



Public Utilities

March 27, 2015

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Public Utilities

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Mr. John Morris, P.G.

Florida Department of Environmental Protection

Waste Permitting Section

13051 Telecom Parkway

Temple Terrace, FL 33637

RE: **Southeast County Landfill
Laboratory Analytical Results
Initial Assessment Monitoring Plan
Report No. 54 – February 2015**

Dear Mr. Morris:

The Hillsborough County Public Utilities Department (County) is pleased to provide the analytical results from the February 2015 sampling event conducted as part of the continuation of the Initial Assessment Monitoring Plan (IAMP). The IAMP was developed to address the potential impacts to groundwater from the sinkhole on the edge of Phase VI at the Southeast County Landfill (SCLF), which was discovered on December 14, 2010.

As part of the agreement between the County and Florida Department of Environmental Protection Southwest District Office (Department), three (3) surficial aquifer designated as TH-73, TH-74, TH-75 are sampled on a monthly schedule and four (4) upper Floridan/Limestone aquifer monitoring wells, designated as TH-72, TH-76, TH-77, and TH-78 are sampled on a quarterly schedule. Representative samples were collected from each of these seven (7) monitoring wells on February 4-5, 2015 and analyzed for total dissolved solids (TDS), chloride, total ammonia, arsenic, iron, sodium, and five (5) field parameters. Each sample collected was analyzed by our contracted laboratory, Test America, Inc. The following paragraphs summarize the parameter specific results pertinent to the evaluation of potential water quality impacts from the sinkhole at the SCLF

pH

pH was observed within the Secondary Drinking Water Standard (SDWS) acceptable range of 6.5-8.5 pH units for each of the four (4) upper Floridan/Limestone aquifer monitoring wells. The pH values in monitoring wells, TH-72, TH-76, TH-77, and TH-78 were recorded at 6.71, 7.44, 7.39, and 8.25 pH units. Each of the three (3) surficial aquifer monitoring wells observed pH below the SDWS acceptable range of 6.5-8.5 pH units. Surficial aquifer monitoring wells TH-73, TH-74, and TH-75 were observed at 4.82, 5.58, and 5.57 pH units. The pH values observed are consistent with the historical data set.

Turbidity

Turbidity values in the surficial aquifer monitoring wells TH-73, TH-74, and TH-75 were recorded at 7.48, 2.63, and 1.79 Nephelometric Turbidity Units (NTUs). Turbidity in the upper Floridan aquifer monitoring wells TH-72, TH-76, TH-77, and TH-78 were recorded at 2.29, 0.67, 0.51, and 0.96 NTUs, respectively.

Conductivity

The conductivity values in TH-73, TH-74, and TH-75 were recorded at 481, 771, and 443 micromhos per centimeter (umhos/cm), which is consistent with historical data set. Conductivity values in TH-72, TH-76, TH-77, and TH-78 were recorded at 2,540, 525, 492, and 601 umhos/cm, respectively. Monitoring well TH-72 is the closest UFA monitoring well to the sinkhole, and it continues to exhibit groundwater impacts similar to those observed over the past year. Conductivity values in TH-76, TH-77, and TH-78 are relatively low and consistent with the unaffected deep wells across the site

Total Dissolved Solids (TDS)

The TDS in monitoring well TH-72 was observed at 1,300 mg/l, which continues to be above the SDWS of 500 mg/l. The elevated value is likely attributable to the waste within the remediated sinkhole. The remaining three (3) down gradient UFA monitoring wells, TH-76, TH-77, and TH-78 exhibited TDS values of 280, 280, and 310 mg/l, respectively, which is consistent with the water quality of the unaffected deep wells across the site. The TDS in the surficial aquifer monitoring wells TH-73, TH-74, and TH-75 were all below the Secondary Drinking Water Standard (SDWS) of 500 mg/l, which is consistent with historical data set

Chloride

Chloride was observed at 410 mg/l in monitoring well TH-72, which is above the SDWS of 250 mg/l. The elevated chloride value observed is likely attributable to waste in the sinkhole and the grout materials injected into the subsurface as part of the sinkhole stabilization and remediation. Chloride values in the remaining down gradient UFA monitoring wells TH-76, TH-77, and TH-78 were observed at 9.8, 7, and 29 mg/l, which is consistent with the unaffected deep wells across

Mr. John Morris, P.G.

March 27, 2015

Page 3

the site. Chloride concentrations in the surficial aquifer wells, TH-73, TH-74 and TH-75 were observed below the SDWS at 59, 97, and 40 mg/l, respectively, which is consistent with historical data set.

Iron

Total iron concentrations in one (1) of the four (4) upper Floridan/Limestone aquifer monitoring wells was observed above the SDWS of 0.3 mg/l. Monitoring well TH-72 exhibited iron at 0.62, mg/l. The remaining three upper Floridan/Limestone monitoring wells, TH-76, TH-77, and TH-78 exhibited iron at 0.13, 0.16, and 0.2 mg/l, respectively. Total iron values in monitoring wells TH-73, TH-74, and TH-75 was observed at 5, 36, and 5.6 mg/l, respectively. The Iron concentrations observed are consistent with historical water quality values across the site, and the iron is likely naturally occurring or a result of past strip mining.

Sodium

Sodium was observed at a concentration of 190 mg/l in monitoring well TH-72, which is above the PDWS of 160 mg/l. The elevated sodium value is likely attributable to the waste in the sinkhole and/or the grouting materials, as previously discussed. Sodium values in down gradient monitoring wells TH-76, TH-77, and TH-78 were observed at 22, 18, and 35 mg/l, which is consistent with the unaffected deep wells across the site. Sodium values in the surficial aquifer monitor wells were all well below the standard and consistent with the historical data set.

Groundwater Elevations and Direction of Flow

On February 4, 2015, the County collected groundwater elevation data at eleven (11) locations along the western portion of Phases 1-6 at the landfill site, including seven (7) surficial aquifer wells and four (4) upper Floridan (limestone) aquifer wells. No significant changes to the patterns of flow in the surficial aquifer were noted in the data set, and the flow diagram for the surficial aquifer is provided. The elevations observed within the wells closest to the sinkhole indicate that the flow pattern may be affected by the remediated feature, which has not been unexpected. However, the overall direction of flow within the surficial aquifer remains toward the west/northwest.

A contour diagram of the upper Floridan / Limestone aquifer has been prepared for the west side of the landfill around the sinkhole, and it is provided with this submittal. This diagram was generated manually in AutoCad™ utilizing the four data points closest to the sinkhole. During this sampling event, the changes in elevations between TH-72 and TH-76 is - 0.05 ft., and TH-72 and TH-77 is + 0.14 ft. Elevation of newly installed monitor well TH-78 indicated an elevation of water

Mr. John Morris, P.G.

March 27, 2015

Page 4

body in this area, or some other geologic formation anomaly may be creating this potentiometric high. Based on the significant difference in elevations, the data from TH-78 was approximately 6 feet higher than those elevations recorded at TH-72, TH-76, and TH-77. This anomaly in the groundwater elevation indicates that TH-78 may be influenced by the geology in that area or the nearby surface water feature. Therefore, the data from TH-78 was not utilized to prepare the contour diagram. However, the County maintains the position that the configuration of the three down gradient deep monitoring wells adequately addresses the potential for lateral migration of the contamination observed in TH-72.

Conclusions

The water quality observed in the February 2015 IAMP sampling event indicates that the monitoring well TH-72, which is closest to the sinkhole, continues to exhibit impacts to water quality in the upper Floridan / Limestone aquifer. The impacts observed include elevated conductivity, TDS, chloride, iron, and sodium. The values have remained relatively stable, and do not appear to be migrating to any of the down gradient deep monitoring wells. The impacts were not unexpected in the immediate vicinity of the sinkhole, as TH-72 is less than fifty feet away from the former surface expression, and likely even closer to the subsurface karst feature where significant amounts of waste and cement grout materials are likely present. Down gradient deep monitoring wells, TH-76 and TH-77, and TH-78 exhibit good water quality with no evidence of impact from the sinkhole. Conductivity values, pH, TDS, sodium and chloride are all very low and consistent with the historical data sets for the unaffected upper Floridan/Limestone aquifer groundwater monitoring wells at the SCLF.

Recommendations

The County continues to move forward with implementation of the IAMP, which includes the monthly sampling of the four upper Floridan / Limestone aquifer groundwater monitoring wells, TH-72, TH-76, TH-77, and TH-78, and quarterly sampling of the three surficial aquifer wells, TH-73, TH-74, and TH-75. The County will continue to evaluate any water quality changes in both the surficial and upper Floridan aquifer wells, and present the findings in the monthly IAMP reports. However, it should be noted the IAMP has been conducted for over four years, and the consistency of the data set supports closure of this monitoring plan. A select group of the IAMP wells, designed to provide long term protectiveness, should be included in the semi-annual sampling required by the Landfill Operations Permit No. 35435-022-SO/01. It is anticipated that an application for modification of that permit, which is currently being prepared for submittal, will include this proposed plan. If you have any specific concerns with this concept, please provide your feedback as soon as possible, so we can incorporate any suggestions into our strategy moving forward.

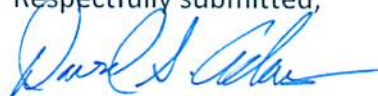
Mr. John Morris, P.G.

March 27, 2015

Page 5

Enclosed for your review please find a site location map depicting the location of the monitoring wells sampled, the water quality data summary table for this sampling event, a groundwater elevation data table, groundwater contour and flow diagrams for the surficial and upper Floridan / Limestone aquifers, the historical data summary tables for the wells sampled this month, and the complete analytical data report from our contracted laboratory, Advanced Environmental Laboratories, Inc. Should you have any questions or require any additional information please feel free to call me at (813) 663-3221.

Respectfully submitted,



David S. Adams, P.G.
Environmental Manager
Public Utilities Department

3/27/2015



DSA/mt

G:/enviro/Southeast/Scanned Reports-Docs/IAMP Reports/SCLF – IAMP Report No 54.pdf

xc: John Lyons, Director, Public Works Department
Kim Byer, Director, Solid Waste Division, Public Works
Larry Ruiz, Landfill Manager, Solid Waste Division, Public Works
Jeff Greenwell, GMIII, Environmental Services, Public Utilities
Richard Tedder, FDEP Tallahassee
Clark Moore, FDEP Tallahassee
Steve Morgan, FDEP, Southwest District
Andy Schipfer, EPC
Ernest Ely, WMI
Brian Miller, DOH
Rich Siemering, HDR
Bob Curtis, HDR
Joe O'Neill, CDS

GENERAL PARAMETERS	Surficial Aquifer Wells			Upper Floridan Wells				MCL STANDARD
	TH-73	TH-74	TH-75	TH-72	TH-76	TH-77	TH-78	
conductivity (umhos/cm) (field)	481	771	443	2540	525	492	601	NS
dissolved oxygen (mg/l) (field)	0.52	0.68	0.55	0.57	0.27	0.2	0.32	NS
pH (field)	4.82	5.58	5.57	6.71	7.44	7.39	8.25	(6.5 - 8.5)**
temperature (°C) (field)	24.90	21.36	21.68	23.27	22.65	23.20	22.95	NS
turbidity (NTU) (field)	7.48	2.63	1.79	2.29	0.67	0.51	0.96	NS
total dissolved solids (mg/l)	280	440	250	1,300	280	280	310	500**
chloride (mg/l)	59	97	40	410	9.8	7 j4	29	250**
ammonia nitrogen (mg/l as N)	2.5	3.9	1.6	17	0.34	0.39	0.32	NS
METALS (mg/l)								MCL STANDARD
arsenic	0.0016 u	0.0016 u	0.0027 i	0.0016 u	0.0016 u	0.0016 u	0.0016 u	0.01*
iron	5	36	5.6	0.62	0.13	0.16	0.2	0.3**
sodium	34	32	17	190	22	18	35	160*

Note: Ref. Groundwater Guidance Concentrations, FDEP 2012

MCL = Maximum Contaminant Level

NTU = Nephelometric Turbidity Units

NS = No Standard

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

u = parameter was analyzed but not detected.

j4 = estimated value, value may not be accurate, spike recovery or RPD outside of criteria

* = Primary Drinking Water Standard

** = Secondary Drinking Water Standard

1,300 Exceeds Standards

ug/l = micrograms per liter

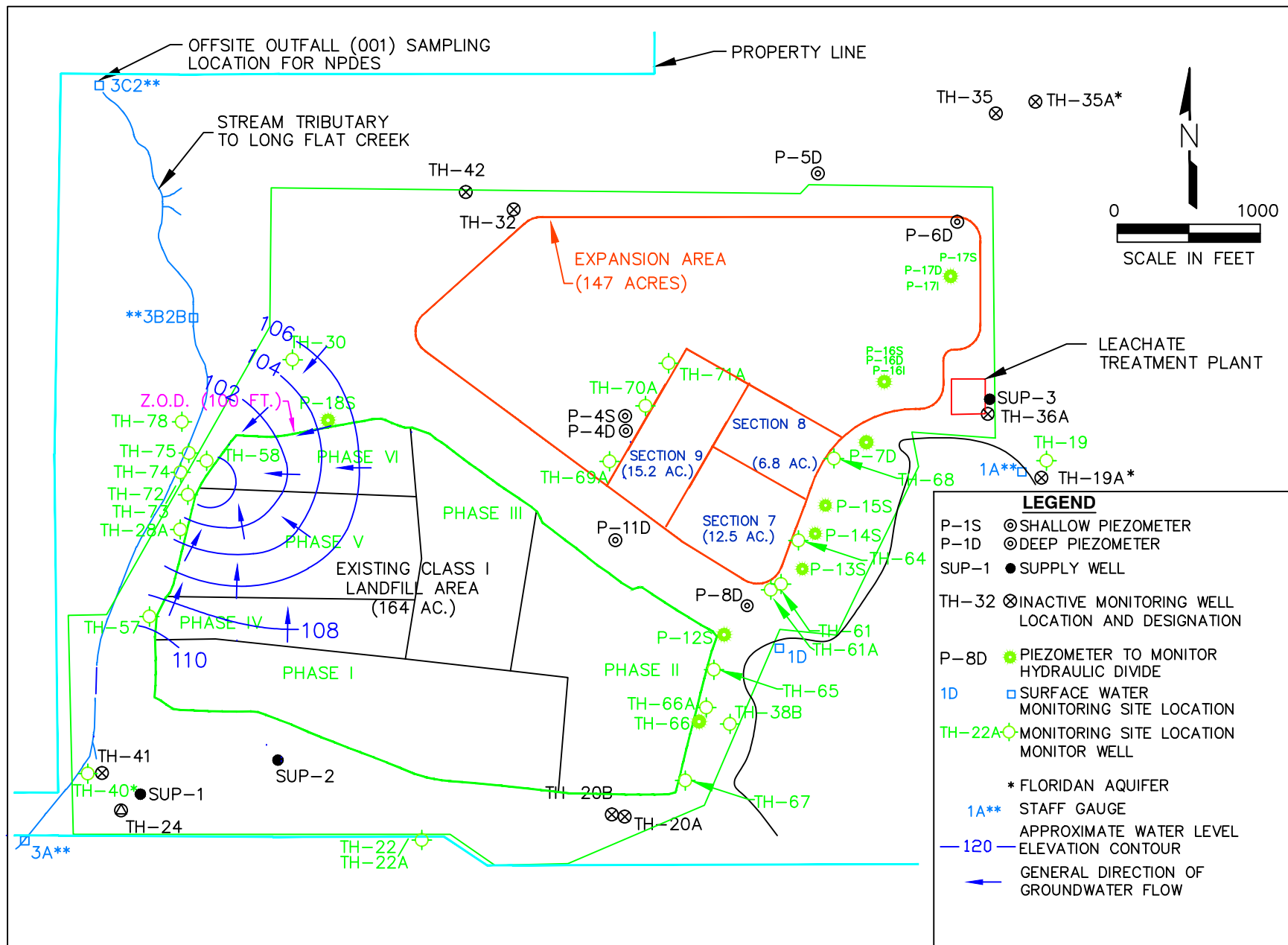
mg/l = milligrams per liter

Southeast County Landfill

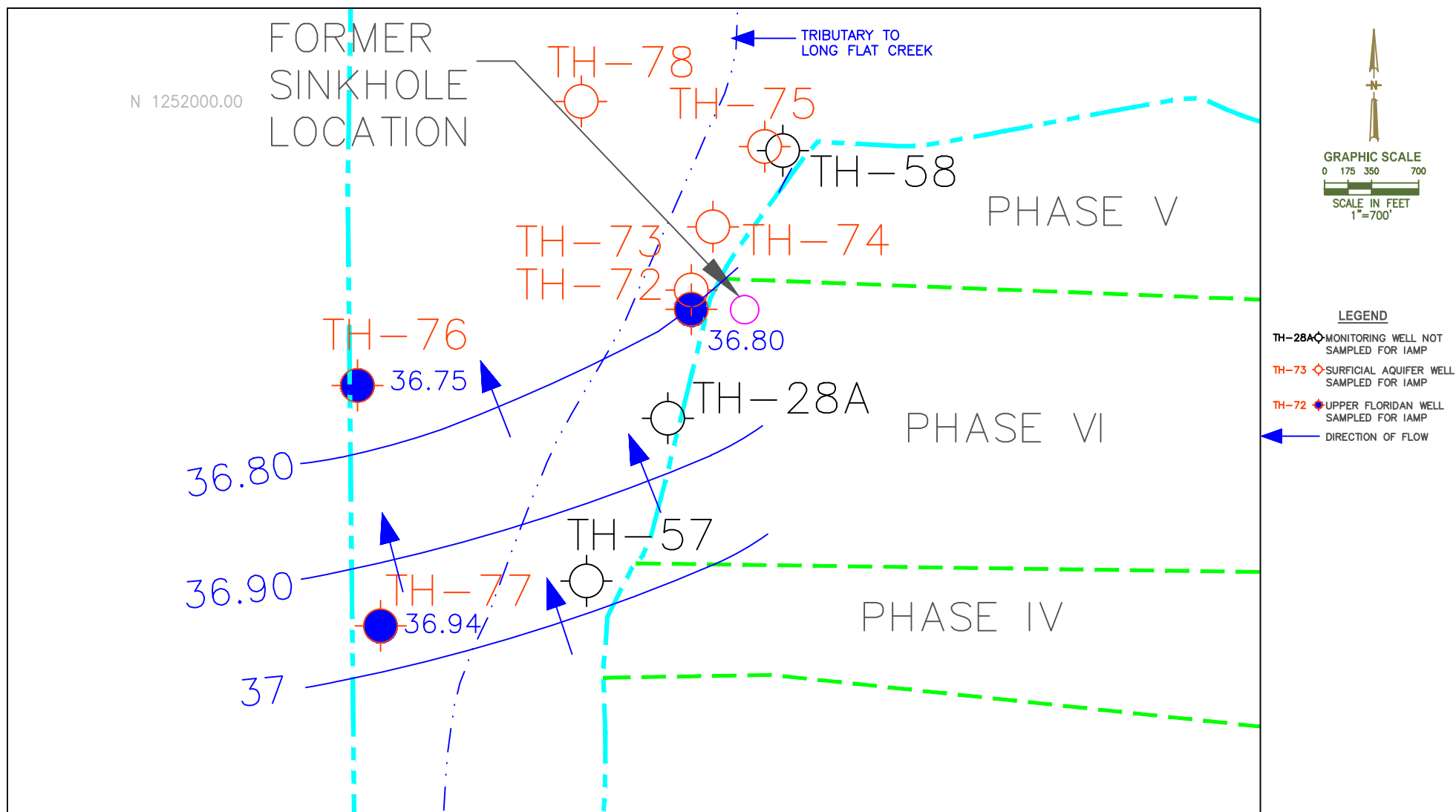
Groundwater Elevations

February 4, 2015

Measuring Point I.D.	T.O.C. Elevations (NGVD)	W.L. B.T.O.C.	W.L. (NGVD)	Time
TH-28A	131.10	28.00	103.10	11:04 AM
TH-30	128.88	23.79	105.09	10:55 AM
TH-57	128.36	18.85	109.51	11:08 AM
TH-58	127.88	27.99	99.89	10:58 AM
TH-72*	130.96	94.16	36.80	11:01 AM
TH-73	131.07	30.56	100.51	11:01 AM
TH-74	109.08	9.33	99.75	11:14 AM
TH-75	106.92	7.80	99.12	11:53 AM
TH-76*	111.21	74.46	36.75	9:33 AM
TH-77*	119.88	82.94	36.94	9:30 AM
TH-78*	120.75	76.21	44.54	9:40 AM
NGVD = National Geodetic Vertical Datum				
T.O.C. = Top of Casing				
B.T.O.C. = Below Top of Casing				
* = Floridan Well				
W.L. = Water Level				



Southeast County Landfill
Groundwater Elevation Contour Diagram – February 4, 2015



FEBRUARY 2015
 UPPER FLORIDAN / LIMESTONE AQUIFER CONTOUR DIAGRAM
 IN THE VICINITY OF THE FORMER SINKHOLE
 SOUTHEAST COUNTY LANDFILL
 HILLSBOROUGH COUNTY, FLORIDA

February 23, 2015

David Adams
Hillsborough Co Public Utilities
332 North Falkenburg Rd
Tampa, FL 33619

RE: Workorder: T1501630 SE County Landfill IAMP

Dear David Adams:

Enclosed are the analytical results for sample(s) received by the laboratory between Wednesday, February 04, 2015 and Thursday, February 05, 2015. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heidi Brooks
HBrooks@AELLab.com

Enclosures

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SAMPLE SUMMARY

Workorder: T1501630 SE County Landfill IAMP

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T1501630001	Field Blank	Water	2/4/2015 09:50	2/4/2015 15:25
T1501630002	Duplicate	Water	2/4/2015 00:00	2/4/2015 15:25
T1501630003	TH-78	Water	2/4/2015 10:41	2/4/2015 15:25
T1501630004	TH-74	Water	2/4/2015 11:37	2/4/2015 15:25
T1501630005	TH-75	Water	2/4/2015 12:18	2/4/2015 15:25
T1501630006	TH-76	Water	2/4/2015 13:37	2/4/2015 15:25
T1501630007	TH-77	Water	2/5/2015 12:50	2/5/2015 14:45
T1501630008	TH-72	Water	2/5/2015 11:42	2/5/2015 14:45
T1501630009	TH-73	Water	2/5/2015 10:39	2/5/2015 14:45

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ANALYTICAL RESULTS

Workorder: T1501630 SE County Landfill IAMP

Lab ID: **T1501630001**

Date Received: 02/04/15 15:25 Matrix: Water

Sample ID: **Field Blank**

Date Collected: 02/04/15 09:50

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B			Preparation Method: SW-846 3010A					
Analysis, Water			Analytical Method: SW-846 6010					
Arsenic	1.6	U	ug/L	1	10	1.6	2/9/2015 16:29	T
Iron	21	U	ug/L	1	100	21	2/9/2015 16:29	T
Sodium	0.042	U	mg/L	1	0.20	0.042	2/9/2015 16:29	T

WET CHEMISTRY

Analysis Desc: Ammonia, E350.1, Water			Analytical Method: EPA 350.1					
Ammonia (N)	0.02	U	mg/L	1	0.10	0.02	2/9/2015 13:54	T
Analysis Desc: Tot Dissolved Solids, SM2540C			Analytical Method: SM 2540 C					
Total Dissolved Solids	10	U	mg/L	1	10	10	2/10/2015 09:21	T
Analysis Desc: Chlorides, SM4500-Cl-E, Water			Analytical Method: SM 4500-Cl-E					
Chloride	1.1	U	mg/L	1	5.0	1.1	2/5/2015 12:43	T

Lab ID: **T1501630002**

Date Received: 02/04/15 15:25 Matrix: Water

Sample ID: **Duplicate**

Date Collected: 02/04/15 00:00

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B			Preparation Method: SW-846 3010A					
Analysis, Water			Analytical Method: SW-846 6010					
Arsenic	3.6	I	ug/L	1	10	1.6	2/9/2015 16:35	T
Iron	6600		ug/L	1	100	21	2/9/2015 16:35	T
Sodium	20		mg/L	1	0.20	0.042	2/9/2015 16:35	T

WET CHEMISTRY

Analysis Desc: Ammonia, E350.1, Water			Analytical Method: EPA 350.1					
Ammonia (N)	1.7		mg/L	1	0.10	0.02	2/9/2015 13:54	T

Report ID: 353498 - 5118805

Page 3 of 29

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ANALYTICAL RESULTS

Workorder: T1501630 SE County Landfill IAMP

Lab ID: **T1501630002** Date Received: 02/04/15 15:25 Matrix: Water
Sample ID: **Duplicate** Date Collected: 02/04/15 00:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: Tot Dissolved Solids,SM2540C		Analytical Method: SM 2540 C						
Total Dissolved Solids	240		mg/L	1	10	10	2/10/2015 09:21	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water		Analytical Method: SM 4500-Cl-E						
Chloride	32		mg/L	1	5.0	1.1	2/5/2015 12:43	T

Lab ID: **T1501630003** Date Received: 02/04/15 15:25 Matrix: Water
Sample ID: **TH-78** Date Collected: 02/04/15 10:41

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
FIELD PARAMETERS								
Analysis Desc: Data entry of field measurements		Analytical Method: Field Measurements						
Conductivity	601		umhos/cm	1			2/4/2015 10:41	
Dissolved Oxygen	0.32		mg/L	1			2/4/2015 10:41	
Temperature	22.95		°C	1			2/4/2015 10:41	
Turbidity	0.96		NTU	1			2/4/2015 10:41	
pH	8.25		SU	1			2/4/2015 10:41	

METALS

Analysis Desc: SW846 6010B Analysis,Water		Preparation Method: SW-846 3010A Analytical Method: SW-846 6010						
Arsenic	1.6	U	ug/L	1	10	1.6	2/9/2015 16:40	T
Iron	200		ug/L	1	100	21	2/9/2015 16:40	T
Sodium	35		mg/L	1	0.20	0.042	2/9/2015 16:40	T

WET CHEMISTRY

Analysis Desc: Ammonia,E350.1,Water		Analytical Method: EPA 350.1						
Ammonia (N)	0.32		mg/L	1	0.10	0.02	2/9/2015 13:54	T
Analysis Desc: Tot Dissolved Solids,SM2540C		Analytical Method: SM 2540 C						
Total Dissolved Solids	310		mg/L	1	10	10	2/10/2015 09:21	T

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Page 4 of 29

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ANALYTICAL RESULTS

Workorder: T1501630 SE County Landfill IAMP

Lab ID: **T1501630003** Date Received: 02/04/15 15:25 Matrix: Water
Sample ID: **TH-78** Date Collected: 02/04/15 10:41

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: Chlorides,SM4500-Cl-E,Water		Analytical Method: SM 4500-Cl-E						
Chloride	29		mg/L	1	5.0	1.1	2/5/2015 12:43	T

Lab ID: **T1501630004** Date Received: 02/04/15 15:25 Matrix: Water
Sample ID: **TH-74** Date Collected: 02/04/15 11:37

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: Data entry of field measurements		Analytical Method: Field Measurements						
Conductivity	771		umhos/cm	1			2/4/2015 11:37	
Dissolved Oxygen	0.68		mg/L	1			2/4/2015 11:37	
Temperature	21.36		°C	1			2/4/2015 11:37	
Turbidity	2.63		NTU	1			2/4/2015 11:37	
pH	5.58		SU	1			2/4/2015 11:37	

METALS

Analysis Desc: SW846 6010B Analysis,Water		Preparation Method: SW-846 3010A Analytical Method: SW-846 6010						
Arsenic	1.6	U	ug/L	1	10	1.6	2/9/2015 16:46	T
Iron	36000		ug/L	1	100	21	2/9/2015 16:46	T
Sodium	32		mg/L	1	0.20	0.042	2/9/2015 16:46	T

WET CHEMISTRY

Analysis Desc: Ammonia,E350.1,Water		Analytical Method: EPA 350.1						
Ammonia (N)	3.9		mg/L	1	0.10	0.02	2/9/2015 13:54	T
Analysis Desc: Tot Dissolved Solids,SM2540C		Analytical Method: SM 2540 C						
Total Dissolved Solids	440		mg/L	1	10	10	2/10/2015 09:21	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water		Analytical Method: SM 4500-Cl-E						
Chloride	97		mg/L	1	5.0	1.1	2/5/2015 12:43	T

Report ID: 353498 - 5118805

Page 5 of 29

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ANALYTICAL RESULTS

Workorder: T1501630 SE County Landfill IAMP

Lab ID: **T1501630005**
Sample ID: **TH-75**

Date Received: 02/04/15 15:25 Matrix: Water
Date Collected: 02/04/15 12:18

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
FIELD PARAMETERS								
Analysis Desc: Data entry of field measurements			Analytical Method: Field Measurements					
Conductivity	443		umhos/cm	1			2/4/2015 12:18	
Dissolved Oxygen	0.55		mg/L	1			2/4/2015 12:18	
Temperature	21.68		°C	1			2/4/2015 12:18	
Turbidity	1.79		NTU	1			2/4/2015 12:18	
pH	5.57		SU	1			2/4/2015 12:18	

METALS

Analysis Desc: SW846 6010B Analysis, Water			Preparation Method: SW-846 3010A Analytical Method: SW-846 6010					
Arsenic	2.7	I	ug/L	1	10	1.6	2/9/2015 16:50	T
Iron	5600		ug/L	1	100	21	2/9/2015 16:50	T
Sodium	17		mg/L	1	0.20	0.042	2/9/2015 16:50	T

WET CHEMISTRY

Analysis Desc: Ammonia, E350.1, Water			Analytical Method: EPA 350.1					
Ammonia (N)	1.6		mg/L	1	0.10	0.02	2/9/2015 13:54	T
Analysis Desc: Tot Dissolved Solids, SM2540C			Analytical Method: SM 2540 C					
Total Dissolved Solids	250		mg/L	1	10	10	2/10/2015 09:21	T
Analysis Desc: Chlorides, SM4500-Cl-E, Water			Analytical Method: SM 4500-Cl-E					
Chloride	40		mg/L	1	5.0	1.1	2/5/2015 12:43	T

Lab ID: **T1501630006**
Sample ID: **TH-76**

Date Received: 02/04/15 15:25 Matrix: Water
Date Collected: 02/04/15 13:37

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
FIELD PARAMETERS								

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ANALYTICAL RESULTS

Workorder: T1501630 SE County Landfill IAMP

Lab ID: **T1501630006**
Sample ID: **TH-76**

Date Received: 02/04/15 15:25 Matrix: Water
Date Collected: 02/04/15 13:37

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: Data entry of field measurements		Analytical Method: Field Measurements						
Conductivity	525		umhos/cm	1			2/4/2015 13:37	
Dissolved Oxygen	0.27		mg/L	1			2/4/2015 13:37	
Temperature	22.65		°C	1			2/4/2015 13:37	
Turbidity	0.67		NTU	1			2/4/2015 13:37	
pH	7.44		SU	1			2/4/2015 13:37	

METALS

Analysis Desc: SW846 6010B Analysis, Water		Preparation Method: SW-846 3010A Analytical Method: SW-846 6010						
Arsenic	1.6	U	ug/L	1	10	1.6	2/9/2015 16:55	T
Iron	130		ug/L	1	100	21	2/9/2015 16:55	T
Sodium	22		mg/L	1	0.20	0.042	2/9/2015 16:55	T

WET CHEMISTRY

Analysis Desc: Ammonia, E350.1, Water		Analytical Method: EPA 350.1						
Ammonia (N)	0.34		mg/L	1	0.10	0.02	2/9/2015 13:54	T
Analysis Desc: Tot Dissolved Solids, SM2540C		Analytical Method: SM 2540 C						
Total Dissolved Solids	280		mg/L	1	10	10	2/10/2015 09:21	T
Analysis Desc: Chlorides, SM4500-Cl-E, Water		Analytical Method: SM 4500-Cl-E						
Chloride	9.8		mg/L	1	5.0	1.1	2/5/2015 12:43	T

Lab ID: **T1501630007**
Sample ID: **TH-77**

Date Received: 02/05/15 14:45 Matrix: Water
Date Collected: 02/05/15 12:50

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: Data entry of field measurements		Analytical Method: Field Measurements						
Conductivity	492		umhos/cm	1			2/5/2015 12:50	

FIELD PARAMETERS

Report ID: 353498 - 5118805

Page 7 of 29

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ANALYTICAL RESULTS

Workorder: T1501630 SE County Landfill IAMP

Lab ID: **T1501630007**

Date Received: 02/05/15 14:45 Matrix: Water

Sample ID: **TH-77**

Date Collected: 02/05/15 12:50

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Dissolved Oxygen	0.2		mg/L	1			2/5/2015 12:50	
Temperature	23.2		°C	1			2/5/2015 12:50	
Turbidity	0.51		NTU	1			2/5/2015 12:50	
pH	7.39		SU	1			2/5/2015 12:50	

METALS

Analysis Desc: Chlorides, SM4500-Cl-E, Water Analytical Method: SM 4500-Cl-E

Chloride	7.0	J4	mg/L	1	5.0	1.1	2/10/2015 11:38	T
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Analysis Desc: SW846 6010B Preparation Method: SW-846 3010A
Analysis, Water Analytical Method: SW-846 6010

Arsenic	1.6	U	ug/L	1	10	1.6	2/9/2015 17:01	T
Iron	160		ug/L	1	100	21	2/9/2015 17:01	T
Sodium	18		mg/L	1	0.20	0.042	2/9/2015 17:01	T

WET CHEMISTRY

Analysis Desc: Ammonia, E350.1, Water Analytical Method: EPA 350.1

Ammonia (N)	0.39		mg/L	1	0.10	0.02	2/9/2015 13:54	T
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Analysis Desc: Tot Dissolved Solids, SM2540C Analytical Method: SM 2540 C

Total Dissolved Solids	280		mg/L	1	10	10	2/10/2015 09:21	T
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Lab ID: **T1501630008**

Date Received: 02/05/15 14:45 Matrix: Water

Sample ID: **TH-72**

Date Collected: 02/05/15 11:42

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
FIELD PARAMETERS								
Analysis Desc: Data entry of field measurements Analytical Method: Field Measurements								
Conductivity	2540		umhos/cm	1			2/5/2015 11:42	
Dissolved Oxygen	0.57		mg/L	1			2/5/2015 11:42	
Temperature	23.27		°C	1			2/5/2015 11:42	
Turbidity	2.29		NTU	1			2/5/2015 11:42	

Report ID: 353498 - 5118805

Page 8 of 29

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ANALYTICAL RESULTS

Workorder: T1501630 SE County Landfill IAMP

Lab ID: **T1501630008**
Sample ID: **TH-72**

Date Received: 02/05/15 14:45 Matrix: Water
Date Collected: 02/05/15 11:42

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
pH	6.71		SU	1			2/5/2015 11:42	

METALS

Analysis Desc: Ammonia,E350.1,Water		Analytical Method: EPA 350.1						
Ammonia (N)	17		mg/L	10	1.00	0.25	2/9/2015 13:54	T
Analysis Desc: SW846 6010B Analysis,Water		Preparation Method: SW-846 3010A Analytical Method: SW-846 6010						
Arsenic	1.6	U	ug/L	1	10	1.6	2/9/2015 17:32	T
Iron	620		ug/L	1	100	21	2/9/2015 17:32	T
Sodium	190		mg/L	1	0.20	0.042	2/9/2015 17:32	T

METALS

Analysis Desc: Tot Dissolved Solids,SM2540C		Analytical Method: SM 2540 C						
Total Dissolved Solids	1300		mg/L	1	10	10	2/10/2015 09:21	T
Analysis Desc: Chlorides,SM4500-Cl- E,Water		Analytical Method: SM 4500-Cl-E						
Chloride	410		mg/L	10	50	11	2/10/2015 11:38	T

Lab ID: **T1501630009**
Sample ID: **TH-73**

Date Received: 02/05/15 14:45 Matrix: Water
Date Collected: 02/05/15 10:39

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
FIELD PARAMETERS								
Analysis Desc: Data entry of field measurements		Analytical Method: Field Measurements						
Conductivity	481		umhos/cm	1			2/5/2015 10:39	
Dissolved Oxygen	0.52		mg/L	1			2/5/2015 10:39	
Temperature	24.9		°C	1			2/5/2015 10:39	
Turbidity	7.48		NTU	1			2/5/2015 10:39	
pH	4.82		SU	1			2/5/2015 10:39	

METALS

Report ID: 353498 - 5118805

Page 9 of 29

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ANALYTICAL RESULTS

Workorder: T1501630 SE County Landfill IAMP

Lab ID: **T1501630009**

Date Received: 02/05/15 14:45 Matrix: Water

Sample ID: **TH-73**

Date Collected: 02/05/15 10:39

Sample Description:

Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: SW846 6010B		Preparation Method: SW-846 3010A						
Analysis, Water		Analytical Method: SW-846 6010						
Arsenic	1.6	U	ug/L	1	10	1.6	2/9/2015 17:38	T
Iron	5000		ug/L	1	100	21	2/9/2015 17:38	T
Sodium	34		mg/L	1	0.20	0.042	2/9/2015 17:38	T

WET CHEMISTRY

Analysis Desc: Ammonia, E350.1, Water		Analytical Method: EPA 350.1						
Ammonia (N)	2.5		mg/L	1	0.10	0.02	2/9/2015 13:54	T
Analysis Desc: Tot Dissolved Solids, SM2540C		Analytical Method: SM 2540 C						
Total Dissolved Solids	280		mg/L	1	10	10	2/10/2015 09:21	T
Analysis Desc: Chlorides, SM4500-Cl-E, Water		Analytical Method: SM 4500-Cl-E						
Chloride	59		mg/L	5	25	5.7	2/10/2015 11:38	T

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ANALYTICAL RESULTS QUALIFIERS

Workorder: T1501630 SE County Landfill IAMP

PARAMETER QUALIFIERS

- U The compound was analyzed for but not detected.
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J4 Estimated Result

LAB QUALIFIERS

- T DOH Certification #E84589(AEL-T)(FL NELAC Certification)
- T^ Not Certified

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QUALITY CONTROL DATA

Workorder: T1501630 SE County Landfill IAMP

QC Batch: WCA/1543 Analysis Method: SM 4500-Cl-E
QC Batch Method: SM 4500-Cl-E Prepared:
Associated Lab Samples: T1501630001, T1501630002, T1501630003, T1501630004, T1501630005, T1501630006

METHOD BLANK: 1672694

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY Chloride	mg/L	1.1	1.1	U

LABORATORY CONTROL SAMPLE: 1672695

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY Chloride	mg/L	40	43	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1672696 1672697 Original: T1501630002

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
WET CHEMISTRY Chloride	mg/L	32	40	72	74	101	104	90-110	2	10	

QC Batch: DGM/1046 Analysis Method: SW-846 6010
QC Batch Method: SW-846 3010A Prepared: 02/06/2015 12:00
Associated Lab Samples: T1501630001, T1501630002, T1501630003, T1501630004, T1501630005, T1501630006, T1501630007,

METHOD BLANK: 1673032

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
METALS				
Arsenic	ug/L	1.6	1.6	U
Iron	ug/L	21	21	U
Sodium	mg/L	0.042	0.042	U

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QUALITY CONTROL DATA

Workorder: T1501630 SE County Landfill IAMP

LABORATORY CONTROL SAMPLE: 1673033

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
METALS						
Arsenic	ug/L	400	380	95	80-120	
Iron	ug/L	25000	27000	104	80-120	
Sodium	mg/L	50	54	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1673034 1673035 Original: T1501548001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
METALS											
Arsenic	ug/L	1.4	400	380	390	95	96	75-125	1	20	
Iron	ug/L	310	25000	27000	27000	104	106	75-125	2	20	
Sodium	mg/L	160	50	220	210	104	100	75-125	1	20	

QC Batch: WCA/1564

Analysis Method: EPA 350.1

QC Batch Method: EPA 350.1

Prepared:

Associated Lab Samples: T1501630001, T1501630002, T1501630003, T1501630004, T1501630005, T1501630006, T1501630007

METHOD BLANK: 1673386

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.02	0.02 U	

LABORATORY CONTROL SAMPLE: 1673387

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	1	1.1	107	90-110	

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QUALITY CONTROL DATA

Workorder: T1501630 SE County Landfill IAMP

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1673388 1673389 Original: T1501630002

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
WET CHEMISTRY Ammonia (N)	mg/L	1.7	1	2.6	2.7	92	96	90-110	2	10	

QC Batch: WCA/1565 Analysis Method: EPA 350.1

QC Batch Method: EPA 350.1 Prepared:

Associated Lab Samples: T1501630008, T1501630009

METHOD BLANK: 1673398

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY Ammonia (N)	mg/L	0.02	0.02	U

LABORATORY CONTROL SAMPLE: 1673399

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY Ammonia (N)	mg/L	1	1.1	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1673400 1673401 Original: T1501630008

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
WET CHEMISTRY Ammonia (N)	mg/L	17	1	19	18	108	101	90-110	0	10	

QC Batch: WCA/1582 Analysis Method: SM 2540 C

QC Batch Method: SM 2540 C Prepared:

Associated Lab Samples: T1501630001, T1501630002, T1501630003, T1501630004, T1501630005, T1501630006, T1501630007,

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QUALITY CONTROL DATA

Workorder: T1501630 SE County Landfill IAMP

METHOD BLANK: 1673994

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Dissolved Solids	mg/L	10	10	U

LABORATORY CONTROL SAMPLE: 1673995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Dissolved Solids	mg/L	660	660	100	75-125	

SAMPLE DUPLICATE: 1673996

Original: T1501530001

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
WET CHEMISTRY						
Total Dissolved Solids	mg/L	260	260	1	10	
QC Batch:	WCAI/1590		Analysis Method:		SM 4500-Cl-E	
QC Batch Method:	SM 4500-Cl-E		Prepared:			
Associated Lab Samples:				T1501630007, T1501630008, T1501630009		

METHOD BLANK: 1674158

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Chloride	mg/L	1.1	1.1	U

LABORATORY CONTROL SAMPLE: 1674159

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Chloride	mg/L	40	43	108	90-110	

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QUALITY CONTROL DATA

Workorder: T1501630 SE County Landfill IAMP

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1674160 1674161 Original: T1501630007

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
WET CHEMISTRY Chloride	mg/L	7	40	39	40	79	83	90-110	4	10	

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T1501630 SE County Landfill IAMP

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T1501630001	Field Blank			SM 4500-CI-E	WCA/1543
T1501630002	Duplicate			SM 4500-CI-E	WCA/1543
T1501630003	TH-78			SM 4500-CI-E	WCA/1543
T1501630004	TH-74			SM 4500-CI-E	WCA/1543
T1501630005	TH-75			SM 4500-CI-E	WCA/1543
T1501630006	TH-76			SM 4500-CI-E	WCA/1543
T1501630001	Field Blank	SW-846 3010A	DGM/1046	SW-846 6010	ICP/1031
T1501630002	Duplicate	SW-846 3010A	DGM/1046	SW-846 6010	ICP/1031
T1501630003	TH-78	SW-846 3010A	DGM/1046	SW-846 6010	ICP/1031
T1501630004	TH-74	SW-846 3010A	DGM/1046	SW-846 6010	ICP/1031
T1501630005	TH-75	SW-846 3010A	DGM/1046	SW-846 6010	ICP/1031
T1501630006	TH-76	SW-846 3010A	DGM/1046	SW-846 6010	ICP/1031
T1501630007	TH-77	SW-846 3010A	DGM/1046	SW-846 6010	ICP/1031
T1501630008	TH-72	SW-846 3010A	DGM/1046	SW-846 6010	ICP/1031
T1501630009	TH-73	SW-846 3010A	DGM/1046	SW-846 6010	ICP/1031
T1501630001	Field Blank			EPA 350.1	WCA/1564
T1501630002	Duplicate			EPA 350.1	WCA/1564
T1501630003	TH-78			EPA 350.1	WCA/1564
T1501630004	TH-74			EPA 350.1	WCA/1564
T1501630005	TH-75			EPA 350.1	WCA/1564
T1501630006	TH-76			EPA 350.1	WCA/1564
T1501630007	TH-77			EPA 350.1	WCA/1564
T1501630008	TH-72			EPA 350.1	WCA/1565
T1501630009	TH-73			EPA 350.1	WCA/1565
T1501630001	Field Blank			SM 2540 C	WCA/1582
T1501630002	Duplicate			SM 2540 C	WCA/1582
T1501630003	TH-78			SM 2540 C	WCA/1582
T1501630004	TH-74			SM 2540 C	WCA/1582
T1501630005	TH-75			SM 2540 C	WCA/1582

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T1501630 SE County Landfill IAMP

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T1501630006	TH-76			SM 2540 C	WCA/1582
T1501630007	TH-77			SM 2540 C	WCA/1582
T1501630008	TH-72			SM 2540 C	WCA/1582
T1501630009	TH-73			SM 2540 C	WCA/1582
T1501630007	TH-77			SM 4500-CI-E	WCA/1590
T1501630008	TH-72			SM 4500-CI-E	WCA/1590
T1501630009	TH-73			SM 4500-CI-E	WCA/1590
T1501630003	TH-78	Field Measurements	FLD/	Field Measurements	FLD/
T1501630004	TH-74	Field Measurements	FLD/	Field Measurements	FLD/
T1501630005	TH-75	Field Measurements	FLD/	Field Measurements	FLD/
T1501630006	TH-76	Field Measurements	FLD/	Field Measurements	FLD/
T1501630007	TH-77	Field Measurements	FLD/	Field Measurements	FLD/
T1501630008	TH-72	Field Measurements	FLD/	Field Measurements	FLD/
T1501630009	TH-73	Field Measurements	FLD/	Field Measurements	FLD/

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05/9/95

Received on Ice ☐ Yes ☒ No ☐ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked ☐ Temperature when received 4.5 (in degrees Celsius)

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 10A A: 3A M: 1A S: 1V

Form revised 08/19/2012

Relinquished by:		Received by:	
Date	Time	Date	Time
2-4-15	1505	2-4-15	1505

FOR DRINKING WATER USE (When PWS information not otherwise supplied)

PWS ID: _____

Contact Person: _____ Phone: _____

Supplier of Water: _____

Site-Address: _____



T1501630

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge Preservation Code: I = ice H = HCl S = H₂SO₄ N = HNO₃ T = (Sodium Thiosulfate)

Received on ice ☐ Yes ☐ No ☐ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received _____ (in degrees Celsius)

FOR DRINKING WATER USE (When PWS information not otherwise supplied)

PWS ID: _____

Contact Person: _____ Phone: _____

Supplier of Water: _____

Site Address: _____

Page 21 of 29

Form FD 9000-24

SITE NAME: Southeast County Landfill - IAMP		SITE LOCATION:	
WELL NO: TH-75	SAMPLE ID: TH-75	DATE: 2-4-15	

PURGING DATA

WELL DIAMETER (inches): 2		TUBING DIAMETER (inches): 1/2		WELL SCREEN INTERVAL DEPTH: 7 feet to 17 feet		STATIC DEPTH TO WATER (feet): 7.80		PURGE PUMP TYPE OR BAILER: BP			
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) = (17 feet - 7.80 feet) X .16 gallons/foot = 1.48 gallons											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) = gallons + (gallons/foot X feet) + gallons = gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 16		FINAL PUMP OR TUBING DEPTH IN WELL (feet): 16		PURGING INITIATED AT: 11:55		PURGING ENDED AT: 12:18		TOTAL VOLUME PURGED (gallons): 2.30			
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or 1/5 S/cm	DISSOLVED OXYGEN (circle units) (mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
12:10	1.5	1.5	.10	7.80	5.60	21.68	444	.60	2.43	NONE	NONE
12:14	.40	1.90	.10	7.86	5.59	21.66	443	.58	2.01	↓	↓
12:18	.40	2.30	.10	7.86	5.57	21.68	443	.55	1.79		
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

SAMPLING DATA

[illegible]

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: $\pm 5\%$ Dissolved Oxygen: all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Revision Date: February 2009

Form FD 9000-24

SITE NAME: Southeast County Landfill -IAMP		SITE LOCATION:	
WELL NO: TH-74	SAMPLE ID: TH-74	DATE: 2-4-15	

PURGING DATA

[illegible]

SAMPLING DATA

[illegible]

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+0.2$ mg/L or $+10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally $+5$ NTU or $+10\%$ (whichever is greater)

Revision Date: February 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill - IAMP		SITE LOCATION:	
WELL NO: TH-78	SAMPLE ID: TH-78	DATE: 2-4-15	

PURGING DATA

[illegible]

SAMPLING DATA

[illegible]

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: $\pm 5\%$ Dissolved Oxygen: all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Revision Date: February 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill - IAMP	SITE LOCATION:
WELL NO: FIELD BLANK	SAMPLE ID: FIELD BLANK DATE: 2-4-15

PURGING DATA

WELL DIAMETER (inches): N/A	TUBING DIAMETER (inches): N/A	WELL SCREEN INTERVAL DEPTH: — feet to — feet	STATIC DEPTH TO WATER (feet): N/A	PURGE PUMP TYPE OR BAILER: N/A
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): N/A	FINAL PUMP OR TUBING DEPTH IN WELL (feet): N/A	PURGING INITIATED AT: N/A	PURGING ENDED AT: N/A	TOTAL VOLUME PURGED (gallons): N/A

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or μS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
FIELD BLANK											

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: ANDREW BALLOON / ZACK PATTERSON				SAMPLER(S) SIGNATURE(S):				SAMPLING INITIATED AT: 9:50		SAMPLING ENDED AT: 9:55	
PUMP OR TUBING DEPTH IN WELL (feet): N/A				TUBING MATERIAL CODE: T		FIELD-FILTERED: Y (N)			FILTER SIZE: _____ μm		
FIELD DECONTAMINATION: PUMP Y N Dedicated				TUBING Y N Dedicated				DUPLICATE: Y (N)			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)		
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH					

SEE COC FOR ANALYSIS

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE NAME: <u>Southeast County Landfill - IAMP</u>	SITE LOCATION:	DATE: <u>2-4-15</u>
WELL NO: <u>Duplicate</u>	SAMPLE ID: <u>Duplicate</u>	

PURGING DATA

WELL DIAMETER (inches): <u>N/A</u>	TUBING DIAMETER (inches): <u>N/A</u>	WELL SCREEN INTERVAL DEPTH: <u>—</u> feet to <u>—</u> feet	STATIC DEPTH TO WATER (feet): <u>N/A</u>	PURGE PUMP TYPE OR BAILER: <u>N/A</u>
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): <u>N/A</u>	FINAL PUMP OR TUBING DEPTH IN WELL (feet): <u>N/A</u>	PURGING INITIATED AT: <u>N/A</u>	PURGING ENDED AT: <u>N/A</u>	TOTAL VOLUME PURGED (gallons): <u>N/A</u>

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or μS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
DUPLICATE											

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.008; 1/2" = 0.010; 5/8" = 0.016
PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: <u>ANDREW BALLOON / ZACK PATTERSON</u>		SAMPLER(S) SIGNATURE: <u>[Signature]</u>		SAMPLING INITIATED AT: <u>N/A</u>	SAMPLING ENDED AT: <u>N/A</u>
PUMP OR TUBING DEPTH IN WELL (feet): <u>N/A</u>		TUBING MATERIAL CODE: <u>T</u>	FIELD-FILTERED: Y <u>(N)</u>	FILTER SIZE: <u>—</u> μm	
FIELD DECONTAMINATION: PUMP <u>Y</u> N Dedicated		TUBING <u>Y</u> N Dedicated		DUPLICATE: <u>(Y)</u> N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			

SEE COC FOR ANALYSIS

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 2009

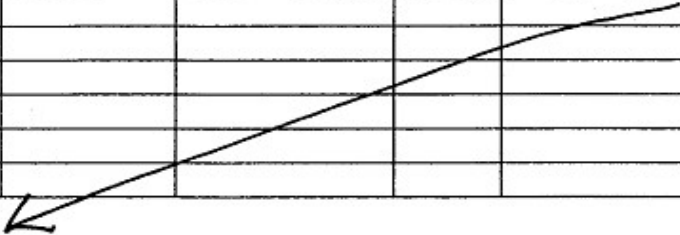
GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill - IAMP		SITE LOCATION:	
WELL NO: TH-77	SAMPLE ID: TH-77	DATE: 2-5-15	

PURGING DATA

[illegible]

~~SAMPLING DATA~~

SAMPLED BY (PRINT) / AFFILIATION: ANDREW BALLOON / ZACK PATTERSON				SAMPLER(S) SIGNATURE(S) <i>[Signature]</i>				SAMPLING INITIATED AT: 12:50				SAMPLING ENDED AT: 12:55					
PUMP OR TUBING DEPTH IN WELL (feet): 168.2				TUBING MATERIAL CODE: T				FIELD-FILTERED: Y N Filtration Equipment Type:				FILTER SIZE: _____ μm					
FIELD DECONTAMINATION: PUMP Y N Dedicated				TUBING Y N Dedicated				DUPLICATE: Y N									
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION							INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE		SAMPLE PUMP FLOW RATE (mL per minute)		
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH											
																	
SEE COC FOR ANALYSIS																	
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)																	
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPF = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)																	

SEE COC FOR ANALYSIS

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump;
RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Revision Date: February 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE NAME: SE Southeast County Landfill - IAMP		SITE LOCATION:	
WELL NO: TH-72	SAMPLE ID: TH-72	DATE: 2-5-15	

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/2	WELL SCREEN INTERVAL DEPTH: 180 feet to 190 feet	STATIC DEPTH TO WATER (feet): 93.95	PURGE PUMP TYPE OR BAILER:
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) = (190 feet - 93.95 feet) X .16 gallons/foot = 15.37 gallons				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) = gallons + (gallons/foot X feet) + gallons = gallons				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 189	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 189	PURGING INITIATED AT: 10:55	PURGING ENDED AT: 11:42	TOTAL VOLUME PURGED (gallons): 235

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or μS/cm	DISSOLVED OXYGEN (circle units) (mg/L) or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
11:26	15.5	15.5	.50	94.02	6.71	23.29	2529	.53	2.25	NONE	NONE
11:34	4	19.5	.50	94.02	6.72	23.29	2539	.54	1.62	↓	↓
11:42	4	23.5	.50	94.02	6.71	23.27	2540	.57	2.29	↓	↓
<div style="position: absolute; top: 0; left: 0; width: 100%; height: 100%; border: 2px solid black; border-radius: 50%; transform: rotate(45deg); pointer-events: none;"></div>											

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016
PURGING EQUIPMENT CODES: B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: ANDREW BALLOON / ZACK PATTERSON		SAMPLER(S) SIGNATURE(S): <i>Zack Patterson</i>		SAMPLING INITIATED AT: 11:42	SAMPLING ENDED AT: 11:47
PUMP OR TUBING DEPTH IN WELL (feet): 189	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y <input checked="" type="radio"/> N <input checked="" type="radio"/>		FILTER SIZE: _____ μm	
FIELD DECONTAMINATION: PUMP Y <input checked="" type="radio"/> N <input checked="" type="radio"/> Dedicated		TUBING Y <input checked="" type="radio"/> N <input checked="" type="radio"/> Dedicated		DUPLICATE: Y <input checked="" type="radio"/> N <input checked="" type="radio"/>	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			

SEE COC FOR ANALYSIS ←

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 2009



**Advanced
Environmental Laboratories, Inc.**

6601 Southpoint Parkway
Jacksonville, Florida 32216
(904) 363-9350
FAX (904) 363-9354

QCBatch: **WCAt-1590**
Method: **SM 4500-CL-E**
PrepMethod:

I. RECEIPT

No Exceptions were encountered.

II. HOLDING TIMES

Preparation: All holding times were met.
Analysis: All holding times were met.

III. PREPARATION

Sample preparation proceeded normally.

VI. ANALYSIS

A. Calibration: All acceptance criteria were met.
B. Blanks: All acceptance criteria were met.
C. Duplicates: All acceptance criteria were met.
D. Spikes: The matrix spike recoveries of Chloride for T1501630007 were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential low bias in this matrix. The affected sample is qualified to indicate matrix interference.
E. Serial Dilution: All acceptance criteria were met.
F. Samples: Sample analyses proceeded normally.
G. Other:

I certify that this data package is in compliance with the terms and conditions agreed to by Advanced Environmental Laboratories, Inc. and by the client, both technically and for completeness, except for the conditions detailed above. The Technical Director or his designee, as verified by the following signature, has authorized release of the data contained in this hard copy data package and in the computer-readable data submitted on diskette: