Hillsborough County Florida

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February 5, 2019

Mr. Steve Tafuni
Florida Department of Environmental Protection
Waste Permitting Section
13051 Telecom Parkway
Temple Terrace, FL 33637

SUBJECT: **Southeast County Class I Landfill**
WACS Facility ID No. 41193
Supplemental Groundwater Sampling Report – November 2018
Consent Agreement, OGC File No. 17-0058

Dear Mr. Tafuni:

On behalf of the Hillsborough County Transportation and Utility Services, Solid Waste Management Division (SWMD), the Hillsborough County Public Utilities Department (County) has prepared this supplemental groundwater data report in accordance with part 9(g) of the referenced Consent Agreement and Rule 62-701.510(8)(a), F.A.C. This water quality sampling event was conducted at the Southeast County Landfill (SCLF) to address groundwater impacts of the surficial aquifer on the east side of the Phase II waste filled area.

Representative groundwater samples were collected by on November 8-9, 2018 from each of the nine (9) surficial aquifer monitoring wells identified as TH-20B, TH-38B, TH-66A, TH-67, TH-79, TH-80, TH-81, TH-82, and TH-83 for TDS, chloride, sodium, and ammonia. Laboratory analyses was performed by our contracted laboratory, Advanced Environmental Laboratories, Inc. (AEL). A site map is provided depicting the well locations within the landfill property and the following paragraphs detail the specific findings from the groundwater laboratory results.

Surficial Aquifer Groundwater Monitoring Wells

pH

Each surficial aquifer monitoring well east of the Phase II waste filled area continued to exhibit pH below the Secondary Drinking Water Standard (SDWS) acceptable criteria of 6.5 to 8.5 pH units. The pH during this monitoring period ranged from 4.71 to 6.28 pH units. Background water quality records prior to construction and operation of the landfill established naturally occurring pH within the surficial aquifer below the SDWS.

Total Dissolved Solids (TDS)

Each of the detection and compliance surficial aquifer monitoring wells well exhibited TDS below the SDWS of 500 mg/l during this monitoring event ranging from 84 to 470 mg/l. A pattern of elevated groundwater parameters throughout seasonal low periods and a decrease in parameter concentrations as the site reaches the seasonal high has been consistent over the period of record as the corrective actions continue to be implemented. Monitoring wells TH-67 and TH-79 are identified as the closest source locations during the initial water quality changes in February 2016 and continue to exhibit a significant reduction in TDS over the period of record. Detection well TH-83 continues to exhibit an overall downward trend for TDS as the corrective actions contribute to the attenuation of groundwater.

Seasonal fluctuations within the surficial aquifer prior to any water quality changes exhibited in the February 2016 monitoring event have been well documented by the County. Tabulated data and graphical representation dating back to 2010 for TH-67 is provided within this submittal to demonstrate the seasonality exhibited prior to impacts of groundwater in the area east of Phase II. Even with the corrective actions functioning as designed, the County believes these seasonal fluctuations shall continue as water quality slowly attenuates to pre-2016 levels.

Chloride

Concentrations of chloride were detected from 3.6 to 130 mg/l during this water quality monitoring event below the SDWS of 150 mg/l. Water quality changes since corrective actions continue to correspond with seasonal high and seasonal low water level elevations. Data collected to date has scientifically exemplified improved water quality since corrective actions were initiated and exhibits the continued downward trend in the concentrations of chloride.

Sodium

Sodium was detected at each monitoring location below the Primary Drinking Water Standard (PDWS) of 160 mg/l during this water quality monitoring event. Monitoring locations TH-67, TH-79, and TH-81 continue to exhibit substantial water quality improvements since

implementation of the corrective actions and are seasonality driven as previously demonstrated by the data. However, the overall downward trend for sodium since May and August of 2017 continue to attenuate as demonstrated by the effectiveness of the corrective actions.

Groundwater Elevations and Flow Direction

Groundwater elevations were recorded prior to sampling the surficial aquifer groundwater monitoring wells on November 8, 2018. A surficial aquifer groundwater contour diagram was prepared to evaluate the general direction of flow at and around the affected area. The direction of flow in the surficial aquifer continues toward the Mine Cut to the east and southeast directions and is consistent with the historical evaluations in this general area. The surface water elevation in Mine Cut 1 is the primary influence on the direction of flow in this area, and is clearly demonstrated by the elevation data recorded.

Geophysical Survey

The SWMD contracted SCS Engineers, Inc. and their subcontractor Geoview, Inc. to conduct an updated geophysical survey between the southeast corner of the Phase II waste filled landfill area and the landfill access road to compare current bulk soil conductivity to previous geophysical studies of the same area from 2016 and 2017. Changes exhibited in the conductivity of the surficial aquifer from each survey indicates lower response values over the period of record indicating an improvement in water quality since February 2016. Each survey continues to support the findings of quarterly laboratory data analyzed from the groundwater samples collected and the effectiveness of the County's corrective actions. A copy of the November 2, 2018 survey is attached as part of this submittal.

Conclusions

Water quality in surficial aquifer monitoring wells along the east side of Phase II continues to demonstrate improvements since the corrective actions were implemented in early 2017. Detection wells TH-67, TH-79, and TH-83 are the closest monitoring points to the source area exhibited TDS and chloride within their SDWS and sodium within the PDWS. The only SDWS exceedance at the site continues to be pH; however, it has been well documented to be naturally occurring within the aquifer prior to landfill operation activities in the mid 1980's.

Improved water quality generated from the combination of these remedial processes and natural attenuation of the surficial aquifer are supported by the representative groundwater data and the subsurface conductivity surveys. As depicted in the seasonality trends of the groundwater, future seasonal fluctuation may result in the slight rebound of constituents of concern. This trend is expected for the near future; however, the County believes that the

overall reduction in parameter concentrations shall continue. The County believes a discussion with the Department is warranted on reduction of groundwater monitoring frequency as part of this Consent Agreement. Implementation of the corrective actions shall continue within the Phase II area of the landfill.

Should you have any questions, require any additional information, or would like to discuss the information provided within this submittal, please feel free to contact us at (813) 663-3222 or (813) 612-7757.

Respectfully submitted,

2/5/2019

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Environmental Services
Public Utilities Department

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Section Manager – GM III
Environmental Services
Public Utilities Department

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Enclosures

xc: Larry Ruiz, Landfill Manager, Solid Waste Management Division
Kimberly Byer, Director, Solid Waste Management Division
Joe O'Neill, Professional Engineer II, Solid Waste Management Division
Kelly Boatwright, Florida Department of Environmental Protection
Justin Chamberlain, P.G., Florida Department of Environmental Protection
Melissa Madden, Florida Department of Environmental Protection
Ken Guilbeault, P.G., Project Director, SCS Engineers, Inc.
Clark Moore, Florida Department of Environmental Protection
Andy Schipfer, HC Environmental Protection Commission
Bob Curtis, P.E., SCS Engineers, Inc.

SOUTHEAST COUNTY LANDFILL
SURFICIAL AQUIFER GROUNDWATER
CONTOUR MAP
FEBRUARY 7,2018

2016 AERIAL PHOTO

Legend

Existing Monitoring Wells

Direction Of Flow

Hillsborough County Florida

Southeast County Landfill
Supplemental Site Assessment Data
November 8-9, 2018

General Parameters Detected	Surficial Aquifer Wells									MCL Standard
	TH-20B	TH-38B	TH-66A	TH-67	TH-79	TH-80	TH-81	TH-82	TH-83	
well type	**Background**	**Background**	**Detection**	**Detection**	**Detection**	**Detection**	**Detection**	**Background**	**Detection**	
conductivity (umhos/cm) (field)	390.5	55.7	361.7	706	488.9	575	226.6	134.6	968	**NS**
dissolved oxygen (mg/l) (field)	0.11	0.22	0.56	0.14	1.60	0.1	0.45	0.34	0.63	**NS**
ORP (mV)	30.7	88.1	-61.8	-50.1	27.1	28.5	81.1	32	61.3	**NS**
temperature (°C) (field)	26.00	26.50	26.80	26.70	26.20	26.40	27.30	26.90	27.20	**NS**
turbidity (NTU) (field)	2.65	3.84	1.81	8.41	15.6	1.74	5.54	4.18	1.1	**NS**
pH (SU) (field)	**5.41**	**4.71**	**5.94**	**6.09**	**5.56**	**5.55**	**5.62**	**4.97**	**6.28**	**(6.5 - 8.5)****
Field Parameters Detected										**MCL Standard**
total dissolved solids (mg/l)	260	340	240	400	250	280	140	84	470	**500****
chloride (mg/l)	72	3.6 i	20	92	24	50	13	18	130	**250****
ammonia nitrogen (mg/l as N)	1.9	0.3	2	1.5	1.7	0.38	0.13	1.7	13	**NS**
Metals Detected (mg/l)										**MCL Standard**
sodium	20	2.5	9.9	35	16	30	6.3	6.2	110	**160***

Notes: Reference Groundwater Guidance Concentrations, FDEP 2012

NS=No Standard

MCL=Maximum Contaminant Level (Groundwater Standards)

*= Primary Drinking Water Standards as per Cahpter 62-550.310, F.A.C.

**=Secondary Drinking Water Standards as per Chapter 62-550.320, F.A.C.

5.41 Exceeds Standard

NTU=Nephelometric Turbidity Units

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

u = parameter was analyzed but not detected.

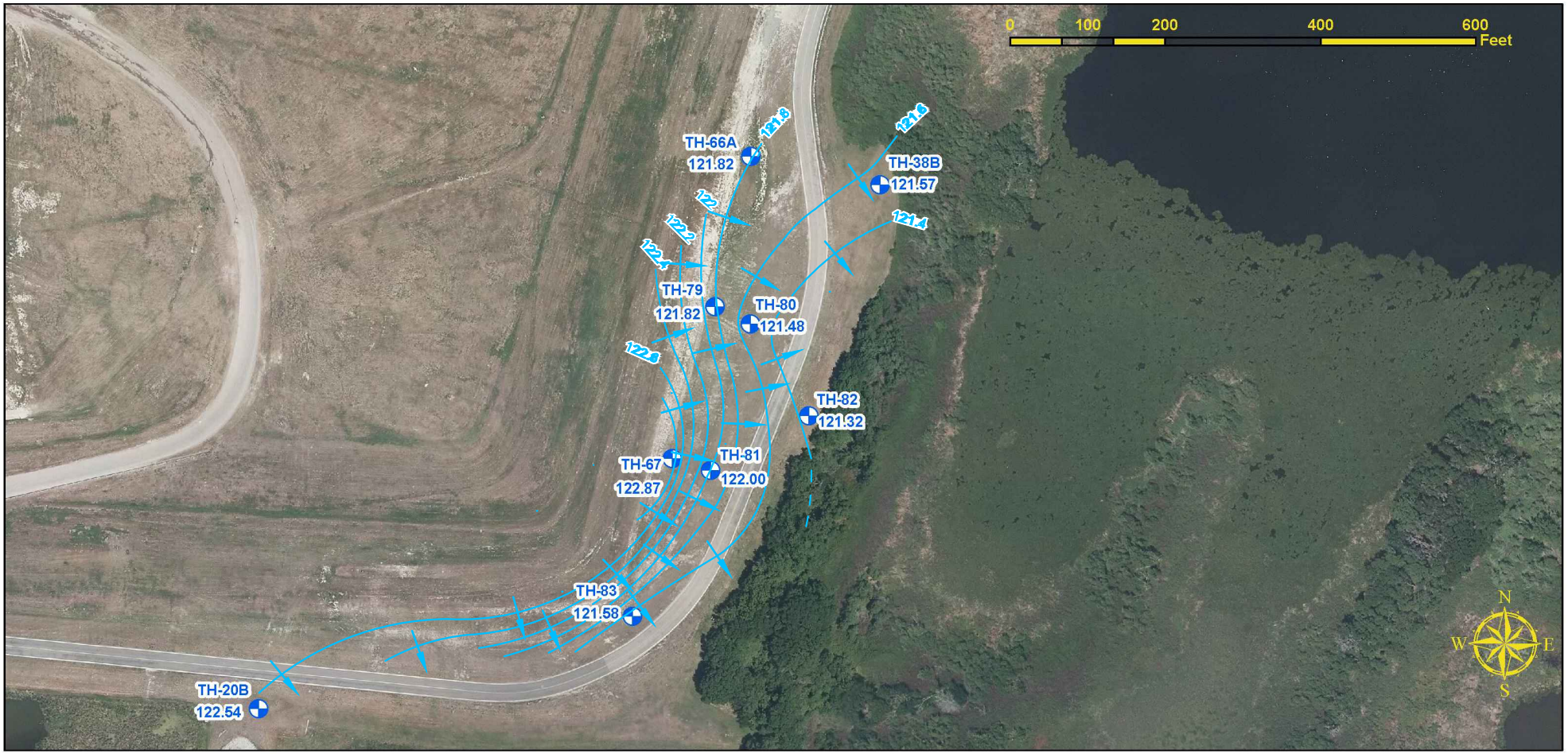
ug/l=micrograms per liter

mg/l=milligrams per liter

mV = millivolts

Southeast County Landfill
Surficial Aquifer Groundwater Elevations
November 8, 2018

Measuring Point I.D.	T.O.C. Elevations (NGVD)	W.L. B.T.O.C.	W.L. (NGVD)
TH-20B	132.57	10.03	122.54
TH-38B	131.81	10.24	121.57
TH-66A	130.66	8.84	121.82
TH-67	129.51	6.64	122.87
TH-79	129.60	7.78	121.82
TH-80	129.52	8.04	121.48
TH-81	130.26	8.26	122.00
TH-82	131.24	9.92	121.32
TH-83	130.23	8.65	121.58
NGVD	**= National Geodetic Vertical Datum**		
T.O.C.	**= Top of Casing**		
B.T.O.C.	**= Below Top of Casing**		
W.L.	**= Water Level**		



SOUTHEAST COUNTY LANDFILL
SURFICIAL AQUIFER GROUNDWATER
CONTOUR MAP
NOVEMBER 08, 2018

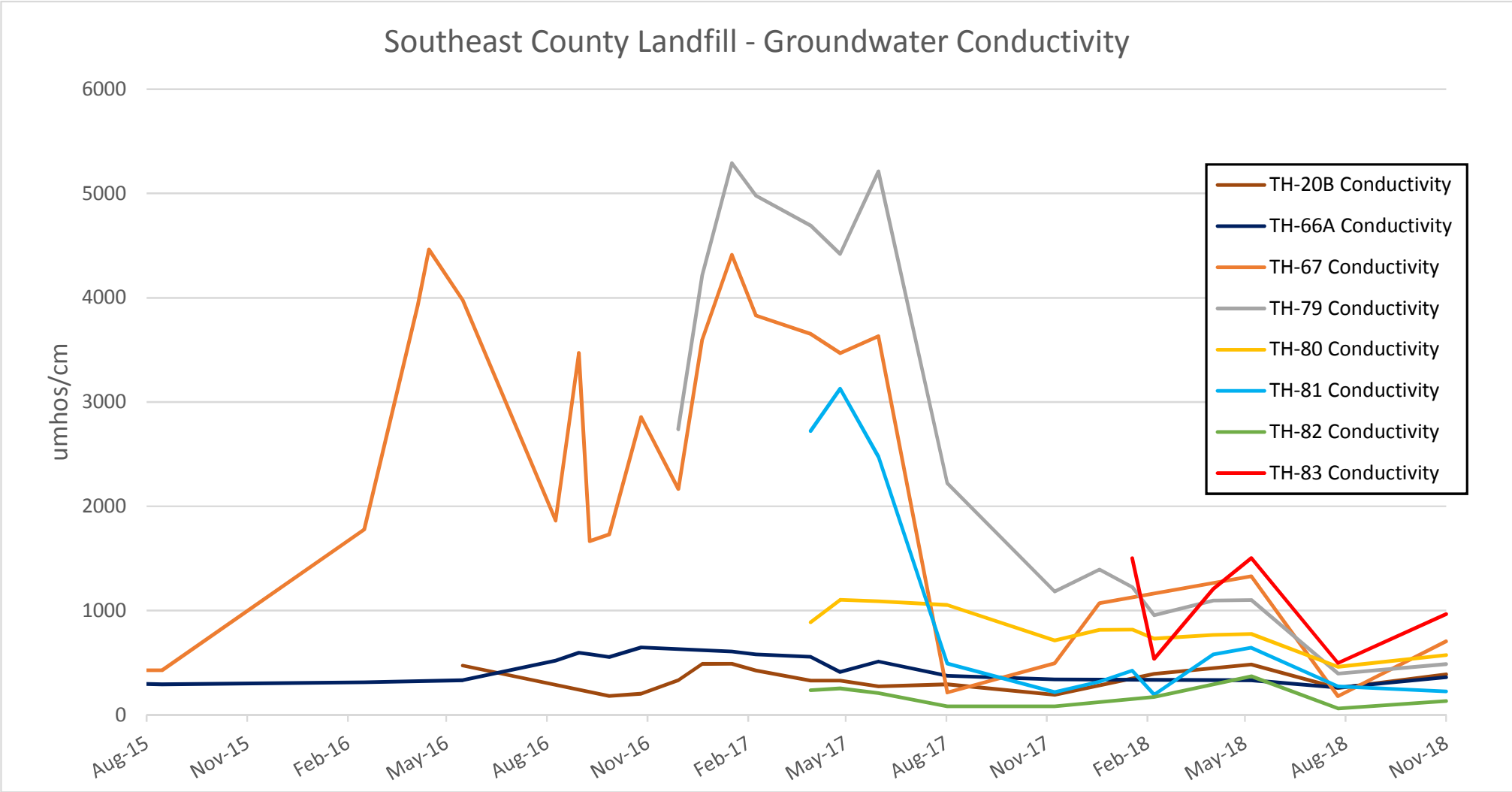
2018 AERIAL PHOTO

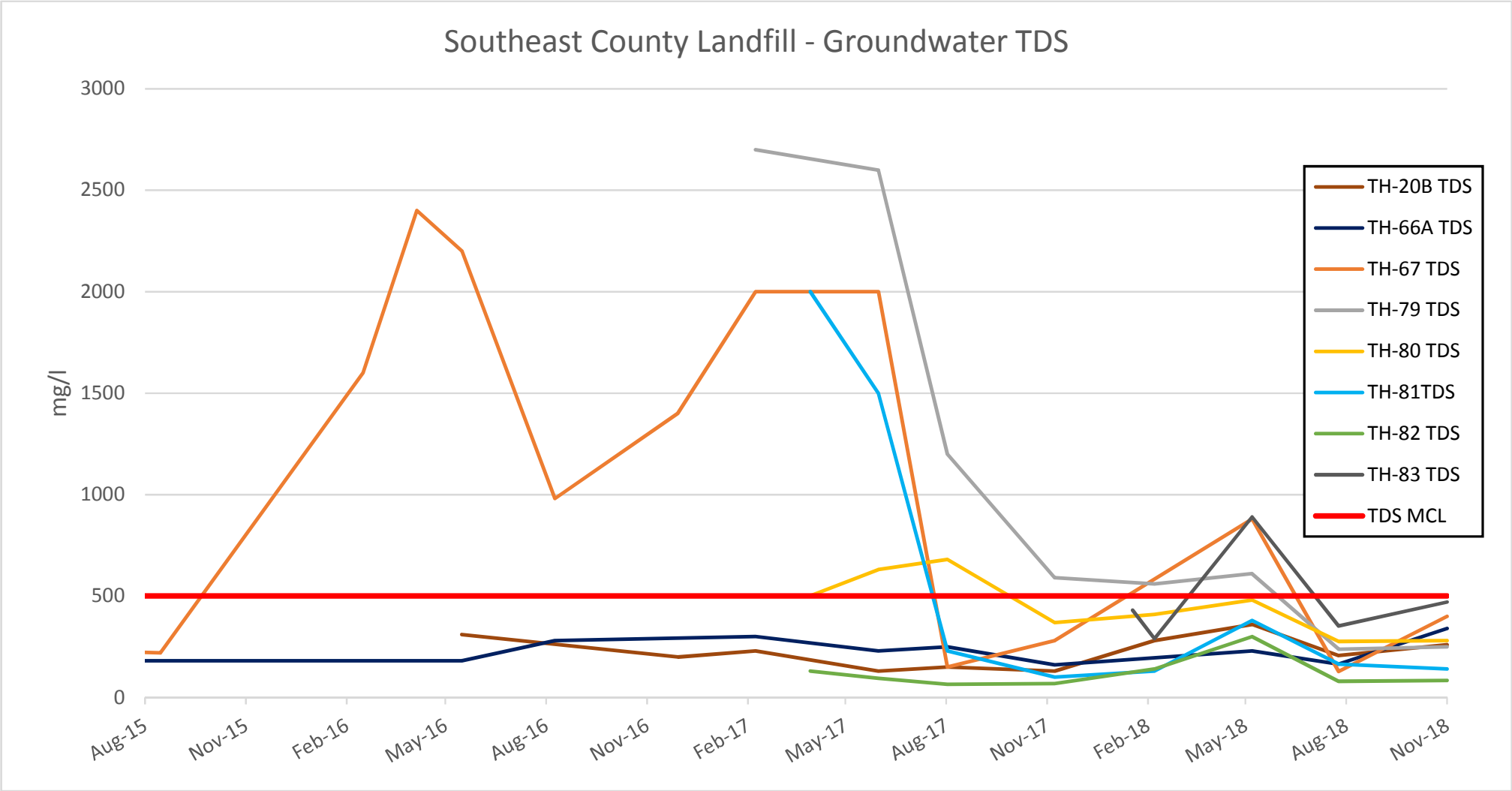
Legend

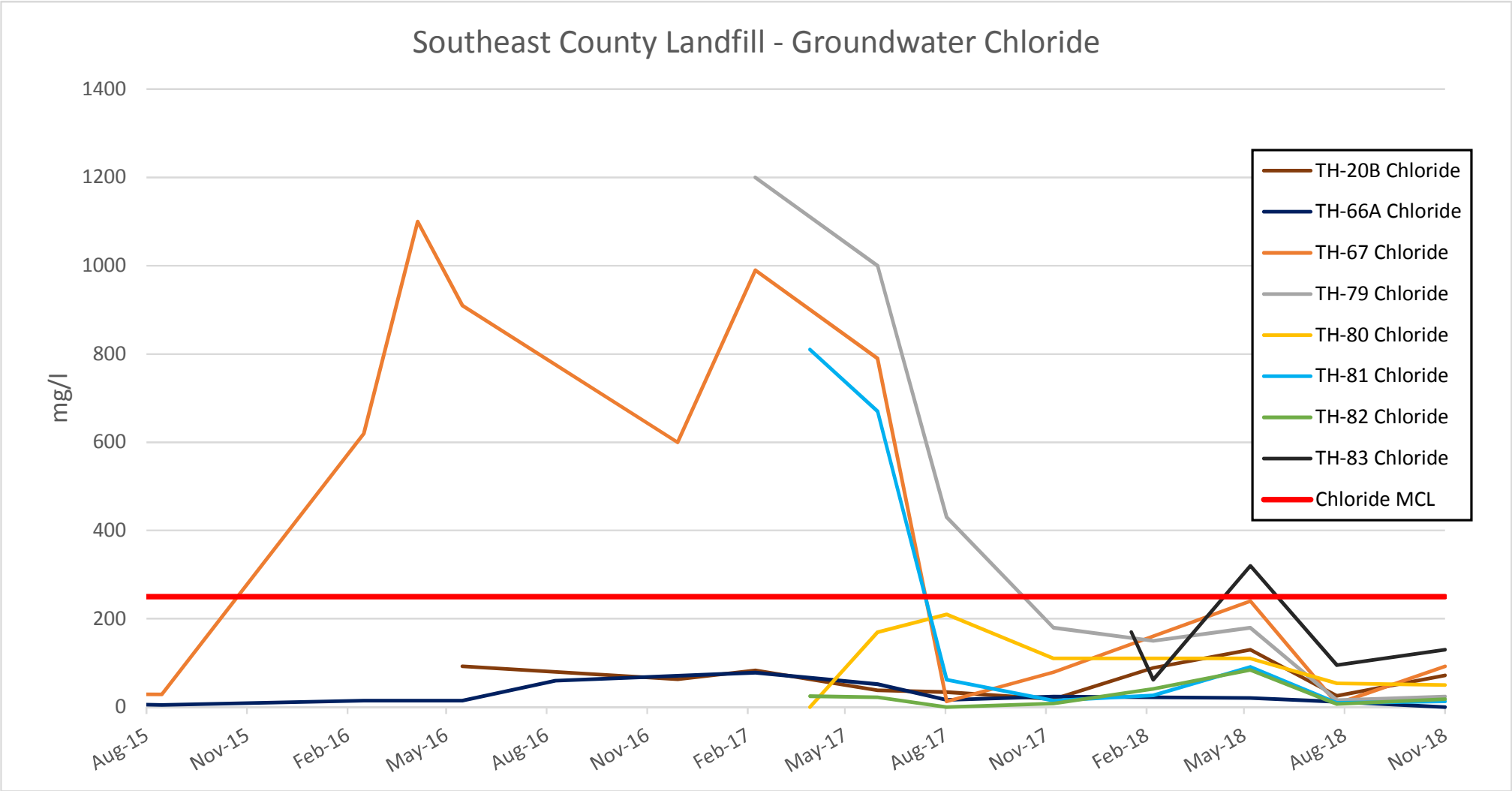
Existing Monitoring Wells

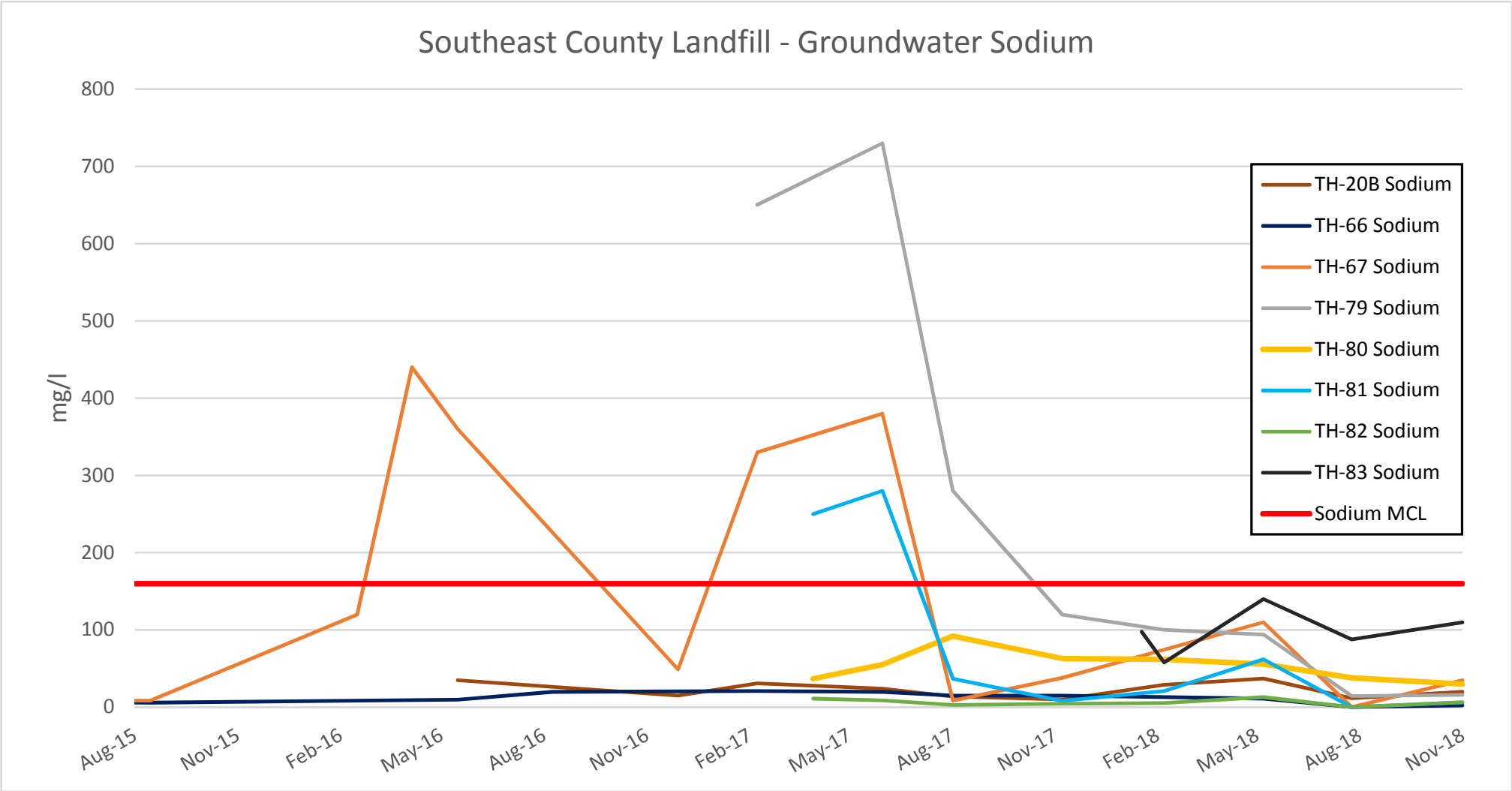
Direction Of Flow

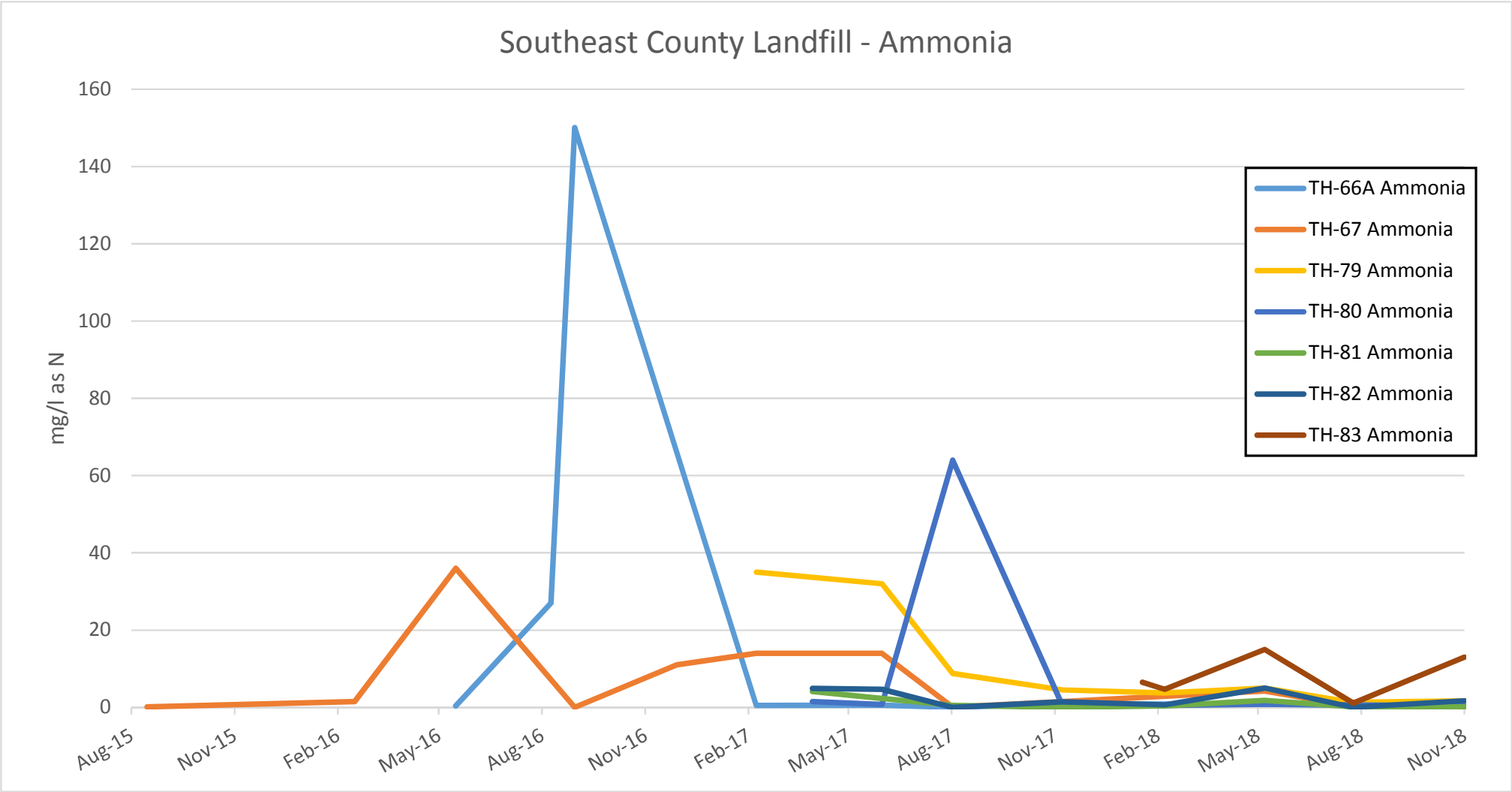
Hillsborough County Florida


Southeast County Landfill - Groundwater Conductivity
umhos/cm
6000
5000
4000
3000
2000
1000
0
Aug-15
Nov-15
Feb-16
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
TH-20B Conductivity
TH-66A Conductivity
TH-67 Conductivity
TH-79 Conductivity
TH-80 Conductivity
TH-81 Conductivity
TH-82 Conductivity
TH-83 Conductivity


Southeast County Landfill - Groundwater TDS
mg/l
3000
2500
2000
1500
1000
500
0
Aug-15
Nov-15
Feb-16
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
TH-20B TDS
TH-66A TDS
TH-67 TDS
TH-79 TDS
TH-80 TDS
TH-81TDS
TH-82 TDS
TH-83 TDS
TDS MCL


Southeast County Landfill - Groundwater Chloride
mg/l
1400
1200
1000
800
600
400
200
0
Aug-15
Nov-15
Feb-16
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
TH-20B Chloride
TH-66A Chloride
TH-67 Chloride
TH-79 Chloride
TH-80 Chloride
TH-81 Chloride
TH-82 Chloride
TH-83 Chloride
Chloride MCL


Southeast County Landfill - Groundwater Sodium
mg/l
800
700
600
500
400
300
200
100
0
Aug-15
Nov-15
Feb-16
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
TH-20B Sodium
TH-66 Sodium
TH-67 Sodium
TH-79 Sodium
TH-80 Sodium
TH-81 Sodium
TH-82 Sodium
TH-83 Sodium
Sodium MCL


Southeast County Landfill - Ammonia
mg/l as N
160
140
120
100
80
60
40
20
0
Aug-15
Nov-15
Feb-16
May-16
Aug-16
Nov-16
Feb-17
May-17
Aug-17
Nov-17
Feb-18
May-18
Aug-18
Nov-18
TH-66A Ammonia
TH-67 Ammonia
TH-79 Ammonia
TH-80 Ammonia
TH-81 Ammonia
TH-82 Ammonia
TH-83 Ammonia

Southeast County Landfill
Historical Supplemental Assessment Groundwater Data
TH-20B

Field Parameters	May-16	Nov-16	Feb-17	Jun-17	Aug-17	Nov-17	Feb-18	May-18	Jul-18	Nov-18	MCL Standard
conductivity (umhos/cm) (field)	473	332	427	275	294	192.9	394.8	484.6	257	390.5	**NS**
dissolved oxygen (mg/l) (field)	0.23	0.27	0.18	0.19	0.1	2	0.37	1.81	0.11	0.11	**NS**
ORP (mV)	-9.6	-31.2	-41.7	36.9	-34	-26.7	-2.4	11.4	32	30.7	**NS**
temperature (°C) (field)	23.47	25.47	23.77	23.92	25.51	25.90	22.90	23.10	25.90	26.00	**NS**
turbidity (NTU) (field)	2.39	4.14	3.77	1.37	2.82	4.3	2.99	1.35	19	2.65	**NS**
pH (field)	**5.67**	**5.43**	**5.82**	**5.52**	**5.72**	**5.95**	**5.68**	**5.54**	**5.92**	**5.41**	**(6.5 - 8.5)****
General Parameters											**MCL Standard**
total dissolved solids (mg/l)	310	200	230	130	150	130	280	360	206	260	**500****
chloride (mg/l)	92	63	83	38	34	18	89	130	25.7	72	**250****
ammonia nitrogen (mg/l as N)	2.2	1.5	1.2	1.2	1.7	1.3	1.2	1.3	1.8	1.9	**NS**
Metals Detected (mg/l)											**MCL Standard**
sodium	35	15	31	24	14	10	29	37	11.5	20	**160***

Note: Reference FDEP Groundwater Guidance Concentrations
NS = No Standard
MCL = Maximum Contaminant Level
* = Primary Drinking Water Standard
** = Secondary Drinking Water Standard
5.67 = Exceeds Standard
mV = millivolts
NTU = Nephelometric Turbidity Units
mg/l = milligrams per liter
NGVD = National Geodedic Vertical Datum

Southeast County Landfill
Historical Supplemental Assessment Groundwater Data
TH-38B

Field Parameters	May-16	Nov-16	Feb-17	May-17	Aug-17	Nov-17	Feb-18	May-18	Jul-18	Nov-18	MCL Standard
conductivity (umhos/cm) (field)	70	61	103	ND	46	49.6	79.2	ND	51	55.7	NS
dissolved oxygen (mg/l) (field)	1.5	0.76	2.02	ND	0.96	1.27	0.86	ND	0.57	0.22	NS
ORP (mV)	175.5	-22.9	6.2	ND	158	28.1	70.7	ND	22.7	88.1	NS
temperature (°C) (field)	24.78	25.37	23.93	ND	26.66	26.10	23.50	ND	27.53	26.50	NS
turbidity (NTU) (field)	8.75	16	16.5	ND	46.6	11.2	3.6	ND	21.9	3.84	NS
pH (field)	**4.95**	**4.73**	**5.45**	ND	**4.69**	**5.16**	**5.22**	ND	**5.70**	**4.71**	(6.5 - 8.5)**
General Parameters											**MCL Standard**
total dissolved solids (mg/l)	65	45	57	ND	73	30	83	ND	50 i	340	500**
chloride (mg/l)	4.2 i	4.2 i	8.2	ND	3.4 i	3.9 i	6.4	ND	12	3.6 i	250**
ammonia nitrogen (mg/l as N)	0.79	0.66	1.4	ND	0.14	0.23	2.2	ND	0.59	0.3	NS
Metals Detected (mg/l)											**MCL Standard**
sodium	2.8	3	3.6	ND	2.7	2.8	3.4	ND	7.15 i	2.5	160*

Note: Reference FDEP Groundwater Guidance Concentrations
NS = No Standard
MCL = Maximum Contaminant Level
ND = No Data, well was dry
* = Primary Drinking Water Standard
** = Secondary Drinking Water Standard
4.95 = Exceeds Standard
mV = millivolts
NTU = Nephelometric Turbidity Units
mg/l = milligrams per liter
NGVD = National Geodedic Vertical Datum

Southeast County Landfill
Historical Supplemental Assessment Groundwater Data
TH-66A

Field Parameters	Aug-15	Feb-16	May-16	Nov-16	Feb-17	May-17	Aug-17	Nov-17	Feb-18	May-18	Jul-18	Nov-18	MCL Standard
conductivity (umhos/cm) (field)	295	313	334	512	580	513	376	342.1	315.6	333	263	361.7	NS
dissolved oxygen (mg/l) (field)	0.38	0.5	0.65	0.33	0.64	1.13	0.09	1.93	0.46	0.69	0.2	0.56	NS
ORP (mV)	ND	ND	69.7	-3	-69.2	30.3	-102.9	-158.7	-43.6	-124.8	125.4	-61.8	NS
temperature (°C) (field)	27.01	21.5	24.55	25.44	23.68	27.67	26.63	25.90	22.50	25.10	27.30	26.80	NS
turbidity (NTU) (field)	3.17	1.35	0.86	0.49	1.06	2.17	1.81	1.89	0.89	0.78	3.65	1.81	NS
pH (field)	**6.00**	**6.12**	**6.03**	**5.82**	**6.18**	**6.09**	**5.88**	**6.09**	**5.87**	**5.99**	**6.89**	**5.94**	(6.5 - 8.5)**
General Parameters													**MCL Standard**
total dissolved solids (mg/l)	180	180	180	320	300	230	250	160	210	230	164	240	500**
chloride (mg/l)	4.9 i	15	15	92	78	52	16	24	24	21	12	20	250**
ammonia nitrogen (mg/l as N)	0.22	0.12	0.34	0.44	0.5	0.57	0.02 u	0.88	0.09 i	0.8	0.54	2	NS
Metals Detected (mg/l)													**MCL Standard**
sodium	5.7	8.7	9.5	21	21	20	15	15	12	11	7.15 i	9.9	160*

Note: Reference FDEP Groundwater Guidance Concentrations
NS = No Standard
MCL = Maximum Contaminant Level
* = Primary Drinking Water Standard
** = Secondary Drinking Water Standard
6.00 = Exceeds Standard
mV = millivolts
NTU = Nephelometric Turbidity Units
mg/l = milligrams per liter
NGVD = National Geodedic Vertical Datum

Southeast County Landfill
Historical Supplemental Assessment Groundwater Data
TH-67

Field Parameters	Aug-15	Feb-16	May-16	Nov-16	Feb-17	May-17	Aug-17	Nov-17	Feb-18	May-18	Jul-18	Nov-18	MCL Standard
conductivity (umhos/cm) (field)	429	1780	3973	2166	3830	3630	215	497.4	207.7	1329	180	706	**NS**
dissolved oxygen (mg/l) (field)	0.55	1.05	0.42	3.04	2.13	0.26	0.31	2.06	5.97	0.39	0.08	0.14	**NS**
ORP (mV)	ND	ND	-7.9	-100	-41.7	-12.1	43.2	-9.5	103.7	-46.1	2.4	-50.1	**NS**
temperature (°C) (field)	28.32	20.81	24.63	25.23	24.52	25.25	26.79	25.40	22.20	24.80	27.94	26.70	**NS**
turbidity (NTU) (field)	1.13	10.11	7.64	5.29	8.72	7.64	16.5	5.05	7.76	2.71	10.4	8.41	**NS**
pH (field)	**6.41**	**5.98**	**6.18**	**6.21**	**6.44**	**6.32**	**6.29**	**6.43**	6.54	**6.39**	**6.44**	**6.09**	**(6.5 - 8.5)****
General Parameters													**MCL Standard**
total dissolved solids (mg/l)	220	**1600**	**2200**	**1400**	**2000**	**2000**	150	280	140	**880**	128	400	**500****
chloride (mg/l)	29	**620**	**910**	**600**	**990**	**790**	13	79	12	240	76	92	**250****
ammonia nitrogen (mg/l as N)	0.12	1.5	36	11	14	14	0.02 u	1.5	0.025 u	4.2	0.28	1.5	**NS**
Metals Detected (mg/l)													**MCL Standard**
sodium	8.7	120	**360**	49	**330**	**380**	8.4	38	6.3	110	1.94 i	35	**160***

Note: Reference FDEP Groundwater Guidance Concentrations
NS = No Standard
MCL = Maximum Contaminant Level
* = Primary Drinking Water Standard
** = Secondary Drinking Water Standard
6.41 = Exceeds Standard
mV = millivolts
NTU = Nephelometric Turbidity Units
mg/l = milligrams per liter
NGVD = National Geodedic Vertical Datum

Southeast County Landfill
Historical Supplemental Assessment Groundwater Data
TH-79

General Parameters	Nov-16	Feb-17	May-17	Aug-17	Nov-17	Feb-18	May-18	Jul-18	Nov-18	MCL Standard
conductivity (umhos/cm) (field)	2740	4980	5212	2221	1183	956	1102	397	488.9	NS
dissolved oxygen (mg/l) (field)	0.25	1.73	1.23	1.67	4.39	3.33	1.63	0.15	1.60	NS
ORP (mV)	1.4	-20.3	-40.6	-30.8	-27.7	-15.0	-95.4	54.0	27.1	NS
temperature (°C) (field)	24.03	21.77	25.49	28.04	24.90	20.70	24.60	29.40	26.20	NS
turbidity (NTU) (field)	27.6	60.2	12	2.66	2.81	7.97	3.28	3.2	15.6	NS
pH (field)	**6.09**	**6.40**	**6.29**	**6.19**	**6.28**	**6.11**	**5.85**	**6.04**	**5.56**	(6.5 - 8.5)**
Field Parameters										**MCL Standard**
total dissolved solids (mg/l)	**1500**	**2700**	**2600**	**1200**	**590**	**560**	**610**	238	250	500**
chloride (mg/l)	500	**1200**	**1000**	**430**	180 j4	150	180	15.4	24	250**
ammonia nitrogen (mg/l as N)	30	35	32	8.8	4.5	3.8	5	1.3	1.7	NS
Metals Detected (mg/l)										**MCL Standard**
sodium	140	**650**	**730**	**280**	120	100	94	14.4	16	160*

Note: Reference FDEP Groundwater Guidance Concentrations
NS = No Standard
MCL = Maximum Contaminant Level
* = Primary Drinking Water Standard
** = Secondary Drinking Water Standard
6.09 = Exceeds Standard
mV = millivolts
NTU = Nephelometric Turbidity Units
mg/l = milligrams per liter
NGVD = National Geodedic Vertical Datum

Southeast County Landfill
Historical Groundwater Assessment Groundwater Data
TH-80

Field Parameters	Mar-17	May-17	Aug-17	Nov-17	Feb-18	May-18	Jul-18	Nov-18	MCL Standard
conductivity (umhos/cm) (field)	889	1090	1055	714	733	777	462	575	**NS**
dissolved oxygen (mg/l) (field)	0.38	0.16	0.05	3.24	0.79	0.22	0.50	0.1	**NS**
ORP (mV)	-10.7	34.2	-120.4	-100.7	13.8	11.8	2.3	28.5	**NS**
temperature (°C) (field)	24.49	25.26	25.17	25.70	24.90	25.50	26.68	26.40	**NS**
turbidity (NTU) (field)	16	10.6	37	17.3	2.49	0.98	0.52	1.74	**NS**
pH (field)	**5.67**	**5.63**	**5.69**	**5.95**	**5.69**	**5.70**	**6.63**	**5.55**	**(6.5 - 8.5)****
General Parameters									**MCL Standard**
total dissolved solids (mg/l)	500	**630**	**680**	370	410	480	276	280	**500****
chloride (mg/l)	130 j4	170	210	110	110	110	53.9	50	**250****
ammonia nitrogen (mg/l as N)	1.5	0.74	0.64	0.36	0.52	0.79 j4	0.65	0.38	**NS**
Metals Detected (mg/l)									**MCL Standard**
sodium	37	55	92	63	62	56	38	30	**160***

Note: Reference FDEP Groundwater Guidance Concentrations
NS = No Standard
MCL = Maximum Contaminant Level
* = Primary Drinking Water Standard
** = Secondary Drinking Water Standard
5.67 = Exceeds Standard
mV = millivolts
NTU = Nephelometric Turbidity Units
mg/l = milligrams per liter
NGVD = National Geodedic Vertical Datum

Southeast County Landfill
Historical Supplemental Assessment Groundwater Data
TH-81

Field Parameters	Mar-17	May-17	Aug-17	Nov-17	Feb-18	May-18	Jul-18	Nov-18	MCL Standard
conductivity (umhos/cm) (field)	2723	2476	493	216.8	194.9	644	275	226.6	NS
dissolved oxygen (mg/l) (field)	0.53	0.72	1.77	1.73	2.12	0.24	1.33	0.45	NS
ORP (mV)	24.9	17.7	68.5	76	71.7	-28.3	150	81.1	NS
temperature (°C) (field)	23.7	25.81	28.68	26.50	22.10	25.90	28.89	27.30	NS
turbidity (NTU) (field)	16.1	27.5	22.7	13	14.5	3.07	6.09	5.54	NS
pH (field)	**6.00**	**6.05**	**6.12**	**5.95**	**6.15**	**6.32**	**5.88**	**5.62**	(6.5 - 8.5)**
General Parameters									**MCL Standard**
total dissolved solids (mg/l)	**2000**	**1500**	230	100	130	380	164	140	500**
chloride (mg/l)	**810**	**670**	62	15	27	91	9.4	13	250**
ammonia nitrogen (mg/l as N)	4.1	2.3	0.52	0.025 u	0.33	1.8	0.15	0.13	NS
Metals Detected (mg/l)									**MCL Standard**
sodium	**250**	**280**	37	8.2	21	62	6.89 i	6.3	160*

Note: Reference FDEP Groundwater Guidance Concentrations
NS = No Standard
MCL = Maximum Contaminant Level
* = Primary Drinking Water Standard
** = Secondary Drinking Water Standard
6.00 = Exceeds Standard
mV = millivolts
NTU = Nephelometric Turbidity Units
mg/l = milligrams per liter
NGVD = National Geodedic Vertical Datum

Southeast County Landfill
Historical Supplemental Assessment Groundwater Data
TH-82

Field Parameters	Mar-17	Jun-17	Aug-17	Nov-17	Feb-18	May-18	Jul-18	Nov-18	MCL Standard
conductivity (umhos/cm) (field)	239	210	82	83	174.3	370.9	63	134.6	**NS**
dissolved oxygen (mg/l) (field)	0.23	0.70	4.11	1.28	1.17	0.49	2.84	0.34	**NS**
ORP (mV)	-147.1	41.9	177.2	-17.5	107.3	2.5	30.3	32	**NS**
temperature (°C) (field)	26.16	25.5	27.84	27.40	24.10	26.50	27.95	26.90	**NS**
turbidity (NTU) (field)	ND	33.4	34.3	27.4	4.56	2.85	0.99	4.18	**NS**
pH (field)	**5.69**	**5.48**	**4.73**	**5.30**	**5.07**	**5.51**	**5.58**	**4.97**	**(6.5 - 8.5)****
General Parameters									**MCL Standard**
total dissolved solids (mg/l)	130	94	65	68	140	300	80	84	**500****
chloride (mg/l)	25	22	4.3 i	8.4	41	84	6.5	18	**250****
ammonia nitrogen (mg/l as N)	4.9	4.7	0.02 u	1.4	0.69	5	0.039 i	1.7	**NS**
Metals Detected (mg/l)									**MCL Standard**
sodium	11	9	2.8	4.5	5.4	13	2.08 i	6.2	**160***

Note: Reference FDEP Groundwater Guidance Concentrations
NS = No Standard
MCL = Maximum Contaminant Level
* = Primary Drinking Water Standard
** = Secondary Drinking Water Standard
5.69 = Exceeds Standard
mV = millivolts
NTU = Nephelometric Turbidity Units
mg/l = milligrams per liter
NGVD = National Geodedic Vertical Datum

Southeast County Landfill
Historical Supplemental Assessment Groundwater Data
TH-83

Field Parameters	Jan-18	Feb-18	May-18	Jul-18	Nov-18	MCL Standard
conductivity (umhos/cm) (field)	1504	537	1505	498	968	**NS**
dissolved oxygen (mg/l) (field)	1.12	1.02	0.70	2.14	0.63	**NS**
ORP (mV)	6.7	10.6	-16.1	140.7	61.3	**NS**
temperature (°C) (field)	22.7	23.10	23.90	26.48	27.20	**NS**
turbidity (NTU) (field)	5.05	4.78	1.63	3.56	1.1	**NS**
pH (field)	6.90	6.55	**6.46**	**6.44**	**6.28**	**(6.5 - 8.5)****
General Parameters						**MCL Standard**
total dissolved solids (mg/l)	430	290	**890**	352	470	**500****
chloride (mg/l)	170	62	**320**	94.9	130	**250****
ammonia nitrogen (mg/l as N)	6.5	4.7	15	1.1	13	**NS**
Metals Detected (mg/l)						**MCL Standard**
sodium	98	58	140	87.7	110	**160***

Note: Reference FDEP Groundwater Guidance Concentrations
NS = No Standard
MCL = Maximum Contaminant Level
* = Primary Drinking Water Standard
** = Secondary Drinking Water Standard
6.46 = Exceeds Standard
mV = millivolts
NTU = Nephelometric Turbidity Units
mg/l = milligrams per liter
NGVD = National Geodedic Vertical Datum

January 15, 2019
File No. 09215600.07

MEMORANDUM

TO: Mr. Larry Ruiz, S.C.
FROM: Mr. Ken Guilbeault, P.G. and Mr. Kollan Spradlin, P.E.
SUBJECT: 2018 Subsurface Geophysics Survey

Executive Summary

SCS Engineers contracted Geoview, Inc. in 2016 and 2017 to conduct subsurface conductivity surveys between the southeast corner of Phase II and the landfill perimeter road. In order to evaluate the change in conductivity over time, SCS Engineers contracted Geoview, Inc. again in November 2018 to conduct an additional subsurface conductivity survey of the subject area.

SCS Engineers found that a comparison of the 2016, 2017, and 2018 subsurface conductivity shows a discernable decline in bulk subsurface conductivity. Additionally, local groundwater quality continues to improve, and monitored parameters meet both primary and secondary drinking water standards. The corrective actions conducted by SWMD appear effective and have reduced groundwater parameter exceedances observed during the quarterly monitoring events.

Introduction

As requested by the Hillsborough County Transportation and Utilities Services, Solid Waste Management Division (SWMD), SCS Engineers (SCS) has prepared this memorandum to present the findings of the November 2018 geophysical survey conducted between the southeastern side of Phase II and the perimeter road at the Southeast County Landfill (SCLF).

Background

Previously, subsurface geophysical surveys were conducted by Geoview, Inc. (Geoview) in November 2016 and October 2017 near the southeast perimeter of Phase II. Both of the previous reports presented the bulk conductivity measurements near the edge of the Phase II perimeter berm to a depth of approximately 16 feet below ground surface.

The 2016 and 2017 surveys identified an area of elevated subsurface conductivity that was mapped and defined within the Geoview reports. Each of the 2016 and 2017 reports delineated the area of elevated conductivity near the Phase II landfill limit at the time of the survey. In order to compare current subsurface conductivity to that of previous geophysical surveys, SCS retained Geoview to complete an additional geophysical assessment of the same area using the same method (frequency domain electromagnetics) in November 2018. This survey was completed on November 2, 2018, and the report is included as Attachment 1.

Field Investigation

Geoview personnel conducted the November 2018 field measurements of bulk subsurface conductivity using a Geonics EM-31-MK2 ground conductivity meter in vertical dipole orientation. An SCS representative was on site to observe and document field activities. Conductivity measurements were collected by Geoview at one-foot intervals along transects spaced approximately 15 feet apart, parallel to the SCLF landfill limits. Previous surveys conducted by Geoview in 2016 and 2017 used the same type of meter with the same orientation and settings.

Findings

Each of the 2016, 2017, and 2018 Geoview report figures show an area of elevated soil conductivity response near the toe of the containment berm in the southeast corner of Phase II. The figures produced by Geoview depicting terrain conductivity are included as **Figure 1** (2016), **Figure 2** (2017), and **Figure 3** (2018).

SCS compared the results of the November 2018 geophysical investigation to the November 2016 geophysical investigation. A discernable decrease in the bulk subsurface conductivity is apparent within the area of elevated conductivity response upon comparison of the 2016, 2017, and 2018 figures.

From 2016 to 2018, conductivity values between TH-67 and TH-83 decreased approximately 60 milli-seimens/meter (mS/m). Additionally, the subsurface conductivity of the area immediately south of TH-79 decreased approximately 40 mS/m. Conversely, conductivity values near the perimeter road changed little (less than 10 mS/m) from 2016 to 2018, which supports that the conductively changes are limited to the area between the toe of the Phase II containment berm and the perimeter road.

The November 2018 Geoview report states that changes in local conductivity measurements can be caused by either metallic interference (metal monitoring well housings and pumps), changes in geologic conditions, or changes in groundwater chemistry. For the purposes of the November 2018 report, Geoview assumed that changes in conductivity are result of changes in the conductance of shallow groundwater. Metallic interference of subsurface conductivity was limited to areas immediately adjacent to metal monitoring well housings and protective bollards. Interference was so localized that the increase in conductivity cause by interference is obstructed by the symbols indicating the locations of the monitoring wells.

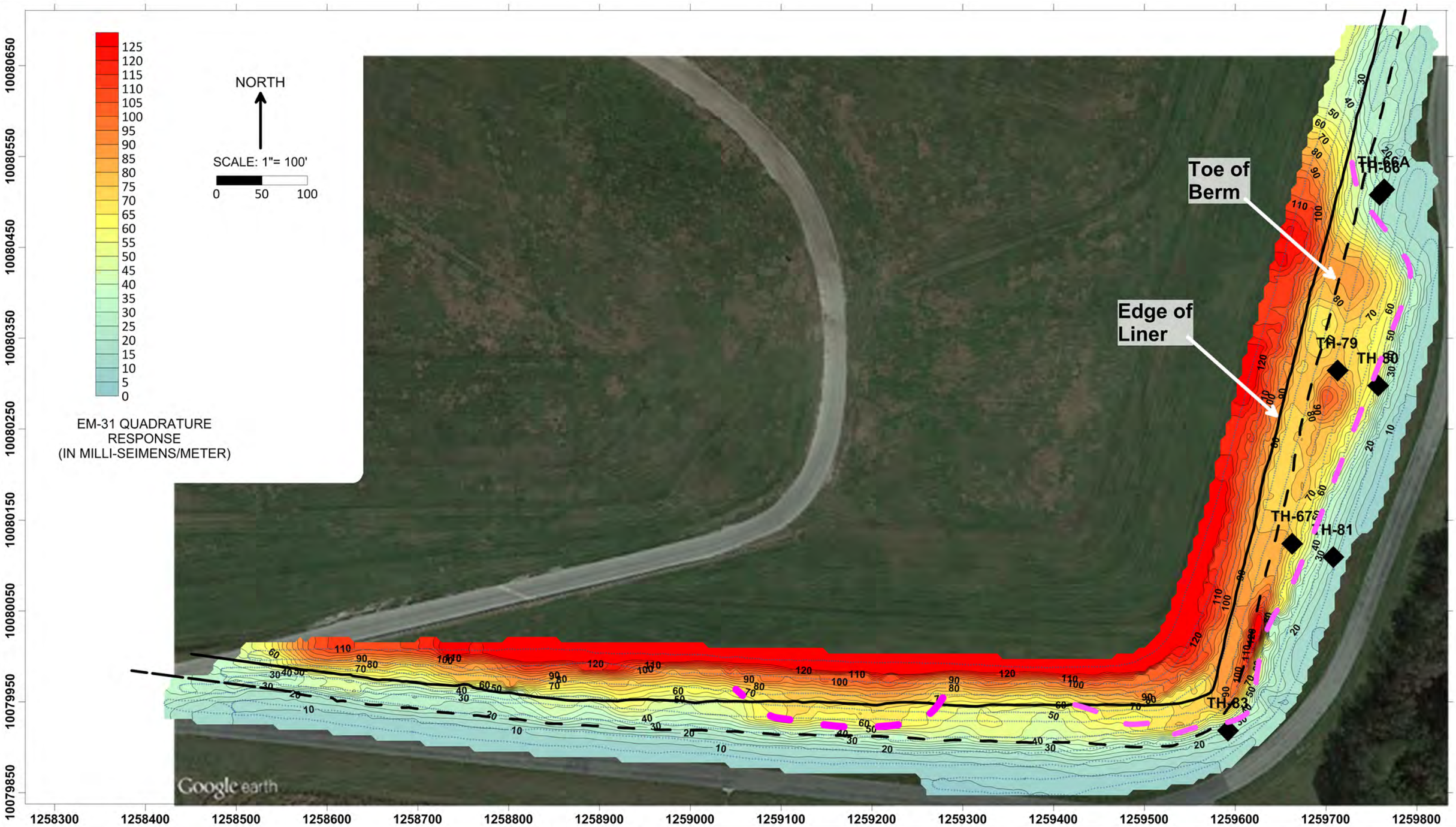
Conclusion

Overall, groundwater quality continues to improve as shown in the most recent monitoring event (August 2018), and the monitored groundwater parameters meet both primary and secondary drinking water standards. The corrective actions conducted by SWMD appear effective and have reduced groundwater parameter exceedances observed during the quarterly monitoring events.

Attachments

Figure 1

2016 Geoview Subsurface Conductivity Figure



EXPLANATION

CONTOUR OF EM31 TERRAIN CONDUCTIVITY RESPONSE (IN MILLI-SEIMENS PER METER)

++++ EM DATA STATIONS

LOCATION OF MONITORING WELL (WITH DESIGNATION)

APPROXIMATE EDGE OF AREA OF ELEVATED CONDUCTIVITY RESPONSE

Geo View — A geophysical services company

FIGURE 1

COLOR CONTOUR MAP OF EM-31 TERRAIN CONDUCTIVITY RESPONSE

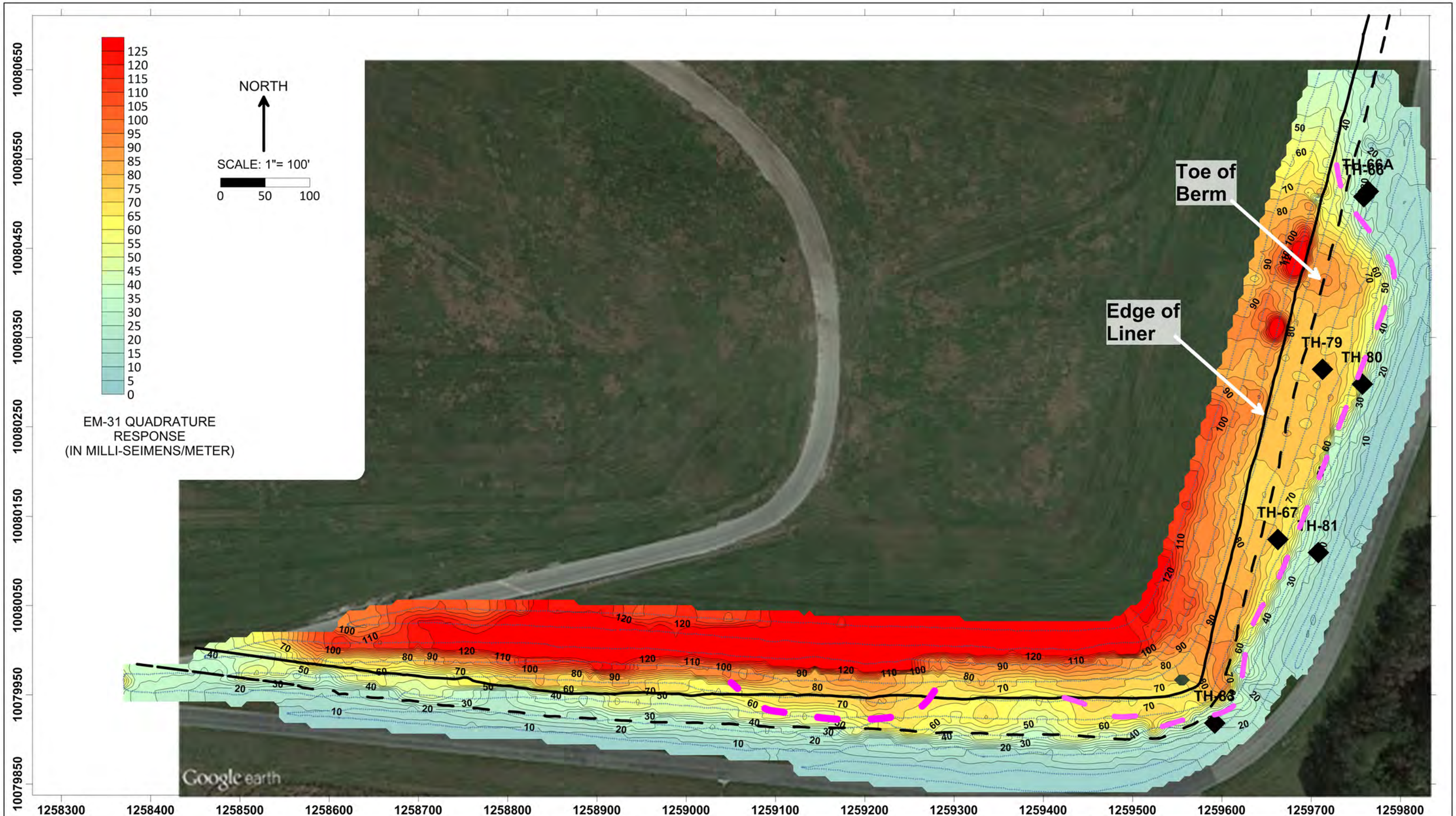
SOUTHEAST COUNTY LANDFILL - PHASE 3
NOVEMBER 10, 2016 SURVEY
LITHIA, FLORIDA

SCS ENGINEERS
TAMPA, FLORIDA

PROJECT: 24527.0
DATE: 12/06/18

Figure 2

2017 Geoview Subsurface Conductivity Figure



EXPLANATION

CONTOUR OF EM31 TERRAIN CONDUCTIVITY RESPONSE (IN MILLI-SEIMENS PER METER)

EM DATA STATIONS

LOCATION OF MONITORING WELL (WITH DESIGNATION)

APPROXIMATE EDGE OF AREA OF ELEVATED CONDUCTIVITY RESPONSE

Geo View — A geophysical services company

FIGURE 1

COLOR CONTOUR MAP OF EM-31 TERRAIN CONDUCTIVITY RESPONSE

SOUTHEAST COUNTY LANDFILL - PHASE 4
OCTOBER 11, 2017 SURVEY
LITHIA, FLORIDA

SCS ENGINEERS
TAMPA, FLORIDA

PROJECT: 24527.2
DATE: 12/06/18

Figure 3

2018 Geoview Subsurface Conductivity Figure

EXPLANATION

CONTOUR OF EM31 TERRAIN CONDUCTIVITY RESPONSE (IN MILLI-SEIMENS PER METER)

++++ EM DATA STATIONS

LOCATION OF MONITORING WELL (WITH DESIGNATION)

APPROXIMATE EDGE OF AREA OF ELEVATED CONDUCTIVITY RESPONSE

Geo View — A geophysical services company

FIGURE 1

COLOR CONTOUR MAP OF EM-31 TERRAIN CONDUCTIVITY RESPONSE

SOUTHEAST COUNTY LANDFILL - PHASE 5
NOVEMBER 2, 2018 SURVEY
LITHIA, FLORIDA

SCS ENGINEERS
TAMPA, FLORIDA

PROJECT: 24527.2
DATE: 12/06/18

Attachment 1

2018 Geoview Geophysical Investigation Report

FINAL REPORT
GEOPHYSICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL - PHASE II
LITHIA, FLORIDA

Prepared for SCS Engineers
Tampa, FL

Prepared by GeoView, Inc.
St. Petersburg, FL

November 12, 2018

Mr. Alex Ortega
Hillsborough County
3922 Coconut Palm Drive, Suite 102
Tampa, FL 33619

Subject: **Transmittal of Final Report for Geophysical Investigation**
Southeast County Landfill - Phase V – Lithia, Florida
GeoView Project Number 24527.2

Dear Mr. Ortega,

GeoView, Inc. (GeoView) is pleased to submit the final report that summarizes and presents the results of the geophysical investigation performed at the above referenced site. Electromagnetics were used to compare the current bulk soil conductivity within the study area to previous surveys conducted in 2016 and 2017. GeoView appreciates the opportunity to have assisted you on this project. If you have any questions or comments about the report, please contact us.

Sincerely,
GEOVIEW, INC.

Michael J. Wightman, P.G.
President
Florida Professional Geologist
Number 1423

Chris Taylor, P.G.
Vice President
Florida Professional Geologist
Number 2256

1.0 Introduction

A geophysical investigation was conducted on November 2, 2018 at the Southeast County Landfill in Lithia, Florida. The geophysical investigation was performed near the southeastern corner of the landfill as specified by Hillsborough County personnel. The geophysical investigation was centered about monitoring well TH-67 where elevated conductivity levels have been detected in the shallow groundwater. The purpose of this investigation was to compare the current bulk soil conductivity within the study area to previous surveys conducted in 2016 and 2017. The geophysical investigation was conducted using frequency domain electromagnetics (EM).

The majority of the study area was previously surveyed using EM in 2016 and 2017. Results from this investigation are provided in GeoView Project Numbers 23973 and 24527.

2.0 Site Description

The geophysical investigation was performed near the southeast corner of the landfill. The survey area extended from 10 feet inside the edge of the liner of the landfill towards the access road to the south and east of the landfill. The survey area encompassed monitoring wells TH-66, TH-67, TH-79, TH-81 and TH83 as shown on Figure 1.

3.0 Description of Geophysical Investigation

3.1 Instrumentation and Field Procedures

The EM survey was conducted using a Geonics EM31-MK2 (EM-31) ground conductivity meter. The EM-31 survey was conducted using a vertical dipole orientation which provided bulk conductivity readings for the earth materials to an approximate depth of 16 to 18 ft below land surface (bls). Terrain conductivity and inphase data was collected at intervals of every 1 ft along transects spaced approximately 10 to 20 ft apart. The transects were oriented parallel to the edge of the landfill. The positions of the geophysical transect lines were recorded using a Trimble Geo7x. The data then contoured using Surfer^{tm} contouring software.

3.2 Causes for Observed Changes in Terrain Conductivity

Changes in terrain conductivity, that are not associated with interference effects, can be caused by either changes in geological conditions or changes in the groundwater chemistry. Typical changes that cause increases in terrain conductivity related to geological factors are increases in the clay, silt or organic content of the soils that are within the effective depth of exploration for the EM

equipment. Typical changes in the groundwater chemistry that cause increases in terrain conductivity are increases in the concentration of dissolved ions. Increases in either salt or metallic ion concentrations typically have the greatest effect upon increasing the terrain conductivity response.

It is not possible to distinguish the cause of a change in terrain conductivity from variations in geological or groundwater conditions. In order to make such a distinction, it is necessary to collect and analyze soil and groundwater samples in suspect and background areas. For the purposes of this study, it is assumed that any increases in terrain conductivity are associated with increases in conductance of the shallow groundwater.

4.0 Survey Results

The EM-31 terrain conductivity results are presented in Figure 1. The terrain conductivity response measures the bulk conductivity of soil and groundwater and is expressed in milli-siemens per meter (mS/m). Terrain conductivity values considered to represent background conditions ranged up to 50 mS/m. These areas are shown in light blue to light yellow on Figure 1. One broad anomaly area consisting of an elevated conductivity response was identified southeast of the toe of the landfill berm. The area is identified by conductivity values in excess of 50 to 55 mS/m (yellow to red contours on Figure 1).

This anomaly area may represent an area of elevated shallow groundwater conductivity. The area extended up to 80 ft east of the toe of the berm. The boundary of this anomaly area is indicated with a magenta dashed line on Figure 1. Monitoring TH-67 (where elevated groundwater conductivities are present) was located within this area. Monitoring well TH-66 (where elevated groundwater conductivities are not present) is outside of this area. The EM showed a possible second minor increase in conductivity values in the southeast corner of the landfill, immediately northeast of TH-83.

APPENDIX 1
FIGURE

EXPLANATION

CONTOUR OF EM31 TERRAIN CONDUCTIVITY RESPONSE (IN MILLI-SEIMENS PER METER)

++++ EM DATA STATIONS

LOCATION OF MONITORING WELL (WITH DESIGNATION)

APPROXIMATE EDGE OF AREA OF ELEVATED CONDUCTIVITY RESPONSE

Geo View — A geophysical services company

FIGURE 1

COLOR CONTOUR MAP OF EM-31 TERRAIN CONDUCTIVITY RESPONSE

SOUTHEAST COUNTY LANDFILL - PHASE 5
NOVEMBER 2, 2018 SURVEY
LITHIA, FLORIDA

SCS ENGINEERS
TAMPA, FLORIDA

PROJECT: 24527.2
DATE: 12/06/18

APPENDIX 2
DESCRIPTION OF GEOPHYSICAL METHODS, SURVEY METHODOLOGIES AND LIMITATIONS

A2.1 On Site Measurements

The measurements that were collected and used to identify the location of the EM-31 data points were made using a Trimble GeoXH GPS. The degree of accuracy of such an approach is typically less than one meter.

A2.2 Electromagnetics

The EM method is a non-destructive geophysical technique that measures the electrical conductivity of subsurface materials. The conductivity is determined by inducing (from a transmitter) a time-varying magnetic field and measuring (with a receiver) the amplitude and phase shift of an induced secondary magnetic field. The EM survey was conducted using a Geonics EM31-MK2 (EM-31). For soil conditions typical to Florida, the EM-31 unit provides a measurement of ground conductivity to a depth of 16 to 18 ft bls.

Variations in subsurface conductivity may be caused by the presence of buried metallic objects or by geological changes such as changes in soil type (clay vs. sand) or variations in pore fluid conductivity. Typical applications for the EM method include:

- Location of buried metallic objects
- Mapping conductive contaminant groundwater plumes (chlorides)
- Mapping of non-conductive (hydrocarbon) contaminant groundwater plumes
- Delineating abandoned trenches or lagoons with fill material different from native soils
- Determining relative concentrations of near-surface conductive soils (clays)
- Delineating bedrock fracture zones
- Identifying large voids or cavities

There are two components of the induced magnetic field measured by the EM-31 equipment. The first is the quadrature-phase (out-of-phase) component that measures the bulk conductivity of soil and groundwater. This is referred to as the terrain conductivity response with units that are expressed in milli-Siemens per meter (mS/m). The second component is the in-phase response that is relatively more sensitive to large metallic objects such as pipes, drums, large items of buried metallic debris and underground storage tanks. This portion of the instrument

response is expressed in parts per thousand (ppt). In areas where no metals are present the in-phase response is zero. By using the in-phase and quadrature-phase components, it is possible to determine whether a change in bulk conductivity is due to the presence of buried metallic objects or due to changes in either subsurface soil conditions or pore fluid conductivity.

The EM-31 survey is performed by walking the instrumentation across the project site along a system of parallel transect lines. The separation distance between transect sites is dictated by the survey requirements. For surveys designed to identify relatively large areas of buried debris (e.g., landfills), a transect spacing of 50 to 100 feet is typical. For surveys designed to identify discrete areas of buried debris, a transect spacing of 10 to 20 feet is used. The EM-31 data is electronically recorded and then downloaded to a computer for processing. EM data is usually presented as either profiles (for an individual transect) or as contour maps. Contour maps are developed using Surfer^{tm}, a computer contouring program.

The estimated maximum depths of investigation are for homogenous (similar) soil materials that are relatively resistive. Depending upon site conditions, the actual depth of investigation could be 10 to 30 percent less. Also, the measured conductivity value for a particular coil orientation and spacing is representative (in a complex relationship) of all the soil materials between the ground surface and the maximum depth of investigation. In other words, the conductivity measurement is not representative of the actual conductance of the earth materials that occur at the maximum depth of investigation.

GeoView can make no warranties or representations of the conditions that may be present beyond the depth of investigation or resolving capability of the EM method or in areas that were either not accessible to the geophysical investigation or where areas of cultural interference were present.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

December 9, 2018

Michael Townsel
Hillsborough Co Public Utilites
332 North Falkenburg Rd
Tampa, FL 33619

RE: Workorder: T1819288 SELF Supplemental Site

Dear Michael Townsel:

Enclosed are the analytical results for sample(s) received by the laboratory between Thursday, November 08, 2018 and Friday, November 09, 2018. 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 Parker - Project Manager
HParker@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

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Phone: (813)630-9616
Fax: (813)630-4327

SAMPLE SUMMARY

Workorder: T1819288 SELF Supplemental Site

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T1819288001	TH-66A	Water	11/8/2018 09:25	11/8/2018 11:33
T1819288002	Field Blank	Water	11/9/2018 08:02	11/9/2018 13:20
T1819288003	TH-82	Water	11/9/2018 08:30	11/9/2018 13:20
T1819288004	TH-38B	Water	11/9/2018 08:50	11/9/2018 13:20
T1819288005	TH-79	Water	11/9/2018 09:19	11/9/2018 13:20
T1819288006	TH-80	Water	11/9/2018 09:49	11/9/2018 13:20
T1819288007	TH-67	Water	11/9/2018 10:30	11/9/2018 13:20
T1819288008	TH-81	Water	11/9/2018 10:56	11/9/2018 13:20
T1819288009	TH-83	Water	11/9/2018 11:15	11/9/2018 13:20
T1819288010	TH-20B	Water	11/9/2018 11:38	11/9/2018 13:20
T1819288011	Duplicate	Water	11/9/2018 00:00	11/9/2018 13:20

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Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288001** Date Received: 11/08/18 11:33 Matrix: Water

Sample ID: **TH-66A** Date Collected: 11/08/18 09:25

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	**361.7**		**umhos/cm**	**1**			11/8/2018 09:25	....
Dissolved Oxygen	**0.56**		**mg/L**	**1**			11/8/2018 09:25	....
ORP-2580BW	**-61.8**		**mV**	**1**			11/8/2018 09:25	....
Temperature	**26.8**		**°C**	**1**			11/8/2018 09:25	....
Turbidity	**1.81**		**NTU**	**1**			11/8/2018 09:25	....
pH	**5.94**		**SU**	**1**			11/8/2018 09:25	....
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**9.9**		**mg/L**	**1**	0.20	0.17	11/14/2018 15:36	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**2.0**		**mg/L**	**1**	0.10	0.025	11/29/2018 16:16	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**240**		**mg/L**	**1**	10	10	11/13/2018 11:31	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**20**		**mg/L**	**1**	5.0	2.6	11/21/2018 12:13	T

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ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288002** Date Received: 11/09/18 13:20 Matrix: Water

Sample ID: **Field Blank** Date Collected: 11/09/18 08:02

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**0.17**	**U**	**mg/L**	**1**	0.20	0.17	11/14/2018 15:40	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.025**	**U**	**mg/L**	**1**	0.10	0.025	11/30/2018 14:10	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**10**	**U**	**mg/L**	**1**	10	10	11/13/2018 11:31	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**2.6**	**U**	**mg/L**	**1**	5.0	2.6	11/21/2018 12:13	T

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ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288003** Date Received: 11/09/18 13:20 Matrix: Water

Sample ID: **TH-82** Date Collected: 11/09/18 08:30

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	**134.6**		**umhos/cm**	**1**			11/9/2018 08:30	....
Dissolved Oxygen	**0.34**		**mg/L**	**1**			11/9/2018 08:30	....
ORP-2580BW	**32**		**mV**	**1**			11/9/2018 08:30	....
Temperature	**26.9**		**°C**	**1**			11/9/2018 08:30	....
Turbidity	**4.18**		**NTU**	**1**			11/9/2018 08:30	....
pH	**4.97**		**SU**	**1**			11/9/2018 08:30	....
METALS								
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**18**		**mg/L**	**1**	5.0	2.6	11/21/2018 12:15	T
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**6.2**		**mg/L**	**1**	0.20	0.17	11/14/2018 16:02	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.7**		**mg/L**	**1**	0.10	0.025	11/30/2018 14:11	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**84**		**mg/L**	**1**	10	10	11/13/2018 11:31	T

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ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288004** Date Received: 11/09/18 13:20 Matrix: Water

Sample ID: **TH-38B** Date Collected: 11/09/18 08:50

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	**55.7**		**umhos/cm**	**1**			11/9/2018 08:50	....
Dissolved Oxygen	**0.22**		**mg/L**	**1**			11/9/2018 08:50	....
ORP-2580BW	**88.1**		**mV**	**1**			11/9/2018 08:50	....
Temperature	**26.5**		**°C**	**1**			11/9/2018 08:50	....
Turbidity	**3.84**		**NTU**	**1**			11/9/2018 08:50	....
pH	**4.71**		**SU**	**1**			11/9/2018 08:50	....
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**2.5**		**mg/L**	**1**	0.20	0.17	11/14/2018 16:06	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.30**		**mg/L**	**1**	0.10	0.025	11/30/2018 14:12	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**340**		**mg/L**	**1**	10	10	11/13/2018 11:31	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**3.6**	**I**	**mg/L**	**1**	5.0	2.6	11/21/2018 12:17	T

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ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288005** Date Received: 11/09/18 13:20 Matrix: Water

Sample ID: **TH-79** Date Collected: 11/09/18 09:19

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	**488.9**		**umhos/cm**	**1**			11/9/2018 09:19	....
Dissolved Oxygen	**1.6**		**mg/L**	**1**			11/9/2018 09:19	....
ORP-2580BW	**27.1**		**mV**	**1**			11/9/2018 09:19	....
Temperature	**26.2**		**°C**	**1**			11/9/2018 09:19	....
Turbidity	**15.6**		**NTU**	**1**			11/9/2018 09:19	....
pH	**5.56**		**SU**	**1**			11/9/2018 09:19	....
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**16**		**mg/L**	**1**	0.20	0.17	11/14/2018 16:10	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.7**		**mg/L**	**1**	0.10	0.025	11/30/2018 14:12	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**250**		**mg/L**	**1**	10	10	11/13/2018 11:31	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**24**		**mg/L**	**1**	5.0	2.6	11/21/2018 12:18	T

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ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288006** Date Received: 11/09/18 13:20 Matrix: Water

Sample ID: **TH-80** Date Collected: 11/09/18 09:49

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	**575**		**umhos/cm**	**1**			11/9/2018 09:49	....
Dissolved Oxygen	**0.1**		**mg/L**	**1**			11/9/2018 09:49	....
ORP-2580BW	**28.5**		**mV**	**1**			11/9/2018 09:49	....
Temperature	**26.4**		**°C**	**1**			11/9/2018 09:49	....
Turbidity	**1.74**		**NTU**	**1**			11/9/2018 09:49	....
pH	**5.55**		**SU**	**1**			11/9/2018 09:49	....
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**30**		**mg/L**	**1**	0.20	0.17	11/14/2018 16:13	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.38**		**mg/L**	**1**	0.10	0.025	11/30/2018 14:13	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**280**		**mg/L**	**1**	10	10	11/13/2018 11:31	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**50**		**mg/L**	**1**	5.0	2.6	11/21/2018 12:19	T

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ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288007** Date Received: 11/09/18 13:20 Matrix: Water

Sample ID: **TH-67** Date Collected: 11/09/18 10:30

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	**706**		**umhos/cm**	**1**			11/9/2018 10:30	....
Dissolved Oxygen	**0.14**		**mg/L**	**1**			11/9/2018 10:30	....
ORP-2580BW	**-50.1**		**mV**	**1**			11/9/2018 10:30	....
Temperature	**26.7**		**°C**	**1**			11/9/2018 10:30	....
Turbidity	**8.41**		**NTU**	**1**			11/9/2018 10:30	....
pH	**6.09**		**SU**	**1**			11/9/2018 10:30	....
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**35**		**mg/L**	**1**	0.20	0.17	11/14/2018 16:17	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.5**		**mg/L**	**1**	0.10	0.025	11/30/2018 14:19	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**400**		**mg/L**	**1**	10	10	11/13/2018 11:31	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**92**		**mg/L**	**1**	5.0	2.6	11/21/2018 12:19	T

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ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288008** Date Received: 11/09/18 13:20 Matrix: Water

Sample ID: **TH-81** Date Collected: 11/09/18 10:56

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	**226.6**		**umhos/cm**	**1**			11/9/2018 10:56	....
Dissolved Oxygen	**0.45**		**mg/L**	**1**			11/9/2018 10:56	....
ORP-2580BW	**81.1**		**mV**	**1**			11/9/2018 10:56	....
Temperature	**27.3**		**°C**	**1**			11/9/2018 10:56	....
Turbidity	**5.54**		**NTU**	**1**			11/9/2018 10:56	....
pH	**5.62**		**SU**	**1**			11/9/2018 10:56	....
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**6.3**		**mg/L**	**1**	0.20	0.17	11/14/2018 16:21	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.13**		**mg/L**	**1**	0.10	0.025	11/30/2018 14:20	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**140**		**mg/L**	**1**	10	10	11/13/2018 11:31	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**13**		**mg/L**	**1**	5.0	2.6	11/21/2018 12:20	T

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ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288009** Date Received: 11/09/18 13:20 Matrix: Water

Sample ID: **TH-83** Date Collected: 11/09/18 11:15

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	**968**		**umhos/cm**	**1**			11/9/2018 11:15	....
Dissolved Oxygen	**0.63**		**mg/L**	**1**			11/9/2018 11:15	....
ORP-2580BW	**61.3**		**mV**	**1**			11/9/2018 11:15	....
Temperature	**27.2**		**°C**	**1**			11/9/2018 11:15	....
Turbidity	**1.1**		**NTU**	**1**			11/9/2018 11:15	....
pH	**6.28**		**SU**	**1**			11/9/2018 11:15	....
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**110**		**mg/L**	**1**	0.20	0.17	11/15/2018 16:11	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**13**		**mg/L**	**2**	0.20	0.050	11/30/2018 15:03	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**470**		**mg/L**	**1**	10	10	11/13/2018 11:31	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**130**		**mg/L**	**5**	25	13	11/21/2018 12:36	T

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ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288010** Date Received: 11/09/18 13:20 Matrix: Water

Sample ID: **TH-20B** Date Collected: 11/09/18 11:38

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	**390.5**		**umhos/cm**	**1**			11/9/2018 11:38	....
Dissolved Oxygen	**0.11**		**mg/L**	**1**			11/9/2018 11:38	....
ORP-2580BW	**30.7**		**mV**	**1**			11/9/2018 11:38	....
Temperature	**26**		**°C**	**1**			11/9/2018 11:38	....
Turbidity	**2.65**		**NTU**	**1**			11/9/2018 11:38	....
pH	**5.41**		**SU**	**1**			11/9/2018 11:38	....
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**20**		**mg/L**	**1**	0.20	0.17	11/14/2018 16:25	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.9**		**mg/L**	**1**	0.10	0.025	11/30/2018 14:21	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**260**		**mg/L**	**1**	10	10	11/13/2018 11:31	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**72**		**mg/L**	**1**	5.0	2.6	11/21/2018 12:21	T

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ANALYTICAL RESULTS

Workorder: T1819288 SELF Supplemental Site

Lab ID: **T1819288011** Date Received: 11/09/18 13:20 Matrix: Water

Sample ID: **Duplicate** Date Collected: 11/09/18 00:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Sodium	**16**		**mg/L**	**1**	0.20	0.17	11/14/2018 16:28	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.7**		**mg/L**	**1**	0.10	0.025	11/30/2018 14:22	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**330**		**mg/L**	**1**	10	10	11/13/2018 11:31	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**24**		**mg/L**	**1**	5.0	2.6	11/21/2018 12:22	T

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ANALYTICAL RESULTS QUALIFIERS

Workorder: T1819288 SELF Supplemental Site

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.

LAB QUALIFIERS

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

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QUALITY CONTROL DATA

Workorder: T1819288 SELF Supplemental Site

QC Batch: WCAt/7359 Analysis Method: SM 2540 C
QC Batch Method: SM 2540 C Prepared:
Associated Lab Samples: T1819288001, T1819288002, T1819288003, T1819288004, T1819288005, T1819288006, T1819288007,

METHOD BLANK: 2902815

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

LABORATORY CONTROL SAMPLE: 2902816

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Dissolved Solids	mg/L	660	760	115	85-115	

SAMPLE DUPLICATE: 2902817 Original: T1819287026

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
WET CHEMISTRY						
Total Dissolved Solids	mg/L	760	780	2	10	

QC Batch: DGMt/2517 Analysis Method: SW-846 6010
QC Batch Method: SW-846 3010A Prepared: 11/14/2018 10:00
Associated Lab Samples: T1819288001, T1819288002, T1819288003, T1819288004, T1819288005, T1819288006, T1819288007,

METHOD BLANK: 2906650

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
METALS				
Sodium	mg/L	0.17	0.17	U

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QUALITY CONTROL DATA

Workorder: T1819288 SELF Supplemental Site

LABORATORY CONTROL SAMPLE: 2906651

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
METALS						
Sodium	mg/L	50	50	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2906652 2906653 Original: T1819230001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
METALS											
Sodium	mg/L	3.2	50	53	52	99	98	75-125	1	20	

QC Batch: WCAt/7579 Analysis Method: SM 4500-Cl-E
QC Batch Method: SM 4500-Cl-E Prepared:
Associated Lab Samples: T1819288001, T1819288002, T1819288003, T1819288004, T1819288005, T1819288006, T1819288007,

METHOD BLANK: 2914426

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Chloride	mg/L	2.6	2.6	U

LABORATORY CONTROL SAMPLE: 2914427

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Chloride	mg/L	50	50	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2914428 2914429 Original: T1819360001

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	25	50	75	76	99	102	90-110	2	10	

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QUALITY CONTROL DATA

Workorder: T1819288 SELF Supplemental Site

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2914430 2914431 Original: T1819288003

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	18	50	68	68	100	100	90-110	0	10	

QC Batch: WCAt/7726 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T1819288001

METHOD BLANK: 2920833

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.025	0.025	U

LABORATORY CONTROL SAMPLE: 2920834

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.46	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2920838 2920839 Original: T1819198002

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	-0.01	1	1.1	1.1	106	105	90-110	0	10	

QC Batch: WCAt/7760 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T1819288002, T1819288003, T1819288004, T1819288005, T1819288006, T1819288007, T1819288008,

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QUALITY CONTROL DATA

Workorder: T1819288 SELF Supplemental Site

METHOD BLANK: 2922298

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.025	0.025	U

LABORATORY CONTROL SAMPLE: 2922299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.48	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2922303 2922304 Original: T1819321001

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	-0.04	1	0.96	0.95	96	95	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2922718 2922719 Original: S1801961001

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	2.2	1	3.2	3.2	100	100	90-110	0	10	

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T1819288 SELF Supplemental Site

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T1819288001	TH-66A			SM 2540 C	WCAt/7359
T1819288002	Field Blank			SM 2540 C	WCAt/7359
T1819288003	TH-82			SM 2540 C	WCAt/7359
T1819288004	TH-38B			SM 2540 C	WCAt/7359
T1819288005	TH-79			SM 2540 C	WCAt/7359
T1819288006	TH-80			SM 2540 C	WCAt/7359
T1819288007	TH-67			SM 2540 C	WCAt/7359
T1819288008	TH-81			SM 2540 C	WCAt/7359
T1819288009	TH-83			SM 2540 C	WCAt/7359
T1819288010	TH-20B			SM 2540 C	WCAt/7359
T1819288011	Duplicate			SM 2540 C	WCAt/7359
T1819288001	TH-66A	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288002	Field Blank	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288003	TH-82	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288004	TH-38B	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288005	TH-79	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288006	TH-80	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288007	TH-67	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288008	TH-81	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288009	TH-83	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288010	TH-20B	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288011	Duplicate	SW-846 3010A	DGMt/2517	SW-846 6010	ICPt/1866
T1819288001	TH-66A			SM 4500-Cl-E	WCAt/7579
T1819288002	Field Blank			SM 4500-Cl-E	WCAt/7579
T1819288003	TH-82			SM 4500-Cl-E	WCAt/7579
T1819288004	TH-38B			SM 4500-Cl-E	WCAt/7579
T1819288005	TH-79			SM 4500-Cl-E	WCAt/7579
T1819288006	TH-80			SM 4500-Cl-E	WCAt/7579
T1819288007	TH-67			SM 4500-Cl-E	WCAt/7579
T1819288008	TH-81			SM 4500-Cl-E	WCAt/7579
T1819288009	TH-83			SM 4500-Cl-E	WCAt/7579
T1819288010	TH-20B			SM 4500-Cl-E	WCAt/7579

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T1819288 SELF Supplemental Site

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T1819288011	Duplicate			SM 4500-Cl-E	WCAt/7579
T1819288001	TH-66A			EPA 350.1	WCAt/7726
T1819288002	Field Blank			EPA 350.1	WCAt/7760
T1819288003	TH-82			EPA 350.1	WCAt/7760
T1819288004	TH-38B			EPA 350.1	WCAt/7760
T1819288005	TH-79			EPA 350.1	WCAt/7760
T1819288006	TH-80			EPA 350.1	WCAt/7760
T1819288007	TH-67			EPA 350.1	WCAt/7760
T1819288008	TH-81			EPA 350.1	WCAt/7760
T1819288009	TH-83			EPA 350.1	WCAt/7760
T1819288010	TH-20B			EPA 350.1	WCAt/7760
T1819288011	Duplicate			EPA 350.1	WCAt/7760
T1819288001	TH-66A	Field Measurements	FLDt/	Field Measurements	FLDt/
T1819288003	TH-82	Field Measurements	FLDt/	Field Measurements	FLDt/
T1819288004	TH-38B	Field Measurements	FLDt/	Field Measurements	FLDt/
T1819288005	TH-79	Field Measurements	FLDt/	Field Measurements	FLDt/
T1819288006	TH-80	Field Measurements	FLDt/	Field Measurements	FLDt/
T1819288007	TH-67	Field Measurements	FLDt/	Field Measurements	FLDt/
T1819288008	TH-81	Field Measurements	FLDt/	Field Measurements	FLDt/
T1819288009	TH-83	Field Measurements	FLDt/	Field Measurements	FLDt/
T1819288010	TH-20B	Field Measurements	FLDt/	Field Measurements	FLDt/

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☐ **Miramar:** 10200 USA Today Way, Miramar, FL 33025 • 954.889.2288 • Fax 954.889.2281
☐ **Tallahassee:** 1288 Cedar Center Drive, Tallahassee, FL 32301 • 850.219.6274 • Fax 850.219.6275
☐ **Tampa:** 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.9616 • Fax 813.630.4327

T 8/19288

Client Name: Hills. Co. Public Utilities
Address: 332 North Falkenburg Rd.
Tampa, Florida 33619
Phone: (813) 663-3222
FAX: (813) 274-6801
Contact: Michael Townsel
Sampled By: T. Aguilar J. Fuller
Turn Around Time: ☑ STANDARD ☐ RUSH
Page: 1 of: 1

Project Name: SELF Supplemental Site Assessment
P.O. Number/Project Number: N/A
Project Location: Southeast County Landfill
REMARKS/SPECIAL INSTRUCTIONS:

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	PRESERVATION	Total Ammonia-N	Sodium	Chloride	TDS	LABORATORY I.D. NUMBER
	TH-66A	G	11/8/16	9:25	GW	3		X	X	X	X	001

BOTTLE SIZE & TYPE / ANALYSIS REQUIRED

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 5.1 (in degrees celcius)

Form revised 09/19/2012

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

	Relinquished by:	Date	Time	Received by:	Date	Time
1	[signature]	11/8/16	11:32	—	11/8/16	11:32
2						
3						
4						

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

PWS ID:
Contact Person: Phone:
Supplier of Water:

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T819288

Client Name:	Hills. Co. Public Utilities
Address:	332 North Falkenburg Rd.
	Tampa, Florida 33619
Phone:	(813) 663-3222
FAX:	(813) 274-6801
Contact:	Michael Townsel
Sampled By:	T. Aguilar J. Fuller
Turn Around Time:	☒ STANDARD ☐ RUSH
Page:	1 of: 1

Project Name: SELF Supplemental Site Assessment
P.O. Number/Project Number: N/A
Project Location: Southeast County Landfill
REMARKS/SPECIAL INSTRUCTIONS:

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	PRESERVATION	Total Ammonia-N	Sodium	Chloride	TDS							LABORATORY I.D. NUMBER
	Field Blank	—	11/9/18	8:02	DI	3		X	X	X	X						001	~~21~~
	TH-82	G	11/9/18	8:30	GW	3		X	X	X	X						002	~~22~~
	TH-38B	G	11/9/18	8:50	GW	3		X	X	X	X						003	~~23~~
	TH-79	G	11/9/18	9:19	GW	3		X	X	X	X						004	~~24~~
	TH-80	G	11/9/18	9:49	GW	3		X	X	X	X						005	~~25~~
	TH-67	G	11/9/18	10:30	GW	3		X	X	X	X						006	~~26~~
	TH-81	G	11/9/18	10:56	GW	3		X	X	X	X						007	~~27~~
	TH-83	G	11/9/18	11:15	GW	3		X	X	X	X						008	~~28~~
	TH-20B	G	11/9/18	11:36	GW	3		X	X	X	X						009	~~29~~
	Duplicate	G	11/9/18	—	GW	3		X	X	X	X						010	~~30~~

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 1.2 (in degrees celcius)

Form revised 09/19/2012

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

	Relinquished by:	Date	Time	Received by:	Date	Time
1	[signature]	11/9/18	13:19	[signature]	11/9/18	1320
2						
3						
4						

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

PWS ID:
Contact Person: Phone:
Supplier of Water:
Site-Address:

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill	SITE LOCATION: Lithia, Florida	
WELL NO: TH-66A	SAMPLE ID: TH-66A	DATE: 11/8/18

PURGING DATA

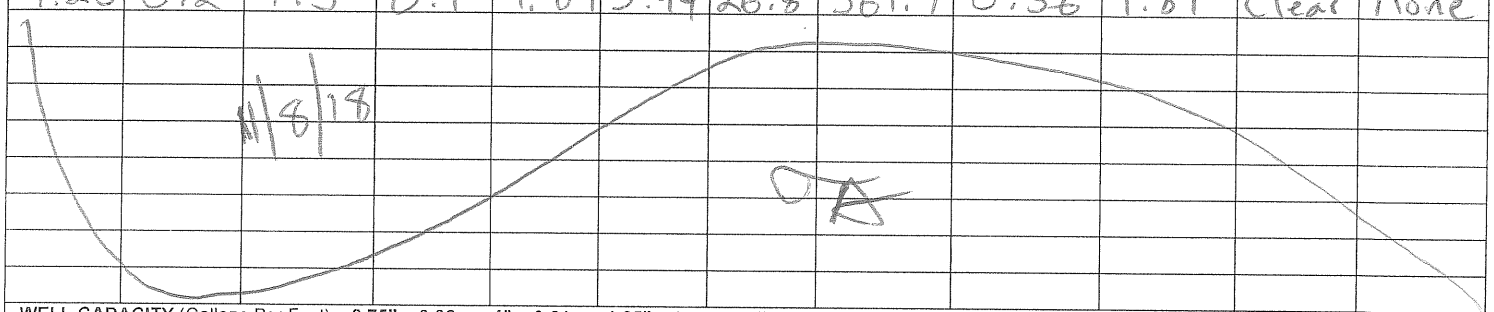
WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/2	WELL SCREEN INTERVAL DEPTH: 5.37 ft to 15.37 ft	STATIC DEPTH TO WATER (feet): 8.84	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (15.37 feet – 8.84 feet) X 0.16 gallons/foot = 1.045 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): 14.37	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.37	PURGING INITIATED AT: 9:10	PURGING ENDED AT: 9:25	TOTAL VOLUME PURGED (gallons): 1.5

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)
9:21	1.1	1.1	0.1	9.89	5.96	27.0	373.4	0.79	1.14	Clear	None
9:23	0.2	1.3	0.1	9.89	5.95	26.8	366.1	0.67	1.36	Clear	None
9:25	0.2	1.5	0.1	9.89	5.94	26.8	361.7	0.56	1.81	Clear	None



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: T. Fuller J. Fuller	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 9:25	SAMPLING ENDED AT: 9:28
PUMP OR TUBING DEPTH IN WELL (feet): 14.37	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm

FIELD DECONTAMINATION: PUMP Y (N) TUBING Y (N) (replaced) 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			

REMARKS: **SEE C.O.C. FOR SAMPLE ANALYSIS** **ORP:** 9:21 (-48.1), 9:23 (-55.4), 9:25 (-61.8)

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)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill	SITE LOCATION: Lithia, Florida	
WELL NO: Field Blank	SAMPLE ID: Field Blank	DATE: 11/9/18

PURGING DATA

WELL DIAMETER (inches): N/A	TUBING DIAMETER (inches): N/A	WELL SCREEN INTERVAL DEPTH: N/A ft to N/A	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)

= (N/A feet – N/A feet) X 0.16 gallons/foot = N/A gallons

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

= N/A gallons + (N/A gallons/foot X N/A feet) + N/A gallons = N/A gallons

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 11/9/18

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: T. Aguilar J. Fuller	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 8:02	SAMPLING ENDED AT: 8:05
PUMP OR TUBING DEPTH IN WELL (feet): N/A	TUBING MATERIAL CODE: N/A	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	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			

REMARKS: **SEE C.O.C. FOR SAMPLE 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)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill		SITE LOCATION: Lithia, Florida
WELL NO: TH-82	SAMPLE ID: TH-82	DATE: 11/9/18

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/2	WELL SCREEN INTERVAL DEPTH: 8.94 ft to 18.94 Ft	STATIC DEPTH TO WATER (feet): 9.91	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)

= (18.94 feet – 9.91 feet) X 0.16 gallons/foot = 1.44 gallons

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

= gallons + (N/A gallons/foot X N/A feet) + N/A gallons = N/A gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 17.94	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 17.94	PURGING INITIATED AT: 7:56	PURGING ENDED AT: 8:30	TOTAL VOLUME PURGED (gallons): 3.4

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)
8:11	1.5	1.5	0.1	9.94	5.40	26.8	251.2	0.66	7.43	Clear	None
8:13	0.2	1.7	0.1	9.94	5.38	26.8	231.1	0.60	6.87	Clear	None
8:15	0.2	1.9	0.1	9.94	5.35	26.8	201.9	0.55	6.51	Clear	None
8:17	1.1	3.0	0.1	9.94	5.04	26.9	139.6	0.38	5.05	Clear	None
8:28	0.2	3.2	0.1	9.94	5.02	26.9	136.7	0.36	4.42	Clear	None
8:30	0.2	3.4	0.1	9.94	4.97	26.9	134.6	0.34	4.18		

11/9/18

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: T. Aguilar J. Fuller	SAMPLER(S) SIGNATURE(S): [signature]	SAMPLING INITIATED AT: 8:30	SAMPLING ENDED AT: 8:33
PUMP OR TUBING DEPTH IN WELL (feet): 17.94	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm

FIELD DECONTAMINATION: PUMP Y (N) TUBING Y (N) (replaced) 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			
							ORP: 8:26	(28.4)	
							8:28	(29.9)	
							8:30	(32.0)	

REMARKS: **SEE C.O.C. FOR SAMPLE ANALYSIS** **ORP:** 8:11(-21.7), 8:13(-17.1), 8:15(-8.6)

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)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill	SITE LOCATION: Lithia, Florida	
WELL NO: TH-38B	SAMPLE ID: TH-38B	DATE: 11/9/18

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/2	WELL SCREEN INTERVAL DEPTH: 5.42 ft to 15.42 Ft	STATIC DEPTH TO WATER (feet): 10.25	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)

= (15.42 feet – 10.25 feet) X 0.16 gallons/foot = 0.83 gallons

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

= gallons + (N/A gallons/foot X N/A feet) + N/A gallons = N/A gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 14.42	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.42	PURGING INITIATED AT: 8:37	PURGING ENDED AT: 8:50	TOTAL VOLUME PURGED (gallons): 1.3

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)
8:46	0.9	0.9	0.1	11.15	4.60	26.4	55.5	0.23	6.91	Clear	None
8:48	0.2	1.1	0.1	11.24	4.66	26.4	55.6	0.21	5.02	Clear	None
8:50	0.2	1.3	0.1	11.26	4.71	26.5	55.7	0.22	3.84	Clear	None

11/9/18

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: T. Aguilar J. Fuller	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 8:50	SAMPLING ENDED AT: 8:53
PUMP OR TUBING DEPTH IN WELL (feet): 14.42	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm

FIELD DECONTAMINATION: PUMP Y (N) TUBING Y (N) (replaced) 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			

REMARKS: **SEE C.O.C. FOR SAMPLE ANALYSIS** **ORP:** 8:46 (105.5), 8:48 (94.0), 8:50 (88.1)

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)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill	SITE LOCATION: Lithia, Florida
WELL NO: TH-79	SAMPLE ID: TH-79	DATE: 11/9/18

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/2	WELL SCREEN INTERVAL DEPTH: 7.80 ft to 17.80 Ft	STATIC DEPTH TO WATER (feet): 7.77	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)
= (17.80 feet – 7.77 feet) X 0.16 gallons/foot = 1.605 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (N/A gallons/foot X N/A feet) + N/A gallons = N/A gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 16.80	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 16.80	PURGING INITIATED AT: 8:58	PURGING ENDED AT: 9:19	TOTAL VOLUME PURGED (gallons): 2.1

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 mS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
9:15	1.7	1.7	0.1	8.90	5.56	26.2	485.2	1.16	18.8	Clear	None
9:17	0.2	1.9	0.1	8.90	5.57	26.2	486.9	1.22	16.7	Clear	None
9:19	0.2	2.1	0.1	8.90	5.56	26.2	488.9	1.60	15.6	Clear	None

11/9/18

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: T. Aguilar J. Fuller	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 9:19	SAMPLING ENDED AT: 9:22
PUMP OR TUBING DEPTH IN WELL (feet): 16.80	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y [N] Filtration Equipment Type:	FILTER SIZE: ____ µm

FIELD DECONTAMINATION: PUMP Y [N] TUBING Y [N] (replaced) 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			

REMARKS: **SEE C.O.C. FOR SAMPLE ANALYSIS** **ORP:** 9:15(30.0), 9:17(28.5), 9:19(27.1)

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)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill	SITE LOCATION: Lithia, Florida	11/9/18 date
WELL NO: TH-80	SAMPLE ID: TH-80	DATE: ~~11/8/18~~

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/2	WELL SCREEN INTERVAL DEPTH: 8.65 ft to 18.65 Ft	STATIC DEPTH TO WATER (feet): 8.08	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)

= (18.65 feet – 8.08 feet) X 0.16 gallons/foot = 1.69 gallons

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

= N/A gallons + (N/A gallons/foot X N/A feet) + N/A gallons = N/A gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 17.65	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 17.65	PURGING INITIATED AT: 9:28	PURGING ENDED AT: 9:49	TOTAL VOLUME PURGED (gallons): 2.1

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)
9:45	1.7	1.7	0.1	8.23	5.55	26.4	573	0.14	2.32	Clear	None
9:47	0.2	1.9	0.1	8.23	5.56	26.4	574	0.12	1.44	Clear	None
9:49	0.2	2.1	0.1	8.23	5.55	26.4	575	0.10	1.74	Clear	None

11/8/18

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: T. Aguilar J. Fuller	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 9:49	SAMPLING ENDED AT: 9:52
PUMP OR TUBING DEPTH IN WELL (feet): 17.65	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm

FIELD DECONTAMINATION: PUMP Y (N) TUBING Y (N) (replaced) 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			

REMARKS: **SEE C.O.C. FOR SAMPLE ANALYSIS** **ORP:** 9:45(33.6), 9:47(29.3), 9:49(28.5)

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)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill	SITE LOCATION: Lithia, Florida	
WELL NO: TH-67	SAMPLE ID: TH-67	DATE: 11/9/18

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 0.5	WELL SCREEN INTERVAL DEPTH: 5.25 ft to 15.25 ft	STATIC DEPTH TO WATER (feet): 6.64	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)

= (15.25 feet – 6.64 feet) X 0.16 gallons/foot = 1.38 gallons

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

= gallons + (N/A gallons/foot X N/A feet) + N/A gallons = N/A gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 14.25	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.25	PURGING INITIATED AT: 9:58	PURGING ENDED AT: 10:30	TOTAL VOLUME PURGED (gallons): 3.2

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)
10:12	1.4	1.4	0.1	9.60	6.03	26.4	568	0.19	11.4	Clear	None
10:14	0.2	1.6	0.1	9.60	6.01	26.4	590	0.17	8.7	Clear	None
10:26	1.2	2.8	0.1	11.20	6.08	26.7	711	0.14	6.84	Clear	None
10:28	0.2	3.0	0.1	11.27	6.09	26.7	708	0.15	7.96	Clear	None
10:30	0.2	3.2	0.1	11.35	6.09	26.7	706	0.14	8.41	Clear	None

11/9/18

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: T. Aguilar J. Fuller	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 10:30	SAMPLING ENDED AT: 10:33
PUMP OR TUBING DEPTH IN WELL (feet): 14.25	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm

FIELD DECONTAMINATION: PUMP Y (N) TUBING Y (N) (replaced) 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			
							ORP: 10:28	(-49.5)	
							10:30	(-50.1)	

REMARKS: **SEE C.O.C. FOR SAMPLE ANALYSIS** **ORP:** 10:12 (-38.8), 10:14 (-40.7), 10:26 (-48.4)

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

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill	SITE LOCATION: Lithia, Florida	
WELL NO: TH-81	SAMPLE ID: TH-81	DATE: 11/9/18

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/2	WELL SCREEN INTERVAL DEPTH: 6.94 ft to 16.94 Ft	STATIC DEPTH TO WATER (feet): 8.26	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)

= (16.94 feet – 8.26 feet) X 0.16 gallons/foot = 1.39 gallons

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

= N/A gallons + (N/A gallons/foot X N/A feet) + N/A gallons = N/A gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 15.94	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 15.94	PURGING INITIATED AT: 10:36	PURGING ENDED AT: 10:56	TOTAL VOLUME PURGED (gallons): 2.0

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)
10:50	1.4	1.4	0.1	8.30	5.62	27.1	218.0	0.19	30.0	Clear	None
10:52	0.2	1.6	0.1	8.30	5.59	27.2	221.7	1.03	15.1	Clear	None
10:54	0.2	1.8	0.1	8.30	5.60	27.3	224.7	0.59	4.93	Clear	None
10:56	0.2	2.0	0.1	8.30	5.62	27.3	226.6	0.45	5.54	Clear	None
		11/9/18									

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: T. Aguilar J. Fuller	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 10:56	SAMPLING ENDED AT: 10:59
PUMP OR TUBING DEPTH IN WELL (feet): 15.94	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y [N] Filtration Equipment Type:	FILTER SIZE: ____ µm

FIELD DECONTAMINATION: PUMP Y [N] TUBING Y [N] (replaced) 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			
							ORP: 10:56	(81.1)	

REMARKS: **SEE C.O.C. FOR SAMPLE ANALYSIS** **ORP:** 10:50 (73.0), 10:52 (77.2), 10:54 (79.3)

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)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill	SITE LOCATION: Lithia, Florida
WELL NO: TH-83	SAMPLE ID: TH-83	DATE: 11/9/18

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/2	WELL SCREEN INTERVAL DEPTH: 5.47 ft to 15.47 Ft	STATIC DEPTH TO WATER (feet): 8.65	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)

= (15.47 feet – 8.65 feet) X 0.16 gallons/foot = 1.09 gallons

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

= N/A gallons + (N/A gallons/foot X N/A feet) + N/A gallons = N/A gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 14.47	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.47	PURGING INITIATED AT: 11:04	PURGING ENDED AT: 11:15	TOTAL VOLUME PURGED (gallons): 1.76

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)
11:11	1.12	1.12	0.16	8.70	6.34	27.1	976	0.76	1.51	Clear	None
11:13	0.32	1.44	0.16	8.70	6.29	27.1	951	0.70	1.51	Clear	None
11:15	0.32	1.76	0.16	8.70	6.28	27.2	968	0.63	1.10	Clear	None

11/9/18

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: T. Aguilar J. Fuller	SAMPLER(S) SIGNATURE(S): [signature]	SAMPLING INITIATED AT: 11:15	SAMPLING ENDED AT: 11:18
PUMP OR TUBING DEPTH IN WELL (feet): 14.47	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm

FIELD DECONTAMINATION: PUMP Y (N) TUBING Y (N) (replaced) 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			

REMARKS: **SEE C.O.C. FOR SAMPLE ANALYSIS** **ORP:** 11:11 (55.5), 11:13 (60.4), 11:15 (61.3)

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)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill	SITE LOCATION: Lithia, Florida	
WELL NO: TH-20B	SAMPLE ID: TH-20B	DATE: 11/9/18

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/2	WELL SCREEN INTERVAL DEPTH: 12.80 ft to 22.80 ft	STATIC DEPTH TO WATER (feet): 9.98	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)

= (22.8 feet – 9.98 feet) X 0.16 gallons/foot = 2.05 gallons

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

= N/A gallons + (N/A gallons/foot X N/A feet) + N/A gallons = N/A gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 21.8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 21.8	PURGING INITIATED AT: 11:24	PURGING ENDED AT: 11:38	TOTAL VOLUME PURGED (gallons): 4.06

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)
11:32	2.32	2.32	0.29	12.40	5.34	26.1	367.6	0.17	2.03	Clear	None
11:34	0.58	2.90	0.29	12.40	5.34	26.1	377.2	0.15	1.76	Clear	None
11:36	0.58	3.48	0.29	12.40	5.37	26.0	387.4	0.12	2.08	Clear	None
11:38	0.58	4.06	0.29	12.40	5.41	26.0	390.5	0.11	2.65	Clear	None
		11/9/18									

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: T. Aguilar J. Fuller	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 11:38	SAMPLING ENDED AT: 11:41
PUMP OR TUBING DEPTH IN WELL (feet): 21.8	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	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			
							ORP: 11:38	(30.7)	

REMARKS: **SEE C.O.C. FOR SAMPLE ANALYSIS** **ORP:** 11:32 (47.4), 11:34 (42.5), 11:36 (36.5)

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)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME: Southeast County Landfill	SITE LOCATION: Lithia, Florida

WELL NO: DUPLICATE	SAMPLE ID: DUPLICATE	DATE: 11/9/18

PURGING DATA

WELL DIAMETER (inches): N/A	TUBING DIAMETER (inches): N/A	WELL SCREEN INTERVAL DEPTH: N/A ft to N/A	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)

= (N/A feet – N/A feet) X 0.16 gallons/foot = N/A gallons

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

= N/A gallons + (N/A gallons/foot X N/A feet) + N/A gallons = N/A gallons

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)
Duplicate											

OTA 11/9/18

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: T. Aguilar J. Fuller	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: N/A	SAMPLING ENDED AT: N/A
PUMP OR TUBING DEPTH IN WELL (feet): N/A	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	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			

REMARKS: **SEE C.O.C. FOR SAMPLE 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)