Hillsborough County
Florida

Office of the County Administrator
Michael S. Merrill



November 21, 2013

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. 38 – October 2013**

Dear Mr. Morris:

The Hillsborough County Public Utilities Department (County) is pleased to provide the analytical results from the October 2013 sampling event conducted as part of the Initial Assessment Monitoring Plan (IAMP). The IAMP was developed to address the potential impacts to groundwater from the sinkhole in Phase VI of the Southeast County Landfill (SCLF), which was discovered on December 14, 2010.

As agreed by the County and the Florida Department of Environmental Protection (FDEP) Southwest District Office, three (3) upper Floridan / Limestone aquifer monitoring wells, TH-72, TH-76 and TH-77 are sampled on a monthly schedule. Representative samples were collected on October 2, 2013 by the County's Field Sampling Team, and the five (5) field parameters were recorded during the sample collection process. The samples collected were analyzed by our contracted laboratory, Test America, Inc. for total dissolved solids (TDS), chloride, total ammonia, arsenic, iron, and sodium. The following paragraphs summarize the parameter specific results pertinent to the evaluation of potential water quality impacts from the former sinkhole at the SCLF.

**Turbidity**
During the September sampling event, turbidity values in Upper Floridan / Limestone aquifer wells TH-72, TH-76, and TH-77 were at 2.6, 61.9 and 52.7 Nephelometric Turbidity Units (NTUs), respectively. The elevated turbidity observed in TH-76 and TH-77 is not unexpected for recently installed monitoring wells, and the County believes that turbidity values will gradually decrease over the next few sampling events. The County will continue to direct the Field Sampling Team to reduce the pumping rates to help achieve lower turbidity values prior to sample collection.

**Conductivity**
The conductivity values observed in TH-72, TH-76, and TH-77 were 1,566, 399, and 383 micromhos per centimeter (umhos/cm), respectively. Monitoring well TH-72 is the closest well to the sinkhole and continues to exhibit groundwater impacts similar to those observed over the last year. The elevated conductivity observed is likely attributable to the waste in the throat of the sinkhole and the large amounts of grout materials injected into subsurface as part of the sinkhole remediation process. The conductivity values observed in TH-76 and TH-77 are consistent with the unaffected deep wells across the site.

**Total Dissolved Solids (TDS)**
The TDS in TH-72 was observed at 1,000 mg/l and continues to be above the Secondary Drinking Water Standard (SDWS) of 500 mg/l. The two down gradient monitoring wells, TH-76 and TH-77 exhibited TDS values of 120 mg/l and 240 mg/l, respectively, which is consistent with the unaffected deep wells across the site.

**Chloride**
The chloride in TH-72 was observed at 350 mg/l, which is above the Primary Drinking Water Standard (PDWS) of 250 mg/l. The two down gradient monitoring wells, TH-76 and TH-77 exhibited chloride values of 13 mg/l and 9.1 mg/l, respectively, which is consistent with the unaffected deep wells across the site.

**Total Ammonia**
The well closest to the source, TH-72 continues to exhibit ammonia above the former groundwater cleanup target level (GCTL) of 2.8 mg/l, at a concentration of 7.4 mg/l. The two down gradient monitoring wells, TH-76 and TH-77 were observed at 0.38 and 0.39 mg/l, respectively, which is consistent with the unaffected deep wells across the site.

**Iron**
Total iron concentrations in each of the three (3) upper Floridan/Limestone aquifer monitoring wells were observed above the SDWS of 0.3 mg/l. TH-72, TH-76 and TH-77 exhibited iron at 0.79, 1.7, and 1.3 mg/l, respectively. The elevated iron concentrations observed in these wells are consistent with historical data set, and are likely naturally occurring in the formation, and/or the result of past strip mining activities at the site.

**Groundwater Elevations and Direction of Flow**

On October 4, 2013, the County collected groundwater and surface water elevation data at sixty-five (65) points across the site, including twenty eight (28) surficial aquifer wells, seven (7) upper Floridan (limestone) aquifer wells, twenty three (23) piezometers, and seven (7) surface water sites.

No significant changes to the patterns of flow in the surficial aquifer were noted in the September data set and the diagram is consistent with the observations over the period of record. The general direction of flow within the surficial aquifer has historically been to the west northwest across the Southeast County Landfill site. The elevations observed within the wells closest to the sinkhole indicate that flow patterns may be somewhat affected in the area, which would not be unexpected. However, the overall direction of flow within the surficial aquifer remains toward the west/northwest across the site.

A contour diagram of the upper Floridan / Limestone aquifer has been prepared for the general area around the sinkhole and is included with this submittal. This diagram was generated manually in AutoCad ™ utilizing only the three data points closest to the sinkhole. For the month of October, the elevation change between TH-72 and TH-76 is again only 0.03 ft., and the change between TH-72 and TH-77 is only 0.21 ft. The diagram indicates that flow within the UFA in the area of the former sinkhole continues to be in a north/northwest direction, but at what appears to be a very slow rate. We will continue to evaluate the direction of flow within the upper Floridan / Limestone aquifer in the vicinity of the sinkhole, and a more comprehensive understanding of this system will be developed over time. However, based on the consistency of the gradient over the period of record, and what appears to be a very consistent direction of flow, an additional down gradient UFA monitoring well may be warranted.

**Conclusions**

The upper Floridan / Limestone aquifer monitoring well, TH-72, which is located closest to the source, continues to exhibit impacts that are likely attributable to the waste within the sinkhole and/or the fluids introduced during the extensive grouting activities conducted as part of the remedial actions. Consistent concentrations of TDS, chloride, ammonia, iron, sodium, and conductivity have been observed, and no apparent trends are evident. However, the impacts, which were not unexpected, have only been observed in the immediate vicinity of the sinkhole within both the surficial and upper Floridan aquifers over the period of record.

The two new upper Floridan / Limestone aquifer monitoring wells TH-76 and TH-77 exhibit good water quality with no evidence of impact from the sinkhole. Conductivity, TDS, chloride and ammonia are all very low and consistent with the historical data set for the other unaffected deep monitoring wells at the SCLF.

**Recommendations**

The County recommends continued implementation of the optimized IAMP, which includes the monthly sampling of the three upper Floridan / Limestone aquifer monitoring wells, TH-72, TH-76, and TH-77, and the quarterly sampling of the three surficial aquifer monitoring 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 monitoring wells, and present the findings within the monthly IAMP reports.

Enclosed for your review please find a site location map depicting the network of IAMP monitoring wells the water quality data summary table for the October 2013 sampling event, a groundwater elevation data table, groundwater contour and flow diagrams for the surficial and upper Floridan / Limestone aquifers, the historical data tables for each well sampled this month, and the complete analytical data report from our contracted laboratory, Test America, Inc.

Should you have any questions or require any additional information please feel free to call me at (813) 663-3221.

Respectfully submitted,

11/21/2013

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

DAVID S. ADAMS LICENSE NO 1827 STATE OF FLORIDA PROFESSIONAL GEOLOGIST

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Andy Schipfer, EPC
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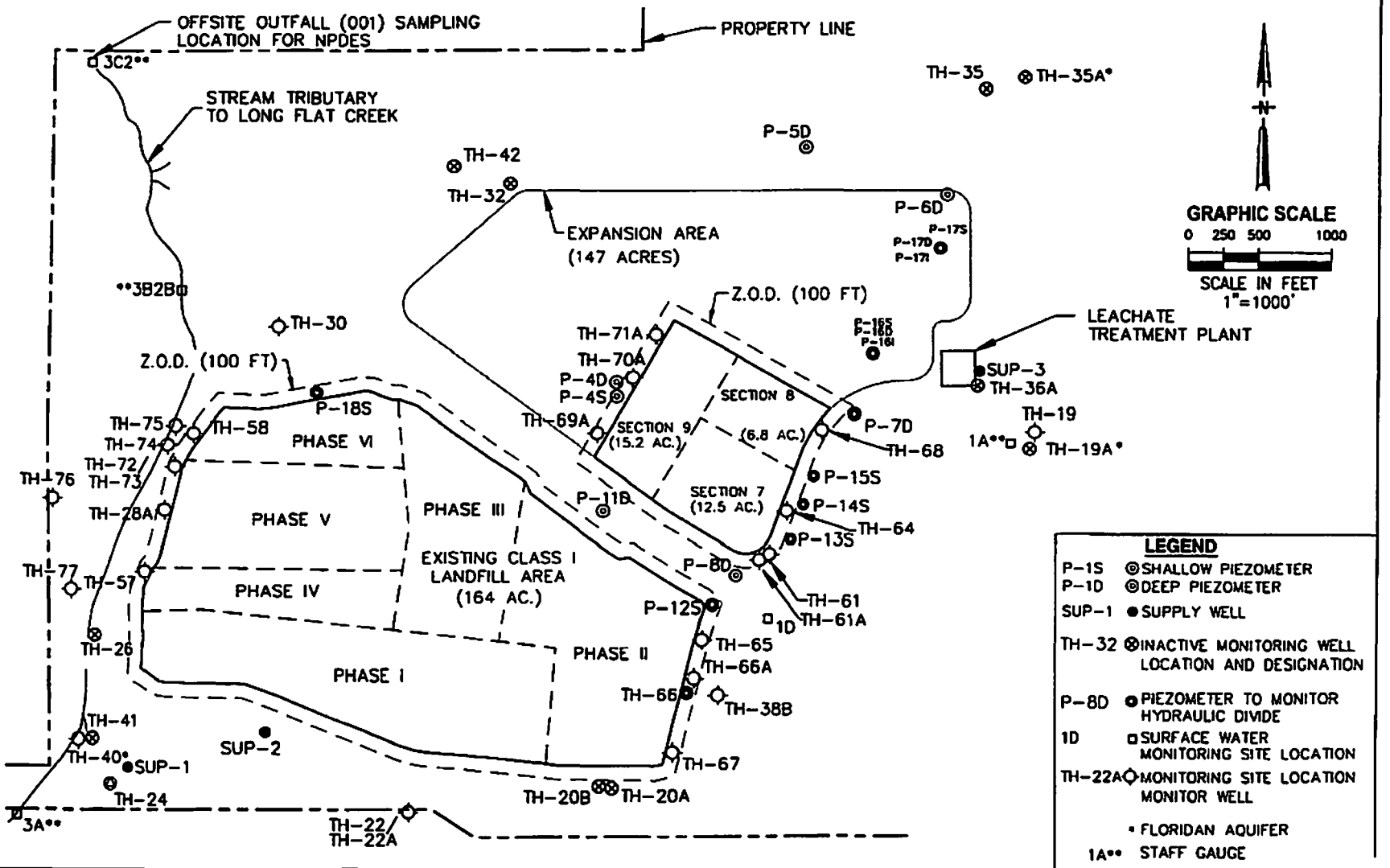
Final copy scanned to LFS/Southeast/Sinkhole/SCLF – IAMP Report No 38.pdf




Hillsborough County Florida

HDR

# LOCATION OF MONITORING WELLS, PIEZOMETERS, AND SURFACE WATER SAMPLING PLAN SOUTHEAST COUNTY LANDFILL HILLSBOROUGH COUNTY, FLORIDA

DATE
OCT 2013

FIGURE
FDEP-1

# Southeast County Landfill
# Laboratory Analytical Data
# Upper Floridan Groundwater Monitoring Wells
# October 2, 2013

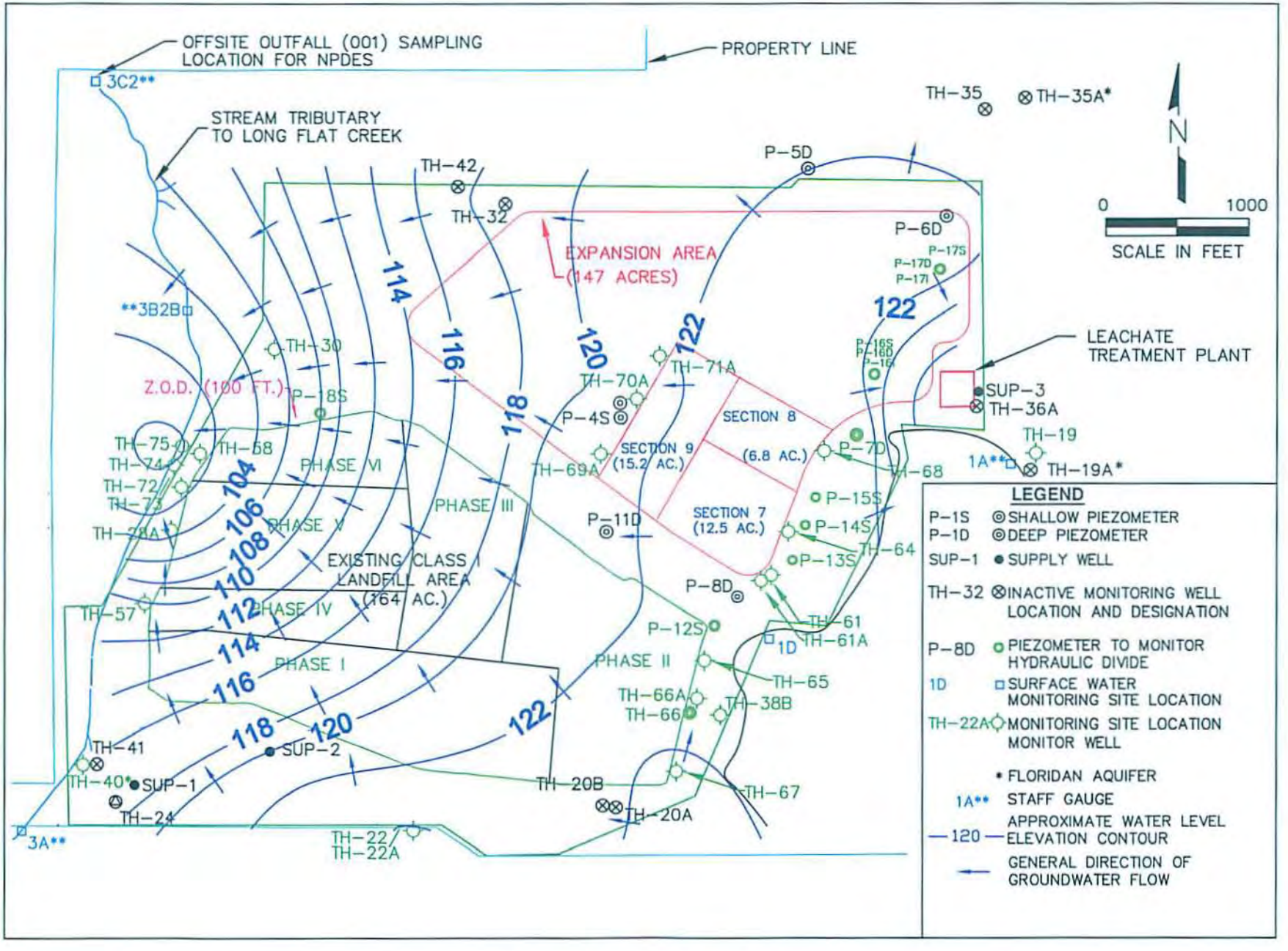
| GENERAL PARAMETERS | Upper Floridan Wells | | | (MCL) STANDARD |
|---|---|---|---|---|
| | TH-72 | TH-76 | TH-77 | |
| conductivity (umhos/cm) (field) | 1566 | 399 | 383 | NS |
| dissolved oxygen (mg/l) (field) | 0.32 | 0.22 | 0.69 | NS |
| pH (field) | 6.86 | 7.61 | 7.50 | (6.5 - 8.5)** |
| temperature (°C) (field) | 23.53 | 22.99 | 23.59 | NS |
| turbidity (NTU) (field) | 12.6 | 61.9 | 52.7 | NS |
| total dissolved solids (mg/l) | **1000** | 120 | 240 | 500** |
| chloride (mg/l) | **350** | 13 | 9.1 | 250** |
| ammonia nitrogen (mg/l as N) | **7.4 J3** | 0.38 | 0.39 | 2.8*** |
| | | | | |
| Metals: (mg/l) | TH-72 | TH-76 | TH-77 | (MCL) STANDARD |
| arsenic | 0.004 u | 0.004 u | 0.004 u | 0.01* |
| iron | **0.79** | **1.7** | **1.3** | 0.3** |
| sodium | 120 | 20 | 17 | 160* |

Note: Ref. Groundwater Guidance Concentrations, FDEP 2012
MCL=MAXIMUM CONTAMINANT LEVEL
BDL=BELOW DETECTION LIMIT
NTU=NEPHELOMETRIC TURBIDITY UNITS
u = parameter was analyzed but not detected.
J3 = Estimated value Spike recovery of RPD outside of criteria.
*=DENOTES PRIMARY DRINKING WATER STANDARD
**=DENOTES SECONDARY DRINKING WATER STANDARD
***=DENOTES GROUNDWATER CLEANUP TARGET LEVELS
**1000**
ug/l=MICROGRAMS PER LITER
mg/l=MILLIGRAMS PER LITER
NS=NO STANDARD

# Southeast County Landfill
# Groundwater and Surface Water Elevations
# October 4, 2013

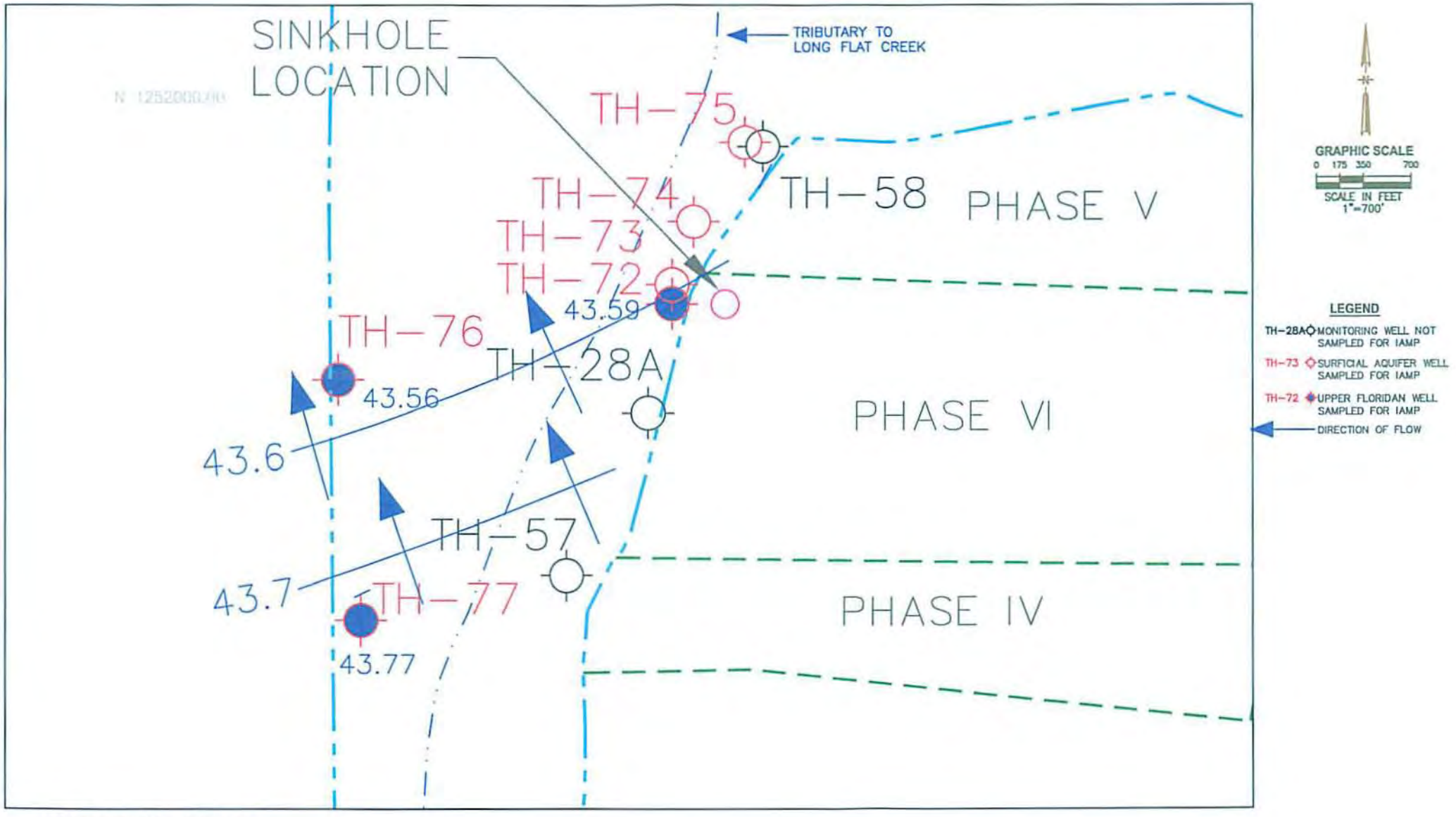
| Measuring Point I.D. | T.O.C. Elevations (NGVD) | W.L. B.T.O.C. | W.L. (NGVD) | Time |
|---|---|---|---|---|
| P-4D | 140.78 | 20.84 | 119.94 | 12:53 |
| P-4S | 140.95 | 9.72 | 131.23 | 12:54 |
| P-5D | 151.94 | ND | ND | 11:29 |
| P-6D-A | 148.01 | 23.40 | 124.61 | 13:00 |
| P-7D | 138.92 | 15.51 | 123.41 | 12:17 |
| P-8D | 138.34 | 16.62 | 121.72 | 12:33 |
| P-11D | 138.02 | 15.70 | 122.32 | 12:36 |
| P-12S | 134.97 | 12.60 | 122.37 | 12:31 |
| P-13S | 140.21 | 16.87 | 123.34 | 12:25 |
| P-14S | 138.56 | 15.03 | 123.53 | 12:23 |
| P-15S | 139.19 | 18.12 | 121.07 | 12:21 |
| P-16S | 143.38 | 15.63 | 127.75 | 13:20 |
| P-16I | 144.15 | 22.34 | 121.81 | 13:19 |
| P-16D | 143.84 | 22.02 | 121.82 | 13:18 |
| P-17S | 137.35 | ND | ND | 13:25 |
| P-17I | 137.32 | 13.79 | 123.53 | 13:26 |
| P-17D | 137.22 | 14.14 | 123.08 | 13:24 |
| P-18S | 129.86 | 17.10 | 112.76 | 12:04 |
| P-19 | 133.36 | 7.89 | 125.47 | 13:32 |
| P-20 | 132.38 | 10.08 | 122.30 | 13:15 |
| P-21 | 122.79 | 1.50 | 121.29 | 13:05 |
| P-22 | 128.35 | 6.79 | 121.56 | 13:07 |
| P-23 | 143.13 | 21.38 | 121.75 | 13:11 |
| TH-19* | 130.27 | 87.93 | 42.34 | 13:49 |
| TH-20A | 131.86 | 8.34 | 123.52 | 14:08 |
| TH-20B | 132.57 | 9.24 | 123.33 | 14:09 |
| TH-22 | 128.82 | 4.42 | 124.40 | 10:17 |
| TH-22A | 129.27 | 5.03 | 124.24 | 10:16 |
| TH-24A | 128.23 | 4.04 | 124.19 | 10:23 |
| TH-28A | 131.10 | 27.43 | 103.67 | 10:45 |
| TH-30 | 128.88 | 23.60 | 105.28 | 10:36 |
| TH-32 | 129.90 | 11.58 | 118.32 | 11:59 |
| TH-35 | 145.98 | 26.54 | 119.44 | 13:41 |
| TH-36A | 152.70 | 37.89 | 114.81 | 13:52 |
| TH-38A | 130.68 | 8.90 | 121.78 | 14:00 |
| TH-38B | 131.81 | ND | ND | 14:02 |
| TH-40* | 124.99 | 82.70 | 42.29 | 10:30 |
| TH-41* | 125.00 | 87.64 | 37.36 | 10:28 |
| TH-42* | 116.74 | 65.69 | 51.05 | 11:54 |
| TH-57 | 128.36 | 18.29 | 110.07 | 10:47 |
| TH-58 | 127.88 | 27.41 | 100.47 | 10:38 |
| TH-61 | 138.73 | 15.78 | 122.95 | 12:30 |
| TH-61A | 139.45 | 15.72 | 123.73 | 12:29 |
| TH-64 | 139.64 | 15.36 | 124.28 | 12:25 |
| TH-65 | 135.40 | 12.97 | 122.43 | 13:56 |
| TH-66 | 130.58 | 7.22 | 123.36 | 14:02 |
| TH-66A | 130.66 | 7.62 | 123.04 | 14:02 |
| TH-67 | 129.51 | 4.98 | 124.53 | 14:04 |
| TH-68 | 140.01 | 15.60 | 124.41 | 12:19 |
| TH-69A | 144.97 | 23.96 | 121.01 | 12:40 |
| TH-70A | 146.63 | 25.62 | 121.01 | 12:43 |
| TH-71A | 146.95 | 25.26 | 121.69 | 12:55 |
| TH-72 | 130.96 | 87.37 | 43.59 | 10:41 |
| TH-73 | 131.07 | 29.74 | 101.33 | 10:40 |
| TH-74 | 109.08 | 8.87 | 100.21 | 10:53 |
| TH-75 | 106.92 | 7.45 | 99.47 | 10:56 |
| TH-76 | 111.21 | 67.65 | 43.56 | 11:29 |
| TH-77 | 119.88 | 76.11 | 43.77 | 11:17 |
| SW-3A | 3.0'=125.53' | 0.70 | 123.23 | 10:10 |
| SW-3B2B | 3.0'=97.97' | 0.70 | 95.67 | 11:06 |
| SW-3C2 | 6.0'=92.33' | 1.68 | 88.01 | 11:39 |
| Mine Cut #1 | 4.0'=122.14' | ND | ND | ND |
| Mine Cut #2 | 6.0'=123.47' | 3.20 | 120.67 | 13:45 |
| Mine Cut #3 | 4.0'=112.27' | ND | ND | ND |
| Mine Cut #4 | 5.0'=97.54' | 1.58 | 94.12 | 11:46 |

NGVD = National Geodetic Vertical Datum
T.O.C. = Top of Casing
B.T.O.C. = Below Top of Casing
* = Floridan Well
ND =No Data
Mine Cut #1 and #3 - unable to read due to thick vegetation.
W.L. = Water Level




Southeast County Landfill

Groundwater Elevation Contour Diagram – October 4, 2013




OCTOBER 2013
UPPER FLORIDAN / LIMESTONE AQUIFER CONTOUR DIAGRAM
iN THE VICINITY OF THE FORMER SINKHOLE
SOUTHEAST COUNTY LANDFILL
HILLSBOROUGH COUNTY, FLORIDA

# Hillsborough County Southeast Landfill
## Laboratory Analytical Results from IAMP Groundwater Monitoring
## TH-72

| Date | Depth to Water (feet) | Water Table Elevation (NGVD) | conductivity (umhos/cm) (field) | dissolved oxygen (mg/l) (field) | pH (field) | temperature (°C) (field) | turbidity (NTU) (field) | total dissolved solids (mg/l) | chloride (mg/l) | ammonia nitrogen (mg/l as N) | arsenic (mg/l) | iron (mg/l) | sodium (mg/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01/27/2011 | 115.69 | 15.27 | 551 | 0.39 | 7.43 | 22.88 | 3.2 | 320 | 32 | 0.22 | 0.004 u | **0.52** | 32 |
| 02/03/2011 | 112.18 | 18.78 | 565 | 1.09 | 7.38 | 22.95 | 9.9 | 300 | 32 | 0.21 | 0.004 u | **0.62** | 27 |
| 02/10/2011 | 109.80 | 21.16 | 514 | 1.58 | 7.34 | 22.65 | 3.2 | 340 | 31 | 0.28 | 0.004 u | **0.54** | 31 |
| 02/14/2011 | 108.18 | 22.78 | 483 | 1.15 | 7.36 | 22.7 | 3.5 | 320 | 32 | 0.24 | 0.0013 u | **0.58** | 32 |
| 02/24/2011 | 111.71 | 19.25 | 513 | 0.19 | 7.34 | 22.85 | 1 | 350 | 32 | 0.22 | 0.004 u | **0.53** | 31 |
| 03/03/2011 | 111.88 | 19.08 | 579 | 0.77 | 7.35 | 22.8 | 0.8 | 330 | 31 | 0.23 | 0.004 u | **0.43** | 32 |
| 03/10/2011 | 113.65 | 17.31 | 551 | 1.26 | 7.41 | 22.73 | 0.9 | 320 | 30 | 0.18 | 0.004 u | **0.35** | 31 |
| 03/17/2011 | 112.85 | 18.11 | 388 | 1.05 | 7.34 | 22.9 | 0.9 | 330 | 30 | 0.31 | 0.004 u | 0.25 | 31 |
| 03/24/2011 | 114.33 | 16.63 | 1192 | 1.5 | 7.58 | 23.1 | 1.5 | **1,100** | **350** | **9** | 0.004 u | **0.64** | 130 |
| 04/01/2011 | 115.70 | 15.26 | 928 | 0.16 | 7.41 | 22.8 | 3.6 | **520** | 110 | 2 | 0.004 u | 0.24 | 59 |
| 04/08/2011 | 112.10 | 18.86 | 810 | 0.92 | 7.35 | 23.13 | 6.1 | 420 | 87 | 1.9 | 0.004 u | 0.22 | 51 |
| 05/05/2011 | 116.21 | 14.75 | 609 | 0.71 | 7.67 | 23.01 | 6.6 | 320 | 33 | 0.3 | 0.004 u | 0.27 | 37 |
| 06/08/2011 | 119.19 | 11.77 | 607 | 0.71 | 7.65 | 23.35 | 4.51 | 340 | 32 | 0.57 | 0.004 u | 0.2 | 34 |
| 07/07/2011 | 113.30 | 17.66 | 606 | 0.72 | 7.4 | 23.25 | 3.94 | 150 | 64 | 2.1 | 0.004 u | **7.9** | 27 |
| 08/04/2011 | 103.31 | 27.65 | 564 | 0.33 | 7.29 | 23.18 | 0.4 | 360 | 33 | 0.21 | 0.004 u | 0.18 i | 34 |
| 09/08/2011 | 97.99 | 32.97 | 536 | 1.11 | 7.29 | 23.2 | 0.6 | 340 | 34 | 0.41 | 0.004 u | 0.18 i | 36 |
| 10/04/2011 | 99.45 | 31.51 | 471 | 1.69 | 7.31 | 23.13 | 1.1 | 290 | 31 | 0.3 | 0.004 u | 0.14 i | 34 |
| 11/03/2011 | 103.37 | 27.59 | 550 | 1.8 | 7.28 | 23.04 | 1.51 | 290 | 32 | 0.29 | 0.004 u | 0.15 i | 34 |
| 12/08/2011 | 106.80 | 24.16 | 528 | 1.92 | 7.31 | 22.9 | 0.73 | 320 | 29 | 0.32 | 0.004 u | 0.13 i | 33 |
| 01/05/2012 | 113.08 | 17.88 | 535 | 0.2 | 7.23 | 22.74 | 0.44 | 330 | 32 | 0.29 | 0.004 u | 0.097 i | 31 |
| 02/10/2012 | 113.86 | 17.10 | 511 | 0.94 | 7.3 | 22.89 | 1.39 | 310 | 28 | 0.28 | 0.004 u | 0.13 i | 30 |
| 03/07/2012 | 121.00 | 9.96 | 575 | 0.27 | 7.15 | 23.23 | 0.5 | 310 | 25 | 0.22 | 0.004 u | 0.11 i | 31 |
| 04/05/2012 | 124.96 | 6.00 | 522 | 1.09 | 7.08 | 23.18 | 0.65 | 280 | 28 | 0.41 | 0.004 u | 0.11 i | 29 |
| 05/03/2012 | 126.55 | 4.41 | 746 | 1.6 | 6.9 | 23.46 | 0.81 | 380 | 72 | 2.3 | 0.004 u | **0.54** | 49 |
| 06/07/2012 | 120.46 | 10.50 | 641 | 0.72 | 7.07 | 23.4 | 0.26 | 370 | 46 | 1 | 0.004 u | 0.23 | 37 |
| 07/05/2012 | 104.95 | 26.01 | 900 | 0.23 | 6.54 | 23.52 | 0.4 | **650** | 190 | **2.9 j3** | 0.004 u | **0.39** | 70 |
| 08/03/2012 | 98.26 | 32.70 | 843 | 0.69 | 6.77 | 23.6 | 2.23 | **730** | 210 | **3** | 0.004 u | **0.48** | 78 |
| 09/06/2012 | 91.18 | 39.66 | 2,357 | 0.2 | 6.51 | 23.62 | 1.05 | **1,300** | **570** | **12** | 0.004 u | **1.1** | **170** |
| 10/04/2012 | 90.19 | 40.77 | 1,654 | 0.6 | **6.43** | 23.22 | 0.46 | **1,500** | **650** | **25** | 0.004 u | **1.9** | **210** |
| 11/07/2012 | 99.29 | 31.67 | 2,488 | 0.76 | 6.58 | 23.03 | 0.74 | **1,400** | **540** | **15** | 0.004 u | **1.4** | **180** |
| 12/05/2012 | 101.82 | 29.14 | 2,416 | 0.23 | **6.49** | 23.18 | 0.45 | **1,300** | **540** | **13** | 0.004 u | **1.3** | **180 j3** |
| 01/03/2013 | 100.65 | 30.31 | 2,430 | 1.1 | **6.44** | 23.09 | 0.42 | **1,400** | **500** | **15** | 0.004 u | **1.3** | **170 j3** |
| 02/07/2013 | 105.58 | 25.38 | 2,206 | 0.6 | 6.5 | 23.1 | 0.22 | **1,100** | **470** | **13** | 0.004 u | **1.1** | 160 |
| 03/07/2013 | 110.00 | 20.96 | 1,234 | 0.3 | 6.61 | 22.85 | 0.41 | **770** | **290** | **11** | 0.004 u | **1.1** | 110 |
| 04/04/2013 | 111.35 | 19.61 | 1,252 | 0.33 | 6.74 | 23.15 | 9.9 | **870** | **260** | **10** | 0.004 u | **1** | 100 |
| 05/02/2013 | 109.56 | 21.40 | 1,615 | 0.18 | 6.83 | 23.16 | 0.45 | **810** | **300** | **8.6** | 0.004 u | **0.87** | 110 |
| 06/04/2013 | 109.62 | 21.34 | 1,440 | 0.31 | 7.13 | 23.3 | 0.27 | **850** | **290** | **8.4** | 0.004 u | **0.82** | 120 |
| 07/03/2013 | 98.72 | 32.24 | 1,450 | 0.18 | 7.03 | 23.5 | 0.41 | **820** | **280** | **8.8** | 0.004 u | **0.79** | 120 |
| 08/02/2013 | ND | ND | 1,256 | 0.46 | 6.88 | 23.43 | 0.2 | **800** | **290** | **6.8** | 0.004 u | **0.72** | 120 |
| 09/05/2013 | 87.92 | 43.04 | 1,001 | 0.61 | 6.98 | 23.45 | 1.17 | **760** | **290** | **7.6** | 0.004 u | **0.71** | 110 |

New survey data beginning with 10/4/2012.

u = parameter was analyzed but not detected

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

j3 = estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.

ND = No Data - water levels collected during quarterly ADR.

**1,100** EXCEEDS STANDARD

## Hillsborough County Southeast Landfill
## Laboratory Analytical Results from IAMP Groundwater Monitoring
## TH-76

| Date | Depth to Water (feet) | Water Table Elevation (NGVD) | conductivity (umhos/cm) (field) | dissolved oxygen (mg/l) (field) | pH (field) | temperature (°C) (field) | turbidity (NTU) (field) | total dissolved solids (mg/l) | chloride (mg/l) | ammonia nitrogen (mg/l as N) | arsenic (mg/l) | iron (mg/l) | sodium (mg/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 05/02/2013 | 89.83 | 21.38 | 450 | 0.22 | 7.63 | 22.81 | 36.9 | 220 | 13 | 0.4 | 0.004 u | **1.1** | 20 |
| 06/04/2013 | 89.91 | 21.30 | 401 | 0.27 | 7.86 | 22.9 | 16.2 | 240 | 13 | 0.4 | 0.004 u | **0.66** | 22 |
| 07/03/2013 | 79.04 | 32.17 | 398 | 0.19 | 8 | 23 | 28.6 | 210 | 12 | 0.34 | 0.004 u | **0.99** | 22 |
| 08/02/2013 | ND | ND | 343 | 0.22 | 7.57 | 23.02 | 42.2 | 230 | 13 | 0.26 | 0.004 u | **1.6** | 21 |
| 09/05/2013 | 68.22 | 42.99 | 278 | 0.21 | 7.74 | 22.97 | 46 | 240 | 12 | 0.32 | 0.004 u | **1.5** | 20 |

u = parameter was analyzed but not detected

ND = No Data - water levels collected during quarterly ADR.

**1.1** EXCEEDS STANDARD

## Hillsborough County Southeast Landfill
## Laboratory Analytical Results from IAMP Groundwater Monitoring
## TH-77

| Date | Depth to Water (feet) | Water Table Elevation (NGVD) | conductivity (umhos/cm) (field) | dissolved oxygen (mg/l) (field) | pH (field) | temperature (°C) (field) | turbidity (NTU) (field) | total dissolved solids (mg/l) | chloride (mg/l) | ammonia nitrogen (mg/l as N) | arsenic (mg/l) | iron (mg/l) | sodium (mg/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 05/02/2013 | 98.31 | 21.57 | 440 | 0.57 | 7.39 | 23.39 | 59.4 | 190 | 9.4 | 0.39 | 0.004 u | **1.2** | 17 |
| 06/04/2013 | 98.38 | 21.50 | 384 | 0.56 | 7.86 | 23.59 | 35.4 | 230 | 8.9 | 0.42 | 0.004 u | **0.89** | 18 |
| 07/03/2013 | 87.48 | 32.40 | 388 | 0.41 | 7.8 | 23.7 | 38.4 | 210 | 8.9 | 0.4 | 0.004 u | **1.1** | 17 |
| 08/02/2013 | ND | ND | 334 | 0.47 | 7.44 | 23.66 | 42.9 | 230 | 9.2 | 0.36 | 0.004 u | **1.1** | 18 |
| 09/05/2013 | 76.66 | 43.22 | 269 | 0.83 | 7.61 | 23.68 | 47.1 | 230 | 8.9 | 0.35 | 0.004 u | **0.96** | 16 |

u = parameter was analyzed but not detected

ND = No Data - water levels collected during quarterly ADR.

**1.2** EXCEEDS STANDARD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tampa
6712 Benjamin Road
Suite 100
Tampa, FL 33634
Tel: (813)885-7427

TestAmerica Job ID: 660-56863-1
Client Project/Site: SELF-IAMP Monitoring Wells

For:
Hillsborough Co Public Utilities Dept
Environmental Services Group
Brandon Support Operations Complex
332 North Falkenburg Rd, 2nd Floor
Tampa, Florida 33619

Attn: David Adams

*Authorized for release by:*
*10/11/2013 3:51:56 PM*

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# Table of Contents

# Sample Summary

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 660-56863-1 | TH-72 | Ground Water | 10/02/13 12:10 | 10/02/13 14:15 |
| 660-56863-2 | TH-76 | Ground Water | 10/02/13 11:26 | 10/02/13 14:15 |
| 660-56863-3 | TH-77 | Ground Water | 10/02/13 10:14 | 10/02/13 14:15 |
| 660-56863-4 | BLANK FIELD 56863 | Ground Water | 10/02/13 10:00 | 10/02/13 14:15 |
| 660-56863-5 | DUPLICATE NOT BLANK | Ground Water | 10/02/13 00:00 | 10/02/13 14:15 |

## Job ID: 660-56863-1

### Laboratory: TestAmerica Tampa

**Narrative**

**Job Narrative**
**660-56863-1**

**Comments**
No additional comments.

**Receipt**
The samples were received on 10/2/2013 2:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.1° C.

**Metals**
Method 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 142009 were outside control limits. The associated laboratory control sample (LCS) recovery met acceptance criteria.

No other analytical or quality issues were noted.

**General Chemistry**
Method 350.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 297308 were outside control limits with the parent sample 4 times greater than the spike amount. The associated laboratory control sample (LCS) recovery met acceptance criteria. The sample is flagged with J3.

No other analytical or quality issues were noted.

## Qualifiers

### HPLC/IC

| Qualifier | Qualifier Description |
|---|---|
| U | Indicates that the compound was analyzed for but not detected. |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| U | Indicates that the compound was analyzed for but not detected. |
| J3 | Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria. |

### General Chemistry

| Qualifier | Qualifier Description |
|---|---|
| J3 | Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria. |
| U | Indicates that 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. |

## Glossary

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

# Detection Summary

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

## Client Sample ID: TH-72 — Lab Sample ID: 660-56863-1

| Analyte | Result | Qualifier | PQL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 350 | | 5.0 | 2.5 | mg/L | 10 | | 300.0 | Total/NA |
| Iron | 790 | | 200 | 50 | ug/L | 1 | | 6010B | Total Recoverable |
| Sodium | 120 | | 0.50 | 0.31 | mg/L | 1 | | 6010B | Total Recoverable |
| Ammonia as N | 7.4 | J3 | 0.25 | 0.13 | mg/L | 5 | | 350.1 | Total/NA |
| Total Dissolved Solids | 1000 | | 25 | 25 | mg/L | 1 | | SM 2540C | Total/NA |
| Field pH | 6.86 | | | | SU | 1 | | Field Sampling | Total/NA |
| Field Temperature | 23.53 | | | | Degrees C | 1 | | Field Sampling | Total/NA |
| Oxygen, Dissolved | 0.32 | | | | mg/L | 1 | | Field Sampling | Total/NA |
| Specific Conductance | 1566 | | | | uS/cm | 1 | | Field Sampling | Total/NA |
| Turbidity | 12.60 | | | | NTU | 1 | | Field Sampling | Total/NA |

## Client Sample ID: TH-76 — Lab Sample ID: 660-56863-2

| Analyte | Result | Qualifier | PQL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 13 | | 0.50 | 0.25 | mg/L | 1 | | 300.0 | Total/NA |
| Iron | 1700 | | 200 | 50 | ug/L | 1 | | 6010B | Total Recoverable |
| Sodium | 20 | | 0.50 | 0.31 | mg/L | 1 | | 6010B | Total Recoverable |
| Ammonia as N | 0.38 | | 0.050 | 0.026 | mg/L | 1 | | 350.1 | Total/NA |
| Total Dissolved Solids | 120 | | 10 | 10 | mg/L | 1 | | SM 2540C | Total/NA |
| Field pH | 7.61 | | | | SU | 1 | | Field Sampling | Total/NA |
| Field Temperature | 22.99 | | | | Degrees C | 1 | | Field Sampling | Total/NA |
| Oxygen, Dissolved | 0.22 | | | | mg/L | 1 | | Field Sampling | Total/NA |
| Specific Conductance | 399 | | | | uS/cm | 1 | | Field Sampling | Total/NA |
| Turbidity | 61.9 | | | | NTU | 1 | | Field Sampling | Total/NA |

## Client Sample ID: TH-77 — Lab Sample ID: 660-56863-3

| Analyte | Result | Qualifier | PQL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 9.1 | | 0.50 | 0.25 | mg/L | 1 | | 300.0 | Total/NA |
| Iron | 1300 | | 200 | 50 | ug/L | 1 | | 6010B | Total Recoverable |
| Sodium | 17 | | 0.50 | 0.31 | mg/L | 1 | | 6010B | Total Recoverable |
| Ammonia as N | 0.39 | | 0.050 | 0.026 | mg/L | 1 | | 350.1 | Total/NA |
| Total Dissolved Solids | 240 | | 10 | 10 | mg/L | 1 | | SM 2540C | Total/NA |
| Field pH | 7.50 | | | | SU | 1 | | Field Sampling | Total/NA |
| Field Temperature | 23.59 | | | | Degrees C | 1 | | Field Sampling | Total/NA |
| Oxygen, Dissolved | 0.69 | | | | mg/L | 1 | | Field Sampling | Total/NA |
| Specific Conductance | 383 | | | | uS/cm | 1 | | Field Sampling | Total/NA |
| Turbidity | 52.7 | | | | NTU | 1 | | Field Sampling | Total/NA |

## Client Sample ID: BLANK FIELD 56863 — Lab Sample ID: 660-56863-4

| Analyte | Result | Qualifier | PQL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Sodium | 0.52 | | 0.50 | 0.31 | mg/L | 1 | | 6010B | Total Recoverable |
| Ammonia as N | 0.034 | I | 0.050 | 0.026 | mg/L | 1 | | 350.1 | Total/NA |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

## Client Sample ID: DUPLICATE NOT BLANK

## Lab Sample ID: 660-56863-5

| Analyte | Result | Qualifier | PQL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 13 | | 0.50 | 0.25 | mg/L | 1 | | 300.0 | Total/NA |
| Iron | 1700 | | 200 | 50 | ug/L | 1 | | 6010B | Total Recoverable |
| Sodium | 21 | | 0.50 | 0.31 | mg/L | 1 | | 6010B | Total Recoverable |
| Ammonia as N | 0.35 | | 0.050 | 0.026 | mg/L | 1 | | 350.1 | Total/NA |
| Total Dissolved Solids | 260 | | 10 | 10 | mg/L | 1 | | SM 2540C | Total/NA |

This Detection Summary does not include radiochemical test results.

# Client Sample Results

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

**Client Sample ID: TH-72**
**Date Collected: 10/02/13 12:10**
**Date Received: 10/02/13 14:15**

**Lab Sample ID: 660-56863-1**
**Matrix: Ground Water**

## Method: 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **350** | | 5.0 | 2.5 | mg/L | | | 10/08/13 16:53 | 10 |

## Method: 6010B - Metals (ICP) - Total Recoverable

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.0 | U | 10 | 4.0 | ug/L | | 10/03/13 13:11 | 10/04/13 10:57 | 1 |
| **Iron** | **790** | | 200 | 50 | ug/L | | 10/03/13 13:11 | 10/04/13 10:57 | 1 |
| **Sodium** | **120** | | 0.50 | 0.31 | mg/L | | 10/03/13 13:11 | 10/04/13 10:57 | 1 |

## General Chemistry

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Ammonia as N** | **7.4** | **J3** | 0.25 | 0.13 | mg/L | | | 10/07/13 19:49 | 5 |
| **Total Dissolved Solids** | **1000** | | 25 | 25 | mg/L | | | 10/07/13 11:46 | 1 |

## Method: Field Sampling - Field Sampling

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Field pH** | **6.86** | | | | SU | | | 10/02/13 12:10 | 1 |
| **Field Temperature** | **23.53** | | | | Degrees C | | | 10/02/13 12:10 | 1 |
| **Oxygen, Dissolved** | **0.32** | | | | mg/L | | | 10/02/13 12:10 | 1 |
| **Specific Conductance** | **1566** | | | | uS/cm | | | 10/02/13 12:10 | 1 |
| **Turbidity** | **12.60** | | | | NTU | | | 10/02/13 12:10 | 1 |

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

**Client Sample ID: TH-76**
**Date Collected: 10/02/13 11:26**
**Date Received: 10/02/13 14:15**

**Lab Sample ID: 660-56863-2**
**Matrix: Ground Water**

### Method: 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 13 | | 0.50 | 0.25 | mg/L | | | 10/08/13 17:05 | 1 |

### Method: 6010B - Metals (ICP) - Total Recoverable

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.0 | U | 10 | 4.0 | ug/L | | 10/03/13 13:11 | 10/04/13 11:00 | 1 |
| Iron | 1700 | | 200 | 50 | ug/L | | 10/03/13 13:11 | 10/04/13 11:00 | 1 |
| Sodium | 20 | | 0.50 | 0.31 | mg/L | | 10/03/13 13:11 | 10/04/13 11:00 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as N | 0.38 | | 0.050 | 0.026 | mg/L | | | 10/07/13 18:28 | 1 |
| Total Dissolved Solids | 120 | | 10 | 10 | mg/L | | | 10/07/13 11:46 | 1 |

### Method: Field Sampling - Field Sampling

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Field pH | 7.61 | | | | SU | | | 10/02/13 11:26 | 1 |
| Field Temperature | 22.99 | | | | Degrees C | | | 10/02/13 11:26 | 1 |
| Oxygen, Dissolved | 0.22 | | | | mg/L | | | 10/02/13 11:26 | 1 |
| Specific Conductance | 399 | | | | uS/cm | | | 10/02/13 11:26 | 1 |
| Turbidity | 61.9 | | | | NTU | | | 10/02/13 11:26 | 1 |

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

**Client Sample ID: TH-77**
**Date Collected: 10/02/13 10:14**
**Date Received: 10/02/13 14:15**

**Lab Sample ID: 660-56863-3**
**Matrix: Ground Water**

### Method: 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 9.1 | | 0.50 | 0.25 | mg/L | | | 10/08/13 17:18 | 1 |

### Method: 6010B - Metals (ICP) - Total Recoverable

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.0 | U | 10 | 4.0 | ug/L | | 10/03/13 13:11 | 10/04/13 11:03 | 1 |
| Iron | 1300 | | 200 | 50 | ug/L | | 10/03/13 13:11 | 10/04/13 11:03 | 1 |
| Sodium | 17 | | 0.50 | 0.31 | mg/L | | 10/03/13 13:11 | 10/04/13 11:03 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as N | 0.39 | | 0.050 | 0.026 | mg/L | | | 10/07/13 18:28 | 1 |
| Total Dissolved Solids | 240 | | 10 | 10 | mg/L | | | 10/07/13 11:46 | 1 |

### Method: Field Sampling - Field Sampling

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Field pH | 7.50 | | | | SU | | | 10/02/13 10:14 | 1 |
| Field Temperature | 23.59 | | | | Degrees C | | | 10/02/13 10:14 | 1 |
| Oxygen, Dissolved | 0.69 | | | | mg/L | | | 10/02/13 10:14 | 1 |
| Specific Conductance | 383 | | | | uS/cm | | | 10/02/13 10:14 | 1 |
| Turbidity | 52.7 | | | | NTU | | | 10/02/13 10:14 | 1 |

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

**Client Sample ID: BLANK FIELD 56863**
**Date Collected: 10/02/13 10:00**
**Date Received: 10/02/13 14:15**

**Lab Sample ID: 660-56863-4**
**Matrix: Ground Water**

### Method: 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 0.25 | U | 0.50 | 0.25 | mg/L | | | 10/08/13 17:30 | 1 |

### Method: 6010B - Metals (ICP) - Total Recoverable

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.0 | U | 10 | 4.0 | ug/L | | 10/03/13 13:11 | 10/04/13 11:07 | 1 |
| Iron | 50 | U | 200 | 50 | ug/L | | 10/03/13 13:11 | 10/04/13 11:07 | 1 |
| **Sodium** | **0.52** | | 0.50 | 0.31 | mg/L | | 10/03/13 13:11 | 10/04/13 11:07 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Ammonia as N** | **0.034** | **I** | 0.050 | 0.026 | mg/L | | | 10/07/13 18:28 | 1 |
| Total Dissolved Solids | 5.0 | U | 5.0 | 5.0 | mg/L | | | 10/07/13 11:46 | 1 |

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

**Client Sample ID: DUPLICATE NOT BLANK**
**Date Collected: 10/02/13 00:00**
**Date Received: 10/02/13 14:15**

**Lab Sample ID: 660-56863-5**
**Matrix: Ground Water**

### Method: 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 13 | | 0.50 | 0.25 | mg/L | | | 10/08/13 17:43 | 1 |

### Method: 6010B - Metals (ICP) - Total Recoverable

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.0 | U | 10 | 4.0 | ug/L | | 10/03/13 13:11 | 10/04/13 11:10 | 1 |
| Iron | 1700 | | 200 | 50 | ug/L | | 10/03/13 13:11 | 10/04/13 11:10 | 1 |
| Sodium | 21 | | 0.50 | 0.31 | mg/L | | 10/03/13 13:11 | 10/04/13 11:10 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as N | 0.35 | | 0.050 | 0.026 | mg/L | | | 10/07/13 18:28 | 1 |
| Total Dissolved Solids | 260 | | 10 | 10 | mg/L | | | 10/07/13 11:46 | 1 |

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 680-297351/2**
**Matrix: Water**
**Analysis Batch: 297351**

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

| Analyte | MB Result | MB Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 0.25 | U | 0.50 | 0.25 | mg/L | | | 10/08/13 13:44 | 1 |

**Lab Sample ID: LCS 680-297351/3**
**Matrix: Water**
**Analysis Batch: 297351**

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

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | | | 10.0 | 10.0 | | mg/L | | 100 | 90 - 110 | | |

**Lab Sample ID: LCSD 680-297351/4**
**Matrix: Water**
**Analysis Batch: 297351**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | | | 10.0 | 10.0 | | mg/L | | 100 | 90 - 110 | 0 | 30 |

**Lab Sample ID: 660-56858-E-1 MS**
**Matrix: Water**
**Analysis Batch: 297351**

**Client Sample ID: Matrix Spike**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 49 | | 20.0 | 69.2 | | mg/L | | 99 | 80 - 120 | | |

**Lab Sample ID: 660-56858-E-1 MSD**
**Matrix: Water**
**Analysis Batch: 297351**

**Client Sample ID: Matrix Spike Duplicate**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 49 | | 20.0 | 69.4 | | mg/L | | 100 | 80 - 120 | 0 | 30 |

**Lab Sample ID: 680-94528-C-5 MS**
**Matrix: Water**
**Analysis Batch: 297351**

**Client Sample ID: Matrix Spike**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 10 | | 10.0 | 20.3 | | mg/L | | 101 | 80 - 120 | | |

**Lab Sample ID: 680-94528-C-5 MSD**
**Matrix: Water**
**Analysis Batch: 297351**

**Client Sample ID: Matrix Spike Duplicate**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 10 | | 10.0 | 20.4 | | mg/L | | 102 | 80 - 120 | 0 | 30 |

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 660-141976/1-A**
**Matrix: Water**
**Analysis Batch: 142009**

**Client Sample ID: Method Blank**
**Prep Type: Total Recoverable**
**Prep Batch: 141976**

| Analyte | MB Result | MB Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.0 | U | 10 | 4.0 | ug/L | | 10/03/13 13:11 | 10/04/13 09:33 | 1 |
| Iron | 50 | U | 200 | 50 | ug/L | | 10/03/13 13:11 | 10/04/13 09:33 | 1 |
| Sodium | 0.31 | U | 0.50 | 0.31 | mg/L | | 10/03/13 13:11 | 10/04/13 09:33 | 1 |

**Lab Sample ID: LCS 660-141976/2-A**
**Matrix: Water**
**Analysis Batch: 142009**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total Recoverable**
**Prep Batch: 141976**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Arsenic | 1000 | 970 | | ug/L | | 97 | 80 - 120 |
| Iron | 1000 | 1070 | | ug/L | | 107 | 80 - 120 |
| Sodium | 10.0 | 10.1 | | mg/L | | 101 | 80 - 120 |

**Lab Sample ID: 660-56865-E-7-B MS**
**Matrix: Water**
**Analysis Batch: 142009**

**Client Sample ID: Matrix Spike**
**Prep Type: Total Recoverable**
**Prep Batch: 141976**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.0 | U | 1000 | 985 | | ug/L | | 99 | 80 - 120 |
| Iron | 2000 | J3 | 1000 | 3690 | J3 | ug/L | | 173 | 80 - 120 |
| Sodium | 24 | | 10.0 | 33.5 | | mg/L | | 98 | 80 - 120 |

**Lab Sample ID: 660-56865-E-7-C MSD**
**Matrix: Water**
**Analysis Batch: 142009**

**Client Sample ID: Matrix Spike Duplicate**
**Prep Type: Total Recoverable**
**Prep Batch: 141976**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.0 | U | 1000 | 993 | | ug/L | | 99 | 80 - 120 | 1 | 20 |
| Iron | 2000 | J3 | 1000 | 3780 | J3 | ug/L | | 182 | 80 - 120 | 2 | 20 |
| Sodium | 24 | | 10.0 | 34.1 | | mg/L | | 103 | 80 - 120 | 2 | 20 |

## Method: 350.1 - Nitrogen, Ammonia

**Lab Sample ID: MB 680-297308/35**
**Matrix: Water**
**Analysis Batch: 297308**

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

| Analyte | MB Result | MB Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as N | 0.026 | U | 0.050 | 0.026 | mg/L | | | 10/07/13 19:56 | 1 |

**Lab Sample ID: LCS 680-297308/27**
**Matrix: Water**
**Analysis Batch: 297308**

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

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Ammonia as N | 1.00 | 0.987 | | mg/L | | 99 | 90 - 110 |

## Method: 350.1 - Nitrogen, Ammonia (Continued)

**Lab Sample ID: 660-56863-1 MS**
**Matrix: Ground Water**
**Analysis Batch: 297308**

**Client Sample ID: TH-72**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as N | 7.4 | J3 | 1.00 | 8.06 | J3 | mg/L | | 63 | 90 - 110 |

**Lab Sample ID: 660-56863-1 MSD**
**Matrix: Ground Water**
**Analysis Batch: 297308**

**Client Sample ID: TH-72**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia as N | 7.4 | J3 | 1.00 | 7.88 | J3 | mg/L | | 44 | 90 - 110 | 2 | 30 |

**Lab Sample ID: 660-56863-2 DU**
**Matrix: Ground Water**
**Analysis Batch: 297308**

**Client Sample ID: TH-76**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Ammonia as N | 0.38 | | 0.360 | | mg/L | | 6 | 30 |

## Method: SM 2540C - Solids, Total Dissolved (TDS)

**Lab Sample ID: MB 660-142040/1**
**Matrix: Water**
**Analysis Batch: 142040**

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

| Analyte | MB Result | MB Qualifier | PQL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 5.0 | U | 5.0 | 5.0 | mg/L | | | 10/07/13 11:46 | 1 |

**Lab Sample ID: LCS 660-142040/2**
**Matrix: Water**
**Analysis Batch: 142040**

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

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 10000 | 10000 | | mg/L | | 100 | 80 - 120 |

**Lab Sample ID: 660-56863-5 DU**
**Matrix: Ground Water**
**Analysis Batch: 142040**

**Client Sample ID: DUPLICATE NOT BLANK**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 260 | | 260 | | mg/L | | 0 | 20 |

## HPLC/IC

### Analysis Batch: 297351

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 660-56858-E-1 MS | Matrix Spike | Total/NA | Water | 300.0 | |
| 660-56858-E-1 MSD | Matrix Spike Duplicate | Total/NA | Water | 300.0 | |
| 660-56863-1 | TH-72 | Total/NA | Ground Water | 300.0 | |
| 660-56863-2 | TH-76 | Total/NA | Ground Water | 300.0 | |
| 660-56863-3 | TH-77 | Total/NA | Ground Water | 300.0 | |
| 660-56863-4 | BLANK FIELD 56863 | Total/NA | Ground Water | 300.0 | |
| 660-56863-5 | DUPLICATE NOT BLANK | Total/NA | Ground Water | 300.0 | |
| 680-94528-C-5 MS | Matrix Spike | Total/NA | Water | 300.0 | |
| 680-94528-C-5 MSD | Matrix Spike Duplicate | Total/NA | Water | 300.0 | |
| LCS 680-297351/3 | Lab Control Sample | Total/NA | Water | 300.0 | |
| LCSD 680-297351/4 | Lab Control Sample Dup | Total/NA | Water | 300.0 | |
| MB 680-297351/2 | Method Blank | Total/NA | Water | 300.0 | |

## Metals

### Prep Batch: 141976

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 660-56863-1 | TH-72 | Total Recoverable | Ground Water | 3005A | |
| 660-56863-2 | TH-76 | Total Recoverable | Ground Water | 3005A | |
| 660-56863-3 | TH-77 | Total Recoverable | Ground Water | 3005A | |
| 660-56863-4 | BLANK FIELD 56863 | Total Recoverable | Ground Water | 3005A | |
| 660-56863-5 | DUPLICATE NOT BLANK | Total Recoverable | Ground Water | 3005A | |
| 660-56865-E-7-B MS | Matrix Spike | Total Recoverable | Water | 3005A | |
| 660-56865-E-7-C MSD | Matrix Spike Duplicate | Total Recoverable | Water | 3005A | |
| LCS 660-141976/2-A | Lab Control Sample | Total Recoverable | Water | 3005A | |
| MB 660-141976/1-A | Method Blank | Total Recoverable | Water | 3005A | |

### Analysis Batch: 142009

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 660-56863-1 | TH-72 | Total Recoverable | Ground Water | 6010B | 141976 |
| 660-56863-2 | TH-76 | Total Recoverable | Ground Water | 6010B | 141976 |
| 660-56863-3 | TH-77 | Total Recoverable | Ground Water | 6010B | 141976 |
| 660-56863-4 | BLANK FIELD 56863 | Total Recoverable | Ground Water | 6010B | 141976 |
| 660-56863-5 | DUPLICATE NOT BLANK | Total Recoverable | Ground Water | 6010B | 141976 |
| 660-56865-E-7-B MS | Matrix Spike | Total Recoverable | Water | 6010B | 141976 |
| 660-56865-E-7-C MSD | Matrix Spike Duplicate | Total Recoverable | Water | 6010B | 141976 |
| LCS 660-141976/2-A | Lab Control Sample | Total Recoverable | Water | 6010B | 141976 |
| MB 660-141976/1-A | Method Blank | Total Recoverable | Water | 6010B | 141976 |

## General Chemistry

### Analysis Batch: 142040

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 660-56863-1 | TH-72 | Total/NA | Ground Water | SM 2540C | |
| 660-56863-2 | TH-76 | Total/NA | Ground Water | SM 2540C | |
| 660-56863-3 | TH-77 | Total/NA | Ground Water | SM 2540C | |
| 660-56863-4 | BLANK FIELD 56863 | Total/NA | Ground Water | SM 2540C | |
| 660-56863-5 | DUPLICATE NOT BLANK | Total/NA | Ground Water | SM 2540C | |
| 660-56863-5 DU | DUPLICATE NOT BLANK | Total/NA | Ground Water | SM 2540C | |
| LCS 660-142040/2 | Lab Control Sample | Total/NA | Water | SM 2540C | |

## General Chemistry (Continued)

### Analysis Batch: 142040 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 660-142040/1 | Method Blank | Total/NA | Water | SM 2540C | |

### Analysis Batch: 297308

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 660-56863-1 | TH-72 | Total/NA | Ground Water | 350.1 | |
| 660-56863-1 MS | TH-72 | Total/NA | Ground Water | 350.1 | |
| 660-56863-1 MSD | TH-72 | Total/NA | Ground Water | 350.1 | |
| 660-56863-2 | TH-76 | Total/NA | Ground Water | 350.1 | |
| 660-56863-2 DU | TH-76 | Total/NA | Ground Water | 350.1 | |
| 660-56863-3 | TH-77 | Total/NA | Ground Water | 350.1 | |
| 660-56863-4 | BLANK FIELD 56863 | Total/NA | Ground Water | 350.1 | |
| 660-56863-5 | DUPLICATE NOT BLANK | Total/NA | Ground Water | 350.1 | |
| LCS 680-297308/27 | Lab Control Sample | Total/NA | Water | 350.1 | |
| MB 680-297308/35 | Method Blank | Total/NA | Water | 350.1 | |

## Field Service / Mobile Lab

### Analysis Batch: 142084

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 660-56863-1 | TH-72 | Total/NA | Ground Water | Field Sampling | |
| 660-56863-2 | TH-76 | Total/NA | Ground Water | Field Sampling | |
| 660-56863-3 | TH-77 | Total/NA | Ground Water | Field Sampling | |

## Client Sample ID: TH-72

**Lab Sample ID: 660-56863-1**

**Date Collected: 10/02/13 12:10**

**Matrix: Ground Water**

**Date Received: 10/02/13 14:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 10 | 297351 | 10/08/13 16:53 | CMB | TAL SAV |
| Total Recoverable | Prep | 3005A | | | 141976 | 10/03/13 13:11 | GAF | TAL TAM |
| Total Recoverable | Analysis | 6010B | | 1 | 142009 | 10/04/13 10:57 | GAF | TAL TAM |
| Total/NA | Analysis | SM 2540C | | 1 | 142040 | 10/07/13 11:46 | TKO | TAL TAM |
| Total/NA | Analysis | 350.1 | | 5 | 297308 | 10/07/13 19:49 | JME | TAL SAV |
| Total/NA | Analysis | Field Sampling | | 1 | 142084 | 10/02/13 12:10 | | TAL TAM |

## Client Sample ID: TH-76

**Lab Sample ID: 660-56863-2**

**Date Collected: 10/02/13 11:26**

**Matrix: Ground Water**

**Date Received: 10/02/13 14:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 297351 | 10/08/13 17:05 | CMB | TAL SAV |
| Total Recoverable | Prep | 3005A | | | 141976 | 10/03/13 13:11 | GAF | TAL TAM |
| Total Recoverable | Analysis | 6010B | | 1 | 142009 | 10/04/13 11:00 | GAF | TAL TAM |
| Total/NA | Analysis | SM 2540C | | 1 | 142040 | 10/07/13 11:46 | TKO | TAL TAM |
| Total/NA | Analysis | 350.1 | | 1 | 297308 | 10/07/13 18:28 | JME | TAL SAV |
| Total/NA | Analysis | Field Sampling | | 1 | 142084 | 10/02/13 11:26 | | TAL TAM |

## Client Sample ID: TH-77

**Lab Sample ID: 660-56863-3**

**Date Collected: 10/02/13 10:14**

**Matrix: Ground Water**

**Date Received: 10/02/13 14:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 297351 | 10/08/13 17:18 | CMB | TAL SAV |
| Total Recoverable | Prep | 3005A | | | 141976 | 10/03/13 13:11 | GAF | TAL TAM |
| Total Recoverable | Analysis | 6010B | | 1 | 142009 | 10/04/13 11:03 | GAF | TAL TAM |
| Total/NA | Analysis | SM 2540C | | 1 | 142040 | 10/07/13 11:46 | TKO | TAL TAM |
| Total/NA | Analysis | 350.1 | | 1 | 297308 | 10/07/13 18:28 | JME | TAL SAV |
| Total/NA | Analysis | Field Sampling | | 1 | 142084 | 10/02/13 10:14 | | TAL TAM |

## Client Sample ID: BLANK FIELD 56863

**Lab Sample ID: 660-56863-4**

**Date Collected: 10/02/13 10:00**

**Matrix: Ground Water**

**Date Received: 10/02/13 14:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 297351 | 10/08/13 17:30 | CMB | TAL SAV |
| Total Recoverable | Prep | 3005A | | | 141976 | 10/03/13 13:11 | GAF | TAL TAM |
| Total Recoverable | Analysis | 6010B | | 1 | 142009 | 10/04/13 11:07 | GAF | TAL TAM |
| Total/NA | Analysis | SM 2540C | | 1 | 142040 | 10/07/13 11:46 | TKO | TAL TAM |
| Total/NA | Analysis | 350.1 | | 1 | 297308 | 10/07/13 18:28 | JME | TAL SAV |

# Lab Chronicle

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

**Client Sample ID: DUPLICATE NOT BLANK**
**Date Collected: 10/02/13 00:00**
**Date Received: 10/02/13 14:15**

**Lab Sample ID: 660-56863-5**
**Matrix: Ground Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 297351 | 10/08/13 17:43 | CMB | TAL SAV |
| Total Recoverable | Prep | 3005A | | | 141976 | 10/03/13 13:11 | GAF | TAL TAM |
| Total Recoverable | Analysis | 6010B | | 1 | 142009 | 10/04/13 11:10 | GAF | TAL TAM |
| Total/NA | Analysis | SM 2540C | | 1 | 142040 | 10/07/13 11:46 | TKO | TAL TAM |
| Total/NA | Analysis | 350.1 | | 1 | 297308 | 10/07/13 18:28 | JME | TAL SAV |

**Laboratory References:**

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

TAL TAM = TestAmerica Tampa, 6712 Benjamin Road, Suite 100, Tampa, FL 33634, TEL (813)885-7427

# Method Summary

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 300.0 | Anions, Ion Chromatography | MCAWW | TAL SAV |
| 6010B | Metals (ICP) | SW846 | TAL TAM |
| 350.1 | Nitrogen, Ammonia | MCAWW | TAL SAV |
| SM 2540C | Solids, Total Dissolved (TDS) | SM | TAL TAM |
| Field Sampling | Field Sampling | EPA | TAL TAM |

**Protocol References:**

EPA = US Environmental Protection Agency

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

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

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

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

TAL TAM = TestAmerica Tampa, 6712 Benjamin Road, Suite 100, Tampa, FL 33634, TEL (813)885-7427

# Certification Summary

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

## Laboratory: TestAmerica Tampa

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

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| Alabama | State Program | 4 | 40610 | 06-30-14 |
| Florida | NELAP | 4 | E84282 | 06-30-14 |
| Georgia | State Program | 4 | 905 | 06-30-14 |
| USDA | Federal | | P330-11-00177 | 04-20-14 |

## Laboratory: TestAmerica Savannah

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

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| | AFCEE | | SAVLAB | |
| A2LA | DoD ELAP | | 399.01 | 02-28-15 |
| A2LA | ISO/IEC 17025 | | 399.01 | 02-28-15 |
| Alabama | State Program | 4 | 41450 | 06-30-14 |
| Arkansas DEQ | State Program | 6 | 88-0692 | 02-01-14 |
| California | NELAP | 9 | 3217CA | 07-31-14 |
| Colorado | State Program | 8 | N/A | 12-31-13 |
| Connecticut | State Program | 1 | PH-0161 | 03-31-15 |
| Florida | NELAP | 4 | E87052 | 06-30-14 |
| GA Dept. of Agriculture | State Program | 4 | N/A | 12-31-13 |
| Georgia | State Program | 4 | N/A | 06-30-14 |
| Georgia | State Program | 4 | 803 | 06-30-14 |
| Guam | State Program | 9 | 09-005r | 06-17-14 |
| Hawaii | State Program | 9 | N/A | 06-30-14 |
| Illinois | NELAP | 5 | 200022 | 11-30-13 |
| Indiana | State Program | 5 | N/A | 06-30-14 |
| Iowa | State Program | 7 | 353 | 07-01-15 |
| Kentucky | State Program | 4 | 90084 | 12-31-13 |
| Kentucky (UST) | State Program | 4 | 18 | 06-30-14 |
| Louisiana | NELAP | 6 | 30690 | 06-30-14 |
| Maine | State Program | 1 | GA00006 | 08-16-14 |
| Maryland | State Program | 3 | 250 | 12-31-13 |
| Massachusetts | State Program | 1 | M-GA006 | 06-30-14 |
| Michigan | State Program | 5 | 9925 | 06-30-14 |
| Mississippi | State Program | 4 | N/A | 06-30-14 |
| Montana | State Program | 8 | CERT0081 | 01-01-14 |
| Nebraska | State Program | 7 | TestAmerica-Savannah | 06-30-14 |
| New Jersey | NELAP | 2 | GA769 | 06-30-14 |
| New Mexico | State Program | 6 | N/A | 06-30-14 |
| New York | NELAP | 2 | 10842 | 04-01-14 |
| North Carolina DENR | State Program | 4 | 269 | 12-31-13 |
| North Carolina DHHS | State Program | 4 | 13701 | 07-31-14 |
| Oklahoma | State Program | 6 | 9984 | 08-31-14 |
| Pennsylvania | NELAP | 3 | 68-00474 | 06-30-14 |
| Puerto Rico | State Program | 2 | GA00006 | 01-01-14 |
| South Carolina | State Program | 4 | 98001 | 06-30-14 |
| Tennessee | State Program | 4 | TN02961 | 06-30-14 |
| Texas | NELAP | 6 | T104704185-08-TX | 11-30-13 |
| USDA | Federal | | SAV 3-04 | 04-07-14 |
| Virginia | NELAP | 3 | 460161 | 06-14-14 |
| Washington | State Program | 10 | C1794 | 06-10-14 |

# Certification Summary

Client: Hillsborough Co Public Utilities Dept
Project/Site: SELF-IAMP Monitoring Wells

TestAmerica Job ID: 660-56863-1

## Laboratory: TestAmerica Savannah (Continued)

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

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| West Virginia | State Program | 3 | 9950C | 12-31-13 |
| West Virginia DEP | State Program | 3 | 94 | 06-30-14 |
| Wisconsin | State Program | 5 | 999819810 | 08-31-14 |
| Wyoming | State Program | 8 | 8TMS-L | 06-30-14 |

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

TestAmerica Tampa
6712 Benjamin Rd, Suite 100
Tampa, FL 33634
www.testamericainc.com
Phone: (813) 885 7427
Fax: (813) 885 7049

Alternate Laboratory Name/Location:
Phone:
Fax:

| PROJECT REFERENCE | PROJECT NO. | PROJECT LOCATION |
|---|---|---|
| SELF-IAMP Monitoring Wells | | Lithia, FL |
| TESTAMERICA (LAB) PROJECT MANAGER | P.O. NUMBER | CONTRACT NO. |
| Nancy Robertson | | |
| CLIENT (SITE) PM | CLIENT PHONE | CLIENT FAX |
| Michael Townsel | (813) 663-3222 | (813) 274-6801 |
| CLIENT NAME | CLIENT EMAIL | |
| Hills. County Public Utilities | townselm@hillsboroughcounty.org | |
| CLIENT ADDRESS | | |
| 332 North Falkenburg Road | | |
| COMPANY CONTRACTING THIS WORK | SAMPLER'S SIGNATURE | |

PAGE ____ OF ____

STANDARD REPORT DELIVERY ○
DATE DUE ____
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE ____
NUMBER OF COOLERS SUBMITTED PER SHIPMENT

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT...) | NUMBER OF CONTAINERS SUBMITTED: H2SO4 Ammonia-N | TDS | Chloride | HNO3 As, Fe, Na | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | H2SO4 | Ice | Ice | HNO3 | | | | | | | |
| 10-2-13 | 12.10 | TH-72 | G | X | | | | X | X | X | X | | | | | | | |
| 10-2-13 | 11.26 | TH-76 | G | X | | | | X | X | X | X | | | | | | | |
| 10-2-13 | 10.14 | TH-77 | G | X | | | | X | X | X | X | | | | | | | |
| 10-2-13 | 10.00 | FIELD BLANK | G | X | | | | X | X | X | X | | | | | | | |
| 10-2-13 | / | DUPE | G | X | | | | X | X | X | X | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
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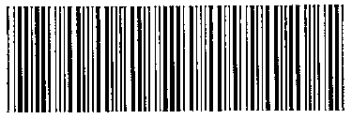

660-56863 Chain of Custody

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| Jack Ketterer | 10-2-13 | 1415 | | | | | | |
| RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME |
| Carl McNulty | 10/2/13 | 1415 | | | | | | |

LABORATORY USE ONLY

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT YES ○ NO ○ | CUSTODY SEAL NO. | STL LOG NO. | LABORATORY REMARKS: |
|---|---|---|---|---|---|---|
| | | | | | | 5.1° C WD7 |

FCU036:12.20.00:2

Original - Return to Laboratory with Sample(s)

**TestAmerica Tampa**
6712 Benjamin Road Suite 100
Tampa, FL 33634
Phone (813) 885-7427 Fax (813) 885-7049

# Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

| Client Information (Sub Contract Lab) | Sampler: | Lab PM: Robertson, Nancy | Carrier Tracking No(s): | COC No: 660-60444.1 |
|---|---|---|---|---|
| Client Contact: Shipping/Receiving | Phone: | E-Mail: nancy.robertson@testamericainc.com | | Page: Page 1 of 1 |
| Company: TestAmerica Laboratories, Inc. | | | | Job #: 660-56863-1 |
| Address: 5102 LaRoche Avenue, , | Due Date Requested: 10/9/2013 | | | |
| City: Savannah | TAT Requested (days): | | | |
| State, Zip: GA, 31404 | | | | |
| Phone: 912-354-7858(Tel) 912-352-0165(Fax) | PO #: | | | |
| Email: | WO #: | | | |
| Project Name: SELF MWs,SS,Private Wells,NPDES | Project #: 66003915 | | | |
| Site: Southeast Landfill | SSOW#: | | | |

**Analysis Requested**

**Preservation Codes:**

| | |
|---|---|
| A - HCL | M - Hexane |
| B - NaOH | N - None |
| C - Zn Acetate | O - AsNaO2 |
| D - Nitric Acid | P - Na2O4S |
| E - NaHSO4 | Q - Na2SO3 |
| F - MeOH | R - Na2S2SO3 |
| G - Amchlor | S - H2SO4 |
| H - Ascorbic Acid | T - TSP Dodecahydrate |
| I - Ice | U - Acetone |
| J - DI Water | V - MCAA |
| K - EDTA | W - ph 4-5 |
| L - EDA | Z - other (specify) |

Other:

| Sample Identification - Client ID (Lab ID) | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | 350.1/ Nitrogen, Ammonia | 300_ORGFM_28D/ Chloride | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | | | | |
| TH-72 (660-56863-1) | 10/2/13 | 12:10 Eastern | | Water | | | X | X | 2 | |
| TH-76 (660-56863-2) | 10/2/13 | 11:26 Eastern | | Water | | | X | X | 2 | |
| TH-77 (660-56863-3) | 10/2/13 | 10:14 Eastern | | Water | | | X | X | 2 | |
| BLANK FIELD (660-56863-4) | 10/2/13 | 10:00 Eastern | | Water | | | X | X | 2 | |
| DUPLICATE NOT BLANK (660-56863-5) | 10/2/13 | Eastern | | Water | | | X | X | 2 | |

*Possible Hazard Identification*
*Unconfirmed*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

| Empty Kit Relinquished by: | Date: | Time: | Method of Shipment: |
|---|---|---|---|
| Relinquished by: [signature] | Date/Time: 10/3/13 @ 1515 | Company: TA TPA | Received by: [signature] Date/Time: 10-04-13 0630 Company: TAS |
| Relinquished by: | Date/Time: | Company: | Received by: Date/Time: Company: |
| Relinquished by: | Date/Time: | Company: | Received by: Date/Time: Company: |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 1.8°C



10/11/2013

**Form FD 9000-24**

# GROUNDWATER SAMPLING LOG

| SITE NAME: | SELF IAMP | SITE LOCATION:. | Lithia, Florida |
|---|---|---|---|
| WELL NO: | TH-72 | SAMPLE ID: | DATE: 10-2-13 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 0.5 | WELL SCREEN INTERVAL DEPTH: 180 feet to 190 feet | STATIC DEPTH TO WATER (feet): 87.39 | PURGE PUMP TYPE OR BAILER: DBP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

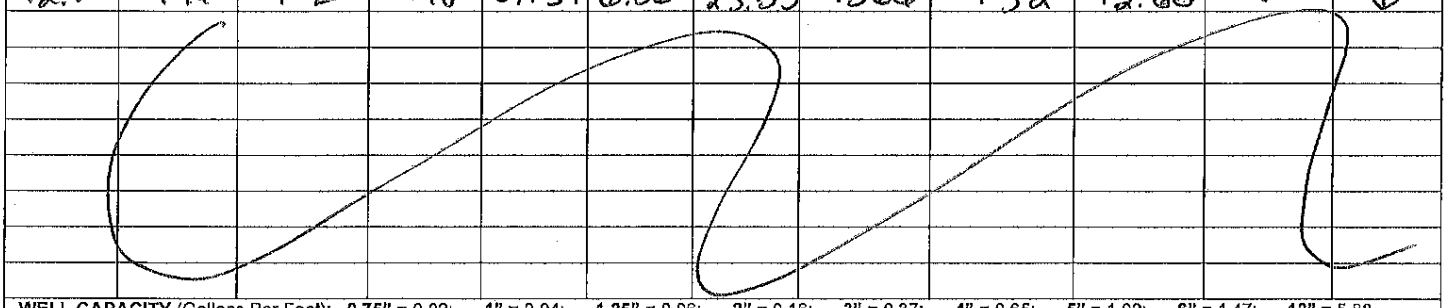
= ( 190 feet – feet) X .16 gallons/foot = gallons

**EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

= .16 gallons + ( .006 gallons/foot X 192 feet) + .30 gallons = 1.61 gallons

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 189 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 189 | PURGING INITIATED AT: 11.55 | PURGING ENDED AT: 12.10 | TOTAL VOLUME PURGED (gallons): 7.20 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (gallons) | CUMUL. VOLUME PURGED (gallons) | PURGE RATE (gpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. µS/cm | DISSOLVED OXYGEN mg/L | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.06 | 5.28 | 5.28 | .48 | 87.35 | 6.86 | 23.55 | 1560 | .34 | 19.4 | NONE | NONE |
| 12.08 | .96 | 6.24 | .48 | 87.38 | 6.87 | 23.55 | 1564 | .32 | 13.69 | ↓ | ↓ |
| 12.10 | .96 | 7.20 | .48 | 87.39 | 6.86 | 23.53 | 1566 | .32 | 12.60 | ↓ | ↓ |



**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): Zack Patterson | SAMPLING INITIATED AT: 12.10 | SAMPLING ENDED AT: 12.22 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 189 | 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 | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |

**SEE C.O.C. FOR SAMPLE ANALYSIS** DBP =Dedicated Bladder Pump

Sunny 50% clouds

**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: | SELF IAMP | SITE LOCATION: | Lithia, Florida |
|---|---|---|---|
| WELL NO: | TH-76 | SAMPLE ID: | DATE: 10-2-13 |

## PURGING DATA

| WELL DIAMETER (inches): 2 | TUBING DIAMETER (inches): 0.5 | WELL SCREEN INTERVAL DEPTH: 163.35 feet to 178.35 feet | STATIC DEPTH TO WATER (feet): 67.69 | PURGE PUMP TYPE OR BAILER: DBP |
|---|---|---|---|---|

**WELL VOLUME PURGE: 1 WELL VOLUME** = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= ( 178.35 feet − 67.69 feet ) X .16 gallons/foot = 17.70 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): 177.35 | FINAL PUMP OR TUBING DEPTH IN WELL (feet): 177.35 | PURGING INITIATED AT: 10.34 | PURGING ENDED AT: 11.26 | TOTAL VOLUME PURGED (gallons): 27.56 |
|---|---|---|---|---|

| TIME | VOLUME PURGED (gallons) | CUMUL. VOLUME PURGED (gallons) | PURGE RATE (gpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. µS/cm | DISSOLVED OXYGEN mg/L | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.08 | 18.02 | 18.02 | .53 | 68.80 | 7.64 | 22.94 | 395 | .23 | 62.00 | cloudy | none |
| 11.17 | 4.77 | 22.79 | .53 | 68.88 | 7.63 | 22.98 | 397 | .23 | 63.0 | ↓ | ↓ |
| 11.26 | 4.97 | 27.56 | .53 | 68.85 | 7.61 | 22.99 | 399 | .22 | 61.9 | ↓ | ↓ |

**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: 11.26 | SAMPLING ENDED AT: 11.38 |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): 177.35 | 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 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
| | | | | | SEE COC | | | | |

**SEE C.O.C. FOR SAMPLE ANALYSIS** DBP = Dedicated bladder pump

Sunny 40% clouds,

**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: | SELF IAMP | SITE LOCATION: | Lithia, Florida |
|---|---|---|---|
| WELL NO: | TH-77 | SAMPLE ID: | DATE: 10-2-13 |

## PURGING DATA

| WELL DIAMETER (inches): | TUBING DIAMETER (inches): | WELL SCREEN INTERVAL DEPTH: | STATIC DEPTH TO WATER (feet): | PURGE PUMP TYPE OR BAILER: |
|---|---|---|---|---|
| 2 | 0.5 | 154.2 feet to 169.2 feet | 76.14 | DBP |

**WELL VOLUME PURGE:** 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)

= ( 169.2 feet – 76.14 feet) X .16 gallons/foot = 14.90 gallons

**EQUIPMENT VOLUME PURGE:** 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)

= .0 gallons + (.0026 gallons/foot X 172.2 feet) + .30 gallons = gallons

| INITIAL PUMP OR TUBING DEPTH IN WELL (feet): | FINAL PUMP OR TUBING DEPTH IN WELL (feet): | PURGING INITIATED AT: | PURGING ENDED AT: | TOTAL VOLUME PURGED (gallons): |
|---|---|---|---|---|
| 168.2 | 168.2 | 9.35 | 10.14 | 23.4 |

| TIME | VOLUME PURGED (gallons) | CUMUL. VOLUME PURGED (gallons) | PURGE RATE (gpm) | DEPTH TO WATER (feet) | pH (standard units) | TEMP. (°C) | COND. µS/cm | DISSOLVED OXYGEN mg/L | TURBIDITY (NTUs) | COLOR (describe) | ODOR (describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.00 | 15.00 | 15.0 | .60 | 76.62 | 7.47 | 23.55 | 384 | .75 | 49.1 | cloudy | NONE |
| 10.07 | 4.2 | 19.2 | .60 | 76.61 | 7.49 | 23.57 | 383 | .74 | 52.4 | ↓ | ↓ |
| 10.14 | 4.2 | 23.4 | .60 | 76.61 | 7.50 | 23.59 | 383 | .69 | 52.7 | ↓ | ↓ |

**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: | SAMPLER(S) SIGNATURE(S): | SAMPLING INITIATED AT: | SAMPLING ENDED AT: |
|---|---|---|---|
| ANDREW BALLOON / ZACK PATTERSON | Zack Patterson | 10.14 | 10.26 |

| PUMP OR TUBING DEPTH IN WELL (feet): | TUBING MATERIAL CODE: | FIELD-FILTERED: Y (N) Filtration Equipment Type: | FILTER SIZE: ____ µm |
|---|---|---|---|
| 168.2 | T | | |

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 | | | | | |

**SEE C.O.C. FOR SAMPLE ANALYSIS** DBP= Dedicated bladder pump

Sunny 30% clouds.

**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: | SELF IAMP | SITE LOCATION:. | Lithia, FL |
|---|---|---|---|
| WELL NO: | Field Blank | SAMPLE ID: | DATE: 10-2-13 |

## PURGING DATA

| WELL DIAMETER (inches): | TUBING DIAMETER (inches): | WELL SCREEN INTERVAL DEPTH: feet to feet | STATIC DEPTH TO WATER (feet): | 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)
= ( feet − feet) X gallons/foot = 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): | FINAL PUMP OR TUBING DEPTH IN WELL (feet): | PURGING INITIATED AT: | PURGING ENDED AT: | TOTAL VOLUME PURGED (gallons): |
|---|---|---|---|---|
| | | | | |

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
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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: 10.00 | SAMPLING ENDED AT: |
|---|---|---|---|
| PUMP OR TUBING DEPTH IN WELL (feet): | 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 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID CODE | # CONTAINERS | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOL ADDED IN FIELD (mL) | FINAL pH | INTENDED ANALYSIS AND/OR METHOD | SAMPLING EQUIPMENT CODE | SAMPLE PUMP FLOW RATE (mL per minute) |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | SEE COC | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |

Sunny 40% clouds

**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: | SELF JAMP | SITE LOCATION:. | LITHIA, FL |
|---|---|---|---|
| WELL NO: | DUPE | SAMPLE ID: | DATE: 10-2-13 |

## PURGING DATA

| WELL DIAMETER (inches): | TUBING DIAMETER (inches): | WELL SCREEN INTERVAL DEPTH: feet to feet | STATIC DEPTH TO WATER (feet): | 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)
= ( feet − feet) X gallons/foot = 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): | FINAL PUMP OR TUBING DEPTH IN WELL (feet): | PURGING INITIATED AT: | PURGING ENDED AT: | TOTAL VOLUME PURGED (gallons): |
|---|---|---|---|---|

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
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DUPE

**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: | SAMPLING ENDED AT: |
|---|---|---|---|

| PUMP OR TUBING DEPTH IN WELL (feet): | 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 | | | |
| | | | 1 | | | | | | |
| | | | | | | | | | |
| | | | | | SEE COC | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**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

# Login Sample Receipt Checklist

Client: Hillsborough Co Public Utilities Dept

Job Number: 660-56863-1

**Login Number: 56863**

**List Source: TestAmerica Tampa**

**List Number: 1**

**Creator: Snead, Joshua**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | N/A | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | N/A | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

# Login Sample Receipt Checklist

Client: Hillsborough Co Public Utilities Dept

Job Number: 660-56863-1

**Login Number: 56863**
**List Number: 1**
**Creator: Banda, Christy S**

**List Source: TestAmerica Savannah**
**List Creation: 10/04/13 08:27 AM**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | N/A | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | N/A | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | N/A | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |