for the radium 228:226 ratio for individual wells.
10. It is recommended that the site O&M Plan be modified to allow for the use of FDEP Standard Operating Procedures (SOPs) related to well purging procedures.
11. It is recommended that the OU-1 Annual Report be combined with the OU-2 Annual Report, whereby one Annual Report would be produced reporting the annual Agrico groundwater monitoring results.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

RECEIVED
SEP - 4 2008

September 2, 2008
Mr. Jeffry R. Wagner, P.G.
Vice President/Operations Manager
Principal Hydrogeologist
Environmental Group Manager
URS Corporation
1625 Summit Lake Drive, Suite 200
Tallahassee, Florida 32317

Re: Agrico OU-1 semiannual sampling event in response to
June 28, 2000, Five-Year Review

Dear Mr. Wagner:

EPA approves the August 19, 2008, e-mail request from you to discontinue the OU-1 semiannual sampling event required by the June 28, 2000, Five-Year Review and continue with the integrated networks as was started in 2007.

The statistical evaluation confirmed the integrity of the containment system with five years of data, 1997 to 2001, and was further confirmed by data collected since 2001 with an additional seven years of data.

If we may be of assistance in this matter, please contact me at (404) 562-9120 or via Internet e-mail at miller.scott@epa.gov.

Sincerely,

Scott Miller
Remedial Project Manager
Superfund Remedial Branch, Section C
Superfund Division

5.1 BACKGROUND

With the implementation of the OU-1 source control, impacts upon groundwater from the soils are eliminated and concentrations in the ground water are expected to attenuate downgradient, resulting in decreasing concentrations with time.

Following the implementation of remedial actions for OU-1 and as part of the O&M plan requirements (Appendix I-September 1996) for OU-1, EPA required that the monitoring for groundwater for OU-1 be separate and distinct from the ground water monitoring requirements in OU-2.

Baseline data was collected semiannually for a period of five years (1997-2001) in order to determine concentration variability. Based on the 5 years of data collected during annual seasonal extremes in the water level hydrograph (May – highs, November – lows), a statistical evaluation was conducted to evaluate the integrity of the OU-1 containment remedy. This report presents the 2001 sampling results and the results of the statistical evaluation for the five years of data.

The statistical procedures utilized to evaluate the data are the procedures established in 40 CFR 264 Subpart F and are adapted from the Interim Final Guidance for Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities. Application of this methodology is intended to evaluate if the OU-1 remedy has eliminated continuing releases to groundwater.

5.2 METHODOGY

The choice of an appropriate statistical test depends on the type of monitoring and the nature of the data. When a site in compliance monitoring has a constant maximum concentration limit or performance standard, the appropriate comparison is with the constant. Section 5.2.1 discusses the comparison of the compliance well data to the performance standard. When a site has collected multiple years of compliance data, it may be also useful to perform intra-well comparisons over time to supplement other methods. This type of analysis is presented in Section 5.2.2.

URS has elected to use both of these tools to evaluate the Agrico OU-1 monitoring well data sets. These data sets have been generated through semi-annual ground monitoring conducted at the site from May of 1997 through November 2001. These data are presented in Table 3. These evaluations show that the concentrations results are decreasing.

In order to further evaluate the data, trend analysis were performed on the 5-year data set. The results of these analyses are presented in Section 5.2.3.

5.2.1 Comparison of Compliance Well Data to Performance Standards

This statistical procedure is appropriate when the monitoring is designed to determine whether ground-water concentrations of hazardous constituents are below or above fixed concentration limits. In this situation, the Performance Standard is a specified concentration limit rather than being determined by the background well concentrations.

The performance standards for this site are as follows:

Arsenic	0.05 mg/L
Lead	0.015 mg/L
Fluoride	4 mg/L

The control charts found in Figure 6, indicate the sampling dates where the concentrations are above the specified performance standards. As of the last sampling event, the only performance standard, which is currently being exceeded, is fluoride in monitor well AC-7SR.

5.2.2 Intra-Well Comparison

Control charts are used for intra-well comparisons because it can be an effective technique for monitoring the levels at a well over time. An important application of the plotting procedure is in detecting possible trends or drifts in the data from a given well. Also, when visually comparing the plots from several compliance wells, variations in concentrations at different locations of the site can be detected.

Inspection of the graphic presentations of the data in Figure 6 indicates that the concentrations of all of the constituents of concern are decreasing over time. As of the latest sampling episode, the concentrations of all constituents are below the established performance standards with the exception of fluoride in monitor well AC-7SR. The concentration of fluoride in AC-7SR has decreased over time from a value of approximately 5 times the performance standard to a value which is approaching the performance standard.

5.2.3 Trend Analysis

Trend analyses can perform using a variety of statistical tests. However traditional, tests produce biased estimates from the out lier ground water data. Therefore, for ground water data, the most appropriate trend estimator is a non-parametric type. Because of the differences in the concentrations results for the three constitutes evaluated, two different non-parameteric methods were used to analyze the trends of the 5 years of data for the ground water monitoring wells immediately downgradient of OU-1. The trend analysis was not performed on the background wells since all results were less than the detection limit indication no upgraident impacts to OU-1.

The Sen's Test was applied to fluoride, arsenic, and lead results. This test proved unsuitable for the arsenic and lead data. It was suitable for the fluoride data and indicated a positive downward trend for AC-34S. The results of the calculations for this test are presented in Appendix C.

The Mann-Kendall Test was applied to lead and arsenic data. This test uses only the relative magnitudes of the data rather than the measured values, therefore rendering the data sets suitable for trend analysis. A positive downward trend was indicated for arsenic and lead data associated for AC-7SR no trend was indicated for AC-33S or AC-34S for arsenic and lead. The reason for no trend is that all result have been non-detect (constant value) except for a detection in AC-33S for arsenic and lead in May 1999 in which both values were less than the performance standard (Table 3). The test results are presented in Appendix C.

5.3 SUMMARY AND CONCLUSIONS

Two statistical procedures were utilized to evaluate the performance monitoring data from OU-1. These procedures are established in 40 CFR 264 Subpart F and are adapted from the Interim Final Guidance for Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities. The data that has been evaluated has been the result of sampling and analysis of three compliance and two background wells on a semi-annual basis for the past five years.

At this time only Fluoride in Well AC-7SR exceeds the established performance standard. Evaluation of the available data indicate that fluoride in monitor well AC-7SR has decreased over the time period monitored, to a value which is approaching the performance limit. Values obtained in future monitoring events are expected to show that the performance standards are being met in each of the compliance wells.

This evaluation demonstrates that the remedy for OU-1 is effective.

URS

November 18, 2009

Sent via electronic mail to miller.scott@epa.gov

Mr. Scott Miller, RPM
U.S. Environmental Protection Agency (EPA)
Region 4
Atlanta Federal Center
61 Forsyth St SW
Atlanta, GA 30303-8960

RE: Recommendations to Operations and Maintenance Plans
Operable Unit One (OU-1) and Operable Unit Two (OU-2)
Agrico Site
Pensacola, Florida
EPA ID # FLD 980221857

Dear Mr. Miller:

As per discussions in Pensacola on October 6, 2009 during the Agency's Five-Year field inspection and project review, and subsequent follow-up via telephone discussion on October 14, 2009, URS Corporation (URS) *[on behalf of ConocoPhillips, Inc. (ConocoPhillips) and Agrico Chemical Company represented by the Williams Companies (Williams)]* is submitting the enclosed recommendations to the Agrico site Operations and Maintenance (O&M) Plans.

Background

The O&M Plans developed in 1996 and 1998 have been implemented for the past 12 years. For the OU-1 O&M Plan, the intent of the O&M tasks as written were to ensure that a well vegetated cover was established and that erosion controls mitigated any damage to the cap. In the past 12 years, a well established cover has been established on the 12 acre cap area as well as for the remaining area of the site. Erosion has been minimal and readily controlled since the final remedy was approved by EPA in April 1997. For these reasons, URS is recommending the following changes to the 1996 OU-1 O&M Plan that are more flexible, yet meets the same objectives:

- Maintain vegetation
- Maintain drainage control structures and control erosion
- Maintain site security control
- Maintain care activities

URS Corporation
1625 Summit Lake Drive, Suite 200
Tallahassee, FL 32317
Tel: 850.574.3197
Fax: 850.576.3676

URS

All of these objectives have been established and maintained over the past 12 years. The site is entering the thirteenth year under the 30 year regulatory care period. It is recognized that the OU-1 Record of Decision also provides for Post-Closure Care for an additional 30 years. Both ConocoPhillips and Williams have demonstrated that they are committed to the care of the site. We believe the recommendations presented herein will ensure the continued care for the site.

The following are recommendations for the September 20, 1996 Operation and Maintenance Plan for Operable Unit One:

RECOMMENDATION #1: Delete Drive-By Site Security

During the past 12 years, URS contracted with a local security company to provide bi-weekly drive-by security checks of the site. During this 12 year period, there has never been a security incident reported. URS believes that these security drive-by checks have very limited value and do not enhance site control. We do believe, however, that the more significant factors include the care of the property, i.e. it is well maintained via continued maintenance of the security fencing and locked gates, vegetative control, along with the continued periodic inspections by URS personnel (at least twice a month).

RECOMMENDATION #2: Change Schedule for Storm Water Under Drain Piping Cleanout to one per three years and/or as needed

Currently the O&M Plan calls for annual storm water drain cleanout. It is recommended that the clean out schedule be changed to on an as needed basis, and/or once every 3 years and then, only cleaned out if needed.

During the past 12 years, the annual inspection and cleanout has not yielded a single time where sediments have been found to be built-up in the under drain piping system. The only sediment build up in the under drain piping has been after the pipes have been jetted with water during the annual cleaning. Although minimal pressure is used to jet out the pipes, the gravel packing outside the pipes is very sensitive to jetting, and the result is that soil around a few manhole access points has been disturbed to the point were visible wash-outs occurred next to the manholes. These were subsequently repaired; the piping system has not been impaired. Based on the past 12 years, it is believed that the recommended schedule and clean out only as needed and/or once per three years, will serve better to maintain control of the under drain piping system and actually result in less potential negative impacts.

RECOMMENDATION #3: Change Reporting related to Semi-annual Site Inspections

This change is related to the documentation of inspections. Inspections will continue on a semi-annual basis with periodic inspections related to storm events. Currently a separate letter report is distributed to EPA twice a year that includes the results of the site inspection visits. In order to consolidate the documentation of the activities associated with this site, it is recommended that the results of the inspections conducted at the site, whether they are semiannual or related to storm events, be documented in the annual report and not submitted as separate letter reports after each separate event.

RECOMMENDATION #4: Change Mowing Schedule from a Rigorous Set Schedule to a More Flexible "As Required" Schedule

Currently the schedule calls for mowing the grass twice a month from May through October and once a month from November through March. It is recommended that more flexibility be allowed for the mowing schedule, i.e. "mow as necessary to maintain site care and control". The grass cover is well established and through the past 12 years has been well maintained. However, the rigorous schedule in the O&M plan is not always needed as stated. During periods of drought, a twice monthly mowing schedule is not needed. Likewise, during a warm, wet winter period twice a month or possibly more may be necessary. The recommendation is asking for flexibility in the mowing schedule with the objective of maintaining care of the site.

The following recommendation is related to Operable Unit Two Operations and Maintenance Plan dated November 1998:

RECOMMENDATION #5: Deletion of Surface Water Monitoring Station on Carpenter's Creek and designated as ACSW-BL

The original rationale for this station was for annual monitoring of Agrico Constituents of Concern (COCs) (especially nitrate/nitrate) upstream of Bayou Texar. These monitoring results are considered not to be site related but they are related to freshwater storm water input to Carpenter's Creek and thus input to the brackish Bayou Texar since the creek flows into the bayou. The sampling results are primarily affected by source and non-point source loading from the Carpenter's Creek drainage basin.

URS

Since the results for the past 12 years at the upstream, freshwater Carpenter's Creek station do not show significant concentrations of any Agrico COCs from sources upstream of Agrico, it is recommended that the annual sampling for this station be discontinued.

If you have any questions regarding these recommendations, please call. If you are in agreement with the proposed changes, please provide written approval. Your consideration of these recommendations is greatly appreciated.

Sincerely,

Jeffry R. Wagner

Jeffry R. Wagner, P.G., V.P.
Principal Hydrogeologist

JRW/lc

cc: Terry Vandell-Bell
Phil Roberts

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

January 25, 2010

Mr. Jeffry R. Wagner, P.G.
Vice President/Operations Manager
Principal Hydrogeologist
Environmental Group Manager
URS Corporation
1625 Summit Lake Drive, Suite 200
Tallahassee, Florida 32317

Re: November 18, 2009, Requested O&M Plan Updates – Agrico Pensacola

Dear Mr. Wagner:

Thank you for the November 18, 2009, submittal of the "Recommendations to Operations and Maintenance Plans Operable Unit One (OU1) and Operable Unit Two (OU2)." EPA and FDEP approve these requested changes and look forward to working with you on their implementation.

If we may be of assistance in this matter, please contact me at (404) 562-9120.

Sincerely,

Scott Miller
Remedial Project Manager
Superfund Remedial Branch, Section C
Superfund Division

Internet Address (URL) • http://www.epa.gov
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Miller.Scott@epamail.epa.gov
01/04/2010 07:19 AM

To Jeffry_Wagner@URSCorp.com
cc
bcc
Subject Fw: Agrico Report Reviews

History: This message has been forwarded.

Jeff,
FDEP feedback on Agrico submittals FYI.
Scott Miller
Remedial Project Manager
Superfund Division
Superfund Remedial Branch
Section C
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303
Phone (404) 562-9120
Fax (404) 562-8896
----- Forwarded by Scott Miller/R4/USEPA/US on 01/04/2010 07:18 AM -----

From: "Jean-Baptiste, Walsta" <Walsta.JeanBaptiste@dep.state.fl.us>

To: Scott Miller/R4/USEPA/US@EPA

Cc: "Kulakowski, Zoe" <Zoe.Kulakowski@dep.state.fl.us>, "Jean-Baptiste, Walsta" <Walsta.JeanBaptiste@dep.state.fl.us>

Date: 12/21/2009 10:39 AM

Subject: Agrico Report Reviews

Hi Scott,

Zoe Kulakowski of the Technical section has reviewed the Monitored Natural Attenuation in Groundwater report dated August 19, 2009 with the following comments:

"This report is satisfactory for its intended purpose and is technically acceptable. I concur with all three conclusions presented on page 2, including the dropping of arsenic and lead from the list of future analyses. Monitored Natural Attenuation (MNA) appears to be working for the Agrico plume as documented by declining groundwater concentrations.

I also concur with the conclusion that radium is not the result of Agrico's releases to groundwater, but from the passage of the plume and plume interaction with the aquifer sediments."

Zoe also reviewed the 2007 and 2008 Annual Reports prepared by URS Corporation and finds them acceptable.

Thank you,

Walsta Jean-Baptiste
Environmental Specialist II
Hazardous Waste Cleanup Section

Office Phone: 850-245-8973

The Department of Environmental Protection values your feedback as a customer. DEP Secretary Michael W. Sole is committed to continuously assessing and improving the level and quality of services provided to you. Please take a few minutes to comment on the quality of service you received. Simply click on this link to the DEP Customer Survey. Thank you in advance for completing the survey.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

2/5/2010
Mr. Jeffry Wagner, P.G., V.P.
Principal Hydrogeologist
URS Corporation
1625 Summit Lake Drive, Suite 200
Tallahassee, FL 32317

Dear Mr. Wagner:

Thank you for your February 3, 2010, letter entitled "Evaluation of Monitored Natural Attenuation in Groundwater: EPA Comments (October 15, 2009), Agrico Site, Pensacola, Florida." EPA appreciates the thoroughness of the August 19, 2009, initial monitored natural attenuation (MNA) approach and the submitted updates to the original MNA plan included in the February 3, 2010, submittal.

EPA approves the original August 19, 2009, submittal and the corresponding updates in the February 3, 2010, submittal. If we may be of assistance in this matter, please contact me either via Internet e-mail at miller.scott@epa.gov or at (404) 562-9120.

Sincerely,

Scott Miller

Scott Miller
Remedial Project Manager
Superfund Remedial Branch, Section C
Superfund Division

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OCT 21 2009

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4

61 Forsyth Street
Atlanta, Georgia 30303-3104

October 15, 2009

Mr. Jeffry R. Wagner, P.G.
Vice President/Operations Manager
Principal Hydrogeologist
Environmental Group Manager
URS Corporation
1625 Summit Lake Drive, Suite 200
Tallahassee, Florida 32317

Dear Mr. Wagner:

Thank you for the August 21, 2009, document entitled "Evaluation of Monitored Natural Attenuation (MNA) in Groundwater, Agrico Chemical NPL Site, Pensacola, FL". We were impressed with the effort taken to do the evaluation and generally agree with this approach. Our comments on this document are as follows:

1. There is some potentially troubling language near the bottom of page 17. Specifically, the text states "*Only data representing attenuating conditions are valid for calculating attenuation rates. This section provides a scientific and statistical basis for choosing which wells and data are suitable for evaluating MNA.*" This statement can be interpreted to indicate that data that do not fit a presupposed "attenuating condition" should be discarded from MNA analysis. Taken as a general statement (not specific to this site), this statement appears to advocate a selective use of monitoring data, rejecting sample points that are not showing concentration decreases as indicators (or not) of natural attenuation. Such selective data evaluation would bias an assessment of MNA. While it is true that attenuation rates could not be calculated in the absence of attenuation, it is obviously important to identify sample locations where there is no apparent concentration trend over time or for that matter, a potentially increasing concentration trend. Since the conceptual site model includes a cessation of the contaminant source and the concept of peak concentrations followed by a decline, the inclusion of all wells in an attenuation analysis is clearly inappropriate for this site. Regardless of that fact, the statement should be amended to indicate that it pertains specifically to the Agrico Chemical Site.

2. On page 20, there is the following statement regarding the σ parameter: "Small values indicate concentrations in the well are decaying at a consistent rate." Is a small value necessarily associated with a consistent decay rate? Conceptually, the concentrations in the wells of particular interest are expected to decrease over time at this site (after the peak concentration has passed), but if the attenuation rate is extremely low, then a "small" value of σ becomes more important. In fact, a small σ would seem to not indicate anything regarding the decay rate as long as σ is large enough relative to the attenuation rate (or line slope).

   Additionally, it is conceivable that large σ values would be associated with something other than, or in addition to, the decay rate. That is, while sampling and analytical variability are expected to be a relatively minor factor for a well run field program (as pointed out on page 20, under the heading **Estimating the parameters**), it is not inconceivable that variability attributable to the sampling and analysis (mostly sampling) will be substantial and not amenable to confident diagnosis as to the cause. Thus a large σ may not indicate anything definitive about the consistency of the decay rate.

3. On page 23, the text indicates an alternative method that that suggested by EPA was used to estimate cleanup times and their confidence limits. The report should indicate reasons why the alternative method was selected rather than following the procedure suggested by EPA. The report references Newell et al (2002) to make its case for the alternative procedure, but the approach for Agrico data analysis suggested by EPA Region 4 is that of Wilson (2008). If the objections raised on pages 23-25 to the Newell et al (2002) method are likewise applicable to Wilson's 2008 method, the text should indicate that is the case. If we understand the discussion on page 24 correctly, at least a part of the concern with the referenced EPA method is that it uses the most recent sample result (with a true concentration plus an error component) in the equation to predict a cleanup time, whereas the report proposes the alternative approach that only uses the regression model to predict the cleanup time, which avoids the bias inherent in using the most recent sample as the starting point for predicting the cleanup time. Is this the fundamental, or sole concern (conceptually) with the EPA approach discussed, or are there any additional conceptual concerns with the EPA approach?

4. On page 32, the text discusses dropping older data if there is a slowly accelerating decay rate and proposes a method for doing this. While this approach may be statistically valid, there is probably no practical reason for doing this, as long as the apparent decay rate prior to the gradual acceleration period is an acceptable degree of progress toward attainment of remedial objectives. That is, there is probably no "down side" to under-predicting the decay rate and over-predicting the time to attain to remedial objectives, as long as the progress toward attainment is already deemed acceptable. On the

other hand, if there is a slowly decelerating decay rate, there may be a concern about over-predicting the decay rate. For this reason, the text on page 32 should be restructured to discuss the converse of the situation of a slowly accelerating decay rate.

5. Table I indicates that AC-2D, while appearing to be downgradient, is upgradient of the source area when the 3-D flow pattern is considered. Figure 4 indicates that at this well, the initial fluoride concentrations slightly exceeded 5 mg/L, and there has been an observable decrease in fluoride concentrations in AC-2D samples over the monitoring period. The water quality data imply that the well is downgradient of the source and EPA has already concluded that AC-2D is downgradient of the source.

   A conceptualization of why there is and has been limited contamination observed at AC-2D despite its downgradient status and horizontal proximity to the source is that the well is so close to the source that the lateral component of advective flow carries the plume core through a shallower part of the aquifer past AC-2D before the vertical advective flow component has brought the plume core to the approximate depth of the AC-2D monitoring interval. This conceptualization of near-source advective transport should be the basis for a remark in Table I regarding the AC-2D status. AC-2D should be identified in the table as a plume fringe monitoring well.

6. On page 36, the statement is made "...we may conclude that **peak concentrations have already occurred in most of the area occupied by the plume**, especially in the areas of highest concentration." This conclusion is questionable. While peak concentrations have apparently been noted in wells that are along what is believed to be the plume centerline, or that are closest to the source area, there are many wells outside the plume core and/or the near-source area where the peak concentrations may or may not have yet been observed. In these areas, fluoride concentrations are relatively dilute, but the volume of contaminated groundwater is potentially greater than in the areas where peak concentrations have more demonstrably already been reached. Note that Table IV shows numerous wells without clearly identifiable peak concentration dates (or ranges). Additionally, there is a large volume of fringe plume area that is unmonitored and little can be said about the timing of the peak concentration there. The statement should be modified to more accurately represent what is known (or unknown) about the arrival of peak contaminant concentrations.

7. Text on page 36 that discusses "fringes of the plume" monitoring wells should note wells where fluoride concentration increases might be expected in the future. Examples of such wells include AC-10D and AC-14D. These two specific wells are identified based upon their distance from the source area, their distance from the plume centerline, and the appearance of increasing

fluoride concentrations, at respectively, AC-22D and AC-12D, which are more or less upgradient of AC-10D and AC-14D.

8. On pages 41 and 42, more discussion is needed regarding the nitrate concentration. The text has a somewhat dismissive tone regarding nitrate, probably because the nitrate concentrations are generally much closer to the performance standard relative to the fluoride concentrations at wells with significant groundwater impacts. Yet the text indicates that nitrate appears to move more slowly than fluoride, such that "...definite peak concentrations in all wells have not yet been observed." This statement, if correct, first implies that some nitrate concentrations close to the performance standard in wells with presently low or nondetect fluoride concentrations are monitoring nitrate from some other source(s). Examples of such wells include AC-8D and AC-10D. This condition should be noted in the report. Additionally, since the text indicates that peak concentrations may not yet be present at some wells, the text should clearly state that when peak nitrate concentrations arrive, existing data indicate that such concentrations will not be much greater than the performance standard. This latter point may be considered obvious from a review of the Figure 7 plots, but the text should state that it is the case.

9. For the statistical evaluation of radium attenuation rates (page 42; Table VI), there is a lack of consistency regarding what data events were included, or excluded for each statistically evaluated monitoring point, and an incomplete explanation of why such inclusion or exclusion was done. Table VI does footnote the cases where some of the January 2004 results were included (the 2004 results are identified in the text as being excluded from the statistical evaluation), but it appears to be arbitrary to only include some of the data points from that sample period in the statistical calculations. What justifies inclusion of the January 2004 data at all, other than to have a less ominous estimate of the maximum duration of the cleanup period at certain wells? It is also unclear from the text and table why eight samples are included in the AC-30D statistical analysis when there are data that were collected from other wells that would allow for statistical analysis using the same sample size or range of dates of sample collection. The report and/or table need to include a better explanation of why different sample sizes were evaluated.

10. We do not fully concur with the statements made in the last paragraph on page 44 regarding monitoring frequency. For wells where the peak contaminant concentration has not yet occurred, more frequent monitoring prior to the time of peak contaminant concentration would not add to an understanding of the time needed to attain cleanup goals. However, once the peak concentration has been observed, more frequent monitoring would allow for an earlier predictive capability of the time needed for remedial action.

The report states "More frequent monitoring would not help identify when peak concentrations occur in wells: that depends on the progress of attenuation." We partially disagree with this statement. It is true that assuming a uniform decay rate, sufficient monitoring after the peak concentration will eventually identify declining concentrations, and monitoring results will eventually produce a reasonable estimated decay rate. With sufficient post-peak sample points available to establish a valid statistical basis for estimating cleanup times and uncertainties, the exact or approximate time at which the peak concentration occurred will be of no importance. However, this understanding of the anticipated progress of the remedial action may occur years after it would occur if there is more frequent monitoring that can identify the post-peak condition sooner and should more readily provide an adequate data set for statistical evaluation. Although the exact timing of the peak concentration may not be determined even with more frequent monitoring data, it is important at key wells to have sufficient monitoring data from the post-peak period to be able to statistically interpret cleanup progress sooner rather than later. More frequent monitoring may be especially useful if the attenuation rate at wells that are both outside of the plume centerline and far downgradient of the plume source are low and thus post-peak trends are more subtle than in wells closer to the source and along the plume centerline. One could probably conclude that because of the observed fluoride concentrations and its distance from the source area, well AC-25D will probably be the best predictor of the complete time needed to cleanup groundwater throughout the plume. However, it is not assured that the full duration of the remedial action is predictable by results from this well.

There are some key monitoring wells where the peak concentration has probably not yet been observed and that have infrequent monitoring; these wells include AC-9D and AC-24D. For the reasons listed above, I recommend more frequent monitoring at these wells, to more quickly establish when post-peak monitoring is occurring and thus more quickly be able to evaluate the cleanup progress at these wells. AC-28D is in somewhat the same status as AC-24D and AC-9D. However, because the most recent observed fluoride concentration at AC-28D is roughly an order of magnitude lower than the most recent fluoride concentrations at the other two wells, I do not recommend more frequent AC-28D monitoring at this time. As AC-28D and other less frequently monitored wells continue to be evaluated, there is a possibility that future changes in monitoring frequency in such wells will also be indicated.

If we may be of assistance in this matter, please contact me at (404) 562-9120 or via Internet e-mail at miller.scott@epa.gov.

Sincerely,

Scott Miller
Remedial Project Manager
Superfund Remedial Branch, Section C

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

September 20, 2010

Mr. Jeffry R. Wagner, P.G.
Vice President/Operations Manager
Principal Hydrogeologist
Environmental Group Manager
URS Corporation
1625 Summit Lake Drive, Suite 200
Tallahassee, Florida 32317

Re: September 4, 2009 report, "*Conceptual Site Model Ecological Impact Evaluation of Bayou Texar Downgradient of Agrico's Groundwater Fluoride Plume*"

Dear Mr. Wagner:

Thank you for the September 4, 2009 report, entitled "*Conceptual Site Model Ecological Impact Evaluation of Bayou Texar Downgradient of Agrico's Groundwater Fluoride Plume.*"

EPA approves this Report. If we may be of assistance in this matter, please contact me at (404) 562-9120.

Sincerely,

Scott Miller
Remedial Project Manager
Superfund Remedial Branch, Section C
Superfund Division

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URS Jeffry Wagner/Tallahassee/URSCorp
09/20/2010 12:00 PM

To Jeffry Wagner/Tallahassee/URSCorp@URSCORP
cc
bcc
Subject Agrico Pensacola -- RE: EPA approval BT Report

Terry/Phil -- Please note the string of emails attached. File attached is EPA approval letter for Sept. 4, 2009 Bayou Texar report.

Also as the emails state, the SWAC calculation was confirmed by EPA-Athens.

The upcoming annual sampling event in November will add the BT surface water sampling locations as was recommended by the April 20, 2010 Tallahassee meeting.

I believe the responses from EPA bring closure to the open issues regarding the BT report.

jeff

URS Miller.Scott@epamail.epa.gov
09/17/2010 08:20 PM

To Jeffry_Wagner@URSCorp.com
cc
Subject Re: Agrico Pensacola

Jeff,
Hello, I assumed that Joe would've been in contact had there been an issue with the SWAC for Bayou Texar. I will follow-up with Joe and make sure that this is the case. If this is the case, I'll send you an approval letter to close your files on it. One could also probably conclude from the 2010 Five-Year Review report recommendations that EPA accepted that approach.
Have a great weekend,
Scott Miller
Remedial Project Manager
Superfund Division
Superfund Remedial Branch
Section C
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303
Phone (404) 562-9120
Fax (404) 562-8896

----- Forwarded by Scott Miller/R4/USEPA/US on 09/20/2010 09:15 AM -----

From: Joe Owusu/R4/USEPA/US

To: Scott Miller/R4/USEPA/US@EPA

Cc: Linda George/R4/USEPA/US@EPA

Date: 09/20/2010 09:09 AM

Subject: Re: Fw: Agrico Pensacola

Hi Scott:

Sorry we have not been able to communicate with you lately. We have been kind of busy. Yes I got help from one of our engineers and we confirmed the SWAC calculation for Bayou Texar. In fact EPA has set up a work group that is looking at SWAC.

Thanks, Joe
Senior Toxicologist
Integrated Laboratory Systems, Inc.
980 College Station Rd
Athens, GA 30605
(&06) 355-8696

From: Scott Miller/R4/USEPA/US

To: Joe Owusu/R4/USEPA/US@EPA

Cc: Linda George/R4/USEPA/US@EPA

Date: 09/20/2010 07:50 AM

Subject: Fw: Agrico Pensacola

Howdy Joe,
Hope all is going well in Athens for you and Linda this morning. I take it that your
calculations of the SWAC of fluoride for Bayou Texar showed the same results that URS did. Is that correct?
Thanks,
Scott Miller
Remedial Project Manager
Superfund Division
Superfund Remedial Branch
Section C

U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303
Phone (404) 562-9120
Fax (404) 562-8896
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EPA approval ltr -BT 090409 report_092010.pdf

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33.00

DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS

THIS DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS ("Covenant") is made by CONOCO INC. ("CONOCO"), and shall take effect as of the date set forth below. The purpose of this Covenant is to restrict and prohibit all surface and subsurface uses of the property described herein, in perpetuity, except as specifically set forth herein.

RECITALS

WHEREAS, CONOCO is the owner of real property lying and being in Escambia County, Florida; and

WHEREAS, the intent of CONOCO is that this Covenant apply to and be binding on all property owned by CONOCO as of the date of this document and which lies in the area bounded by North Palafox Street, Brent Lane, North Davis Highway, and Fairfield Drive (the "Property"), as more particularly described on Composite Exhibit "A" consisting of 4 pages, attached and made a part hereof; and

WHEREAS, a RCRA cap is located on the Property containing pollutants in excess of certain standards allowed by federal and state law, as more particularly described in the Record of Decision, Agrico Chemical Superfund Site, September 28, 1992;
and

WHEREAS, the Record of Decision described above mandated that CONOCO perform remedial action and impose access and use restrictions on the Property; and

WHEREAS, CONOCO seeks by this Covenant to fully comply with the Record of Decision requirement to restrict access to and use of the Property;

NOW THEREFORE, in consideration of the acceptance by the United States Environmental Protection Agency of the remedial action conditions and limitations stated in the Record of Decision, and acknowledging that the same constituted good and valuable consideration, CONOCO does hereby impose on the Property, in perpetuity, the following reasonable and lawful access and use restrictions.

COVENANTS

1. Access to the Property is restricted (1) to those authorized CONOCO agents and governmental agents or their representatives and officials who must enter the Property to inspect, maintain, or repair fencing or other remedial action measures constructed pursuant to or to be maintained in connection with the Record of Decision, (2) to those persons entitled to exercise the personal servitude of passage

in accordance with and for the limited purposes stated in the Act of Servitude recorded in the Official Records of Escambia County at OR Book 3758, Page 0955, and (3) to those persons who must have access to the Property to service and maintain existing public utilities and electrical power lines.

2. The erection, construction, or placing of any road, parking lot, building, sign, billboard or other advertising, utilities (public or commercial), towers, antennas, or any other structure on or above the ground is prohibited, except (a) as such structures may be required for the purpose of maintaining the remedial measures as required by paragraph 1 herein, or (b) as Conoco, or its agents or assigns, may erect or construct on those portions of the Property on which is not located the RCRA cap and as will not interfere with the maintenance of the remedial measures.

3. Use of the Property for temporary or permanent storage of equipment, inventory, or materials is prohibited, except as the same may be necessary to maintain the remedial measures as required by paragraph 1 herein.

4. The dumping or placing of soil or other substance or material as landfill or the dumping or placing of trash, waste, or unsightly or offensive materials on the Property is prohibited.

5. The removal or harvesting for any commercial purpose of trees, shrubs, or other vegetation is prohibited.

6. The excavation, dredging, or removal of loam, peat, gravel, soil, rock, or other material substance on or under the Property is prohibited, except as may be necessary to maintain the remedial measures as required by paragraph 1 herein.

7. Any drilling, mining, or other removal of soil, water, minerals, gases, or other substances from the surface or subsurface of the Property is prohibited, except as required to comply with the Record of Decision.

8. Any other use of the Property contrary to the Record of Decision is prohibited even though not specifically enumerated herein.

9. The restrictions imposed herein are perpetual restrictions imposed by the lawful owner of the Property and will run with the land and be binding on all successor owners, lessees or other transferees of the Property, as well as all successors and assigns of CONOCO.

10. This Covenant may be enforced by CONOCO, any other Potentially Responsible Party with respect to the Property the United States Environmental Protection Agency or the Florida Department of Environmental Protection, or their successors and assigns.

11. Enforcement of this Covenant shall be by action against any person or persons violating or attempting to violate any provision herein, either in equity or in law.

12. Invalidation of any provision of this Covenant by judgment or court order shall in no way affect any other provision of this Covenant, which shall remain in full force and effect in perpetuity.

IN WITNESS WHEREOF, the Covenantor has executed this Declaration of Covenants, Conditions and Restrictions for the Property described herein, this 11th day of July, 1997.

Signed, sealed and delivered
in the presence of:

ANN LUNDSTROM

Name: Ann Lundstrom

DOROTHY AKERS

Name: Dorothy Akers

COVENANTOR:

CONOCO INC., a Delaware corporation

By: Dennis R. Parker (SEAL)
Dennis R. Parker
Its: Vice President, SHEA

CONOCO INC. CORPORATE SEAL 1920

Attest:

Assistant Secretary

STATE OF TEXAS
COUNTY OF HARRIS

The foregoing instrument was acknowledged before me this 11th day of July, 1997, by Dennis R. Parker, as V.P. SHEA of CONOCO INC., a Delaware corporation, and who is personally known to me or who has produced U.S. Passport 131824098 as identification.

Notary Public

Commission No.:
My Commission Expires: 9-20-97

MARGO WILLIAMS
Notary Public, State of Texas
My Commission Expires
09/20/97

This instrument prepared by:
Jesse W. Rigby, of
CLARK, PARTINGTON, HART, LARRY
BOND, STACKHOUSE & STONE
One Pensacola Plaza
125 W. Romana Street, Suite 800
Pensacola, Florida 32501

PARCEL 1:

Commence at the Northwest corner of Section 4, Township 2 South, Range 30 West, Escambia County, Florida; thence North 52°36'16" East along the South line of Section 5, Township 2 South, Range 30 West for a distance of 1194.20 feet to the Easterly R/W line of the Louisville and Nashville Railroad (100' R/W); thence North 24°26'14" West along said Easterly R/W line for a distance of 295.98 feet to the Northerly R/W line of Fairfield Drive (SR #289-A); thence North 52°33'46" East along said Northerly R/W for a distance of 76.08 feet; thence South 37°26'14" East along said R/W for a distance of 90.00 feet; thence North 57°38'32" East along said R/W for a distance of 451.36 feet; thence North 50°39'13" East along said R/W for a distance of 150.08 feet; thence North 37°26'14" West for a distance of 490.00 feet; thence North 52°33'46" East for a distance of 200.00 feet to a point which is the Point of Beginning. From said Point of Beginning, continue North 52°33'46" East for a distance of 200.00 feet; thence South 37°26'14" East for a distance of 400.00 feet to the R/W line of Fairfield Drive (SR #289-A); thence continue South 37°26'14" East along said R/W for a distance of 165.00 feet; thence South 82°26'14" East along said R/W for a distance of 35.36 feet; thence North 52°33'46" East along said R/W for a distance of 177.70 feet to the Westerly R/W line of Interstate Highway 110 (SR #8-A); thence North 16°26'14" West along said Westerly R/W line for a distance of 823.07 feet; thence South 52°39'08" West for a distance of 697.67 feet; thence South 37°26'14" East for a distance of 179.49 feet to the Point of Beginning, containing 7.0 acres, more or less, and lying and being in Section 5, Township 2 South, Range 30 West, Escambia County, Florida, and subject to a 100 foot wide Gulf Power Company Easement. [As recorded in OR Book 3767, Page 0377, Escambia County, Florida.]

PARCEL 2:

Commence at the Northwest corner of Section 4, Township 2 South, Range 30 West, Escambia County, Florida; thence North 52°36'16" East along the South line of Section 5, Township 2 South, Range 30 West for a distance of 1194.20 feet to the Easterly R/W line of the Louisville & Nashville Railroad (100' R/W); thence North 24°26'14" West along said Easterly R/W line for a distance of 295.98 feet to the Northerly R/W line of Fairfield Drive (SR #289-A); thence North 52°33'46" East along said Northerly R/W for a distance of 76.08 feet; thence South 37°26'14" East along said R/W for a distance of 90.00 feet; thence North 57°38'32" East along said R/W for a distance of 451.36 feet; thence North 50°39'13" East along said R/W for a distance of 150.08 feet; thence North 28°20'06" East along said R/W for a distance of 219.32 feet to the Point of Beginning; thence North 52°33'46" East along said R/W for a distance of 200,00 feet; thence North 37°26'14" West for a distance of 400.00 feet; thence South 52°33'46" West for a distance of 200.00 feet; thence South 37°26'14" East for a distance of 400.00 feet to the Point of Beginning, containing 1.84 acres more or less and all lying and being in Section 5, Township 2 South, Range 30 West, Escambia County, Florida. [As recorded in OR Book 3767, Page 0377, Escambia County, Florida.]

EXHIBIT "A"

PARCEL 3:

A tract being 1,6769 acres in Section 5, Township 2 South, Range 30 West, Escambia County, Florida, being more particularly described as:

Commence at the Northwest Corner of Section 4, Township 2 South, Range 30 West of said Escambia County, Florida; thence North 52°36'16" East along the South line of Section 5, Township 2 South, Range 30 West for 1194.20 feet to the Easterly R/W line of the CSX Railroad (100 foot R/W); thence North 24°26'14" West along said Easterly R/W line for 295.98 feet to the Northerly R/W line of Fairfield Drive (SR #289-A); thence North 52°33'46" East along said Northerly R/W for 25.64 feet; thence North 24°26'14" West for 370.51 feet; thence North 14°47'54" West for 199.93 feet; thence North 52°39'08" East for 970.81 feet; thence North 24°20'24" West for 175.71 feet; thence North 52°38'15" East for 257.88 feet to the Westerly R/W line of a Gulf Power Company Easement (100 feet R/W) as recorded in O.R. Book 298 at Page 512 of the public records of said county and the Point of Beginning; thence along said Westerly R/W line North 18°04'37" West 38.40 feet; thence departing said Westerly R/W line North 75°28'00" East for 93.40 feet; thence South 52°38'15" West for 98.77 feet to the Westerly R/W line of the aforesaid Gulf Power Easement and the Point of Beginning, AND

Commence at the Northwest Corner of Section 4, Township 2 South, Range 30 West of said Escambia County, Florida; thence North 52°36'16" East along the South line of Section 5, Township 2 South, Range 30 West for 1194.20 feet to the Easterly R/W line of the CSX Railroad (100 foot R/W); thence North 24°26'14" West along said Easterly R/W line for 295.98 feet to the Northerly R/W line of Fairfield Drive (SR #289-A); thence North 52°33'46" East along said Northerly R/W for 25.64 feet; thence North 24°26'14" West for 370.51 feet; thence North 14°47'54" West for 199.93 feet; thence North 52°39'08" East for 970.81 feet for the Point of Beginning; thence continue North 52°39'08" East for 416.63 feet to the Westerly R/W of Interstate I-110 (R/W varies); thence along said Westerly R/W North 16°22'22" West for 43.75 feet to the point of curvature of a curve concave to the Northeast having a radius of 2969.83 feet; thence along the arc of said curve through a central angle of 01°33'56" for an arc distance of 108.46 feet (Chord Bearing North 26°08'39" West, Chord Distance 108.46 feet); thence departing said Westerly R/W South 75°29'00" West for 62.02 feet; thence South 52°38'15" West for 356.65 feet; thence South 24°20'24" East for 175.71 feet to the Point of Beginning. [As recorded in OR Book 3758, Page 0952, Escambia County, Florida.]

EXHIBIT "A"

PARCEL 4:

A portion of Section 5, Township 2 South, Range 30 West, Escambia County, Florida, being more particularly described as follows:

Commence at the Northwest corner of Section 4, Township 2 South, Range 30 West of said Escambia County, Florida; thence North 52°36'16" East along the South line Section 5, Township 2 South, Range 30 West for 1194.20 feet to the Easterly R/W line of the CSX Railroad (100' R/W); thence North 24°26'14" West along said Easterly R/W for 295.98 feet to the Northerly R/W line of Fairfield Drive (SR #289-A); thence North 52°33'46" East along said Northerly R/W for 25.64 feet; thence North 24°26'14" West for 370.51 feet; thence North 14°47'54" West for 199.93 feet; thence North 52°39'08" East for 970.81 feet; thence North 24°20'24" West for 175.71 feet to the Point of Beginning; thence continue North 24°20'24" West for 140.43; thence North 75°28'00" East for 259.23 feet to the Westerly R/W line of a Gulf Power Company Easement (100' R/W) as recorded to O.R. Book 298 at page 512 of the Public Records of said county; thence along said Westerly R/W line South 18°04'37" East for 38.40 feet; thence departing said Westerly R/W line South 52°38'15" West for 257.88 feet to the Point of Beginning, containing 0.519 acres more or less.

PARCEL 5:

A portion of Section 5, Township 2 South, Range 30 West, Escambia County, Florida, being more particularly described as follows:

Commence at the Northwest corner of Section 4, Township 2 South, Range 30 West of said Escambia County, Florida; thence North 52°36'16" East along the South line Section 5, Township 2 South, Range 30 West for 1194.20 feet to the Easterly R/W line of the CSX Railroad (100' R/W); thence North 24°26'14" West along said Easterly R/W line for 295.98 feet to the Northerly R/W line of Fairfield Drive (SR #289-A); thence North 52°33'46" East along said Northerly R/W for 25.64 feet; thence North 24°26'14" West for 370.51 feet; thence North 14°47'54" West for 199.93 feet; thence North 52°39'08" East for 118.25 feet for the Point of Beginning; thence continue North 52°39'08" East for 852.56 feet; thence North 24°20'24" West for 636.38 feet; thence South 65°39'36" West for 480.00 feet; thence South 24°20'24" East for 466.12 feet; thence South 52°38'43" West for 218.02 feet; thence South 2°28'32" West for 350.75 feet to the Point of Beginning; containing 9.1316 acres more or less.

Being more particularly shown on plat of survey dated March 19, 1995 prepared by Paul F. McCartney, Professional Land Surveyor Number 3140, Carlan Consulting Group, Inc., P.O. Box 2518, Pensacola, Florida 32513, incorporated herein by reference.

EXHIBIT "A"

Being a portion of the property acquired by The Louisville and Nashville Railroad Company, a predecessor of Grantor, from Louis Boley, et ux, by deed dated November 17, 1896, recorded among the Public Land Records of Escambia County, Florida, in Book 17, Page 86.

On December 29, 1982 The Louisville and Nashville Railroad Company merged into Seaboard Coast Line Railroad Company, and the name of the surviving corporation changed to Seaboard System Railroad, Inc. On July 1, 1986, Seaboard System Railroad, Inc. changed its name to CSX Transportation, Inc.

PARCEL 6:

Commence at the Northwest corner of Section 4, Township 2 South, Range 30 West, Escambia County, Florida; thence North 52°36'16" East along the South line of Section 5, Township 2 South, Range 30 West, for a distance of 1194.20 feet to the easterly R/W line of the Louisville and Nashville Railroad (100' R/W); thence North 24°26'14" West along said easterly R/W line for a distance of 295.98 feet to the northerly R/W line of Fairfield Drive (SR #298-A); thence North 52°33'46" East along said northerly R/W for a distance of 25.64 feet to the Point of Beginning; then continue North 52°33'46" East along said R/W for a distance of 50.44 feet; thence South 37°26'14" East along said R/W for a distance of 90.00 feet; thence North 57°38'32 East along said R/W for a distance of 451.36 feet; thence North 50°39'13" East along said R/W for a distance of 150.08 feet; thence North 37°26'14" West for a distance of 490.00 feet; thence North 52°33'46" East for a distance of 200.00 feet; thence run North 37°26'14" West for a distance of 179.49 feet; thence South 52°39'08" West for a distance of 689.92 feet; thence South 14°47'54" East for a distance of 199.93 feet; thence South 24°26'14" East parallel to said Railroad R/W for a distance of 370.51 feet to the Point of Beginning. Containing 9.67 acres, more or less, and lying and being in Section 5, Township 3 South, Range 30 West, Escambia County, Florida.

RCD Aug 07, 1997 12:39 pm
Escambia County, Florida

Ernie Lee Magaha
Clerk of the Circuit Court
INSTRUMENT 97-407567

Wagner, Jeffry

From: Hagans, Alan <Alan.Hagans@dot.state.fl.us>
Sent: Thursday, November 14, 2013 4:05 PM
To: Wagner, Jeffry
Cc: Scott Miller
Subject: RE: Agrico Pensacola - Annual Inquiry to FDOT Regarding Potential Construction Work for Fairfield Dr (Palafox to I-110)

Jeffry,

After review of the production schedule for fiscal year 2014 no construction work is scheduled for this area.

Thanks,

Alan Hagans
District Contamination Impacts Coordinator
Department Of Environmental Management (FDOT)
Ph: (850) 330-1511
alan.hagans@dot.state.fl.us

From: Wagner, Jeffry [mailto:jeffry.wagner@urs.com]
Sent: Thursday, November 14, 2013 2:36 PM
To: Hagans, Alan
Cc: Scott Miller
Subject: Agrico Pensacola - Annual Inquiry to FDOT Regarding Potential Construction Work for Fairfield Dr (Palafox to I-110)

Alan – please see attached request. Your reply via email is appreciated.

Jeff Wagner
Vice President and Principal Hydrogeologist
URS Corporation
1625 Summit Lake Dr. Suite 200
Tallahassee, Florida 32317
850-402-6409
Jeffry.wagner@urs.com

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NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

GOVERNING BOARD MEETING MINUTES

District Headquarters
10 Miles West of Tallahassee
U.S. Highway 90

Thursday
February 22, 2001

Governing Board Members Present

Charles W. Roberts, Chair
Joyce Estes, Vice Chair
Judy Byrne Riley, Secretary/Treasurer
Wayne Bodie
Sharon T. Gaskin
L. E. McMullian, Jr.
John R. Middlemas, Jr.
J. Russell Price
NancyAnn M. Stuparich

Attendees

Bill Bartrick, Florida Department of Agriculture; Rick Fernandez, City of Tallahassee; Camilo Gaitan, Florida Department of Agriculture; Karl Kraka, Department of Environmental Protection; Robert A. Kromhout, League of Women Voters Coalition; Ann Roberts; Betty Roberts, C. W. Roberts Construction, Incorporated; Lorin Pratt, City of Tallahassee; Charlie Rosborough, Florida Department of Agriculture and Consumer Services/Office of Agricultural Water Policy; Elspeth D. Stowell, Sierra Club; Jeff Wagner, URS

1. Call to Order and Roll Call

Chairman Roberts called the meeting to order at 1:33 p.m., EST. The roll was called and a quorum declared present.

2. Pledge of Allegiance to the Flag

Chairman Roberts led the meeting in the Pledge of Allegiance to the Flag.

3. Introduction of Visitors

Chairman Roberts introduced visitors.

4. Additions, Deletions or Changes to the Agenda

There was one addition to the Governing Board Agenda. Mr. Douglas Barr requested that the presentation of plaques to Governing Board members Mr. Rob Middlemas, Ms. Judy Byrne Riley and Mr. Chuck Roberts be added to the agenda. The plaques are tokens of appreciation for their service to the District.

There were two deletions to the Agenda. Items 7.A. 7. and 7.A.10. were removed from the agenda.

Mr. Barr presented a plaque to each Board member and expressed his sincere appreciation for their years of dedicated service as Governing Board members. He said that Mr. Middlemas served for eight years with five years as the District Lands Committee Chairman, Ms. Riley served for four years with two years as Board Secretary/Treasurer and Mr. Roberts served for 12 years with eight years as Board Chairman, which is unprecedented amongst the management districts.

5. Approval of Minutes for January 25, 2001

MOTION BY MS. ESTES, SECONDED BY MS. RILEY, THAT THE GOVERNING BOARD APPROVE THE JANUARY 25, 2001, GOVERNING BOARD MINUTES. MOTION CARRIED.

8.C. Consideration of Agreement with the City of Tallahassee for Water Reuse Project

Mr. Barr presented the agreement between the District and the City of Tallahassee for a water reuse project. He said the agreement would provide $300,000 in District funding for construction of an advanced Wastewater Treatment System and Reclaimed Water Distribution System to provide reuse water to the Southwood area. Mr. Barr recommended that the Governing Board approve the agreement between the District and the City of Tallahassee in the amount of $300.000.

Mr. Barr introduced Mr. Rick Fernandez, Assistant City Manager for the City of Tallahassee.

Mr. Fernandez said that he was very pleased with the reuse project and thanked staff and the Board members for their assistance.

MOTION BY MR. PRICE, SECONDED BY MS. ESTES, THAT THE GOVERNING BOARD APPROVE THE AGREEMENT WITH THE CITY OF TALLAHASSEE FOR THE WATER REUSE PROJECT IN THE AMOUNT OF $300,000. MOTION CARRIED.

7.A. Committee Reports – District Lands Committee

Mr. John Middlemas reported that the District Lands Committee met and has recommendations for Items 7.A.1., 7.A.2., 7.A.3.a., 7.A.3.c., 7.A.5., 7.A.6., 7.A.8., 7.A.9.a. and 7.A.9.c.

7.A.1. Consideration of Agreement Between Escambia County Board of County Commissioners and the District for Maintenance of Boat Landings

MOTION BY MS. RILEY, SECONDED BY MR. PRICE, THAT THE GOVERNING BOARD APPROVE THE MAINTENANCE AGREEMENT BETWEEN THE ESCAMBIA COUNTY BOARD OF COUNTY COMMISSIONERS AND THE DISTRICT FOR MAINTENANCE OF RECREATION FACILITIES ON DISTRICT LANDS. MOTION CARRIED WITH MS. STUPARICH ABSTAINING.

Ms. Stuparich registered a voting conflict regarding Item 7.A.1., due to being employed by Escambia County, who is a party to the maintenance agreement. She said she would abstain from voting on this item and submitted the appropriate form for the record.

7.A.2. Consideration of Resolution No. 480 to the Department of Environmental Protection for Disbursement of Payments in Lieu of Taxes

MOTION BY MS. ESTES, SECONDED BY MR. MCMULLIAN, THAT THE GOVERNING BOARD APPROVE AND ADOPT RESOLUTION NO. 480 TO THE DEPARTMENT OF ENVIRONMENTAL PROTECTION TO ALLOW PAYMENTS IN LIEU OF TAXES TO BAY, HOLMES, JACKSON, LIBERTY, OKALOOSA, WALTON AND WASHINGTON COUNTIES IN THE AMOUNT OF $61,974.55. MOTION CARRIED.

Mr. McMullian requested that he be permitted to deliver Jackson County's payment in lieu of taxes when the funds become available.

7.A.3.a. Consideration of the Appraisals for the Davis Tracts: Blackwater River

MOTION BY MS. RILEY, SECONDED BY MS. ESTES, THAT THE GOVERNING BOARD APPROVE THE APPRAISALS PREPARED BY ASMAR APPRAISAL COMPANY AND CARLTON APPRAISAL COMPANY FOR THE DAVIS TRACTS, THE REVIEW APPRAISAL PREPARED BY SOUTHEAST APPRAISAL GROUP AND THE CONCLUSION OF THE REVIEW APPRAISER THAT THE APPRAISAL BY CARLTON APPRAISAL COMPANY IS BEST SUPPORTED. MOTION CARRIED.

7.A.3.c. Consideration of Release of Funds for the Boundary Map/Acreage Certification, Environmental Audit, Title Exam and Premium, Document Preparation and Recording Fees for the Davis Tracts: Blackwater River

MOTION BY MS. GASKIN, SECONDED BY MR. BODIE, THAT THE GOVERNING BOARD APPROVE THE RELEASE OF $2,415 FOR THE BOUNDARY MAP/ACREAGE CERTIFICATION, RELEASE OF $2,200 FOR THE ENVIRONMENTAL AUDIT, RELEASE OF $2,875 FOR THE TITLE EXAMINATION AND PREMIUM, RELEASE OF $175 FOR DOCUMENT PREPARATION AND THE RELEASE OF $37.50 FOR RECORDING FEES FOR THE DAVIS TRACTS. MOTION CARRIED.

7.A.5. Consideration of Request for Fee Quotes for Appraisals, Review Appraisal and Timber Inventory for the Hobbs Pasture Tract: Econfina Creek/Deer Point Lake

MOTION BY MS. RILEY, SECONDED BY MR. MCMULLIAN, THAT THE GOVERNING BOARD APPROVE THE QUOTE SUBMITTED BY KETCHAM APPRAISAL GROUP AND ASMAR APPRAISAL COMPANY FOR $3,000 AND $3,175 RESPECTIVELY OF WHICH THE SELLERS WILL PAY ONE-HALF OR $3,087.50 FOR THE APPRAISALS, APPROVAL OF THE QUOTE SUBMITTED BY APPRAISAL GROUP OF TALLAHASSEE, INC. FOR $1,550 TO CONDUCT THE REVIEW APPRAISAL, AND APPROVAL OF THE QUOTE SUBMITTED BY F & W FORESTRY FOR $8,400 TO CONDUCT THE FOREST INVENTORY/APPRAISAL REPORT OF THE HOBBS PASTURE TRACT. MOTION CARRIED.

7.A.6. Consideration of Request for Fee Quotes for Appraisals and Review Appraisal for the Carpenter Conservation Easement: Spring Creek

MOTION BY MS. ESTES, SECONDED BY MS. RILEY, THAT THE GOVERNING BOARD APPROVE THE FEE QUOTES OF $2,820 AND $2,874 SUBMITTED BY RPA, INC. AND CARLTON APPRAISAL COMPANY, RESPECTIVELY TO CONDUCT THE APPRAISALS AND $1,650 BY THE APPRAISAL GROUP OF TALLAHASSEE TO CONDUCT A FIELD REVIEW FOR THE CARPENTER TRACT IN WAKULLA COUNTY. MOTION CARRIED.

7.A.8. Consideration of Multi-Party Acquisition Agreement Between the District and The Nature Conservancy

MOTION BY MS. ESTES, SECONDED BY MR. PRICE, THAT THE GOVERNING BOARD APPROVE THE MULTI-PARTY ACQUISITION AGREEMENT WITH THE NATURE CONSERVANCY FOR THE INDIAN SPRINGS PROJECT. MOTION CARRIED.

7.A.9.a. Consideration of the Appraisals for the Indian Springs Tract: Yellow River

MOTION BY MS. RILEY, SECONDED BY MS. ESTES, THAT THE GOVERNING BOARD APPROVE THE APPRAISAL PREPARED BY M. EUGENE PRESLEY AND ASSOCIATES FOR THE INDIAN SPRINGS TRACT, SUBJECT TO THE APPRAISAL REVIEW BY SUNCOAST APPRAISERS ON THIS TRACT INDICATING THAT THE APPRAISAL REPORT COMPLIES WITH ALL APPLICABLE STANDARDS AND RULES AND THE PURCHASE PRICE FOR THE PROPERTY DOES NOT EXCEED THE DISTRICT'S APPROVED APPRAISED VALUE. MOTION CARRIED.

7.A.9.c. Consideration of Release of Funds for the Boundary Map/Acreage Certification, Environmental Audit, Title Exam and Premium, Document Preparation and Recording Fees for the Indian Springs Tract: Yellow River

MOTION BY MS. RILEY, SECONDED BY MS. ESTES, THAT THE GOVERNING BOARD APPROVE THE RELEASE OF $1,260 FOR THE BOUNDARY MAP/ACREAGE CERTIFICATION, RELEASE OF $875 FOR THE ENVIRONMENTAL AUDIT, RELEASE OF $1,225 FOR THE TITLE EXAMINATION AND PREMIUM, RELEASE OF $700 FOR DOCUMENT PREPARATION AND THE RELEASE OF $78 FOR RECORDING FEES FOR THE INDIAN SPRINGS TRACT. MOTION CARRIED.

6.A. Public Hearing on Consideration of Regulatory Matters

Chairman Roberts called the public hearing to order at 1:50 p.m.

Mr. Recio presented the Consent Agenda which included three consumptive use permits, Items A-1 through A-3; three consumptive use permit modifications and/or renewals, Items B-1 through B-3; one temporary permit consumptive use extension, C-1; and three agricultural/forestry surface water management permits, Item AF-1 through AF-3.

MOTION BY MS. ESTES, SECONDED BY MR. MIDDLEMAS, THAT THE GOVERNING BOARD APPROVE THE CONSENT AGENDA PER THE RECOMMENDATIONS AND CONDITIONS OF THE STAFF REPORTS AND PER THE TERMS AND CONDITIONS OF THE PERMIT DOCUMENTS. MOTION CARRIED.

Mr. Recio presented enforcement logs found in the public hearing folder.

Chairman Roberts adjourned the public hearing at 2:05 p.m.

7.B. District Personnel Committee

Mr. Russell Price reported that the Personnel Committee met and has a recommendation for Item 7.B.1.

7.B.1. Consideration of Senior Management Class Retirement Benefit for Division Directors and Bureau Chiefs

MOTION BY MR. MIDDLEMAS, SECONDED BY MR. BODIE, THAT THE GOVERNING BOARD APPROVE CONVERSION OF ELIGIBLE DIVISION DIRECTORS AND BUREAU CHIEFS TO SENIOR MANAGEMENT RETIREMENT CLASS WITH A RETROACTIVE DATE OF JANUARY 1, 2001. MOTION CARRIED.

8.A. Consent Business Agenda

Mr. Larry Wright presented the Financial Report and Schedule of Disbursements for the month of January 2001.

MOTION BY MR. MIDDLEMAS, SECONDED BY MS. GASKIN, THAT THE GOVERNING BOARD APPROVE THE FINANCIAL REPORT AND SCHEDULE OF DISBURSEMENTS FOR THE MONTH OF JANUARY 2001. MOTION CARRIED.

8.B. Consideration of Renewal of Agreement for Employee Insurance

Mr. Wright said that the District's current employee insurance agreement, a dual option plan with Blue Cross/Blue Shield of Florida and Capital Health Plan of Tallahassee (an HMO), will expire on March 31. In accordance with the provisions of the initial agreement, the District may renew the existing agreement on a year-to-year basis subject to its acceptance of the negotiated premium rates for each subsequent year. The District has negotiated a renewal premium rate for the 2001/2002 contract year at an increased rate. He said that based on the current staffing and selected option mix the total current annualized cost (employee and employer contribution) for employee life, AD&D, health and dental insurance is $445,607. After renewal, the total annualized costs will increase by 14.03 percent ($62,514) to a total of $508,121. Employees who select any one of the three dependent coverage options are required to contribute $100 per month toward the premium costs. The District is also providing, for employees only, life and AD&D coverage. Also included in the renewal package is a managed care "dual option" plan available to employees in the satellite offices in Pensacola and Marianna and the Econfina field office. Staff recommends approval of the renewal of policies for the dual-option medical insurance, the dental plan and the life and AD&D insurance coverages for the 12-month period from April 1, 2001, through March 31, 2002.

MOTION BY MS. RILEY, SECONDED BY MS. GASKIN, THAT THE GOVERNING BOARD APPROVE THE RENEWAL OF THE POLICIES AT THE INCREASED RATE FOR THE DUAL-OPTION MEDICAL INSURANCE, THE DENTAL PLAN AND THE LIFE AND AD&D INSURANCE COVERAGES FOR THE 12-MONTH PERIOD FROM APRIL 1, 2001, THROUGH MARCH 31, 2002. MOTION CARRIED.

6.B. Public Hearing on Consideration of Land Acquisition Matters

Chairman Roberts called the public hearing to order at 2:10 p.m.

Mr. Bill Cleckley referred the Board to a Purchase and Sale Agreement for the Davis property on the Blackwater River in Santa Rosa County. He said staff proposes to acquire the property which consists of eight distinct parcels within or adjacent to the lower floodplain of the Blackwater River/Pond Creek. Acquisition of these tracts will permanently protect over 2.2 miles of the east/west banks of the Blackwater River and approximately one-mile of the north bank of Pond Creek. Mr. Cleckley stated that the purchase price negotiated by staff on the Davis tracts is $360,000 or $1,325.96 per acre. The District shared 50/50 in the cost of both land appraisals of the Davis tracts. The cost of the land appraisal was $8,576.76. Mr. Davis is requesting reimbursement of his 50 percent or $4,288.38 at closing. The District paid for the review appraisal (field) in the amount of $845. The District will order a boundary map/acreage certification for the property. The total cost of the boundary map/acreage certification is $2,415. The environmental assessment will be borne by Purchaser. The cost of the 50-year chain of title and radius search shall not exceed $2,200. The District will order the title examination and a commitment to insure title in the amount of the purchase price. The District will pay for the cost of the title examination and premium. The total cost of the examination and premium will be $2,875. In addition, the District will pay for the cost of document preparation and recording fees in the amount of $175 and $37.50 respectively. The Davis family will pay for documentary stamps, cost of recording any corrective documents, ad valorem taxes to date of closing and any assessments to date of closing. He said that staff recommends approval of the Purchase and Sale Agreement for the acquisition of the Davis tracts for $360,000, subject to the terms and conditions of the Agreement and approval by District legal counsel. Mr. Cleckley submitted documents regarding the acquisition into the record.

Chairman Roberts accepted the documents into the record and opened the floor to public comment. There was no public comment.

MOTION BY MR. MCMULLIAN, SECONDED BY MS. RILEY, THAT THE GOVERNING BOARD APPROVE THE PURCHASE AND SALE AGREEMENT FOR THE ACQUISITION OF THE DAVIS TRACTS FOR $360,000, SUBJECT TO THE TERMS AND CONDITIONS OF THE AGREEMENT AND APPROVAL BY DISTRICT LEGAL COUNSEL. MOTION CARRIED WITH MR. PRICE CASTING THE DISSENTING VOTE.

Mr. Cleckley presented a Purchase and Sale Agreement for the Indian Springs tract. He said that staff proposes acquisition of approximately 77.5 acres otherwise known as the Indian Springs tract from Genesis Corporation, Urbantech Corporation, Investors Guaranty and Surety Group, Inc. and William Dailey. The Indian Springs tract consists primarily of longleaf pine/wiregrass uplands bisected by two small seepage streams. This parcel is adjacent to District lands on the south side. Staff feels this is an excellent opportunity to acquire this parcel which will buffer potential development and enhance protection of the Yellow River floodplain. The parcel also contains an east-west land management road, which will improve District access to adjacent property. Mr. Cleckley stated that the purchase price negotiated by The Nature Conservancy on behalf of the District on the Indian Springs tract is $130,000 or approximately $1,677.41 per acre. The boundary map/acreage certification will be borne by purchaser. The cost of the boundary map/acreage certification will be $1,260. The environmental assessment will be borne by purchaser. The cost of the 50-year chain of title and radius search will not exceed $875. The District will order the title examination and a commitment to insure title in the amount of the purchase price. The cost of the examination and premium shall be borne by purchaser and shall not exceed $1,225. In addition, the District will pay for the cost of document preparation and recording fees in the amount of $700 and $78 respectively. The sellers will pay for documentary stamps, cost of recording and corrective documents, ad valorem taxes to date of closing, and any assessments to date of closing. The Purchase and Sale Agreement will be between The Nature Conservancy and the various owners of this tract. The District, by way of an assignment, will purchase this tract. He said that staff recommends approval of the Purchase and Sale Agreement and Assignment for the acquisition of the Indian Springs tract for $130,000, subject to the terms and conditions of the Agreement and Assignment and approval by District legal counsel, the review appraisal indicating that the appraisal complies with all applicable standards and rules and the purchase price for the property does not exceed the District's approved appraised value and conveyance of Lot 45 to Urbantech Corporation. Mr. Cleckley submitted documents regarding the acquisition into the record.

Chairman Roberts accepted the documents into the record and opened the floor to public comment. There was no public comment.

MOTION BY MS. RILEY, SECONDED BY MR. MIDDLEMAS, THAT THE GOVERNING BOARD APPROVE THE PURCHASE AND SALE AGREEMENT AND ASSIGNMENT FOR THE ACQUISITION OF THE INDIAN SPRINGS TRACT FOR $130,000, SUBJECT TO THE TERMS AND CONDITIONS OF THE AGREEMENT AND ASSIGNMENT, APPROVAL BY DISTRICT LEGAL COUNSEL, RECEIPT OF EXECUTED PURCHASE AND SALE AGREEMENTS FROM THE SELLERS, THE REVIEW APPRAISAL INDICATING THAT THE APPRAISAL COMPLIES WITH ALL APPLICABLE STANDARDS AND RULES AND THE PURCHASE PRICE FOR THE PROPERTY DOES NOT EXCEED THE DISTRICT'S APPROVED APPRAISED VALUE AND CONVEYANCE OF LOT 45 TO URBANTECH CORPORATION. MOTION CARRIED.

Chairman Roberts adjourned the public hearing at 2:30 p.m.

8.D. Consideration of the Florida Forever Program

Mr. Douglas Barr stated that at the January meeting the Board requested a listing projects by geographic area and types that would be eligible for Florida Forever funding in order to provide staff with direction in preparing the program workplan. The projects are listed in three groups generally in order of priority based on the level of expected improvement/restoration of the waterbody, the readiness of the project to move into construction, and some consideration of geographic location. He discussed each group of projects and requested direction from the Board on the framework of the program the Board wishes to develop.

There was considerable discussion concerning preparation of the plan, cost sharing of projects with local governments and prioritizing projects.

MOTION BY MS. RILEY, SECONDED BY MS. STUPARICH, THAT THE GOVERNING BOARD DIRECT STAFF TO USE 50 PERCENT OF THE FLORIDA FOREVER FUNDS FOR DISCRETIONARY PROJECTS TO INCLUDE STORMWATER TREATMENT PROJECTS, REUSE PROJECTS AND ALTERNATE WATER SUPPLY PROJECTS, PRIORITIZED AS RECOMMENDED BY STAFF AND APPROVED BY THE BOARD. MOTION CARRIED AFTER THE FOLLOWING AMENDMENT, WITH MR. MIDDLEMAS CASTING THE DISSENTING VOTE.

MOTION BY MS. RILEY, SECONDED BY MR. PRICE, TO AMEND THE ABOVE MOTION TO INCLUDE THAT THE GOVERNING BOARD DIRECT STAFF TO PROCEED IN THE DIRECTION OF WATER REUSE, ALTERNATIVE WATER SUPPLY, ENVIRONMENTAL RESTORATION AND STORMWATER TREATMENT FOR UP TO 50 PERCENT OF THE FLORIDA FOREVER FUNDS IN PREPARING THE WORKPLAN. AMENDMENT TO MOTION CARRIED WITH MR. MIDDLEMAS CASTING THE DISSENTING VOTE.

6. C. Public Hearing on Consideration of Regional Water Supply Plan for Santa Rosa, Okaloosa and Walton Counties

Chairman Roberts called the public hearing to order at 2:45 p.m.

Mr. Ron Bartel referred the Board to the public hearing folder for discussion on the Regional Water Supply Plan for Santa Rosa, Okaloosa and Walton counties. He said that in accordance with Section 373.0361, Florida Statutes, District staff have prepared a draft "Regional Water Supply Plan for Santa Rosa, Okaloosa and Walton Counties." Development of the plan entailed an evaluation of future water demands on the Floridan Aquifer, documentation of water supply development activities underway in the region, and examination of alternative sources of water to address future needs. The draft plan includes a number of recommendations for future action by the District, including completion of the ongoing Floridan Aquifer sustainability modeling project, further analysis of the Sand-and-Gravel Aquifer, reuse coordination and assistance, water supply planning and coordination, and analysis of other less traditional water supply alternatives such as Aquifer storage and recovery. Upon completion of the draft Regional Water Supply Plan, copies of the document were distributed to all utilities and local governments within the three-county region as well as to the Department of Environmental Protection (DEP) and the Governing Board. The draft plan was also placed on the District's Internet web site where it has been accessed numerous times in the past months. The plan was presented to the Technical Advisory Committee of the Walton/Okaloosa/Santa Rosa Regional Utility Authority at a meeting on November 15, 2000, and a Public Workshop was held on January 31, 2001, in Niceville. Both of these meetings were quite well attended by the respective target audiences. A number of written comments were received on the plan, many of which were constructive. Staff also explained the plan and answered many questions about the water resources of Region II at the public workshop. Mr. Bartel said that staff recommends approval of the Regional Water Supply Plan for Santa Rosa, Okaloosa and Walton Counties. The action being recommended entails approval of the draft Regional Water Supply Plan for Santa Rosa, Okaloosa, and Walton Counties which was previously distributed to the Governing Board, along with the recommended changes. Mr. Bartel submitted documents regarding the Regional Water Supply Plan into the record.

Chairman Roberts accepted the documents into the record and opened the floor to public comment. There was no public comment.

MOTION BY MS. RILEY, SECONDED BY MS. ESTES, THAT THE GOVERNING BOARD APPROVE THE DRAFT REGIONAL WATER SUPPLY PLAN FOR SANTA ROSA, OKALOOSA AND WALTON COUNTIES. MOTION CARRIED.

Chairman Roberts adjourned the public hearing at 3:15 p.m.

8.E. Consideration of Agreement with the City of Graceville, Jackson County, for the Plugging and Abandoning of two Floridan Aquifer Wells and Approval of Selected Bidder, Bid Number 01B-002

Mr. Alex Wood presented an agreement between the District and the City of Graceville for plugging and abandoning of two Floridan Aquifer wells. He said the District proposes to enter into a contractual agreement with the City of Graceville to share the cost of plugging two wells. The wells are not presently in service and are identified by the District as a threat to the groundwater resource. Mr. Wood stated that the funding agreement provides for a 50/50 cost sharing with the City of Graceville; and provides for the City of Graceville to reimburse the District up to $5,850 of the estimated $11,700 total project cost. Staff recommends approval of the funding agreement. Bids were sent to 85 water well contractors and Mr. Everette Leavins, of Leavins-Hughes Well Drilling was the low bidder at $8,750 for plugging the wells and staff selected him as the recommended vendor. In addition, the contract provides an hourly rate of $195 to the contractor for the removal and clearing of any obstructions from the wells and the drilling/washing out of the wells and $100 per hour for standby time. The recommended contract is limited to a maximum total cost of $11,700. Mr. Wood said staff recommends that the District's Executive Director be authorized to execute the well abandonment funding agreement with the City of Graceville, Jackson County. Staff also recommends contingent upon approval of the funding agreement by the City of Graceville, that Mr. Everette Leavins be awarded the bid for plugging two Floridan Aquifer wells in the City of Graceville with the maximum compensation for the contract not to exceed $11,700.

MOTION BY MS. RILEY, SECONDED BY MR. MCMULLIAN, THAT THE GOVERNING BOARD AUTHORIZE THE EXECUTIVE DIRECTOR TO EXECUTE THE WELL ABANDONMENT FUNDING AGREEMENT WITH THE CITY OF GRACEVILLE, JACKSON COUNTY. STAFF

ALSO RECOMMENDS, CONTINGENT UPON APPROVAL OF THE FUNDING AGREEMENT BY THE CITY OF GRACEVILLE, THAT MR. EVERETTE LEAVINS BE AWARDED THE BID FOR THE DESCRIBED PROJECT AND APPROVAL FOR THE DISTRICT TO ENTER INTO A FINAL CONTRACT AGREEMENT (NOTICE TO PROCEED) WITH MR. EVERETTE LEAVINS FOR THE PLUGGING OF TWO FLORIDAN AQUIFER WELLS IN THE CITY OF GRACEVILLE, JACKSON COUNTY, WITH THE MAXIMUM COMPENSATION FOR THE CONTRACT NOT TO EXCEED $11,700. MOTION CARRIED.

8.F. Consideration of Agreement with City of Lynn Haven, Bay County, for the Plugging and Abandoning of one Floridan Aquifer Well and Approval of Selected Bidder, Bid Number 01B-003

Mr. Alex Wood presented an agreement between the District and the City of Lynn Haven for plugging and abandoning of one Floridan Aquifer well. He said the District proposes to enter into a contractual agreement with the City of Lynn Haven to share the cost of plugging one well. The well is not presently in service and is identified by the District as a threat to the groundwater resource. Mr. Wood said that the funding agreement provides for 50/50 cost sharing with the City of Lynn Haven; and provides for the city to reimburse the District up to $5,142.50 of the estimated $10,258.00 total project cost. Staff recommends approval of the funding agreement. Bids were sent to 99 water well contractors and Mr. Everette Leavins, of Leavins-Hughes Well Drilling was the low bidder at $7,925.00 for plugging the well and staff selected him as the recommended vendor. In addition, the contract provides an hourly rate of $195 to the contractor for the removal and clearing of any obstructions from the well and the drilling/washing out of this well and $100 per hour for standby time. The recommended contract is limited to a maximum total cost of $10,285.00. Mr. Wood said staff recommends that the District's Executive Director be authorized to execute the well abandonment funding agreement with the City of Lynn Haven, Bay County. Staff also recommends, contingent upon approval of the funding agreement by the City of Lynn Haven, that Mr. Everette Leavins be awarded the bid for plugging one well in the City of Lynn Haven, with the maximum compensation for the contract not to exceed $10,285.00.

MOTION BY MS. RILEY, SECONDED BY MR. MCMULLIAN, THAT THE GOVERNING BOARD AUTHORIZE THE EXECUTIVE DIRECTOR TO EXECUTE THE WELL ABANDONMENT FUNDING AGREEMENT WITH THE CITY OF LYNN HAVEN, BAY COUNTY. ALSO CONTINGENT UPON APPROVAL OF THE FUNDING AGREEMENT BY THE CITY OF LYNN HAVEN, THAT MR. EVERETTE LEAVINS BE AWARDED THE BID FOR THE DESCRIBED PROJECT AND APPROVAL FOR THE DISTRICT TO ENTER INTO A FINAL CONTRACT AGREEMENT (NOTICE TO PROCEED) WITH MR. EVERETTE LEAVINS FOR PLUGGING ONE FLORIDAN AQUIFER WELL IN THE CITY OF LYNN HAVEN, BAY COUNTY, WITH THE MAXIMUM COMPENSATION FOR THE CONTRACT NOT TO EXCEED $10,285.00. MOTION CARRIED.

9. Information Regarding Permitting of Wells in Delineated Areas of Southern Escambia County

Mr. Barr stated that the Department of Environmental Protection has delineated a portion of Escambia County as an area of potential groundwater contamination. The delineation was based on the existence of numerous contamination sites within the area. Among the sites are the Agrico Chemical and Escambia Treating sites. The District has not issued any permits for the construction of domestic potable supply wells within the area affected by the Agrico and Escambia Treating contamination. Over the last 10 years the District issued about 51 construction permits in this area and all 51 were for non-potable purposes. Based on the last five years, approximately two to three permits are issued annually. The majority of these permits are for landscape irrigation wells for individuals who would rather use a well for landscaping purposes than water obtained from Escambia County Utilities Authority. Recent studies have been done using all available data, which indicates that there may be some health issues related to the Agrico site. Regarding the Agrico site, the EPA has designated an area within which ongoing monitoring is presently being conducted. Regarding the Escambia Treating site, the EPA is currently conducting investigations to better determine the extent of contamination. If the Board would like to consider putting in place a moratorium on the construction of small irrigation wells, staff thinks the EPA-delineated Agrico area would be a good boundary for the moratorium. In the absence of a similar delineation for Escambia Treating, staff examined the existing plume delineations and drew a boundary that encompassed the Escambia Treating plumes. Mr. Barr said that if it is the Board's desire, then staff would recommend that a well construction moratorium be declared in the Agrico and Escambia Treating contamination area. The moratorium is not to apply to any wells associated with investigation, monitoring, or remediation of ground or surface waters.

MOTION BY MS. RILEY, SECONDED BY MR. BODIE, THAT THE GOVERNING BOARD DECLARE A WELL CONSTRUCTION MORATORIUM IN THE AGRICO/ESCAMBIA TREATING CONTAMINATION AREA AS GENERALLY DESCRIBED BY THE STAFF. THIS MORATORIUM IS NOT TO APPLY TO ANY WELL ASSOCIATED WITH THE INVESTIGATION, MONITORING, OR REMEDIATION OF GROUND OR SURFACE WATERS.

Mr. Barr introduce Mr. Jeff Wagner, an environmental consultant with USR.

Mr. Wagner said that as part of the EPA Record of Decision for the Agrico site, it is USR's charge to eliminate the exposure to groundwater from these irrigation wells. It is a voluntary program, as we do not have any regulations to prevent the installation of new wells. Wells in the area were inventoried using the District's construction permitting database and then a door-to-door well survey through that entire area was performed. Our records show that there are 60 wells in that area. We sampled 12 out of the 60 wells and out of the 12, several had problems with perchloroethylene contamination. This contamination (PCE) is not associated with the Agrico plume. As an incentive for abandonment of these wells we have offered to abandon the wells and switch them over to the Escambia County Utilities Authority system and to also pay them $5,000 for their time. Even with the $5,000 incentive no one wants to have their well abandoned.

AT THIS POINT THE MOTION CARRIED.

10. Legal Counsel Briefing

Mr. Doug Stowell reported on items found in his litigation report.

Mr. Stowell said that at last month's Governing Board meeting we discussed the provisions of Section 373.083, Florida Statutes, which were recently amended to allow the Governing Board to delegate powers, duties and functions to the Executive Director or other staff members. As a result of that discussion, the Board directed that we bring back to the Board some thoughts with regard to what responsibilities and activities could be delegated. Mr. Stowell referred to a memo he provided to the Board and said that potential delegations are categorized into three categories: Procedural and Permitting, Administrative and Lands. He explained the benefits of delegating authority and said that the list of potential areas for delegation of authority is not intended to be an exhaustive list, but is intended to provide a framework for discussion of the kinds of activities the Board may feel comfortable in delegating to the Executive Director or others.

The Board requested time to review the list of potential areas for delegation of authority to the Executive Director or others.

11. Executive Director Briefing and Announcements

Mr. Barr gave brief updates on the ACF Compact negotiations, Regional Water Supply Plan, drought conditions, legislative matters and streamlining initiatives.

12. Consideration of Committee Schedule for March Governing Board Meeting

Ms. Carolyn Wise presented the schedule of committee meetings to be held in conjunction with the March 22, 2001, Governing Board meeting. The meetings will be held at District headquarters. Times listed are Eastern Standard.

13. Administrative Detail

Chairman Roberts recommended that Mr. Price serve as chairman for the District Lands Committee in March since that meeting will be held before the election of officers.

Mr. Price agreed to do so.

Chairman Roberts thanked Mr. Barr, staff and Board members for an outstanding learning experience and a rewarding 12 years as a member of the Governing Board.

Meeting was adjourned at 4:20 p.m.

J. Russell Price, Chairman	March 22, 2001 Date
Executive Director	Agency Clerk

Miller.Scott@epamail.epa.gov
11/01/2010 09:41 AM

To Jeffry_Wagner@URSCorp.com
cc
bcc
Subject Required Electronic Data Submittal

History: This message has been forwarded.

Jeffry,
Good morning, as a heads-up here. Referenced is a guidance memorandum from EPA Region 4's Superfund Division Director requiring that all environmental sampling data is required to be submitted in an electronic format.

The data submittal requirements may be found here:

http://www.epa.gov/region4/waste/sf/edd/edd.html

The guidance document may be found here:

http://www.epa.gov/region4/waste/sf/edd/edd_sf_dd_memo_final.pdf

Please plan to provide environmental sampling data in this electronic format for future submittals in addition to the standard reporting that has been previously done.
If you have questions related to this requirement, please contact me via reply e-mail or at the number below.

Thank you,
Scott Miller
Remedial Project Manager
Superfund Division
Superfund Remedial Branch
Section C
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303
Phone (404) 562-9120
Fax (404) 562-8896

APPENDIX E

OU-1 Bi-Annual Inspection Report

Agrico Chemical Site
Pensacola, Florida

ROUTINE FACILITY INSPECTION CHECKLIST AGRICO CHEMICAL SITE, PENSACOLA FLORIDA	SATISFACTORY	UNSATISFACTORY	DATE CORRECTED	INITIALED	REMARKS
GENERAL FACILITY AREA					
Gates and Locks Secured	X				All gates and locks are secure and in proper working condition.
Perimeter Fencing	X				Fence is in good condition. Some baarbed-wire east of the main gate is damaged due to falling tree limbs. No site access issues.
Signage	X				Signs are in place and in good condition.
Roadway Conditions	X				All roadways are in good condition.
COVER SYSTEM					
Surface Water Runoff Controlled	X				In good condition.
No Ponding Water On Cover	X				None observed.
No Sideslope or Top Erosion or Gullying	X				None observed.
Topsoil and Vegetation Intact	X				In good condition.
Settlement/Cracking Inspection	X				No settling or cracking observed.
SURFACE WATER COLLECTION SYSTEM					
No Obstructions of Culverts or Inlets	X				None observed.
Inlet Sediment Controls Intact	X				In good condition.
No Erosion of Drainage Ditches or Berms	X				None observed.
Detention Ponds Draining Adequately	X				Only the north pond contains water. South Pond has scattered wet areas.
Side Slope Erosion of Detention Ponds	X				South and north walls of south pond have some minor erosion along base of slope which is beginning to grow over with vegatation.
Leaks, Structural Damage to Inlets, Culverts, or Pipes	X				None observed.

INSPECTION PERIOD: May 2013 Bi-Annual Inspection Report

INSPECTED BY:

NAME: Eric J. Mann
SIGNATURE: [signature]
DATE: 5/30/2013

OU-1 Bi-Annual Inspection Report

Agrico Chemical Site
Pensacola, Florida

ROUTINE FACILITY INSPECTION CHECKLIST AGRICO CHEMICAL SITE, PENSACOLA FLORIDA	SATISFACTORY	UNSATISFACTORY	DATE CORRECTED	INITIALED	REMARKS
GENERAL FACILITY AREA					
Gates and Locks Secured	X				All gates and locks are secure and in proper working condition.
Perimeter Fencing	X				Fence is in good condition. Some baarbed-wire east of the main gate is damaged due to falling tree limbs. No site access issues.
Signage	X				Signs are in place and in good condition.
Roadway Conditions	X				All roadways are in good condition.
COVER SYSTEM					
Surface Water Runoff Controlled	X				Runnoff control in good condition.
No Ponding Water On Cover	X				None observed.
No Sideslope or Top Erosion or Gullying	X				None observed.
Topsoil and Vegetation Intact	X				In good condition. Good rain this year improved vegetation.
Settlement/Cracking Inspection	X				No settling or cracking observed.
SURFACE WATER COLLECTION SYSTEM					
No Obstructions of Culverts or Inlets	X				None observed.
Inlet Sediment Controls Intact	X				In good condition.
No Erosion of Drainage Ditches or Berms	X				None observed.
Detention Ponds Draining Adequately	X				Only the north pond contains water. South Pond has scattered wet areas.
Side Slope Erosion of Detention Ponds	X				South and north walls of south pond have some minor erosion along base of slope which is beginning to grow over with vegatation.
Leaks, Structural Damage to Inlets, Culverts, or Pipes	X				None observed.

INSPECTION PERIOD: **November 2013 Bi-Annual Inspection Report**

INSPECTED BY:

NAME: Eric J. Mann
SIGNATURE: [signature]
DATE: 11/25/2013

s:/williamsconoco/Deliverables/2010/Inspection Report/Inspection form_Nov_2012.xls

APPENDIX F

URS

October 31, 2013 ***Submitted Electronically to: miller.scott@epa.gov***

Mr. Scott Miller
Remedial Project Manager
Superfund Remedial and Technical Services Branch
U.S. Environmental Protection Agency, Region 4
Atlanta Federal Center
61 Forsyth Street
Atlanta, Georgia 30303-8960

Subject: Evaluation of Monitored Natural Attenuation in Groundwater, Report #2 – October 23, 2013, Agrico Site, Pensacola, Florida by Quantitative Decisions – William A. Huber, Ph.D. EPA ID: FLD 98022 1857

Dear Mr. Miller:

URS Corporation (URS) on behalf of Phillips 66, successor to ConocoPhillips, Inc. and Williams representing Agrico Chemical Company is submitting this Report for the Agrico Site in Pensacola, Florida. The report is "***Evaluation of Monitored Natural Attenuation in Groundwater, Report #2, Agrico Site, Pensacola, Florida, October 23, 2013 by William A. Huber, Ph.D., Quantitative Decisions (Rosemont, Pennsylvania)".***

This report is a follow-up to the August 19, 2009 Huber Report which provided a quantifiable evaluation of the effectiveness of the Monitored Natural Attenuation (MNA) remedy for the Agrico site. This October 23, 2013 report follows the methods and method recommendations conveyed in the August 19, 2009 report. This MNA evaluation also is supplementary and supports the regression analyses and concentration trend analysis presented in the URS 2012 Annual Report (March 29, 2013).

Report #2 continues to show that the MNA remedy for the Agrico site is effective and functioning as expected. The projected ranges of cleanup dates remain similar to previous projections. Combined radium activities have stabilized during the past four years of monitoring. Although the evaluation recommended a reduction in sampling frequency for select monitoring wells, the PRPs have chosen to maintain the existing sampling plan. As more data becomes available in the future, the appropriateness of the monitoring frequencies will continue to be evaluated and future recommendations may be made.

URS Corporation
1625 Summit Lake Drive,
Suite 200
Tallahassee, Florida 32317
Tel: 850.574.3197
Fax: 850.576.3676

Should you have any questions or require additional information regarding this report, please contact Ms. Terry D. Vandell (Phillips 66) at (580) 767-6561 or Mr. John Carey (Williams) at (918) 573-8215.

Sincerely,

Jeffry R. Wagner, P.G., V.P.
Principal Hydrogeologist

JRW:lc

Enclosure

cc: Walsta Jean-Baptiste – FDEP, Hazardous Waste Cleanup Section, Tallahassee (1 copy + 1 CD)
Karen Shea, FDEP, Northwest District, Pensacola (1 copy + 1 CD)
Terry Vandell–Phillips 66 (1 copy + 1 CD)
John Carey – Williams (1 copy + 1 CD)

Evaluation of Monitored Natural Attenuation in Groundwater, Report #2

Agrico Site, Pensacola, Florida

October 23, 2013

Introduction and Background

This report presents the second analysis of monitored natural attenuation (MNA) in groundwater monitoring data collected at the Agrico Site in Pensacola, Florida through 2012. It follows the methods and recommendations conveyed in the URS Corporation (URS) August 19, 2009 *Evaluation of Monitored Natural Attenuation In Groundwater, Agrico Site, Pensacola, Florida* prepared by Dr. William A. Huber as submitted to and accepted by USEPA Region IV and FDEP. This MNA evaluation also is supplementary and supports the regression analyses and concentration trend analysis presented in the URS 2012 Annual Report (March 29, 2013).

Because the 2009 MNA submittal provides all background information and descriptions of the procedures, the present report summarizes the 2009 results, proceeds to describe the new data, applies the procedures to the collective dataset, and interprets the results. It concludes with recommendations for future groundwater monitoring.

Background: the 2009 results

The 2009 MNA Report recommendations and ensuing actions were:

(1) Continue the current monitoring program. The measurement frequencies at that time, typically annual, were found to be appropriate for the cleanup period (up to 70 years from 1997). Based on the 2009 evaluation, EPA on October 15, 2009 requested that the AC-9D2, AC-24D and AC-28D sampling frequency be changed from every 5 years to annual. The request was implemented beginning with the November 2009 sampling event.

(2) Discontinue monitoring arsenic and lead. This recommendation was implemented. For separate reasons, arsenic is still being monitored in groundwater from monitoring well AC-2S.

(3) Periodically apply the following formal analyses of the data:

a. Estimates of point attenuation rates (using Ordinary Least Squares regression of log concentrations against time), anticipating that over time they would eventually accelerate.

b. Estimates of cleanup times (based on inverse regression), anticipating that they would remain stable on average.

c. Calculation of upper prediction limits (UPLs) and lower prediction limits (LPLs) for future data in order to anticipate progress between review periods.

d. Comparison of the most recent data to the previous prediction limits to assess the most recent progress.

The recommended calculations have been performed where possible and are described below. (They are applicable only to parameters in wells that have exceeded their cleanup targets and have exhibited the peak concentrations expected from a groundwater plume migrating past the wells.)

The 2009 evaluation was based on limited data (often the minimum amount needed to perform the statistical procedures) and the results were accordingly uncertain. As time goes on and more data are collected, the results will become less variable and more reliable. Changes in projections (such as the confidence limits and prediction limits that are calculated) between 2009 and 2013 were to be expected and are noted herein. Future changes in projections will also naturally occur, but on the whole are expected to be smaller in magnitude than the changes documented here.

Performance standards

Monitored natural attenuation is part of a coherent set of actions intended to limit and reduce the concentrations of Site-derived materials in the groundwater. The EPA has established "performance standards" for the area. These are concentrations to be achieved throughout the groundwater plume; that is, cleanup targets:

Analyte	**Target**	**Natural Logarithm**	**Basis**
Chloride	250 mg/L	5.52	Florida standard
Fluoride	4 mg/L	1.39	2 mg/L for potable supply
Nitrates[1]	10 mg/L	2.30	
$^{226}Ra + ^{228}Ra$	5 pCi/L	1.61	MCL
Sulfate	250 mg/L	5.52	Florida standard

[1] Represented in the database primarily by combined nitrite + nitrate concentrations (as N). Nitrite was approved for deletion by EPA from the site's analyte list in 2006.

The Data

Data were collected and recorded by URS and delivered in an Excel spreadsheet comprising the entire history of relevant monitoring data from October, 1990 through November, 2012 (consisting of 2,471 rows, one per observation). They represent monitoring results for seven parameters at 44 wells: chloride, fluoride, nitrate as N (“nitrate-n”), nitrates plus nitrites as N (“nitrate+nitrite, n”), radium-226, radium-228, and sulfate.

The information for each observation includes a numeric result (if detected) or a detection limit (if not detected) along with the usual identifying information: sample date, sample location name (consisting of a well name and the unit it monitors), and name of analytical parameter, along with additional information including three “qualifier” fields.

Results were flagged as “nondetects” whenever a detection limit was provided *and* at least one of the following occurred:

- the `DL_QUALIFIER` was “J”, “U”, or “<” *or*
- the `WC_QUALIFIER` was “U” or “<” *or*
- the `RESULT` value was nonzero but less than the detection limit (and the parameter was not a measurement of radiation activity) *or*
- the `RESULT` was zero.

Some records represent replicate measurements: that is, multiple results obtained for a parameter at a well on the same date. To avoid biasing the subsequent calculations, groups of replicate measurements were merged into a single value by taking the arithmetic average of the separate numeric values. Whether or not at least one of the replicates is a nondetect, or whether all the replicates are nondetect, was also recorded. The resulting database contains 2,457 separate observations.

Preprocessing for the formal statistical analyses

Calculations were conducted separately for each analytical parameter, with the most attention paid to fluoride. The most stringent performance standard—that is, the one currently expected to take the longest time to reach—is that for fluoride (4 mg/L). This parameter therefore is of principal interest.

Because many of the earliest results had previously been noted as unusual and necessarily preceded the onset of natural attenuation, which only began in earnest by April 1997 when the source remedial activities were completed, all data before 1995 were eliminated.

Next, only wells having at least one value above the performance standard were retained for evaluation. For fluoride, these are wells AC-12D, AC-13D, AC-24D, AC-25D, AC-28D, AC-29D, AC-2S, AC-30D, AC-34S, AC-35D, AC-3D, AC-7SR, AC-9D2, and NWD-2S.

An initial graphical survey of the data indicated some outlying values, especially for fluoride during the 1990's and early 2000's. At this point these were manually flagged as outlying, which enabled the statistical procedures optionally to exclude them. Outliers *are* routinely shown in graphical displays in this report.

Because the amount of data available for the planned analyses is still relatively small, ranging from four to about two dozen observations per parameter per well, unusual or outlying values can have important effects on the results. To counter this, a *robust* version of ordinary least squares (OLS) fitting was used, implemented as "iteratively re-weighted least squares" (IWLS or IRLS). This method initially uses OLS, then examines the residuals and downweights those that are far from the fitted curve. Subsequent iterations use weighted least squares, with unit weights assigned to most points and weights smaller than 1 assigned to the downweighted points. After each iteration, points are re-weighted according to the amount by which they deviate from the fit. The procedure is continued until convergence. In effect, it fits all or most of the data without allowing large departures from the fit to affect it adversely. Calculations were performed using the `rlm` function in the `MASS` add-in to the `R` statistical computing platform, version 2.15.0 [Ripley *et al.* 2013].

In the 2009 MNA submittal, *ad hoc* methods were used to identify ranges of possible peak times at each well. In order to establish a more objective procedure, these peaks are now provisionally identified by regressing the log concentrations over time and including a quadratic term to allow for the "curvature" near the peak. This means that the temporal evolution of the non-outlying data y_i = log(result) is approximated as

$$y_i = \beta_0 + \beta_1 t_i + \beta_2 t_i^2 + \varepsilon_i \qquad (1)$$

where t_i denotes the date of observation (in years), β_0, β_1, and β_2 are constant coefficients, and ε_i are independent random variables representing deviations between the observations (on the left hand side) and the values as computed on the right hand side. The date of any peak can be identified by estimating the coefficients as b_0, b_1, and b_2, respectively, and computing the value $t_{\text{peak}} = -b_1 / (2b_2)$ provided b_2 actually is negative (for otherwise this formula identifies an apparent "trough," or local minimum, of the concentration). (All these fits are presented graphically in Appendix 2.)

Only wells that have passed their apparent peaks (or had no peaks but have consistently exhibited declining concentrations over time) are candidates for further statistical analysis. In order to carry out that analysis, a sequence of at least three observations is needed. Because most sampling is annual, the estimated peak must therefore occur before the year 2013 – 3 = 2010. Once the peaks are found, subsequent analysis of natural attenuation is performed on all data occurring on or after the peak. (If no peak is found, all the data are used.) Thus the calculations reflect *average* attenuation during the period from the peak to the present. As discussed in the 2009 submittal, this method conservatively underestimates point attenuation rates and overestimates cleanup dates. It is expected that as data accumulate over time, a less conservative procedure can be adopted which more accurately reflects current attenuation rates rather than average rates. (Rates are, by definition, zero at any peak and accordingly make the average look smaller than current rates.)

Because data before (approximately) 2000 tend to have many outlying or unusual values, additional judgment was applied to limit the data used for some analyses, as noted in appropriate sections below. In all cases the most recent data were retained back to a well- and parameter-specific date, before which older data were not used.

To evaluate the combined radium results and to assess parameter correlations, it was necessary to match ^{226}Ra and ^{228}Ra data by time and location (to sum them) and to match all data, regardless of analyte, by time and location (to compare them). To facilitate this, all data were assigned to a "period" consisting of the calendar year in which the sample was taken. In case multiple results were available, they were averaged to represent the entire period. The average was flagged with indicators of whether any or all of its aliquots were considered nondetects. Data were then joined by well and period identifiers. The Ra^{226} and Ra^{228} results were summed into a combined radium value whenever both were available and otherwise the combined radium result was flagged as missing.

Results

Fluoride

Peak detection

The candidate wells for natural attenuation analysis, and their estimated peak dates, are

AC-7SR	NWD-2S	AC-2S	AC-3D	AC-29D	AC-24D	AC-30D	AC-34S	AC-35D
1995.7	NA	1996.1	1979.9	NA	2009.6	2002.8	NA	2002.6

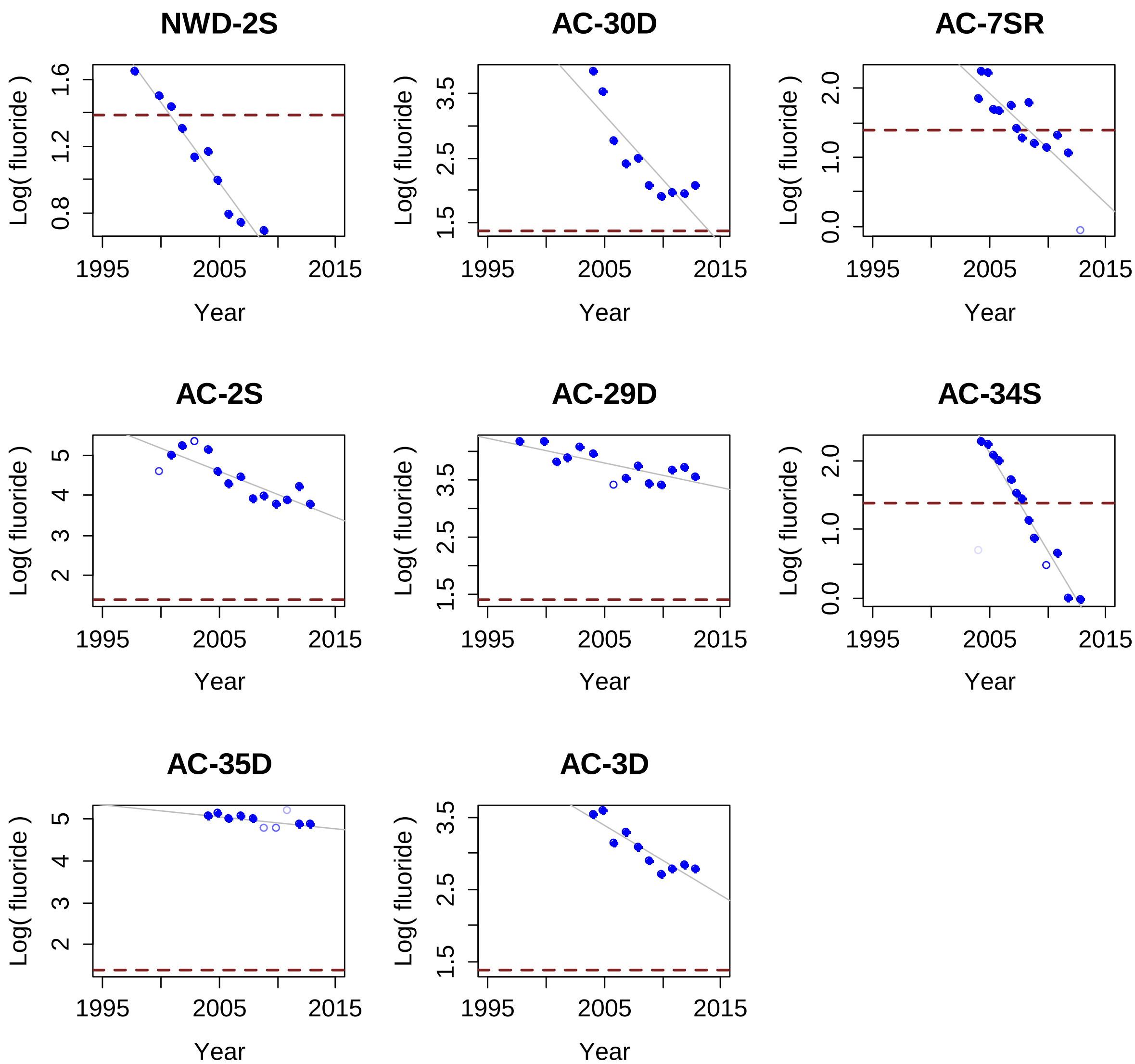
The "NA" results indicate no peak was found before 2010: further analysis will show whether concentrations in those wells should be considered increasing or decreasing. As in the 2009 submittal, the wells are ordered approximately from upgradient to downgradient, left to right.

Any peak estimated to have occurred on or before the beginning of data collection (1995) merely reflects the presence of a downwards trend without significant evidence of a preliminary peak. Wells located within or immediately downgradient of the source would exhibit such behavior. Possibly, natural variation in observations made in wells somewhat further from the source (a few hundred meters) could mask the peak and lead to such early estimates. In any event, it is evident that fluoride has been decreasing in AC-7SR, AC-2S, and AC-3D, where early peaks are estimated.

The recent peak estimate of 2009.6 for AC-24D indicates that observations just before and just afterwards—that is, the most recent ones—must have been relatively constant (which is the case). The estimate of this peak is influenced by an unusually low concentration observed in 1997. Due to the sparse monitoring (every five years until 2009 and annually since then), this estimate of the peak time may be unreliable and could change substantially when more data are collected.

Line fitting

The (robust) OLS fits are shown as slanted gray lines in the following plots. The dots represent the data, with open dots showing data that were downweighted by the IWLS procedure (lighter open dots were downweighted more than the darker open dots: an example appears in the plot for AC-34S). For reference, thick dashed horizontal red lines are drawn at the performance standard of 4 mg/L. All plots show the natural logarithms of the fluoride results on the vertical axis. They share the same range of dates from 1995 to 2015, but allow the range on the vertical axis to vary so that the most detail can be seen. (The interval from 2012—the most recent year in the dataset—to 2015 is shown to facilitate visual extrapolation of the data into the near future.)



All data following a possible visually apparent peak at each well are included:

Data selection

Well	Starting date
AC-7SR	2004
AC-2S	1999
NWD-2S	1995
AC-3D	2003
AC-29D	1995
AC-30D	2003
AC-34S	2004
AC-35D	2001

These eight wells show decreases over time and therefore remain viable candidates for the attenuation analysis. The relatively close scatter of the data around the lines in these plots indicates the fits are sufficiently good approximations to the data to be useful for further attenuation analysis.

Point attenuation rates

	N data	Half-life (yr)	Rate (/yr)	LCL (/yr)	UCL (/yr)	MSE %
AC-7SR	24	8.89	0.078	0.055	0.101	23.0
AC-2S	14	6.08	0.114	0.069	0.159	36.3
NWD-2S	10	7.15	0.097	0.082	0.111	8.2
AC-3D	10	7.15	0.097	0.067	0.127	17.3
AC-29D	14	16.12	0.043	0.022	0.064	24.0
AC-30D	10	3.48	0.199	0.127	0.272	46.3
AC-34S	14	2.43	0.285	0.253	0.317	18.0
AC-35D	10	23.90	0.029	0.006	0.051	6.9

The amount of data available for each well ranges from 10 through 24 separate observations, adequate for characterization of the slopes and potentially for extrapolation into the future. The half-lives are typically short, with three-quarters of them between 2.4 and 8.9 years.

(Because judgment was used in determining which of the earliest data were likely not to represent subsequent attenuation, and thereby to exclude from the analysis, the sensitivity of the results presented in this and the following tables was assessed by computations using slightly different amounts of data at each well. Of course the estimates, the confidence limits, and the prediction limits do change slightly, but none of these changes appreciably affect any of the conclusions.)

The LCL (lower confidence limit) and UCL (upper confidence limit) are each one-sided 95% confidence limits for the rate. For example, the LCL for AC-29D of 0.022/yr is constructed to have a 95% chance of being *less* than the true average point attenuation rate during the period covered by these data (1997 through 2012, according to the plot). Because all LCLs are positive, these results indicate concentrations have been decreasing exponentially over time at all eight of these wells.

The MSE (mean squared error) measures the vertical scatter of the points around their fitted lines (on the logarithmic scale). Small values indicate a close match between the line and the data; larger values suggest some mismatches or larger variability. A value above 0.50 (50%) coupled with a low rate would make it difficult to extrapolate forward with adequate reliability. These MSE values are all small enough to support extrapolation. The relatively large MSE of 36% at AC-2S is due to a nonlinear sequence of values observed between 2000 and 2005. To improve the fit (and lower the MSE), one might view the outlying value in 1999 as being uncharacteristically low, in which case the estimated rate would be substantially higher; or one might view the outlying peak in 2002 as being uncharacteristically high, in which case the estimated rate would be slightly lower. Resolving the question of which of these older data, if either, is characteristic of the trend will need to await future data: as time progresses, older data will have progressively less bearing on the estimates.

The relatively large MSE of 46% at AC-30D is due to an apparent change in trend during the last three years. This causes the fitted line to be less steep than it was previously and increases the scatter of all the data around the line. The mean of the most recent two values exceeds the upper prediction limit computed in 2009 (see below), providing evidence of a recent decrease in the point attenuation rate at this well.

Estimated cleanup dates

	Cleanup year	LCL year	UCL year	2009 estimate	LCL (2009)	UCL (2009
AC-7SR	2008.5	2007.8	2008.8	NA		
AC-2S	2033.3	2029.5	2038.3	2020	2016	2025
NWD-2S	2000.8	2000.3	2001.3	NA		
AC-3D	2025.7	2022.7	2030.2	2019	2016	2025
AC-29D	2060.8	2052.2	2073.1	2041	2030	2069
AC-30D	2014.0	2012.8	2015.8	2010	2009	2011
AC-34S	2007.6	2006.9	2007.5	NA		
AC-35D	2133.9	2109.9	2173.7	2032	NA	NA

The estimated cleanup dates are obtained by extrapolating the fitted lines forward until they reach the performance standard. The LCL and UCL are “fiducial intervals” around those estimates, constructed *via* inverse regression as described in the 2009 submittal. They function similarly to the confidence limits for the rates: the LCL is constructed to have a 95% chance of being too early, while the UCL is constructed to have a 95% chance of being too late. For comparison, the 2009 estimate and its LCL and UCL are copied from Table V in the 2009 submittal: they were based on data available through 2008.

Because the UCLs for cleanup date at AC-7SR and NWD-2S are in the past, the data provide significant evidence that the performance standard has been met at these wells.

As noted in the introduction, data collected since 2009 are *expected* to change the estimated cleanup dates. It is of interest to evaluate whether those changes tend to stay within the confidence intervals. The preceding table lists five 2009 estimates. Confidence intervals could be established for four of them. In all cases, either the new estimate of the cleanup year is beyond the 2009 UCL or the 2009 estimated cleanup year is before the new LCL.

These apparent inconsistencies may be partially due to how data have been selected for analysis. There are three kinds of wells: those whose peaks came early and are now showing high attenuation rates; those whose peaks are uncertain because concentrations are not changing rapidly; and those that clearly have not yet experienced their peaks. The five wells with 2009 cleanup date estimates are all in the middle group, where uncertainty is greatest. The estimates and the confidence limits for these wells are sensitive to how data are selected for fitting and they will be highly uncertain in any case because the expected acceleration of attenuation rates has not yet set in.

Retrospective prediction limits

To check that attenuation is proceeding as expected, current data are compared to prediction limits based on previous data. In the 2009 submittal, prediction limits were computed for the average (geometric mean) of planned 2012 and 2013 data. Because the 2013 data have not yet been collected, this comparison will be made by averaging the two most recent data—usually from 2011 and 2012—and comparing those to retrospectively computed prediction limits based only on the data that were available at the time of the 2009 submittal.

	LPL (mg/L)	UPL (mg/L)	Geo mean (mg/L)	Value 1	Value 2	Date 1	Date 2
AC-7SR	2.02	5.85	**1.65**	2.9	0.94	2011.9	2012.8
AC-2S	11.99	190.70	54.07	68.0	43.00	2011.9	2012.9
NWD-2S	1.71	2.40	2.05	2.1	2.00	2006.9	2008.9
AC-3D	7.81	31.10	16.49	17.0	16.00	2011.9	2012.9
AC-29D	15.47	43.24	37.88	41.0	35.00	2011.9	2012.9
AC-30D	1.04	4.21	**7.48**	7.0	8.00	2011.9	2012.9
AC-34S	0.75	1.38	0.98	1.0	0.97	2011.9	2012.9
AC-35D	83.52	157.72	130.00	130.0	130.00	2011.9	2012.9

These 2009 prediction limits (shown in the “LPL” and “UPL” columns) form an interval constructed to have a 95% chance of including the mean value (the “Geo mean” column). For six of the eight wells, the intervals indeed cover the prediction interval. In AC-7SR, the recent values have been lower than predicted, due primarily to the very low value of 0.94 mg/L observed in late 2012 (shown in the “Value 2” column, with its sample date in the “Date 2” column). In AC-30D, the recent values have been higher than predicted.

These results constitute significant evidence that recent concentrations in AC-7SR are lower than anticipated and recent concentrations in AC-30D are higher than anticipated.

Prospective prediction limits

To set the stage for the next five-year review, provisional prediction limits have been calculated for the geometric mean of hypothetical data to be collected on or near the middle of 2017 and 2018.

	LPL (mg/L)	UPL (mg/L)
AC-7SR	0.39	2.0
AC-2S	9.72	53.7
NWD-2S	0.56	1.0
AC-3D	4.98	14.3
AC-29D	14.69	43.4
AC-30D	0.44	7.3
AC-34S	0.13	0.3
AC-35D	89.1	136

Spatio-temporal considerations

The most distant estimated cleanup date is in 2134 for AC-35D (the one-sided 95% confidence limits are 2110 to 2174). This well is far downgradient of the site, located just west of the Bayou. In 2009 it was not possible to estimate a cleanup date for this well, because it had not yet exhibited signs of attenuation. As the 2009 submittal explained, attenuation at any location is expected to occur only when a plume—whose leading edge is becoming more spread out over time—finally passes that location. Before and during that period, concentrations of the primary constituents (fluoride and chloride) will appear to be randomly fluctuating around a stable (peak) level. Beginning a few years after the peak, depending on how variable the data are, attenuation will become noticeable in the time series plots but be impossible to estimate: this is where AC-35D was in 2009. (A comment in Table IV of the 2009 submittal noted "Peak is very flat.") As more time passes, the attenuation rate will first become estimable, yet be unrealistically low and uncertain. This seems to be where AC-35D is now. The attenuation rate will increase over time, but its estimates may vary erratically at first. Once a peak has been *definitively* identified and then approximately eight observations are available during the subsequent accelerating period, it will become possible to make a reliable estimate of the attenuation rate.

The salient consequences of this analysis are

1. Wells that presently exhibit low attenuation rates will (a) have wide confidence levels for time to cleanup and (b) may exhibit wide swings in the estimated time to cleanup until the plume definitively passes them by.

2. Predicted times to cleanup for the most-downgradient wells in the central portion of the plume, which includes AC-35D, AC-30D, AC-29D, AC-28D, and AC-24D, will be unrealistically long until the plume clearly passes those wells.

"Clearly passes" in the second point refers to that future time when accelerating and consistent attenuation are exhibited. At the time the peak is first (tentatively) identified at any well, its presence is highly uncertain. Even afterwards, changes in local groundwater velocities may cause deviations from the theoretical ideal of a single peak passing through each fixed monitoring point. Higher-concentration portions of the plume may spread laterally under the influence of varying flow directions and cause periods when attenuation is masked by the lateral movement of the plume.

Radium

Trends over time

The reader is referred to the August 19, 2009 MNA report, pages 7-13, for discussion of radium fate and transport. As stated, *"Radium, however, is so strongly retarded under any conditions that the elevated radium activities observed downgradient cannot reasonably be attributed to radium released near the Site."* In Table VI of the 2009 submittal, attenuation rates were estimated for 11 deep monitoring well locations and two shallow well locations. Most were based on five to eight observations. As a result of these relatively small amounts of data, prediction limits for the mean 2012/2013 combined radium values covered wide ranges, often spanning an order of magnitude or greater. Presently, four additional observations obtained in 2009 through 2012 are available.

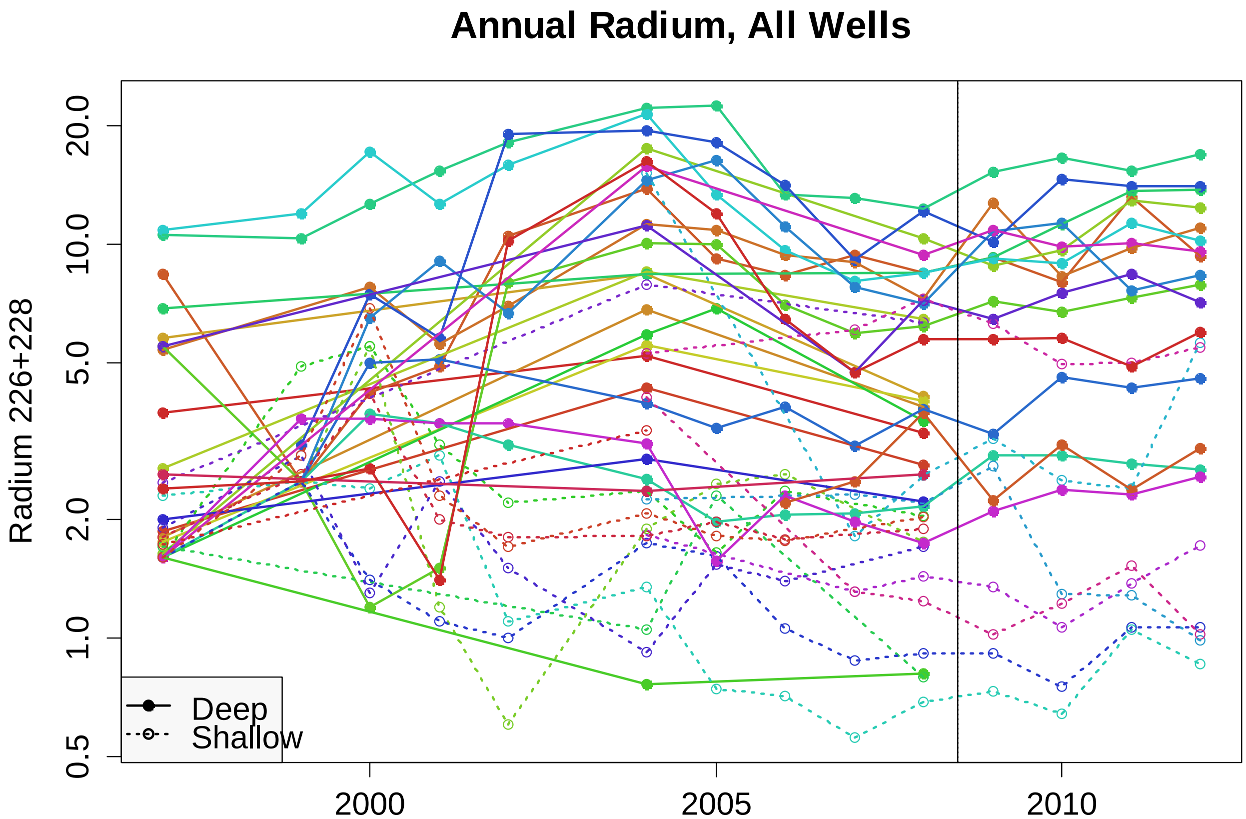
The analysis begins with an overview of the combined radium data, plotted as overlaid time series. The next figure uses a logarithmic axis (showing activity in pCi/L), differentiates wells by color, and uses different symbols to distinguish deep wells from surficial wells. General impressions afforded by this plot are

1. There has been less temporal variation during the last four years than previously.

2. The rate of attenuation that had been apparent in many wells during the 2004 – 2008 period has generally not continued.

3. Radium activity however, appears to be stable—neither significantly increasing nor decreasing—during the last four years.

4. Radium activity in deep wells (typically 2 to 15 pCi/L)—the ones monitoring the Main Producing Zone—tend to be higher than those in shallow wells (typically ½ to 5 pCi/L), which are the ones monitoring the Surficial Zone.



Apparent exceptions to the impression of recent stability occur in AC-34S, whose combined radium activities have decreased from 2.73 pCi/L in 2009 to 0.98 in 2012, and in AC-28D, whose activities have increased from 9.26 pCi to 13.78. To assess the significance of these changes, consider the 23 wells monitored for radium between 2009 and 2012. Consider any such group of 23 wells that *hypothetically* have stable activities over time but exhibit random variation around their long-term values. Among the 4! = 24 possible ways in which a sequence of four values can be ordered, there is exactly one way in which they start high and consistently decrease each time. With fluctuations occurring randomly around a stable level, all 24 ways are equally likely. Thus, 23/24—almost one—of these wells is *expected* to exhibit such a decreasing pattern (and, by the same reasoning, one well is expected to exhibit a consistently *increasing* pattern). The occurrence of one increasing sequence and one decreasing sequence out of 23 wells therefore is no surprise. Moreover, the amounts of change in these two monotonic sequences are typical of the amounts of change occurring in the other 21 wells. Therefore what has recently been observed in AC-34S and AC-28D is neither statistically significant nor of concern, but rather helps to reinforce the impression of overall stability in combined radium activities throughout the monitoring area.

Correlations with other parameters

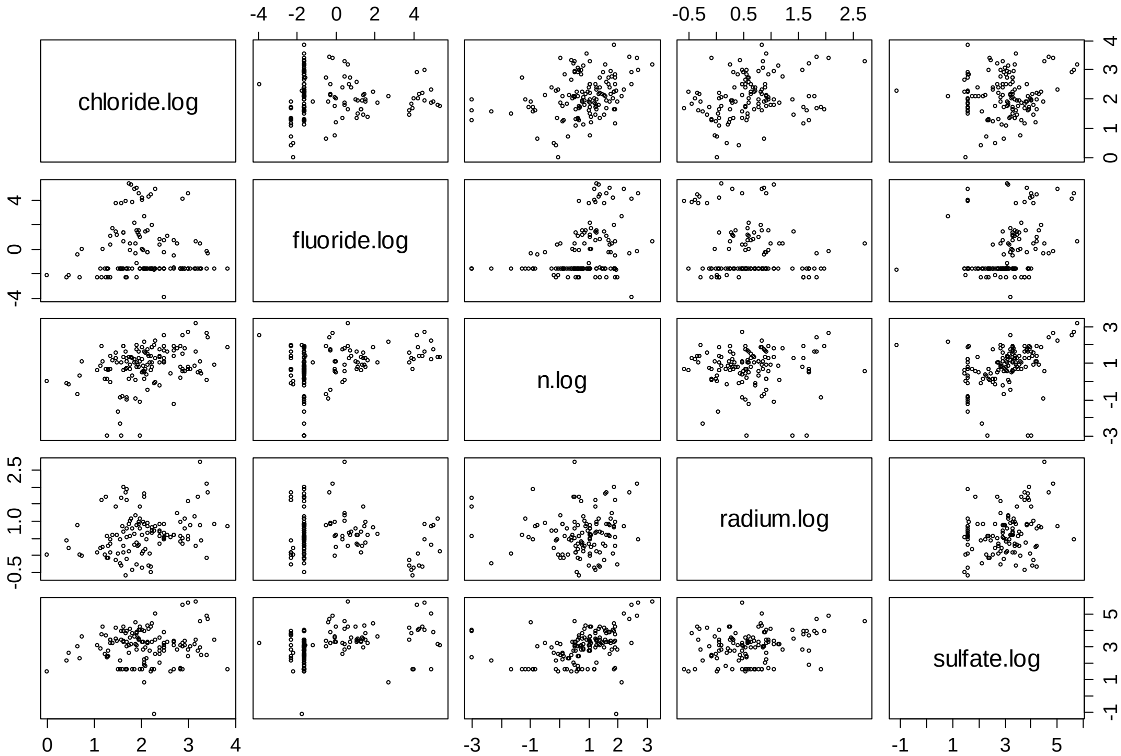
To what extent, then, should combined radium still be considered an "indicator of the overall plume"? This question can be addressed by exploring the relationships between the radium results and the rest of the monitoring parameters.

(Before proceeding, a technical issue has to be managed. From the original seven parameters, combined radium was created by summing two of them (^{226}Ra and ^{228}Ra). Two others, Nitrate as N and Nitrate+nitrite as N, are almost equivalent and closely related to each other. To use them effectively, the values of the latter, in cases where they were missing, were imputed from values of the former by regressing their logarithms and using the resulting least-squares fit to provide estimates. The relationship is so close and accurate that this imputation likely introduces little error, while enabling fullest use of the nitrate-related data.)

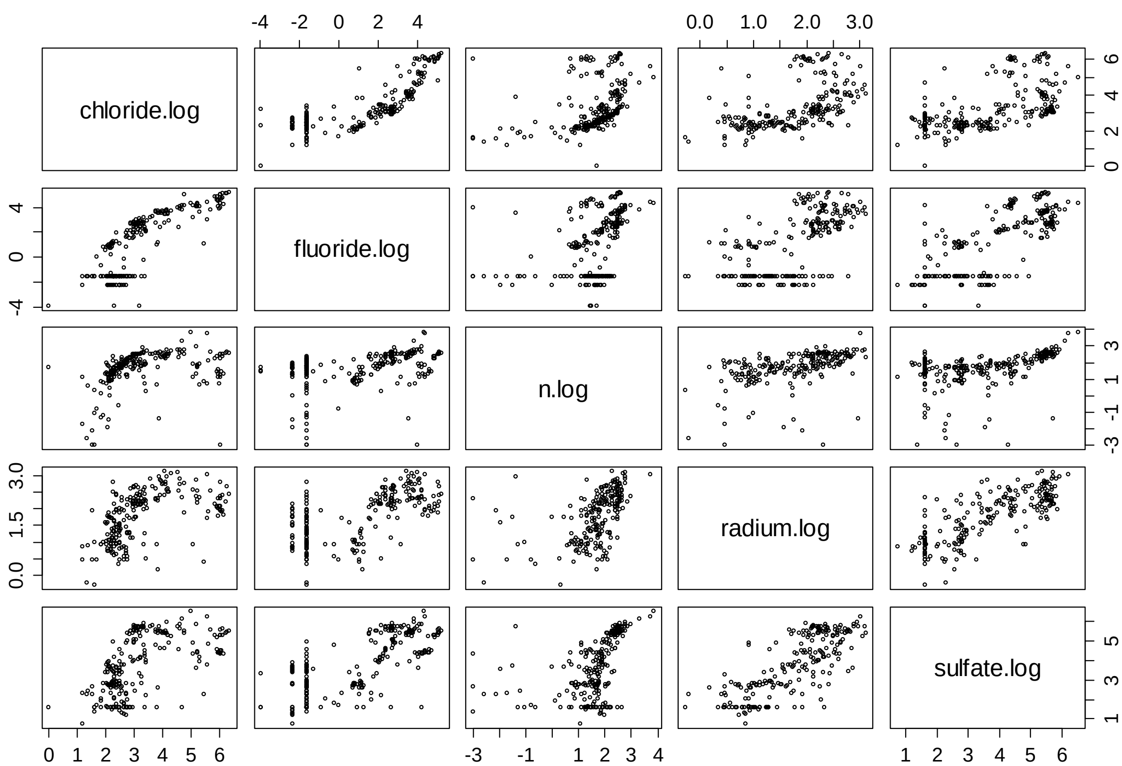
After these preliminaries, four variables are left to study in connection with combined radium: chloride, fluoride, nitrates, and sulfate. For geochemical reasons (as discussed in the 2009 submittal) a positive correlation with sulfate is expected. If indeed radium is created in groundwater from the site-derived plume—either directly or indirectly—then positive correlations with fluoride and chloride should also be evident.

An informative way to assess such correlations is with a scatterplot matrix. This is an array of scatterplots, each comparing one variable to another. As usual, logarithmic scales will be used. Because of the distinct difference in typical radium concentrations observed in the deep and surficial wells (*q.v.*), separate scatterplot matrices for each hydrological unit were generated.

Shallow wells



Deep wells



Within the surficial (shallow) wells, the expected correlations are *not* found. The second column of scatterplots from the right displays the relevant information: each of these scatterplots displays combined radium activities on the horizontal axis and concentrations of the other parameters on the vertical axis. The most important of these compares fluoride to radium: here, the correlation is strongly *negative*. The largest fluoride concentrations are associated with the *smallest* radium activities, forming a separated "cloud" of a dozen points in the upper left of that scatterplot. Complementing this is a cloud of about a dozen points at the lower right, where radium has the highest activity and fluoride concentrations are low or not detected.

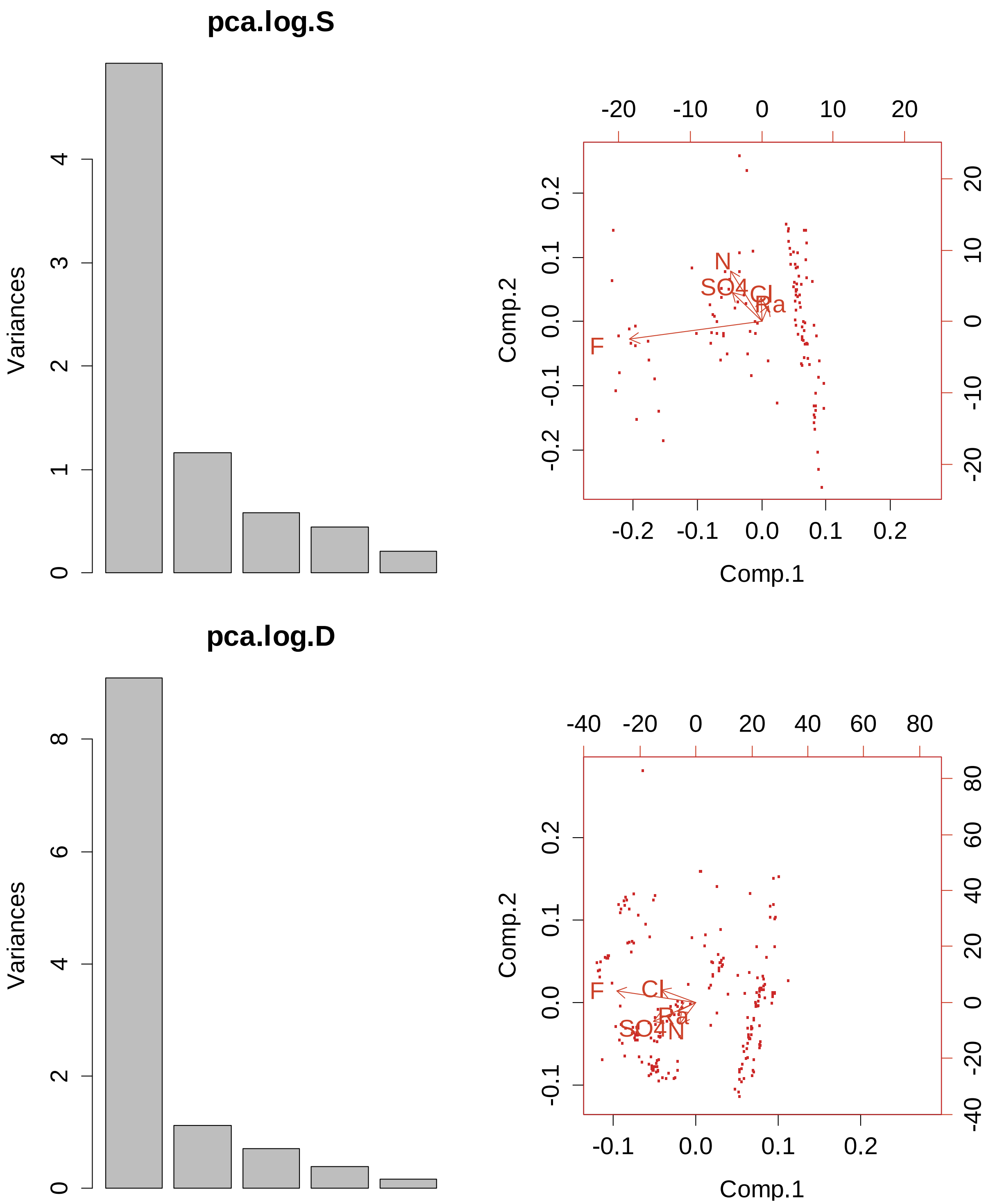
<u>The correlations between radium and the other parameters are weak to nonexistent in the shallow wells.</u> There is some hint of a weak positive association between radium and chloride.

The scatterplot matrix for the deep wells, in contrast, exhibits the expected positive correlations between combined radium and the other parameters. For fluoride the correlation is partially hidden by the nondetects, but it is still clear and strong: the largest fluoride concentrations are consistently associated with the largest radium concentrations, as shown by the large cloud of points in the upper right corner of that scatterplot. The correlation of radium with sulfate suggested by chemical theory is apparent and strong. Its correlations with chloride and nitrate echo those with fluoride and sulfate, respectively, and may indeed be the indirect results of strong chloride-fluoride and nitrate-sulfate correlations.

A numerical way to study a set of mutual correlations among parameters is *Principal Components Analysis*, or PCA [Davis 1986]. This exploratory statistical method finds a relatively small set of linear combinations of the parameters that account for most of the variation in their values. It is a multivariate extension of the visualization carried out in a scatterplot: when we view a cloud of points and assess it for correlation, we are evaluating the degree to which it is long and thin and not just a diffuse circular blob. When it is long and thin, both variables tend to increase and decrease together (or they vary oppositely when the correlation is negative). The linear combination in PCA associated with the long direction of the cloud is the sum of the two variables. In the perpendicular (narrow) direction in the cloud, the associated linear combination is the difference of the variables (taken in either order). The linear combinations (or "principal components") computed in PCA have similar interpretations when more than two variables are involved.

Judgment is needed when performing PCA. Among the decisions made by the analyst are whether to use the original values or their logarithms and whether to analyze the correlations or the *covariances* of the variables. (The covariances can be thought of as correlations, weighted by the amount of variation of the variables.) For these data, the result of PCA does not materially change when these decisions are varied. The following summarizes the PCA based on logarithms (which is consistent with the use of logarithms throughout this analysis) and the use of covariance to measure the associations among the variables.

Because substantial differences in the covariances between the two hydrological units were exhibited in the scatterplot matrices, PCA was performed separately for each unit. The results of a PCA can be summarized with two plots: a "scree plot" showing the contribution of each principal component to the total variation and a "biplot" which graphically shows the contributions of each variable to the largest two principal components.



In both cases, the scree plots (at left) show the components are dominated by the first one, which is typical of groundwater plumes: the first component reflects the overall concentrations. The second components, albeit small, provide some power to indicate how the different parameters are interrelated. For the surficial wells, shown as “pca.log.S,” the biplot (at the right) contains one small dot for each sample (representing the vector of chloride, fluoride, nitrate, radium, and sulfate values for that sample). The axes, labeled “Comp .1” and “Comp. 2,” are the first two principal components. The vector of five (log) concentrations in each sample has been replaced by its pair of “loadings” on the principal components, effectively projecting the five dimensions of data into a two-dimensional plane. Because the first two principal components were used for the projection, as much of the variation in the data as possible is being shown. Because the remaining three principal components have small variances (as displayed in the scree plots), these two-dimensional approximations can be expected to represent the data accurately, justifying the following interpretation.

The dots in the biplots appear to stratify into three discrete levels according to the value of the first component: a near-vertical sequence of points ranging horizontally between 0.05 and 0.1, a more diffuse cloud between -0.1 and 0.0, and another vertical sequence near -0.2. These patterns echo—and effectively combine into one plot—the ten scatterplots shown in the scatterplot matrix for the shallow wells. In particular, the observations with high fluoride and low radium correspond to the third stratum in the biplot and the observations with fluoride nondetects correspond to the first stratum. Evidently, <u>the stratification reflects different levels of fluoride</u>. This is indicated by the vectors in the biplot: fluoride (“F”) stands out by itself, pointing in a direction that separates the strata. Nitrates and sulfates (“N” and “SO4”) form a cluster of two nearly similar vectors, pointing along the directions within the strata. This means that points of any given stratum in that biplot likely can be distinguished by either their nitrate or sulfate concentration, both of which are highly correlated within that stratum. Finally, the very small vectors for radium and chloride (“Ra” and “Cl”) indicate that neither of these parameters plays a strong role in accounting for the variation in the data.

The same three strata show up in the deep wells. This time, though, all five parameters appear to contribute (to some small extent) to the stratification: their vectors in the biplot point in approximately the same direction that the fluoride vector points. This bears out the impression from the earlier scatterplot matrix that all five parameters are strongly mutually correlated.

Conclusions

The recent stable trends in the combined radium activities indicate there is little or no point attenuation of radium throughout the plume within either of the hydrological units, but there are no significant increases. <u>Any short-term trends that may be apparent in the data are not statistically significant: they are consistent with random variation around values that are stable over time. It is therefore not meaningful to estimate attenuation rates or “cleanup” times for radium.</u>

There are clear differences in conditions between the hydrological units: radium activities tend to be greater in the deep wells and they are strongly correlated with the concentrations of all the other parameters. Within the surficial unit, the relatively low radium activities (many, but not all, of which are below the target of 5.0 pCi/L) and the lack of strong correlations (even those predicted on general chemical principles) suggest that the observed radium may be unrelated to any site-derived plume and perhaps reflects naturally occurring concentrations.

Monitoring Frequency

The current monitoring frequency at many wells is once per year. Is this optimal? The answer to that question may vary from well to well according to its role in the monitoring system, the statistical characteristics expected of future observations, and the need and timeliness of any active response to possible changes in conditions.

- The characteristics of future observations *in wells where the peak of the plume has passed* will likely be similar to those in the past: they should exhibit the same amount of apparently random variation around a decreasing trend.
    - When that amount of random variation is relatively small, confidence in future projections can be high, suggesting less frequent monitoring is necessary.
    - Where temporal correlation among observations is high, future data can be predicted with greater confidence.
- Large or sudden changes in wells near the source or—at the other extreme—wells just upgradient of the receptor (the Bayou) might indicate a need for a relatively quick reaction, whereas such changes in wells in the middle of the plume would likely indicate no immediate need for action.
    - If, in any event, concentrations are substantially below their targets, then even large increases in them would be of less environmental concern.

If monitoring frequencies are decreased at wells where attenuation has appeared to begin, then over time less data will be available and consequently the confidence limits for the times to cleanup will be wider and prediction limits for future values will be higher. This will not be problematic at wells that have already met their cleanup targets or whose targets are not in the distant future: these wells are not driving the duration of the overall cleanup.

Nitrates present a problem: in many wells that otherwise exhibit low concentrations of fluoride, chloride, radium, and sulfate, nitrates may be more variable and sometimes exceed their target. Especially in the shallow zone monitoring points, this is consistent with a secondary surficial source of nitrates (such as past agricultural applications). Whether or not nitrates need annual monitoring, or monitoring that is as frequent as the other parameters, is beyond the scope of the present analysis to determine.

Applying these criteria systematically to the data identifies the following wells as the best candidates for a reduced monitoring frequency.

Well	Characteristics
AC-3S	Upper to mid-plume; all parameters are below targets.
AC-5S	South of site and almost side-gradient; all parameters are below targets (but nitrates exhibit relatively high variability).
AC-7SR	At eastern boundary of site. Fluoride appears to be attenuating consistently and has fallen below its target. All other parameters are below their targets.
ACB-32S	At western (upgradient) boundary of site. All parameters are well below targets (many values are nondetects) and some, like sulfate, are attenuating rapidly.
AC-8D	Mid-plume, southern end. No evidence of fluoride. All other parameters are very stable. Nitrate appears to attenuate slowly, as if a separate nitrate-bearing plume had passed by (with a peak around 2003).
AC-36D	Near the Bayou, serving as a sentinel. No evidence of fluoride. All other parameters are very stable. Nitrate appears to attenuate slowly, as if a separate nitrate-bearing plume had passed by (with a peak around 2006).
PIP-D	Upgradient of the site. Low concentrations of all parameters. No evidence of fluoride.

A reduction of frequency to once every two years appears justified in these wells from the data alone. A greater reduction might be suitable but would need additional justification based on the role of each well in the monitoring program and the confidence in the understanding of this plume, the forces affecting it, and the likelihood that conditions continue to change slowly.

Summary and Recommendations

Fluoride continues to determine the progress of natural attenuation at this site. The statistical modeling and testing of the fluoride data has been carried out as described in the 2009 submittal, including:

- Principled selection of data for analysis:
    - Wells exhibiting concentration trends characteristic of attenuation were identified.
    - Outlying data were detected, evaluated, and appropriately downweighted in subsequent analyses.

- Least-squares fitting of log concentrations *versus* time, by well.
- Estimation of point attenuation rates and their corresponding half-lives, with confidence limits constructed for the rates to establish they are all significantly positive.
- Estimation of cleanup dates, with confidence limits constructed to assess the uncertainty in time to cleanup.
- Comparison of recent data to prediction limits based on older data, providing an assessment of progress toward cleanup at this intermediate stage.
- Construction of provisional prediction limits to project the ranges of concentrations likely to be observed in 2017-2018.

Some minor technical improvements have been implemented:

- A robust version of least-squares fitting helps to identify and downweight outlying data.
- Least-squares fitting with a quadratic term is useful for objective identification of likely dates of peak concentration.

The least-squares fits provide good descriptions of the data. The point attenuation rates continue to be sufficiently high in most wells to indicate cleanup targets will be attained before 2062. The projected ranges of cleanup dates remain approximately the same as before.

Concentrations in well AC-30D are greater than projected from previous data: they recently average 7.5 mg/L compared to a projection of 1.0 to 4.2 mg/L. Consequently, although cleanup at this well was expected by now, it has not yet occurred. Nevertheless, the point attenuation rate has been high at this well, averaging a decrease of 22% per year. Assuming that some rate of decrease—albeit perhaps not this great—continues in the future, then within five years the average observed values are projected to lie between 0.4 and 5.7 mg/L, below or near the performance standard. Because concentrations in this well are so close to the cleanup target, it is not determining the duration of the remedy.

The projected cleanup dates in most wells (where concentrations have peaked) remain between the present and 2061. Dates further into the future do appear among the estimates at wells where the peak of the plume has not yet been reliably identified. Those dates are unreliable, will likely decrease during future reviews, but are expected eventually to become reliable and consistent projected cleanup dates as at the other wells.

Combined radium activities have stabilized during the last four years of monitoring. Radium exhibits different characteristics in the two hydrogeological units. In the surficial unit, radium does not appear to be a reliable indicator of a site-derived plume. In the main producing zone, radium does appear associated with the other monitoring parameters, and therefore should exhibit the same trends over time as those other parameters.

Recommendations

Seven wells are good candidates for a reduced monitoring frequency. These wells, and the reasons for the reduction, are listed under the heading "Monitoring Frequency" above. A reduction from annual to biennial (once every two years) monitoring is easily justifiable from the data; a greater reduction may be appropriate in the future, provided it is supported by additional lines of evidence.

Although the data indicate that some monitoring wells are candidates for a reduced monitoring frequency, the PRPs have chosen to maintain the frequencies specified by the existing monitoring plan. As more data become available in the future, the appropriateness of the monitoring frequencies should continue to be re-evaluated with reference to the role of each well in the program.

References

Davis, John C. *Statistics and Data Analysis in Geology*. Second Edition, 1986. John Wiley & Sons, New York.

Ripley, Brian *et al*. *Support Functions and Datasets for Venables and Ripley's MASS*. April 3, 2013. Available at http://cran.r-project.org/web/packages/MASS/MASS.pdf.

URS Corporation, 2009. Evaluation of Monitored Natural Attenuation in Groundwater. Agrico Site. Pensacola, Florida. EPA ID: FLD980221857. Prepared by William A. Huber, Ph.D. (Quantitative Decisions). August 19, 2009.

Appendix 1: Tables

Table I Outlying Fluoride Data

The following records were explicitly flagged as outliers based on visual examination of the time-series graphics and preliminary statistical analyses.

Date	Well	Mean result	Number of replicates	Any NDs?
1999.882	AC-3D	14.00	1	
2000.889	AC-3D	18.00	1	
2001.869	AC-3D	13.00	1	
1990.748	AC-12D	24.00	1	
1990.748	AC-13D	8.60	1	
1992.089	AC-13D	5.30	1	
1997.738	AC-13D	4.90	1	
1992.133	AC-24D	36.00	1	
1993.784	AC-28D	3.10	1	
1997.738	AC-28D	0.42	1	
1997.352	AC-34S	16.00	1	
1997.858	AC-34S	9.50	1	
1998.337	AC-34S	6.30	1	
1998.893	AC-34S	3.80	1	
1999.876	AC-34S	2.50	1	
2000.372	AC-34S	2.60	1	
2000.870	AC-34S	1.60	1	
2001.352	AC-34S	1.20	2	
2002.882	AC-34S	1.20	1	
2003.345	AC-34S	1.90	1	
2004.035	AC-34S	2.00	1	
1999.882	AC-35D	23.00	1	
2002.885	AC-35D	0.08	1	TRUE(1)
1990.748	NWD-2S	0.78	1	

Remarks

(1) The value listed was chosen uniformly and randomly between 1/100 and 1 times the detection limit.

Due to the use of a robust fitting method, some values listed as outliers in the 2009 submittal were not explicitly labeled as such for these analyses. The reason for labeling any values as outliers at all is that least-squares methods are most sensitive to values at the extreme ends of the date ranges: the oldest and the most recent. The most recent are probably more reliable and certainly more current, but the oldest no longer reflect current or even average conditions during the time period. Therefore, any data obtained near the beginning of the monitoring period which appear grossly inconsistent with the subsequent data were flagged as outliers.

Appendix 2: Time-Series Plots

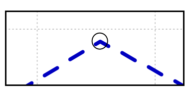
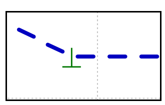
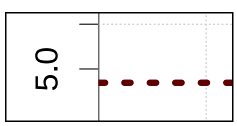
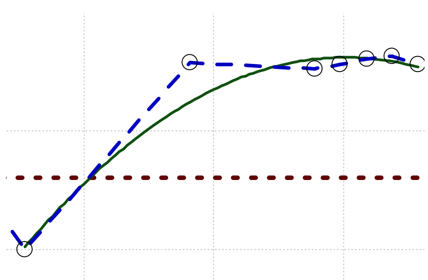
Explanations

Plots are presented in alphabetical order of well name within each groundwater flow zone.

To enhance comparability, all plots show a common range of concentrations (on a logarithmic scale) and a common range of sample dates.

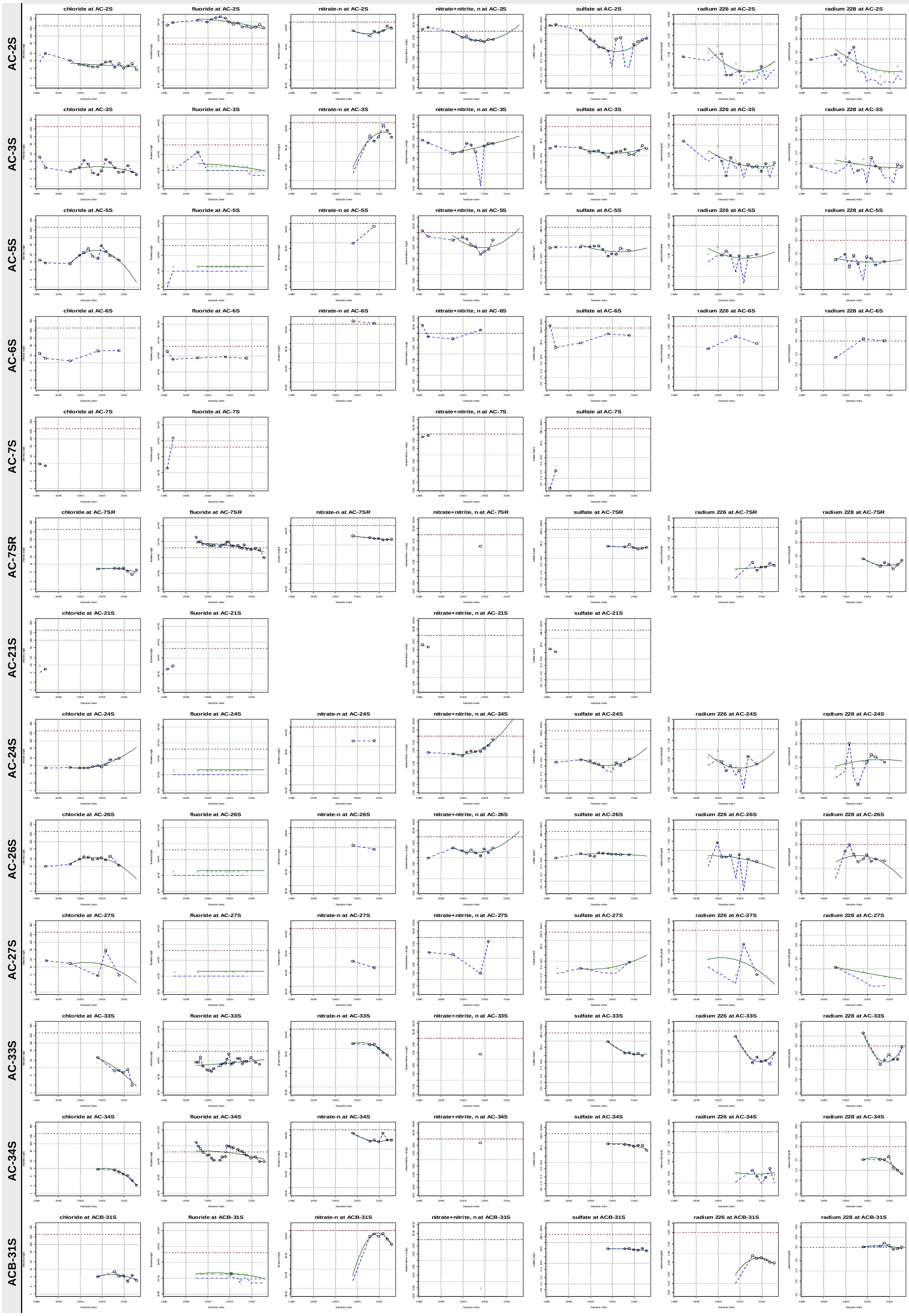
The superimposed curves display the *quadratic* fits used to identify possible peaks., both to serve as documentation of the peak identification procedure and to display a simple summary of temporal trends. The curves span all observations after the beginning of 1995. (Remediation was completed near this time, in April 1997, and most of the data were collected after this date.) **It is not valid to project these fits forward in time**; they are reliable primarily at the location of any peak, if it exists. They should be considered unreliable for small datasets, especially those of just three or four observations.

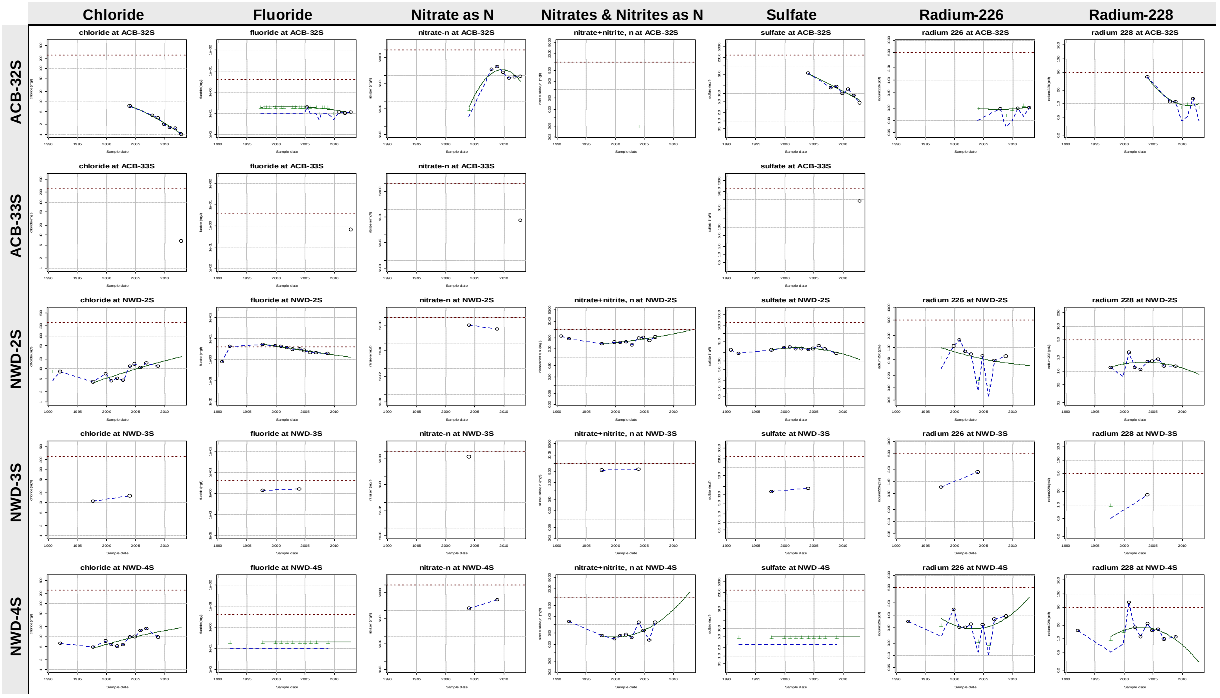
Legend

Symbol	Explanation
	Quantified result
	Nondetect (plotted at the reporting limit)
	Target concentration (4.0 mg/L for Fluoride)
	Fitted quadratic curve

Chloride	Fluoride	Nitrate as N	Nitrates & Nitrites as N	Sulfate	Radium-226	Radium-228

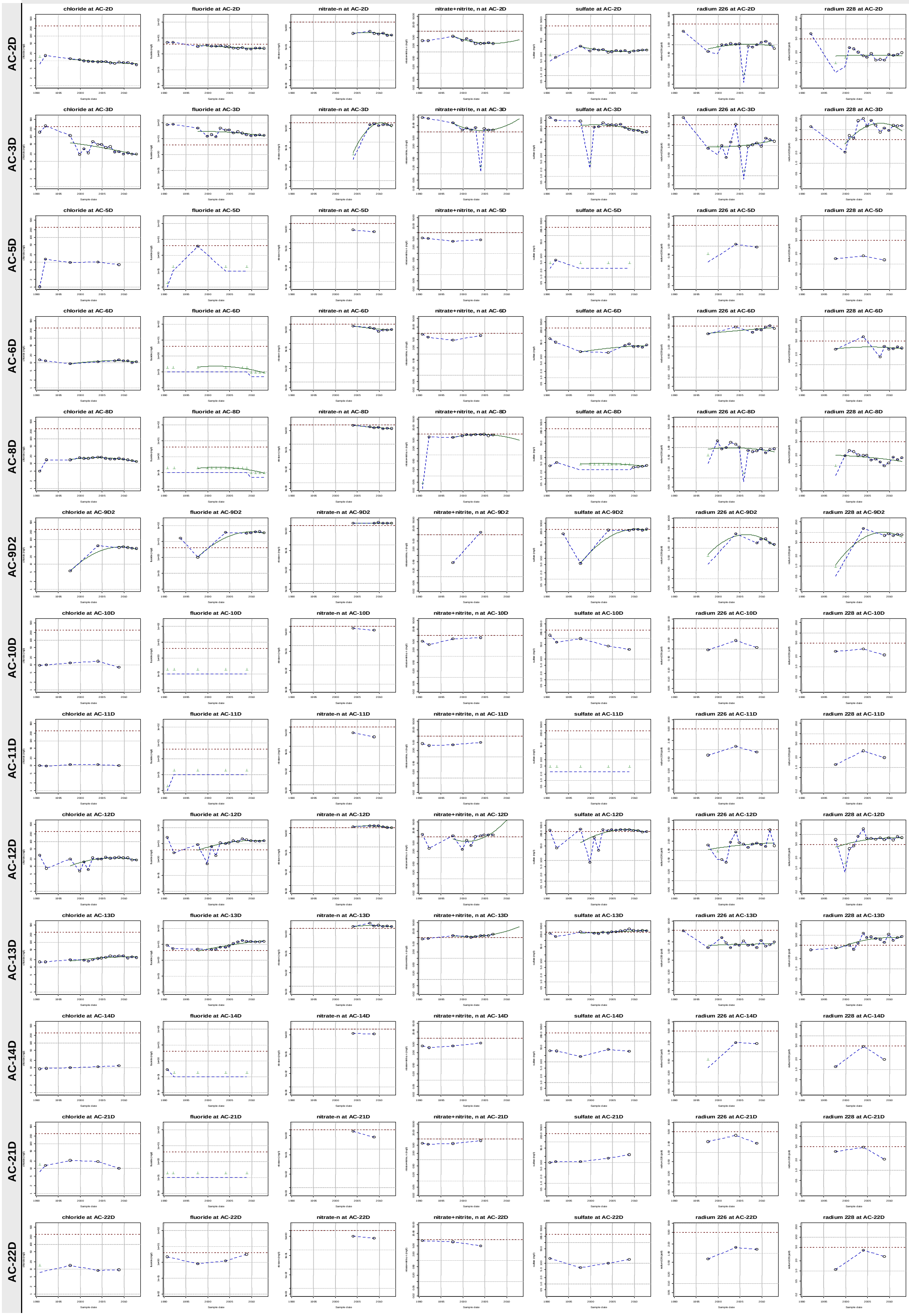
Surficial Zone

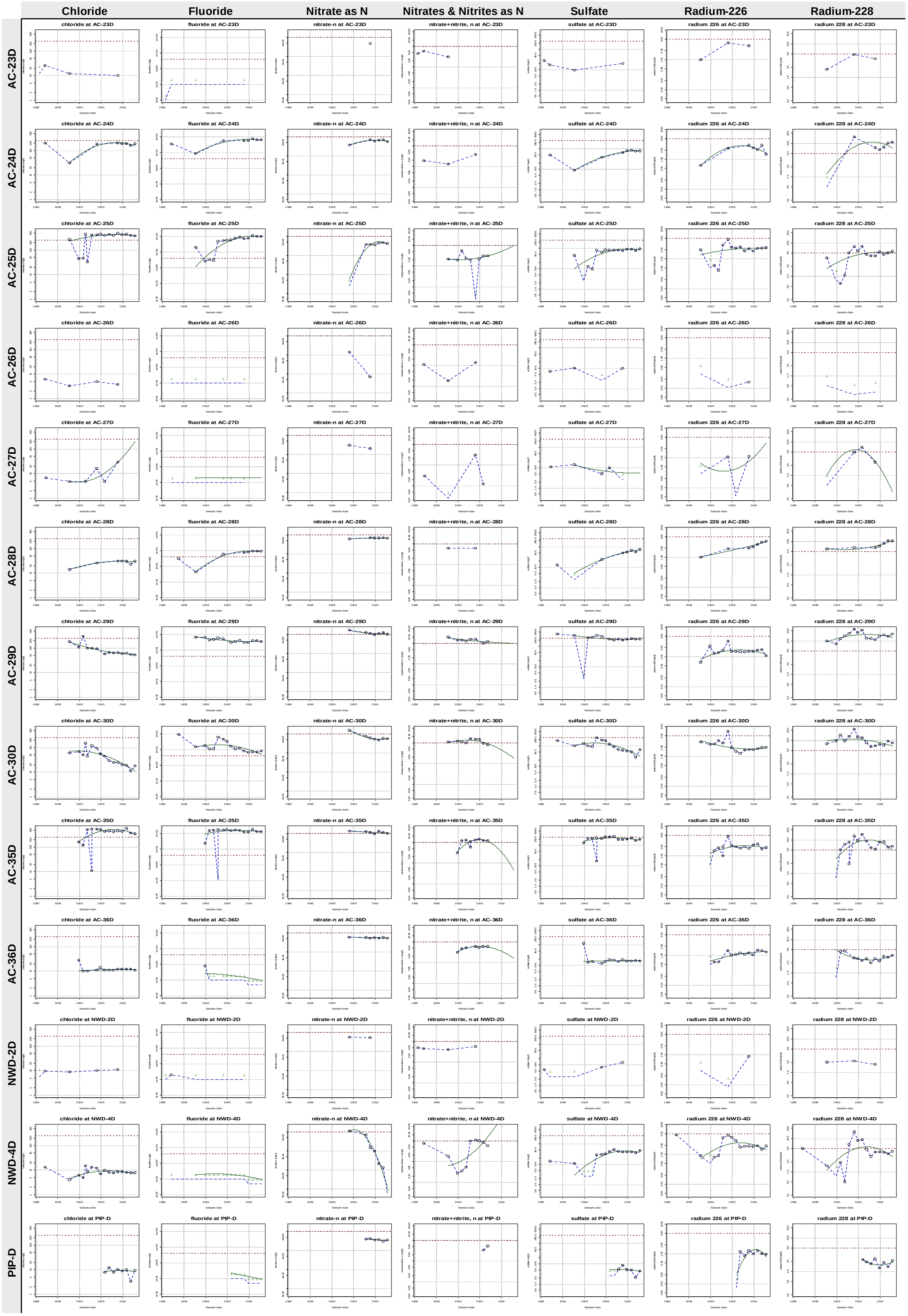



Chloride
Fluoride
Nitrate as N
Nitrates & Nitrites as N
Sulfate
Radium-226
Radium-228
ACB-32S
chloride at ACB-32S
fluoride at ACB-32S
nitrate-n at ACB-32S
nitrate+nitrite, n at ACB-32S
sulfate at ACB-32S
radium 226 at ACB-32S
radium 228 at ACB-32S
ACB-33S
chloride at ACB-33S
fluoride at ACB-33S
nitrate-n at ACB-33S
sulfate at ACB-33S
NWD-2S
chloride at NWD-2S
fluoride at NWD-2S
nitrate-n at NWD-2S
nitrate+nitrite, n at NWD-2S
sulfate at NWD-2S
radium 226 at NWD-2S
radium 228 at NWD-2S
NWD-3S
chloride at NWD-3S
fluoride at NWD-3S
nitrate-n at NWD-3S
nitrate+nitrite, n at NWD-3S
sulfate at NWD-3S
radium 226 at NWD-3S
radium 228 at NWD-3S
NWD-4S
chloride at NWD-4S
fluoride at NWD-4S
nitrate-n at NWD-4S
nitrate+nitrite, n at NWD-4S
sulfate at NWD-4S
radium 226 at NWD-4S
radium 228 at NWD-4S

Chloride	Fluoride	Nitrate as N	Nitrates & Nitrites as N	Sulfate	Radium-226	Radium-228

Main Producing Zone




Chloride
Fluoride
Nitrate as N
Nitrates & Nitrites as N
Sulfate
Radium-226
Radium-228
AC-23D
AC-24D
AC-25D
AC-26D
AC-27D
AC-28D
AC-29D
AC-30D
AC-35D
AC-36D
NWD-2D
NWD-4D
PIP-D