

## **APPENDIX D**



December 12, 2011

alan.hagans@dot.state.fl.us

Mr. Alan Hagans  
Florida Department of Transportation District 3  
1074 Highway 90  
Chipley, Florida 32428

**Subject: Annual Inquiry Regarding Construction Activities  
Fairfield Drive (SR 727) at I-110 (SR 8-A) Roadway ID 48004000  
Mile Marker 9.009 at Palafox to Mile Marker 9.490 at I-110 West Ramp  
Pensacola, Florida**

Dear Mr. Hagans:

Per U.S. Environmental Protection Agency requirements set forth in the Agrico Chemical Site Operation and Maintenance Plans, this annual inquiry is submitted to determine if intrusive work into the subsurface soils in the above-referred location is planned by Florida Department of Transportation (FDOT) for the year 2012. Additionally, this inquiry seeks to determine if there are work activities included in FDOT's five-year plan that will involve intrusive work at Fairfield Drive from Palafox to the I-110 ramp.

If there is additional information that we or the U.S. Environmental Protection Agency (USEPA) should be aware of, please let me know.

Please respond in writing regarding receipt of this correspondence. If you have any questions concerning this request, please e-mail me at [jeffry.wagner@urs.com](mailto:jeffry.wagner@urs.com). **Please note new email address.**

Sincerely,

A handwritten signature in black ink, reading "Jeffrey R. Wagner". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

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

JRW:lc

cc: Terry D. Vandell (ConocoPhillips)  
Phil Roberts (Williams)  
Scott Miller (USEPA)

URS Corporation  
1625 Summit Lake Drive,  
Suite 200  
Tallahassee, Florida 32317  
Tel: 850.574.3197  
Fax: 850.576.3676



June 30, 2011

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: Responses to the May 17, 2011 Florida Department of Environmental  
Protection Comments to the 2010 Annual Report  
Agrico Site  
Pensacola, Florida  
EPA ID: FLD 98022 1857**

Dear Mr. Miller:

URS Corporation (URS) on behalf of ConocoPhillips, Inc., merger successor to Conoco, Inc. and Williams representing Agrico Chemical Company is submitting these responses to the May 17, 2011 Florida Department Environmental Protection Comments to the 2010 Annual Report.

Should you have any questions or require additional information regarding these comments, please contact Ms. Terry D. Vandell (ConocoPhillips) at (580) 767-6561 or Mr. Phil Roberts (Williams) at (918) 573-0757.

Sincerely,

A handwritten signature in blue ink, reading "Jeffry R. Wagner", is positioned below the word "Sincerely,".

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

JRW:lc

Enclosure – Responses to Comments

cc: Walsta Jean-Baptiste – FDEP, Hazardous Waste Cleanup Section, Tallahassee  
Phil Roberts– Williams  
Terry Vandell-Bell – ConocoPhillips

**RESPONSES TO MAY 17, 2011 FDEP COMMENTS TO THE 2010 ANNUAL REPORT  
AGRICO PENSACOLA, FL SITE (dated March 31, 2011)  
EPA ID: FLD 980221857**

**FDEP General Comment –**

*“I have reviewed the referenced document and concur with the recommendations as long as a modification is made to add AC-27S/D to the existing network for groundwater elevations, site COCs and field parameters. The deep well needs to be added because it is located on the east side of Bayou Texar between the plume/discharge divide and the Hagler water supply well. The pH at this well declined from 6.5 in 2005 to 4.7 in 2008. The pH at AC-35D has recently been 4.29 (2010), 4.0 (2009), 3.8 (2008), and 4.1 (2007). As the plume advances, pumping at the Hagler water supply well likely influences the potentiometric surface in wells near the head of Bayou Texar and may permit plume advancement. (See May 1, 2002 Remedial Investigation Report, Escambia Treating, Figure 4-6 and the effect of Royce Street well on AC-25I. Note that the Hagler well is closer to AC-27D than the Royce Street well is to AC-25I.) In fact a number of events have been recorded that show a downward vertical gradient at ETC MW-20S/D (June and October 2001 with AC-27S/D upward in October 2001). On January 22, 2005, the ETC MW-25S/D and ETC MW-26 S/D well pairs (located between AC-27D and Fairfield Drive) showed downward hydraulic gradients. Because plume advancement would affect the protectiveness of the MNA remedy, monitoring of this well should occur more frequently than the approved annual network frequency. It takes a significant change to alter groundwater pH and for that reason, the additional monitor events could be limited to groundwater elevations at AC-27S/D and field parameters (the Agrico plume is characterized by low pH and high specific conductivity). “*

**URS Response to General Comment -**

There is reference in this general comment about a monitoring well AC-25I. It should be noted that this is not an Agrico well and the proper well ID should be ETC MW-25I. The Agrico monitoring well AC-25D is located near Bayou Texar to the north, it is not in close proximity to or affected by the Royce Street ECUA Public Supply Well.

It should be noted that the pH range recorded for the AC-27D monitoring well east of Bayou Texar is within the background fluctuation range for groundwater pH and conductivity in Escambia County. A data review of USGS publication, “Summary of Ground-water and Surface Water Data for the City of Pensacola and Escambia County, Florida” (U.S. Geological Survey Open-File Report 82-361) as stated on page 8-8 of the 2010 Annual Report, indicates that groundwater pH will vary seasonally in Escambia County. A ten year data span shows pH at the same site ranging from less than 5 to greater than 7. Additionally, it should be noted that an increase in pH and conductivity and the absence of fluoride concentrations is not characteristic of the Agrico plume. For the Agrico plume, fluoride is not transported independently of acidity or

dissolved solids. So the statement that the Agrico plume is characterized by low pH and high specific conductivity is not correct if the groundwater is also not elevated in fluoride.

For groundwater in Escambia County, a change from 6.5 to 4.7 for pH over a three year period is not considered significant. Overall, the pH data for well AC-27D shows an increasing pH trend. And in light of the fact that fluoride has not been detected in the AC-27 monitoring well cluster, there is no evidence that any pH change at AC-27D is attributable to the Agrico plume. It should also be noted that the vertical gradient for groundwater levels near discharge boundaries in Escambia do fluctuate seasonally and can reverse naturally for a period of time from an upward to a downward vertical gradient.

A review of the Northwest Florida Water Management District (NFWFMD) publications “Wellhead Protection area Delineation in Southern Escambia County, Florida” (December 1997) and “Susceptibility of Public Supply Wells to Ground Water Contamination in Southern Escambia County, Florida” (December 1999) and the “Potentiometric surface of the Main Producing Zone of the Sand-and-Gravel aquifer, Escambia County, Florida” (October/November 2000) was conducted to assess the potential for well influences to spread to Bayou Texar from ECUA’s Hagler Airport Public Supply Well. These NFWFMD evaluations of pumping influences show that the Hagler well has more of a tendency to reach north-northwest rather than west or east to satisfy groundwater contribution to this production well. Also, the NFWFMD potentiometric surface shows pumping impacts only in the immediate location of the pumping well, the surface does not show pumping influences extending laterally downgradient of the well location to the southwest towards Bayou Texar located ~ 1 mile away. Potentiometric data indicate that the Hagler well is predominantly recharged by groundwater originating north-northwest and upgradient of the well, not from downgradient sources.

For the above reasons, there is no evidence of the Agrico plume advancement and there is no evidence that the groundwater divide at Bayou Texar is being influenced by pumping from the Hagler well.

URS will continue to sample the AC-27 monitoring well cluster every 5-years as part of the EPA Five-Year Review. The analysis will include field parameters (pH, conductivity, dissolved oxygen, turbidity, temperature, and oxidation reduction potential) and the 7 primary COCs. URS will continue to measure water levels in the AC-27 cluster annually.

Specific Comments 1-5:

**FDEP Comment 1. – “Page 8-18 references the Florida Institute of Phosphate Research “Phosphate Primer” (2004). This reference does not discuss any Radium isotopes nor that the phosphate ore tends to have more RA 226 than RA 228. A proper reference needs to be provided.**

***Also, the findings need to present a complete discussion of the radium source. While the Agrico waste stream may not have been the direct source of the now detected radium with more RA 228 than RA 226, the passage of the plume (with high specific conductivity) and its geochemical interaction with the aquifer sediments has produced higher radium concentrations (and a different isotope balance) within the plume limits.”***

**URS Response** – Comment regarding reference is noted.

Comment regarding presenting a discussion on the source of radium is addressed below.

The many technical reports prepared for the Agrico site have addressed the source of radium. For example, the source of radium is discussed in the November 30, 2006 Technical Memorandum Report – Evaluation of Long-Term Groundwater Monitoring network, which was Action Item #3 from the July 2005 Five-Year Review Report. In this report (section 6 and section 8), it is stated that the Agrico waste stream was not the source of radium 226 or radium 228 detected in the Agrico groundwater plume. It also states that the acidity associated with the wastewater ponds contributed to the acidity found in the groundwater plume. Furthermore, it states that due to the transport of the acidity in the plume and contact with aquifer media, a secondary release of radium 228 primarily has occurred within the plume limits. It should be noted that radium 226 is much lower in concentration than radium 228 for the plume. As the FDEP comment indicates and which is also stated similarly in the 2006 report, the presence of radium 228 is due to the passage of the plume (with low pH groundwater; not high specific conductivity – as the comment implies) and its geochemical interaction with the aquifer sediments within the limits of the plume. Please also refer to the more recent August 19, 2009 report, “Evaluation of Monitored Natural Attenuation in Groundwater”, pages 7-9, 42-43.

To clarify the source of the radium, a summary discussion based on the prior work will be included in future annual reports.

**FDEP Comment 2.** – ***“The Table 8 yellow highlighting should be used for results that exceed the Performance Standard, not clean results.”***

**URS Response** – The Agrico site is no longer in an assessment phase. It is in a phase of demonstrating that the MNA remedy is working. Emphasizing data results that show that the MNA remedy is working is very appropriate. Please note the exceedances of the performance standards in Table 8 are shown in larger and bold font.

**FDEP Comment 3.** – ***“Field sampling logs need to be included in future reports to document field purging observations.”***

**URS Response** – Comment noted and such field logs will be included.

**FDEP Comment 4.** – *“Future reports need to include a table summary of all historical results for all plume COCs (including those that have been dropped because they met the performance standards) and field parameters.”*

**URS Response** – For COCs, Table 8 presents all historical data results for the seven plume COCs. None of the COC results have been dropped from the table. For example, the footnotes explain when a select COC has been discontinued from the sampling program, but the results for that COC when it was analyzed are still presented in Table 8.

Future reports will include a table that shows the historical results for Field Parameters.

**FDEP Comment 5.** – *“Provide pH and specific conductivity versus time plots for AC-25D, AC-35D and AC-27D.”*

**URS Response** – The plots are attached to these comment responses. Note for AC-27D, three additional pH/conductivity measurements have been collected in 2010 and 2011 by EPA in relation to monitoring the ETC site. Additionally, a plot for pH and specific conductivity for AC-27S is also presented.

## Memorandum

# Florida Department of Environmental Protection


TO: Walsta Jean-Baptiste, Project Manager, Hazardous Waste Cleanup  
Section, BWC

THROUGH: Brian Dougherty, Administrator  
Program & Technical Support Section, BWC

FROM: Zoe Kulakowski, Professional Geologist  
Program & Technical Support Section, BWC

DATE: May 17, 2011

SUBJECT: Agrico Chemical Superfund Site, Fairfield Avenue, Pensacola,  
Escambia County, 2010 Annual Report for OU-1 and OU-2, dated  
March 31, 2011

5/19/2011  
X   
BJD

5/19/2011  
X ZPK  
ZPK

I have reviewed the referenced document and concur with the recommendations as long as a modification is made to add AC-27S/D to the existing network for groundwater elevations, site COCs and field parameters. The deep well needs to be added because it is located on the east side of Bayou Texar between the plume/discharge divide and the Hagler water supply well. The pH at this well declined from 6.5 in 2005 to 4.7 in 2008. The pH at AC-35D has recently been 4.29 (2010), 4.0 (2009), 3.8 (2008), and 4.1 (2007). As the plume advances, pumping at the Hagler water supply well likely influences the potentiometric surface in wells near the head of Bayou Texar and may permit plume advancement. (See May 1, 2002 Remedial Investigation Report, Escambia Treating, Figure 4-6 and the effect of Royce Street well on AC-25I. Note that the Hagler well is closer to AC-27D than the Royce Street well is to AC-25I.) In fact a number of events have been recorded that show a downward vertical gradient at ETC MW-20S/D (June and October 2001 with AC-27S/D upward in October 2001). On January 22, 2005, the ETC MW-25S/D and ETC MW-26 S/D well pairs (located between AC-27D and Fairfield Drive) showed downward hydraulic gradients. Because plume advancement would affect the protectiveness of the MNA remedy, monitoring of this well should occur more frequently than the approved annual network frequency. It takes a significant change to alter groundwater pH and for that reason, the additional monitor events could be limited to groundwater elevations at AC-27S/D and field parameters (the Agrico plume is characterized by low pH and high specific conductivity).

Specific Comments



# MEMORANDUM

**Walsta Jean-Baptiste**

**May 17, 2011**

**Page 2**

1. Page 8-18 references the Florida institute of Phosphate Research "Phosphate Primer" (2004). This reference does not discuss any Radium isotopes nor that the phosphate ore tends to have more Ra <sup>226</sup> than Ra <sup>228</sup>. A proper reference needs to be provided. Also, the findings need to present a complete discussion of the radium source. While the Agrico waste stream may not have been the direct source of the now detected radium with more Ra <sup>228</sup> than Ra <sup>226</sup>, the passage of the plume (with high specific conductivity) and its geochemical interaction with the aquifer sediments has produced higher radium concentrations (and a different isotope balance) within the plume limits.
2. The Table 8 yellow highlighting should be used for results that exceed the Performance Standard, not clean results.
3. Field sampling logs need to be included in future reports to document field purging observations.
4. Future reports need to include a table summary of all historical results for all plume COCs (including those that have been dropped because that met the Performance Standards) and field parameters.
5. Provide pH and specific conductivity versus time plots for AC-25D, AC-35D, and AC-27D.

If you have any questions, please contact me at (850)245-8982.



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](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



"Hagans, Alan"  
<Alan.Hagans@dot.state.fl.us>  
10/26/2010 08:30 AM

To "Jeffry\_Wagner@URSCorp.com"  
<Jeffry\_Wagner@URSCorp.com>

cc

bcc

Subject RE: Agrico Pensacola -- Annual FDOT Inquiry

Hey Jeffry,

Maybe this will work. If you need more specific's holler!

*Thanks,*

*Alan Hagans  
District Contamination Impacts Coordinator  
Department Of Environmental Management (FDOT)  
Ph: (850) 415-9511  
[alan.hagans@dot.state.fl.us](mailto:alan.hagans@dot.state.fl.us)*

**From:** Jeffry\_Wagner@URSCorp.com [mailto:Jeffry\_Wagner@URSCorp.com]  
**Sent:** Monday, October 25, 2010 3:39 PM  
**To:** Hagans, Alan  
**Subject:** RE: Agrico Pensacola -- Annual FDOT Inquiry

Alan -- I'm not able to read the attachments you had to the email

Can you possibly send in different file format

thanks,  
jeff

Jeff Wagner, V.P., P.G., CPM  
Senior Principal Hydrogeologist  
URS Corporation  
1625 Summit Lake Drive, Suite 200  
Tallahassee, Florida 32317  
Cell - 850-251-7208  
Direct Line - 850-402-6409  
Phone - 850-574-3197  
Fax - 850-402-6490 or 850-576-3676  
email - Jeffry\_Wagner@urscorp.com

This e-mail and any  
attachments contain  
URS Corporation  
confidential  
information that may  
be proprietary or  
privileged. If you

receive this message  
in error or are not the  
intended recipient,  
you should not retain,  
distribute, disclose or  
use any of this  
information and you  
should destroy the  
e-mail and any  
attachments or copies.

"Hagans, Alan" <Alan.Hagans@dot.state.fl.us>

"Hagans, Alan"  
<Alan.Hagans@dot.state.fl.us>

10/21/2010 03:32 PM

To "Jeffry\_Wagner@URSCorp.com"  
<Jeffry\_Wagner@URSCorp.com>

cc

Subject: RE: Agrico Pensacola -- Annual FDOT Inquiry

Jeffry,

Here are the projects pulled by the co/sec:

If you need additional information please call.

*Thanks,*

*Alan Hagans  
District Contamination Impacts Coordinator  
Department Of Environmental Management (FDOT)  
Ph: (850) 415-9511  
[alan.hagans@dot.state.fl.us](mailto:alan.hagans@dot.state.fl.us)*

**From:** Jeffry\_Wagner@URSCorp.com [[mailto:Jeffry\\_Wagner@URSCorp.com](mailto:Jeffry_Wagner@URSCorp.com)]

**Sent:** Wednesday, October 20, 2010 11:54 AM

**To:** Hagans, Alan

**Cc:** miller.scott@epa.gov

**Subject:** Agrico Pensacola -- Annual FDOT Inquiry

*(See attached file: FDOT\_2010AnnlnqLtr.pdf)*

Jeff Wagner, V.P., P.G., CPM  
Senior Principal Hydrogeologist  
URS Corporation  
1625 Summit Lake Drive, Suite 200  
Tallahassee, Florida 32317  
Cell - 850-251-7208  
Direct Line - 850-402-6409  
Phone - 850-574-3197  
Fax - 850-402-6490 or 850-576-3676  
email - Jeffry\_Wagner@urscorp.com

This e-mail and any attachments contain URS Corporation confidential information that may be proprietary or privileged. If you receive this message in error or are not the intended recipient, you should not retain, distribute, disclose or use any of this information and you should destroy the e-mail and any attachments or copies.



AGRICO POTENTIAL PROJECT IMPACTS.docx

Here are the projects pulled by the co/sec:

```
WP02      D_  Display Item_Seg_def

          FDOT - Work Program Administration          10-21-20
          Item/Segment List                          12:39:20
                                                    MORE:

District: 03  Type: M (Man, Geo)  County: 48 +  Roadway Id: 48004000
Box Item: N (y/N)  Box Code:      Trans System:      Group:      Cont Type:
Bridge ID:      Include Candidates: N (y/N)
Include Completed Items: N (y/N)  Include Dropped Items: N (y/N)
Begin Search At Item:

Sel Item Seg Status      Description Version
Description
- 218604 1  PRE-CONST.UNDERWAY      ADOPTED
  SR 727/295 FAIRFIELD FROM SR 298 LILLIAN HWY TO SR 10A (US 90)
- 222467 1  CONST.COMPLETE      ADOPTED
  SR 8A (I-110) FROM MAXWELL STREET TO SR 295 FAIRFIELD DRI
- 407938 2  PRE-CONST.UNDERWAY      ADOPTED
  ESCAMBIA COUNTY PEDESTRIAN ACTUATED SIGNAL PROJECT
- 413435 1  ADOPTED, NOT BEGUN      ADOPTED
  SR 727 FAIRFIELD DR. FROM SR 292 GULF BEACH HW TO BRUCE STREET
- 419301 1  ADVERTISED      ADOPTED
  SR 727/295 FROM SR 292 PACE BLVD TO SR 289 9TH AVENUE
AAA250-I: Successfully displayed.
F1=Help F3=Exit F4=Prompt F7=Bkwd F8=Frwd F15=Logoff
```

```
WP02      D_  Display Item_Seg_def

          FDOT - Work Program Administration          10-21-20
          Item/Segment List                          12:40:00
                                                    MORE: -

District: 03  Type: M (Man, Geo)  County: 48 +  Roadway Id: 48004000
Box Item: N (y/N)  Box Code:      Trans System:      Group:      Cont Type:
Bridge ID:      Include Candidates: N (y/N)
Include Completed Items: N (y/N)  Include Dropped Items: N (y/N)
Begin Search At Item:

Sel Item Seg Status      Description Version
Description
- 424106 1  ADVERTISED      ADOPTED
  SR 727 FAIRFIELD DR FROM BRUCE STREET TO WEST OF SR 10A (US 90)

Successfully displayed. No more data to display.
F1=Help F3=Exit F4=Prompt F7=Bkwd F8=Frwd F15=Logoff
```



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,

A handwritten signature in black ink, appearing to read "Scott Miller", is written over a horizontal line.

Scott Miller  
Remedial Project Manager  
Superfund Remedial Branch, Section C  
Superfund Division



Jeffrey Wagner/Tallahassee/URSCorp

09/20/2010 12:00 PM

To Jeffrey 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



Miller.Scott@epamail.epa.gov

09/17/2010 08:20 PM

To Jeffrey\_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  
(866) 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

----- Forwarded by Scott Miller/R4/USEPA/US on 09/20/2010 07:49 AM -----



EPA approval ltr -BT 090409 report\_092010.pdf

This e-mail and any attachments contain URS Corporation confidential information that may be proprietary or privileged. If you receive this message in error or are not the intended recipient, you should not retain, distribute, disclose or use any of this information and you should destroy the e-mail and any attachments or copies.



**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](mailto:miller.scott@epa.gov) or at (404) 562-9120.

Sincerely,

A handwritten signature in black ink, which appears to read "Scott Miller", is positioned below the word "Sincerely,".

Scott Miller  
Remedial Project Manager  
Superfund Remedial Branch, Section C  
Superfund Division



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

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,

A handwritten signature in black ink, appearing to read "Scott Miller", is written below the word "Sincerely,".

Scott Miller  
Remedial Project Manager  
Superfund Remedial Branch, Section C  
Superfund Division



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



Mr. Scott Miller, RPM  
U.S. Environmental Protection Agency (EPA)  
November 18, 2009  
Page 2 of 4

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 where 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.



Mr. Scott Miller, RPM  
U.S. Environmental Protection Agency (EPA)  
November 18, 2009  
Page 3 of 4

### **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.



Mr. Scott Miller, RPM  
U.S. Environmental Protection Agency (EPA)  
November 18, 2009  
Page 4 of 4

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,

A handwritten signature in blue ink, which appears to read "Jeffrey R. Wagner", is positioned above the printed name and title.

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

JRW/lc

cc: Terry Vandell-Bell  
Phil Roberts

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 -

2. On page 20, there is the following statement regarding the  $\sigma$  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  $\sigma$  becomes more important. In fact, a small  $\sigma$  would seem to not indicate anything regarding the decay rate as long as  $\sigma$  is large enough relative to the attenuation rate (or line slope).

Additionally, it is conceivable that large  $\sigma$  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  $\sigma$  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

- 3 -

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

- 4 -

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

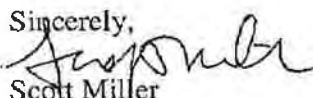
- 5 -

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](mailto: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 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](mailto:miller.scott@epa.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Scott Miller".

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 be performed using a variety of statistical tests. However traditional tests produce biased estimates from the outlier 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 constituents evaluated, two different non-parametric 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 indicating no upgradient 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.

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.

*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**.

## **Executive Summary**

---

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.






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.

## **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
<b>GENERAL FACILITY AREA</b>					
Gates and Locks Secured	X				All gates and locks are secure and in proper working condition.
Perimeter Fencing	X				Fence is in good condition.
Signage	X				Signs are in place and in good condition.
Roadway Conditions	X				All roadways are in good condition.
<b>COVER SYSTEM</b>					
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.
<b>SURFACE WATER COLLECTION SYSTEM</b>					
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 wall of south pond has some minor erosion along base of slope which is beginning to grow over with vegetation.
Leaks, Structural Damage to Inlets, Culverts, or Pipes	X				None observed.

INSPECTION PERIOD: May 2011 Bi-Annual Inspection Report

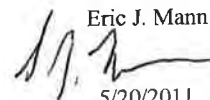
INSPECTED BY:

NAME:

SIGNATURE:

DATE:

Eric J. Mann



5/20/2011

# 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
<b>GENERAL FACILITY AREA</b>					
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 barbed-wire along the western fence line needs repair. Repaired 12/2011.
Signage	X				Signs are in place and in good condition.
Roadway Conditions	X				All roadways are in good condition.
<b>COVER SYSTEM</b>					
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.
<b>SURFACE WATER COLLECTION SYSTEM</b>					
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 is dry.
Side Slope Erosion of Detention Ponds	X				South wall of south pond has some minor erosion along base of slope which is beginning to grow over with vegetation.
Leaks, Structural Damage to Inlets, Culverts, or Pipes	X				None observed.

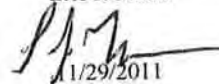
INSPECTION PERIOD: November 2011 Bi-Annual Inspection Report

INSPECTED BY:

NAME:

Eric J. Mann

SIGNATURE:



DATE:

11/29/2011