Department of
Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

December 22, 2003

Perry Frix
ATC Associates, Inc.
5801 Benjamin Center Drive, Suite 101
Tampa, FL 33634

SUBJECT: Field Audit conducted at Circle K Store #0224 in Daytona Beach on March 24, 2003; Response from ATC Associates Dated November 21, 2003

Dear Mr. Frix:

Your November 21, 2003 response has been reviewed against the audit findings and has been found to be acceptable with additional recommendations noted below. Your proposed implementation schedule is reasonable, and is also accepted. Since there are no changes in the original audit report, the final report will consist of the March 24, 2003 audit report, your response dated November 21, 2003 and a copy of this letter.

RESPONSE TO FINDING #7: FD 30001.3 discusses the need to have records on the inclusive of use for rental equipment as well as the equipment type and model. In addition, although the rental agency may calibrate the instrument before renting, it is the responsibility of the field crews to at least verify that the instrument is appropriately calibrated for every 24 hours of use. This would necessitate verifying the calibration before first use and at 24 hours intervals thereafter (FT 1000, section 2).

RESPONSE TO FINDING # 25: An alternative to multiple insertions of the intake tube would be to increase the length of the tubing in the well to accommodate filling more than one VOC vial. This would reduce the number of times the tubing must be reinserted into the well.

RESPONSE TO FINDINGS # 27, 28 AND 30: Multiple standards are not required for calibration verification, however, if sample concentrations exceed the calibrated range, a standard concentration that is selected to extend the range must be used as verification (normally the second check in any 24-hour interval). The checks may be done at the base of operations, if ATC wishes to minimize the number of standards that are taken into the field.

Finding 30 was not addressed. Refer to the proposed revisions to FT 1500 for a clear explanation of how DO checks must be performed.

It was apparent at the TREEO training in November 2003, that you have already instituted corrective action measures for many of the findings in this report. These improvements will facilitate reviews of any future projects for DEP.

Please let me know if the Environmental Assessment section can provide you any training materials that you might need to provide ongoing in-house training.

Sincerely,

Silky S. Labie, Environmental Administrator
Environmental Assessment Section
cc: Andy Tintle, Environmental Assessment
Jane Fugler, Volusia County

Department of
Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

September 25, 2003

Perry Frix
ATC Associates, Inc.
5801 Benjamin Center Drive, Suite 101
Tampa, FL 33634

SUBJECT: Audit conducted at Circle K #24 in Daytona Beach, Florida, March 24, 2003

Dear Mr. Frix:

The attached audit checklist summarizes the observations, comment and findings of the DEP auditors for the audit of the referenced site. This audit was requested by Jane Fugler with Volusia County, after a project audit of data from the referenced site raised questions concerning whether representative groundwater samples had been collected (memo to Jane Fugler, January 24, 2003).

We found the sampling teams to be proficient in the actual mechanics of well purging and sample collection. The teams worked efficiently, and the auditors found few problems with the actual purging and sampling procedure. However, the teams did not appear to fully understand the significance of field measurements, and how this information is used to evaluate the sampling event and ultimately the usability of the data:

1. The FT series (field measurements) of the DEP Standard Operating Procedures (DEP SOPs) were not followed; and
2. The stabilization criteria and procedures in FS 2200 were not followed.

The failure to follow the referenced SOPs were evident in project audit review, as well as the March 24, 2003 audit:

1. The teams did not have all the requisite standards to check all instrument calibrations or to bracket the subsequent sample concentration ranges.
2. While the teams correctly performed the mechanics of purging, they did not use the associated measurements to correct problems such as tubing placement as indicated by high dissolved oxygen.
3. The teams were not familiar with the acceptance criteria for purging completion and calibration acceptance.
4. Knowledge about equipment maintenance and use was inadequate.
5. Daily calibration verifications are not routinely performed.

The attached audit report should be used to identify weaknesses in your organization's procedures that can be used to train and educate samplers in proper procedures.

A response is required for all items at the end of the report that are identified as “Findings”. The response must identify the root cause of each finding, the proposed corrective action, and the date by which the action will be implemented. You may also take this opportunity to explain or provide additional information on any of the comments or findings. This comprehensive “corrective action report” must be submitted to the EA section no later than November 1, 2003.

If you have any questions about the content of this audit report, or needed corrective actions, you may contact me at silky.labie@dep.state.fl.us or (850) 245-8066.

Sincerely,

Silky S. Labie
Environmental Administrator, Environmental Assessment

Attachment: Audit Checklist for Circle Audit (March 24, 2003)

cc: Andy Tintle, Environmental Assessment
Jane Fugler, Volusia County

FIELD AUDIT CHECKLIST

AUDIT DATE: March 24, 2003

SITE NAME:	Circle K 024	SAMPLING AGENCY NAME:	ATC Associates, Inc
SITE ADDRESS:	1800 S. Nova Blvd	SAMPLING AGENCY ADDRESS:	5801 Benjamin Center Drive
			Suite 101
	Daytona Beach, Fl		Tampa, FL
			33634
SITE TELEPHONE:	N/A	SAMPLING AGENCY TELEPHONE:	813 889 8960

SAMPLING PERSONNEL	POSITION/TITLE	SAMPLING EXPERIENCE (years and type)
Perry Frix	Staff Geologist	2 ½ years
Jerry Jakuvowski		1 year
Andre Gray		3 weeks

AUDITORS: DEP EAS: Silky Labie, Andy Tintle

DEP District:

County: Jane Fugler, Volusia County

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

GENERAL

Y Did samplers use waterproof ink for all documentation? (*FD 1100 section 2.5.)*

N[1] Were errors deleted correctly (one line through) and initialed? (*FD 1100 section 2.6.)*

N[2] Were all cleaning procedures documented, whether performed in-house, by vendor or in the field? (*FD 2000 section 1.)* *Note: Auditors must be familiar with FD 2000.*

Y Were all instrument calibrations recorded properly? (*FD 4100)* *Note: Auditors must be familiar with FD 4100.*

Was the following information documented for all sampling events: *(FD 5000 section 2)*

Y - names of all sampling personnel?

Y - date and time of sample collection?

Y[3] -ambient field conditions?

Y - specific description of sample location?

- field measurement data, including:

Y project name?

Y date and time of calibration or measurement?

Y measurement or test sample value including units?

Y -matrix sampled?

- preservation, including: (*FD 5100 section 1.)*

N preservative name?

N[4] pH verification (if applicable)?

N/A amount of preservative used if preserved in the field?

N/A amount of additional preservative used if pre-preserved?

Y[5] use of ice, if applicable?

GROUNDWATER

For groundwater sampling, was the following additional information recorded: *(FD 5100 section 2.1.)*

Y - purge equipment used?

Y[6] - well casing composition and diameter?

Y - water table depth and well depth?

Y - calculations used to determine purge volume?

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

GROUNDWATER, continued

Y - total amount of water purged?

Y - date well was purged?

Y - equipment used?

Y - well diameter?

Y - depth to groundwater?

Y - volume of water in the well?

Y - purging method?

Y - beginning and ending purge times?

Y - purge rate?

Y - temperature, conductivity, pH, dissolved oxygen, and turbidity measurements?

For well purging, was the following additional information documented: *(FD 5100 section 2.3)*

N/A - calculations for pumping rates?

N/A - flow meter readings?

N/A - time needed to purge one (1) well volume or purging equipment volume?

Y - well volumes or purging equipment volumes purged?

Y - drawdown, if applicable?

Y - parameter measurements (temperature, pH, etc.)?

EQUIPMENT MAINTENANCE

Identify Equipment and Meters and indicate whether records are maintained for the following[7]:

?[7] For rented equipment are records of the rental date(s), and the equipment type, model and inventory number retained?

Y Are all manufacturers' operating and maintenance manual retained and used?

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

PRELIMINARY ACTIVITIES

Y[8] If possible, did the sampling crew consist of at least two members? (*FS 1001 section 1.1.)*

Y Was the equipment construction consistent with the analytes to be collected? (*FS 1001 section 2.2.)*
**Note: Auditor must refer to Tables FS 1000-1 and FS 1000-2 to determine compliance.*

Y Did the samplers bring precleaned equipment to the field or use equipment that has been certified clean by the vendor or laboratory? (*FS 1001 section 2.3.)*

N/A If dedicated equipment was used, did samplers decontaminate all equipment (except dedicated pumps or drop pipes) before use in accordance with applicable procedures in FC 1000? (*FS 1001 section 3.4.)*

Y Was the construction of the sample containers consistent with the analytes to be collected? (*FS 1001 section 4.1.) *Note: Auditor must refer to Table FS 1000-2 to determine compliance.*

Y Were all containers free of cracks, chips, discoloration, etc.? (*FS 1001 section 4.2.)*

CONTAMINATION PREVENTION

Y[9] If possible, did samplers collect samples from the least contaminated location (or background location) to the most contaminated sampling location? (*FS 1002 section 1.1.1.)*

N/A If known, did samplers store ambient or background samples in a separate ice chest or shipping container after collection? (*FS 1002 section 1.1.1.1.)*

N/A If applicable, did samplers collect from downstream towards upstream? (*FS 1002 section 1.1.2.)*

N/A If samples were known to be highly contaminated, were they stored and shipped separately from other samples? (*FS 1002 section 1.1.3.)*

SAMPLE COLLECTION ORDER

8310, Fl Pro, Lead – VOCs (8021, BTEX, EDB) were collected last.

PROTECTIVE GLOVES

Y Did the samplers wear gloves?

Samplers are required to wear gloves if the following issues apply: (*FS 1003 section 2.)*

N/A -Sample source is considered to be hazardous?

Y -Samples will be analyzed for trace constituents?

Y -Part of sampling equipment that is handled will come into direct contact with sample source?

Y Were the samplers careful not to allow gloves to come into contact with the sample or the interior lip of the sample container? (*FS 1003 section 3.)*

Y Were the gloves clean, new, unpowdered and disposable? (*FS 1003 section 4.)*

Y Were the gloves changed as needed and discarded appropriately? (*FS 1003 sections 5. and 6.)*

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

CONTAINER AND EQUIPMENT RINSING

Y[10] Did the samplers rinse collection equipment with ample amounts of site water prior to collecting the first sample? (*FS 1004)*

Y If collecting petroleum hydrocarbons or oil and grease, or filling prepreserved containers, were the samplers careful not to rinse the containers? (*FS 1004)*

FUEL-POWERED EQUIPMENT AND RELATED ACTIVITIES

N/A If using fuel-powered equipment, were they placed away from, and downwind of, any site activities? (*FS 1005 section 1.)*

N/A If samplers handled any fuel, did they wear disposable gloves, dispense all fuel and dispose of gloves downwind and well away from sampling activities? (*FS 1005 section 2.)*

N[3] If sampling at an active gas station, was collection stopped during fuel deliveries? (*FS 1005 section 3.)*

N[3] Location and use of fuel powered units noted in field records

PRESERVATION

Y Was all preservation done in accordance to the requirements specified in Tables FS 1000-4 through FS 1000-8? (*FS 1006 section 1.)*

Y With the exception of 24-hour composite samples, were all appropriate samples preserved within 15 minutes of the last collected sample for each analyte? (*FS 1006 section 2.)*

Y[5] Were appropriate samples put on wet ice at 4º C? (*FS 1006)*

N/A For the first sampling event at a particular site, were all pH adjustments verified for all acid-preserved samples, for all analytes? (*FS 1006 section 5.1.)*

N/O If the site is a repeat site, was at least one sample per parameter group verified for proper pH adjustment? (*FS 1006 section 5.2.)*

If the site is sampled more than once a month, were all pH-adjusted samples verified according to the following schedule: (*FS 1006 section 5.3.)*

_____ - weekly sampling: 1 pH check per month on at least one sample per parameter group?

_____ - daily sampling: 1 pH check per week on at least one sample per parameter group?

N[4, 5.b] Were all preservations and verifications recorded? (*FS 2001 section 3.6.4.)*

If volatile organics require preservation, did the samplers use the following procedure: (*FS 2004 section 3.3.)*

N/A - If applicable, any dechlorination agents must be in the vial before the sample is added? (*FS 2004 section 3.2.)*

N/A - Fill vial almost to top with sample?

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

PRESERVATION, continued

N/A - Add four drops of concentrated HCl?

N/A - Add additional sample to create a convex meniscus?

SAMPLE CUSTODY AND TRANSPORT

Y If applicable, did information in notebook and sample label match custody records?

How were samples transported to the laboratory? (*FS 1009)*

Via sampler delivery

Sample transmittal records contained the following information:

Y	Site name	Y	Unique ID/Container	Y	Sample Condition
Y	Site address	Y	Total # Samples	N/A	Common Carrier
Y	Sample Collection Date	Y[11]	Analyses (link to container)		
Y	Sample Collection Time	Y	Preservation procedure		
Y	Sampler Name				

Y When including transmittal forms with samples, forms are placed in a sealed, waterproof enclosure.

N/A When shipping samples via common carrier, transport containers are securely sealed to prevent lids from accidentally opening.

N/A Shipping bills are retained and are linked to a specific sampling event.

N/A If applicable, were chain of custody procedures observed/followed throughout the project? (*FS 1009)*

HAZARDOUS WASTES

N/A If applicable, were all investigation-derived wastes (IDW) properly managed to eliminate contamination? (*FS 1011 section 1.)*

Y Are all local, state and federal requirements followed pertaining to the containerization, storage and disposal of any hazardous wastes or IDW's? (*FS 1011 section 1.)*

N/A Are all IDW holding containers properly labeled and maintained? (*FS 1011 section 1.5.)*

COLLECTING VOLATILES

Y[12] Are volatile organic vials kept isolated from any fuels or fuel-powered equipment? (*FS 2004 section 2.1.)*

Y If bubbles are present in the collected sample, is the total volume of the bubbles less than 5 mm in diameter? (*FS 2004 section 4.4.1.)*

N/A In the case of effervescing after adding any preservatives, did the samplers opt to not submit the preserved sample, but rather collect unpreserved samples and follow the 7-day holding time instead? (*FS 2004 section 3.3.)*

Y Were samplers careful to not re-open the vials, for any reason, once the sample was collected? (*FS 2004 section 4.4.3.)*

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

DOCUMENTATION

SAMPLE IDENTIFICATION

Y Is each container labeled or tagged with a unique field ID code?

Y Is the information on each container recorded in the field records?

Y Does the ID code link the container to

- Y the sample source or point
- Y Requested analytes/test methods
- Y Preservation
- Y Sample Replicate

Y Is the label attached so that it does not contact sample that is removed from or poured into the container?

GENERAL

Was the following information recorded:

- Y Names of all sampling team personnel on site during event
- Y Date and time of sample collection
- Y[2] Ambient conditions (weather, tide, wind, wind direction, etc.)
- Y Specific sampling point description (lat/longs, outfall, etc.)
- Y Matrix
- N[5B] Preservation (see FD 4000)
- Y Purging equipment
- Y Sampling equipment
- N/A Number and amount of any subsample in a composite
- Y Signature(s) or initial(s) of sampler(s)

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

What type and brand of meter(s) is used to measure field parameters?

pH	Horiba U-10 (multiprobe)
Dissolved Oxygen	Horiba U-10 (multiprobe)
Temperature	Horiba U-10 (multiprobe)
Conductivity	Horiba U-10 (multiprobe)
Turbidity	Lamotte 2020

Indicate whether an electronic water level sensor or chalk tape is used to take water level measurements. *(FS 2211 section 3.)*

☒Electronic Model: Heron Dipper T

☐Chalk Tape

Are water levels measured to the nearest 0.01 foot? (*FS 2211 section 3.2).* ☒Yes ☐No

Levels were measured on the north side of each well casing

Sampling Order	Well ID	Depth to Water (fbls or fbtoc)	Total Depth (fbls or fbtoc)[13]	Screened Interval	Submerged?	
					Y	N
	MW1	5.87	14.34	Didn't know	Y[a]	
	MW2	5.79	14.20	Didn't know	Y[a]	
	MW3	5.73	15.24	Didn't know	Y[a]	
	MW4	6.08	14.52	Didn't know	Y[a]	
	MW5	6.76	14.44	Didn't know	Y[a]	
	MW6	6.59	14.75	Didn't know	Y[a]	
	MW7	7.07	14.43	Didn't know	Y[a]	
	MW8	6.63	14.47	Didn't know	Y[a]	
	MW9	5.88	14.56	Didn't know	Y[a]	
	MW10	6.68	14.63	Didn't know	Y[a]	

[a] Water table was high. In all likelihood, the screens (thought to be 5 to 15 feet)were submerged.

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

MW # MW1			Calculated Purge Volume 1.35	☒ Verified?	Purge Rate: estimated	☐ Verified?		
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☒P ☐S	1043							5.89
☒P ☐S	1055	1.5	7.17	583	19	.57	22.7	5.87
☒P ☐S	1059	.75	7.17	583	15	.74	22.7	5.88
☒P ☐S	1103	.5	7.17	583	9.6[14]	.68	22.7	5.88
☐P ☒S	1104	PAHs and BTEX collected; PAH collected first						

MW # MW 2			Calculated Purge Volume 1.34	☒ Verified?	Purge Rate:	☐ Verified?		
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU) Horiba/Lamotte	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☒P ☐S	1112							5.85
☒P ☐S	1121		6.76	620	115	.36	22.6	5.85
☒P ☐S	1126		6.84	614	79/65	.10	22.6	5.85
☒P ☐S			6.88	608	31/26	.3	22.6	5.85
☒P ☐S	1140		6.81	598	27/21	.15	22.4	5.85
☒P ☐S	1145		6.77	5.95	16/14.6[14]	.13	22.4	5.85
☐P ☒S	1150	PAHs, VOCs						

MW # MW3			Calculated Purge Volume 1.52	☒ Verified?	Purge Rate: <1	☐ Verified?		
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☒P ☐S	1416	1.75	6.99	.509	4.6	.35	23.1	5.88
☒P ☐S	1419	0.5	7.00	.507	3.4	0.47	23.2	5.84
☒P ☐S	14.22	0.5	7.00	.507	2.6	0.49	23.2	5.84
☒P ☐S								
☐P ☒S		EDB, Lead, PAH, FlPro						

MW # MW4			Calculated Purge Volume	☐ Verified?	Purge Rate: <1	☐ Verified?		
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☒P ☐S	11:40	1.5	6.91	1.10	18	0.54	23.3	6.14
☒P ☐S	11:49	1	6.9	1.11	7.0	0.52	23.3	6.15
☒P ☐S	11:48	0.75	6.9	1.10	4.6	0.52	23.3	6.15
☐P ☒S	Sampling began immediately after purging completion							

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

MW # MW5			Calculated Purge Volume 1.23 ☒Verified?		Purge Rate: <1 ☐ Verified?			
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU) Horiba/Lamotte	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☒P ☐S	1334	1.5	6.79	1.10	3.6	0.59	22.5	6.87
☒P ☐S	1338	0.75	6.79	1.09	2.4	0.54	22.5	6.87
☒P ☐S	1342	0.75	6.80	1.09	1.7	0.52	22.5	6.88
☐P ☒S		PAHs then BTEX						

MW # MW6			Calculated Purge Volume 1.3 ☒Verified?		Purge Rate: ☐ Verified?			
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU) Horiba/Lamotte	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☒P ☐S	1207							6.69
☒P ☐S	1217		6.54	.855	40/12	.1[15]	23.6	6.69
☒P ☐S			6.60	.855	10/6.3	.04	22.7	6.69
☒P ☐S	1225		6.65	.855	3/4.0	.03	23.7	6.69
☐P ☒S	1226	PAHs then BTEX						

MW # MW7			Calculated Purge Volume 1.17 ☐Verified?		Purge Rate: ☐ Verified?			
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU) Horiba/Lamotte	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☒P ☐S	1244							7.15
☒P ☐S	1253		6.61	765	7/10	1.36[16]	22.5	7.15
☒P ☐S	1257		6.56	821	5	.09	22.4	7.15
☒P ☐S	1300		6.56	828	1	.04	22.4	7.15
☒P ☐S	1304		6.66	830	2	.03	22.4	7.15
☐P ☒S	1306	PAHs then BTEX						

MW # MW8			Calculated Purge Volume ☐Verified?		Purge Rate: ☐ Verified?			
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☒P ☐S	1321							6.7
☒P ☐S	1329		6.49	670	9/2.1	.83	22.2	6.7
☒P ☐S	1331		6.54	678	4	.7	22.3	6.7
☒P ☐S	1333		6.57	685	2	.51	22.3	6.7
☒P ☐S	1336		6.55	691	1.6	.44	22.3	6.7
☒P ☐S	1339		6.54	694	1	.42	22.3	6.7

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

MW # MW8 continued			Calculated Purge Volume_____ ☐Verified?		Purge Rate:_____ ☐ Verified?		
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☐P ☒S	1342	PAHs then BTEX						

MW # MW9			Calculated Purge Volume 1.38 ☒Verified?		Purge Rate:_____ ☐ Verified?		
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU) Horiba/Lamotte	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☒P ☐S	1356							6.0
☒P ☐S	1404		7.06	512	880/240	.13	20.8	6.0
☒P ☐S	1409		7.06	497	435/150	.21[16]	20.8	6.0
☒P ☐S	1412		7.05	492	340/100	.13	20.9	6.0
☒P ☐S	1415		7.07	492	294/80	.13	20.9	6.0
☐P ☐S	4-gallon purge bucket emptied							
☒P ☐S	1422		7.09	484	158/45	.10	20.8	6.0
☒P ☐S	1425		7.08	484	151/33	.02	20.8	6.0
☒P ☐S	1427		7.11	480	1/27	.05	20.8	6.0
☐P ☒S	1430	PAH, FlPRO, BTEX						

MW # MW10			Calculated Purge Volume 1.27 ☒Verified?		Purge Rate: <1 ☐ Verified?		
Purge / Sampled	Time	Volume	pH	Specific Conductance (µhos/cm or µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °F or °C	Water Level Depth (ft)
☒P ☐S	12:24	2	6.99	.521	50	0.5	22.2	6.77
☒P ☐S	12:29	1	7.00	.535	34	0.64	22.3	6.76
☒P ☐S	12:37	1.5	7.01	.534	15	.67	22.3	6.76
☒P ☐S	12:48	1.5	7.00	.536	5.1	0.61	22.3	6.76
☒P ☐S	12:52	1	7.00	.536	4.2	0.6	22.3	6.76
☐P ☒S		PAH, FlPRO, BTEX						

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

	MW1	MW2	MW3	MW4	MW5	MW6	MW7	MW8	MW9	MW10
Was the well casing free of standing water?	N[17]	N[17]	N[18]	N[17]	N[17]	N[17]	N[17]	N[17]	N[17]	N[17]
If not, was the water removed? *(FS 2211 section 2.1).*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Was ground cover used in the work area surrounding the well?	N[19]	N[19]	N[19]	N[19]	N[19]	N[19]	N[19]	N[19]	N[19]	N[19]
Is the Depth to groundwater measured at frequent intervals? (*FS 2213)*	Y[20]	Y[20]	Y[20]	Y[20]	Y[20]	Y[20]	Y[20]	Y[20]	Y[20]	Y[20]
Were well volumes determined accurately? (Note: Auditor-- check random calculations in logbook) (*FS 2211 section 5)*	Y[21]	Y[21]	Y[21]	Y[21]	Y[21]	Y[21]	Y[21]	Y[21]	Y[21]	Y[21]
Describe the purging equipment: Masterflex 7518-02 easyload with new polyethylene tubing used on wells 6,7,8, and 9; Barnant Co. Portable sampler (peristaltic pump) used on wells 1,2,3,4,5 and 10.										
Is the well screen completely submerged or partially submerged? (P or S)	P	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown
Conventional Purge: *Pump, tubing, or bailer* is placed above the screen at the top of the water column.*										
1. Is the pump intake or top of the bailer placed at the top of the water column?	N[22]	N[22]	N[22]	N[22]	N[22]	Y	Y	Y	Y	N[22]
Tubing/Pump Placement										
a. Was the sampler careful to make sure the pump tubing or bailer was not allowed to drop to the bottom of the well while determining the proper placement of the tubing or bailer?	Y	N[22]	N[22]	N[22]	N[22]	Y	Y	Y	Y	N[22]
b. Did the sampler properly estimate the placement of the pump tubing or bailer?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
c. Did the sampler properly record the placement of the pump tubing or bailer?	N[23]	N[23]	N[23]	N[23]	N[23]	N[23]	N[23]	N[23]	N[23]	N[23]
Did the samplers use a type of flow-through cell to measure parameters?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Purging Completion[24]										
a. Purging is considered complete if three (3) consecutive measurements of the three parameters listed below are within stated limits:										
1. Temperature ±0.2° C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. pH ±0.2 SU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Specific Conductance ± 5.0% of reading	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

		MW1	MW2	MW3	MW4	MW5	MW6	MW7	MW8	MW9	MW10
AND (*FS 2212 section 3.1)*											
a1. DO is no greater than 20% saturation?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
a2. Turbidity is no greater than 20 NTUs?		Y	Y	Y	Y	Y	Y	Y	Y	N	Y
OR (*FS 2212 section 3.2.)*											
a3. DO is ±0.2 mg/L or 10%, (which ever is greater)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
a4. Turbidity is ±0.5 NTUs or 10%, which ever is greater		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	
Equipment (*FS 2213)*											
a. Is the pump decontaminated (or replaced) between wells?	Cleaned:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Replaced:										
b. Is the tubing decontaminated (or replaced) between wells?	Cleaned:										
	Replaced:	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
c. When collecting organics using a pump, what is the pump configuration? *(FS 2221 section 1.)*:											
1. Stainless steel and Teflon/ PP/PE variable speed submersible pump?											
2. Stainless steel and Teflon/PP/PE variable speed bladder pumps?											
3. Permanently installed PVC bodied pump (as long as pump remains in contact with the water in the well at all times)?											
4. Peristaltic pump with glass and Teflon/PP/PE vacuum jug assembly											
5. Peristaltic pump with flexible Teflon/PP/PE-lined tubing in pump head.		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6. Other (Describe)		Per directive from tanks section, organics were sampled through the pump head.									
d. When collecting volatile organics using a peristaltic pump, is one of the following techniques used (*FS 2221 section 1)*?											
1. The "Straw Technique"?		Y	Y	Y	Y[25]	Y	Y	Y	Y	Y	Y
2. Reverse flow on a peristaltic pump?											
3. Other (Describe)											

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

GENERAL

N[26] Did samplers verify that all equipment is in proper working condition, calibrated, and that batteries are properly charged? (F*T 1000 section 2.1)*

N[27] Were field test results bracketed between acceptable calibration results? (*FT 1000 section 2.2.1)*

N[28] Were all calibrations verified at no more than 24-hour intervals? (*FT 1000 section 2.2.3)*

N 3a. If not, did sampler have historical data showing instrument remains stable for longer periods of time (no greater than one month)? (*FT 1000 section 2.2.3)*

FIELD MEASUREMENT OF pH

Y Was the type of instrument (ID code, unique description, Model # + Serial number, etc) specified?

For the initial calibration and continuing calibration checks, was the following recorded?

ccv	Type (ICAL or CCV)	3.98	Result (if CCV)	5%	Acceptance Criteria
3-24-03	Date	4.0	True Value (CCV)	Y	Successful ICAL or CCV
	Time		Standard Values (ICAL)	Y	Analyst/Technician name(s)

Y Was the calibration verified within a 24-hour interval?

N/A Did the organization have stability studies to justify longer periods between verifications?

N/A Are verifications performed at least monthly if stability studies demonstrate longer periods?

Y Manufacturer's specifications or acceptance ranges for all standards are retained

Y Were sample measurements linked to ICAL and CCV by date and time?

Were the sample measurements bracketed by

Y Acceptable ICAL/CCV N[22] Standard concentration

N/A Were corrective actions documented with a ICAL/CCV failure or samples outside the standard concentration?

N/A Were samples that were associated with a failed calibration properly qualified?

Y Did pH meter consist of a potentiometer, a glass electrode, a reference electrode, and a temperature-compensating device? (*FT 1100 section 1.1)*

Y Was pH meter accurate and reproducible to at least 0.2 units in the range of 0.0 to 14.0? (*FT 1100 section 1.1.1*

N[27] Were buffers used that bracketed the expected sample range? (*FT 1100 section 1.2)*

Was the meter calibrated at the base of operations, or in the field? *FT 1100 section 2.1.1*

Y Base of Operations _____ Field

Y[27] If calibration was performed at base of operations, was calibration checked on-site? (*FT 1100 section 2.1.1)*

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

FIELD MEASUREMENT OF pH, continued

Y — Did the initial calibration and calibration checks meet the acceptance criteria of +/- 0.2 SU? (*FT 1100 section 2.1.2)*

N/O — On a weekly basis, was the calibration checked to ensure the % theoretical slope is greater than 90%? (*FT 1100 section 2.1.3)*

N[27] — Was the meter calibrated with at least two buffers (one of which is a pH 7) bracketing the expected sample range? (*FT 1100 section 2.3.3)*

N[29] — Was the probe rinsed with de-ionized water (DI) before and after each standard buffer solution? (*FT 1100 section 2.3.6)*

Y — Was an appropriate amount of time given for stabilization before measurement was recorded? (*FT 1100 section 2.4.6)*

FIELD MEASUREMENTS OF SPECIFIC CONDUCTANCE

Y — Was the type of instrument (ID code, unique description, Model # + Serial number, etc) specified?

Not performed[27, 28] — For the initial calibration and continuing calibration checks, was the following recorded?

Y — Was an appropriate amount of time given for stabilization before measurement was recorded? (*FT 1200 section 3.3.3)*

FIELD MEASUREMENT OF TEMPERATURE

Y — Was the type of instrument (ID code, unique description, Model # + Serial number, etc) specified?

Not performed[27, 28] — For the initial calibration and continuing calibration checks, was the following recorded?

Please specify the type of instrument used for field temperature measurements: (*FT 1400 section 1.1)*

Y — Digital thermistor and meter typical of field instruments?

____ Glass bulb, mercury thermometer (not recommended for field)?

____ Glass bulb, alcohol-filled thermometer with protective case?

____ Bi-metal strip/ dial-type thermometer?

____ Advanced silicone chip temperature sensor and digital meter?

Y — Was field instrument capable of measuring temperature in 0.1 degree C? (*FT 1400 section 1.1.1)*

Y — Was an appropriate amount of time given for stabilization before measurement was recorded? (*FT 1400 section 2.3.2)*

If temperature measurement is for a ground water sample, was the reading taken in-situ downhole, or by using a flow through cell? *FT 1400 section 2.3.2.1*

____ In-situ Y Flow-through cell

Y — Was the temperature recorded to the nearest 0.1 degree C? (*FT 1400 section 2.3.3)*

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

FIELD MEASUREMENT OF DISSOLVED OXYGEN

Y — Was the type of instrument (ID code, unique description, Model # + Serial number, etc) specified?

Not performed [27, 28] — For the initial calibration and continuing calibration checks, was the following recorded?

Y — Is the field instrument a membrane/electrode DO meter, with polarographic or galvanic electrode, and a sensitivity that results in a precision of +/- 0.2 mg DO/L and a accuracy of +/- 0.2 mg DO/L?

Was temperature corrected automatically or manually in accordance with SM 4500-O G? (*FT 1500 section 1.1*

____ Manual Y Automatic

Y — Was the probe stored with a cover that creates a saturated atmosphere? (*FT 1500 section 2.1.2)*

Y — Was the probe and membrane in proper working condition (no corrosion, bubbles under the membrane, or any wrinkles or tears in the membrane)? (*FT 1500 section 2.1.3)*

N[30] — Were calibrations checked against a solubility table with an acceptance criteria of +/- 0.2mg DO/L for both initial and continuing calibrations? (*FT 1500 sections 1.1., 2.2.2.2. and 2.3.1.)*

Were any of the following additional calibration checks performed:

N — Winkler method? *(FT 1500 section 2.4.1)*

N — Zero-DO Check? (*FT 1500 section 2.4.2)*

Y — Air-Saturated Water Check? (*FT 1500 section 2.4.3*

Y — Was an appropriate amount of time given for stabilization before measurement was recorded?

N[29] — Was the probe rinsed with de-ionized water and kept in a saturated atmosphere between sites and events? (*FT 1500 section 2.5.2)*

FIELD MEASUREMENT OF TURBIDITY

Y[31] — Was the type of instrument (ID code, unique description, Model # + Serial number, etc) specified?

For the initial calibration and continuing calibration checks, was the following recorded?

CCV	Type (ICAL or CCV)	.95, 9.9	Result (if CCV)	SOP	Acceptance Criteria
3-24-03	Date	1,10	True Value (CCV)	Y[32]	Successful ICAL or CCV
920	Time		Standard Values (ICAL)	Y	Analyst/Technician name(s)

Y — Was the calibration verified within a 24-hour interval?

N/A — Did the organization have stability studies to justify longer periods between verifications?

N/A — Are verifications performed at least monthly if stability studies demonstrate longer periods?

Y — Manufacturer's specifications or acceptance ranges for all standards are retained

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

FIELD MEASUREMENT OF TURBIDITY, continued

Y Were sample measurements linked to ICAL and CCV by date and time?

Were the sample measurements bracketed by

Y Acceptable ICAL/CCV N[33] Standard concentration

Y Does the turbidimeter meet the specifications in FDEP SOP FT 1600 section 2.1?

Were standards used for calibration Formazin type or Polybead type primary standards? (*FT 1600 section 2.3)*

____ Formazin ____ Polybead Y AMCO Stnds

Y Was the instrument calibrated with primary standards or was the calibration verified with secondary standards, either at the base of operations or in the field? (*FT 1600 section 3.2)*

Y Field ____ Base of Operations

N[33] Was the calibration and calibration check performed with standards that bracket the expected sample range? (*FT 1600 section 3.2)*

Y Did the calibration meet the acceptance criteria below: (*FT 1600 section 3.3.2)*

Standard	Acceptance Criteria
0.1 - 10 NTU	+/- 10% of the standard
11-40 NTU	+/- 8% of the standard
41-100 NTU	+/- 6.5% of the standard
>100 NTU	+/- 5% of the standard

N[34] Did the sampler double rinse the sample cell or cuvette with a small amount of sample water before reading an actual sample measurement? (*FT 1600 section 3.3.4)*

N[35] Did sampler gently dry out external surface of the sample cell or cuvette with lint-free paper? (*FT 1600 section 3.3.3)*

DOCUMENTATION

REAGENTS AND STANDARDS

Is the organization recording or documenting the following:

Vendor Records

Y Catalog number

Y Description of each reagent, solution or standard

Y Retain vendor assay certifications (for standards)

Y Standard Grade

Y[36] Expiration date on all reagents and standards

N[37] If calibrated by an outside source, are all calibration certification statements retained?

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

GENERAL

Y — Did all sampling equipment arrive at the site precleaned, appropriately wrapped and ready for use? *(FC 1003 section 1).*

Y[38] — Did the samplers conduct any on-site cleaning or decon?

N/A — Was all equipment rinsed with water after use? (*FC 1003 section 3.)*

Y — Was any/all cleaning waste (solvents or reagents) properly containerized and disposed of? *(FC 1110 section 1.2.)*

REAGENTS

What detergent was used to clean equipment? *FC 1001 section 1*

N/A Liquinox — N/A Other (Describe) _____
N/A Acationox
N/A Alconox

What type of solvent did samplers use as the rinse solvent for cleaning equipment (pesticide grade isopropanol, acetone, methanol, etc.)? *(FC 1001 section 2.1.)*

_____ Methanol — Y IPA
_____ Acetone — _____ Other (Describe)

Describe type of analyte-free water used (DI, distilled, Milli-Q, etc.): *FC 1001 section 3.3.*

_____ DI — _____ Milli-Q
_____ Distilled — Y Other (Describe) Tap water

N/A — If blanks were collected, was analyte-free water used? *(FC 1001 section 3.4)*

N — Was analyte-free water used as the final decontamination water rinse? *(FC 1001 section 3.4).*

N/A — If samples for metals are collected, **and** nitrogen components are not sampled, did samplers use reagent grade nitric acid as the acid rinse for cleaning equipment? *(FC 1001 section 4.1)*

N/A — If samples for metals are collected **and** nitrogen components are sampled, did samplers use reagent grade hydrochloric acid as the acid rinse for cleaning equipment? *(FC 1001 section4.2.)*

GENERAL CLEANING

Please describe the procedure used for any on-site cleaning of Teflon, stainless steel, and glass sampling equipment: (*FC 1131)*

Water level cleaned by wiping with a paper towel that was saturated with isopropanol.

TUBING

If applicable, was pump tubing cleaned between sites or was new tubing used for each site?

_____ Cleaned — Y New Tubing used

DOCUMENTATION

EQUIPMENT CLEANING

Y[39] — Were cleaning procedures different from the SOP?

N/A — Was an internal SOP available that described the step-by-step procedures?

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

DOCUMENTATION, continued

N/A Was there documentation to demonstrate that the modifications were effective? (e.g., blanks)

N/R Are certificates that are issued by vendors for precleaned equipment or containers retained?

N/A When cleaning the in field, is the date and time of cleaning recorded in the field records

SAMPLE KIT DOCUMENTATION

Does the organization have records of transmittal and/or procuring the following:

Y	Quantity, description and material composition of all containers, container closures or closure liners
Y	Intended application for each container (e.g., analytical method; preservation, etc.)
Y	Preservative type and concentration for prepreserved & separate containers
N[38]	Description of any analyte-free water
N	Date analyte-free water was containerized
N/A	Date of sample kit preparation
N/A	Description of and material composition of all reagent transfer implements
NA	Quantity, description and material composition of all sampling equipment
N/A	Tare weight of VOC vials (for 5035)

SUPPORTING DOCUMENTS, REFERENCE AND MANUALS[40]

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[1] ***Finding:*** *The correct procedure for handling errors was not consistently used.*
[2] ***Finding:*** *Samplers did not document cleaning the tapes or sondes.*
[3] ***Finding:*** *Samplers did not note prevailing wind direction since this is an active site, with constant activity. Samplers did not note if active fueling was occurring when samples were being collected.*
[4] ***Finding:*** *Adequacy of preservation was not checked on acid-preserved samples.*
[5] ***Finding:*** ***a.*** *The auditors found it necessary to prompt the samplers on the need to ice the samples*
b. *Use of ice was noted on the transmittal form, however, the bottle labels on those sample containers that required thermal preservation were marked as "no preservative."*
[6] ***Finding:*** *Well casing construction was not noted.*
[7] ***Finding:*** *Envirosupply is contracted for equipment maintenance and calibration. Samplers stated that invoices are retained, but were unaware of any other records that might be available.*
[8] ***Observation:*** *Sampling crew consisted of three individuals. Two purging and sampling teams were used.*
[9] ***Finding:*** *Samplers needed to be reminded of the sample collection order. It appeared that they were unaware of the levels of contamination in the established wells. This information was supplied by Volusia County.*
[10] ***Comment****: Equipment was rinsed by the purging process.*
[11] ***Finding:*** *Until prompted, samplers were not planning to specifically identify the sample containers and parameters for MW3, which had a different set of tests ("GAG") to be analyzed.*
[12] ***Comment:*** *This is an active site, and no trip blanks were provided to monitor environmental conditions.*
[13] ***Comment:*** *Total water level measurements were taken in fall 2002.*
[14] ***Finding:*** *Although the turbidity had fallen below 20 NTU, samplers must establish that the turbidity remains below 20 NTU and all other measurements are stabile by taking at least two more sets of stabilization readings.*
[15] ***Finding:*** *Auditors noted that the tubing was not in the bottom of the flow-through cell, but was cascading down the side. This affected the initial DO measurements.*
[16] ***Finding:*** *Auditors noted that the tubing was splashing water rather than flowing into the flow-through cell. This affected the initial DO measurement.*
[17] ***Comment:*** *Top of well casing was not submerged. It was not necessary to remove the standing water.*

Y (Yes), **N** (No), **N/A** (Not Applicable), **N/O** (Not observed), **N/R** (Not requested)

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[18] ***Comment:*** *The water in the sump was very close to the top of the well casing.*
[19] ***Comment:*** *Although the sampling teams did not allow any of the tubing to contact the ground, a ground cover is recommended. This may have eliminated the ant problem at MW7, where ants were swarming in and around the well casing.*
[20] ***Comment:*** *Measured each time a set of stabilization measurements taken.*
[21] ***Comment:*** *Bucket with calibrated markings used to receive water.*
[22] ***Finding:*** *Second sampling team attempted to place tubing intake in the screened interval. In many cases placement was accomplished by dropping the tube to the bottom, and pulling it up to an approximate depth.*
[23] ***Comment:*** *The placement of the intake tubing in the well is critical in evaluating the sampling event and should be recorded. At a minimum specify if the tubing was placed at the top of the water column or in the screened interval.*
[24] ***Finding:*** *Sampling teams were not familiar with the purging completion criteria.*
[25] ***Finding:*** *Samplers needed to insert the tubing into the well multiple times in order to fill the VOC vials. In some instances, the tubing scraped the side of the well casing, dropping particulates in the water. In MW 4, the second VOC vial has visible solids, a result of the described practice.*
[26] ***Finding:*** *One of the turbidimeters could not be calibrated. All equipment should be checked for working condition before mobilizing to a location.*
[27] ***Finding:*** *Sampling team did not have the requisite supply of standards to check calibrations in the field. They had a single pH standard (4.3), no specific conductance standards (claimed that manufacturer allows free atmosphere calibration), and 1.0 and 10.0 NTU standards for turbidity.*
[28] ***Finding:*** *Calibrations for temperature and specific conductance were not verified in the field.*
[29] ***Finding:*** *Probes were not rinsed between measurements.*
[30] ***Finding:*** *DO checks as described were not observed after sampling event was completed.*
[31] ***Comment:*** *The team had three units: Horiba U-10, unit 1, Horiba U-10, unit 2 and a LaMotte 220.*
[32] ***Comment:*** *One of the meters could not be properly calibrated. This unit was not used although the auditors had the remind the second team that the unit was not operational.*
[33] ***Finding:*** *Auditors noted many final turbidity reading in excess of 10 NTU. a 20 NTU standard (the critical decision point for purging completion) should be added.*
[34] ***Finding:*** *Samplers did not always rinse the cell with sample before collecting the sample for measurement.*
[35] ***Finding:*** *Samplers used paper towels to dry the exterior of the cuvette. The towels are not lint-free, and may scratch the cuvette surface.*
[36] ***Finding:*** *While reagents had an expiration date, these dates were not observed. Auditors note that the expiration date of the pH standard was 2-3-03.*
[37] ***Finding:*** *All units are on long-term lease, and the sampling teams rely on the calibration performed by the rental agency. None of the calibration certification records from the rental agency were available for review.*
[38] ***Comment:*** *Only the water level tape was reused.*
[39] ***Comment:*** *Sampling team planned to obtain distilled water at the facility store, however none was available. All rinsing was done with tap water.*
[40] ***Finding:*** *Although the sampling teams had copies of the applicable Department Standard Operating Procedures, the teams did not have a copy of their most recent quality manual.*

Florida Department of

Memorandum **Environmental Protection**

Via Email

TO: Jane Fugler, Environmental Specialist
Volusia County Environmental Management

FROM: Silky S. Labie, Environmental Administrator
Environmental Assessment Section

DATE: January 24, 2003

SUBJECT: Circle K #224, Daytona Beach Data Review for samples collected on 7-15 to 7-17,2002 by ATC, Tampa, and analyzed by Hygeia Laboratories, Inc

Attached are two sets of checklists for the referenced samples. One set deals with the soils samples, and the second addresses the water samples. The findings, comments and observations for both data reviews are found at the end of the checklists, and are associated with specific items in the text.

Although the laboratory and consultant were not required to provide a complete set of information, sufficient data and records were provided to recommend not accepting the data from the monitoring wells. Further, the soil data is inconclusive with respect to naphthalene for soils from SB-17@ 6' and 3", and SB-18 @ 1" and further characterization is needed to determine if the naphthalene concentrations do exceed the leachability criteria.

The recommendation to reject the groundwater data are based on the following:

1. Irregularities and inconsistencies in the field information (see findings 1, 2, 4, 6, 30, 31, 32, 33, 34, 35, and 36).
    a. None of these wells appeared to have stabilized before samples were collected, although, the data indicated that further purging may have produced measurements that would have met the DEP stabilization criteria for purging.
    b. Unless the groundwater in the vicinity is naturally high in dissolved oxygen, the purging process may have contributed to the DO values that were very close to the goal of less than 20% saturation point.
    c. The very high NTU (999) is usually indicative of problems with the instrument, and not a turbid sample. It is doubtful that the turbidimeter was properly calibrated, as some of the field notes indicated that the water was "clear" when a value of 270 NTU was reported, and one set of values were reported. Further, the laboratory did not have any notes concerning excess turbidity in the samples.
    d. None of the reported purge volumes could be verified from the measurements recorded for total well depth and static depth to water.
    e. Fl PRO and lead require acid preservation. There is no indication either in the laboratory or field records that acid was added or that the pH of the samples were checked.
    f. There is no clear identification of individual sample containers that were collected from each well. Neither the field records nor the laboratory records uniquely identify each container. Therefore, there is no clearly defined link between a

sample container that was collected in the field, and the result that was reported for the same sample.

g. Based on the information on the groundwater sampling logs, it is doubtful that representative samples were collected. Therefore, the related test results would not provide data that is representative of the site.

2. Concerns with the reporting levels and certain of the reported values.

   a. It is difficult to draw any conclusions from the data that was reported by the laboratory as "BRL", since there is no narrative or direct connection with a laboratory-generated method detection limit. Some of the values appear high with respect to method-stated detection limits; other high values may be due to a dilution that the laboratory performed.

      In addition, some of the values are higher than the criteria levels. For some tests, the elevated values were probably due to a dilution (although none was reported), however in many cases, the laboratory should have been able to achieve the requisite level.

   b. Any result for an analyte that is associated with a failed laboratory control spike cannot be accepted. Although acenathylene and benzo(g,h,i)perylene were reported as "BRL", additional work needs to be done to verify the data.

   c. Naphthalene as reported in 8310 was nearly half of the value reported by 8021. Both samples analyses had surrogate problems that could partially explain the discrepancy.

In general, the soil data could be used if the findings can be adequately addressed. Of most importance is the relationship between the "BRL" and the method detection limit. Many laboratories establish a reporting limit that does not reflect the true method detection limit. The laboratory should submit a revised report with non detects accurately reported to the MDL, as well as providing responses to the relevant findings.

These checklists are provided to you so that you can draw any additional conclusions concerning the adequacy of the data. They may also be forwarded to the consultant and/or laboratory for responses to the various findings. The organizations must be notified of the findings so that they can take measures to avoid future occurrences of the same problems. I recommend that the response be directed to you, and that a corrective action plan, and implementation schedule be included. We will be happy to help you evaluate any additional information that might be provided.

Please call me at (850) 245-8066 or email me a silky.labie@dep.state.fl.us if you have any questions or need further clarification.

/ssl

Attachments (2): Project Audit Checklist for Soils dated January 10, 2003

Project Audit Checklist for Groundwater dated December 24, 2002.

cc: Donna Burmeister, BPSS