

PUBLIC WORKS DEPARTMENT
SOLID WASTE DIVISION



October 31, 2012

Mr. Neil Hornick, P.G.
Florida Department of Environmental Protection
Northeast District, Solid Waste Division
7777 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256

Reference: **Site Assessment Report**
Sandler Road Landfill (Closed)
10500 Sandler Road
Jacksonville, Duval County, Florida
FDEP Facility ID Number: NED/16/32164
Permit Number: 0067214-005-SO


Dear Mr. Hornick:


The City of Jacksonville has completed the attached Site Assessment Report for the closed Sandler Road Landfill facility located at 10500 Sandler Road, in Jacksonville, Duval County, Florida. This report has been prepared as required by the Florida Department of Environmental Protection's letter dated November 29, 2011. The results of this investigation have indicated that the benzene impacts in the shallow and intermediate groundwater zones have been delineated and that the concentrations of benzene have been stable or shrinking over the past year. The concentrations of benzene detected are only slightly over its GCTL and no active remediation appears warranted. In accordance with FDEP Permit #0067214-005-SO, routine semi-annual monitoring of the site's groundwater and surface water is conducted. Based on the results of this investigation, the City of Jacksonville recommends that the benzene plume be addressed through natural attenuation monitoring through the addition of monitoring wells MW-16A, MW-17A, MW-18A, MW-19B and MW-20B to the routine semi-annual monitoring events.

If you have any questions, please contact the undersigned at (904) 255-7500.

Sincerely,

CITY OF JACKSONVILLE
PUBLIC WORKS DEPARTMENT, SOLID WASTE DIVISION


Eric B. Fuller
Landfill Environmental Scientist


Jeffrey S. Foster, P.G.
Acting Chief, Solid Waste Division



SITE ASSESSMENT REPORT

**SANDLER ROAD LANDFILL
10500 SANDLER ROAD
JACKSONVILLE, DUVAL COUNTY, FLORIDA
FDEP ID NUMBER: NED/16/32164
PERMIT NUMBER: 0067214-005-SO**

October 31, 2012

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Attachment B	Soil Boring Logs and Well Construction and Development Logs
Attachment C	Well Driller Monitoring Well Completion Reports and Permits
Attachment D	Newly Installed Well Location and Elevation Survey
Attachment E	Slug Test Graphs
Attachment F	CD with Laboratory Analytical Report, Field Sample Forms and Chain of Custodies

**SITE ASSESSMENT REPORT
SANDLER ROAD LANDFILL
10500 SANDLER ROAD
JACKSONVILLE, DUVAL COUNTY, FLORIDA
FDEP FACILITY ID NUMBER: NED/16/32164
PERMIT NUMBER: 0067214-005-SO**

In accordance with the provisions of Florida Statutes, Chapter 492, this report for the Sandler Road Landfill facility located at 10500 Sandler Road, Jacksonville, Duval County, Florida has been prepared under the direct supervision of a Professional Geologist registered in the State of Florida. This report was prepared in accordance with generally accepted professional geological practices pursuant to Chapter 492 of the Florida Statutes.



Jeffrey S. Foster, P.G. Date
Acting Chief, Solid Waste Division
City of Jacksonville
Licensed, Florida No. 0000616

**SITE ASSESSMENT REPORT
SANDLER ROAD LANDFILL
10500 SANDLER ROAD
JACKSONVILLE, DUVAL COUNTY, FLORIDA**

1.0 INTRODUCTION

The City of Jacksonville has completed a Site Assessment Report (SAR) for the closed Sandler Road Landfill facility. This assessment was performed due to the detection of benzene in down gradient monitoring wells during routine semi-annual water quality monitoring at the site as required by the Florida Department of Environmental Protection (FDEP) Permit 0067214-005-SO. The completion of this SAR was based upon FDEP's November 29, 2011 review letter (Attachment A).

The closed Sandler Road Landfill is located off the north side of the 10500 block of Sandler Road, in Jacksonville, Duval County, Florida. The entrance to the facility is located at coordinates 30° 13' 57.67" North and 81° 49' 40.68" West. The site is located within Section 17, Township 3 South, and Range 25 East as shown on the USGS Jacksonville Heights, Florida 7.5 Minute Topographic Map. A Topographic Site Location Map is provided as Figure 1.

The closed landfill consists of approximately 30 acres of land. The former landfill borrow pit is located on the northern portion of the site and the remaining areas of the site represent the capped former disposal area. The adjoining properties consist of Sandler Road followed by residential property to the south; rural residential property to the east and west; wooded land followed by a golf course to the north and northwest; and wooded land and a horse ranch to the northeast.

2.0 SITE HISTORY

This site began operating in 1965 under the direction of the Duval County Board of County Commissioners. Permit documents indicate that the site was used exclusively for household trash disposal. The disposal of special, industrial, and hazardous wastes was specifically prohibited. In 1968, the "consolidated" City of Jacksonville assumed County operations and the landfill was temporarily closed. Records indicate that the site was reopened and scales were installed in late 1973 or early 1974. The site was again temporarily closed in May 1976, due to a shortage of equipment and personnel. Filling operations ceased on July 3, 1981. The site was later capped and a vegetative cover grown. Groundwater and surface water monitoring has been conducted at the site since 1990.

3.0 GENERAL SITE GEOLOGY

It is widely accepted and documented that there are three primary hydrogeologic groups in this area of Northeast Florida. The surficial aquifer, found from the surface to depths of 60 to 100 feet below land surface (bls); the confining Hawthorn group of sediments below the surficial aquifer to depths of approximately 500 feet bls; and the Floridian aquifer, which is the primary drinking water source, found below the Hawthorn group.

According to current field data, the upper 52 feet of the lithology of the site consists of varying shades of fine sand. Past reports indicate the presence of a clayey zone in some areas at depths of approximately 35 -45 feet bls. Below this are sand, sandy clay and clayey sand layers to the top of the shallow rock zone. This zone is identified as sand, shell, clay, and limestone at depths of approximately 65-75 feet bls.

4.0 EXISTING MONITORING NETWORK AND PERMIT CONDITIONS

Routine semi-annual water quality monitoring is conducted at the site as required by FDEP Permit 0067214-005-SO. Reports are due to FDEP by March 4 and September 4 of each year covered by the permit. The routine monitoring activities performed include taking groundwater level measurements to aid in determining groundwater flow direction and groundwater and surface water sample collection with laboratory analysis.

The wells currently sampled as part of the semi-annual reporting include the following:

Background Wells: BW-1A and BW-1B

Compliance Wells: MW-1A, MW-1B, MW-2A, MW-2B, MW-3A, MW-3B, MW-3C, MW-4A, MW-4B, MW-4C, MW-5A, MW-5B, MW-6B, MW-7A, MW-7B, MW-9A, MW-13A and MW-14B.

In the well designations, the suffix “A” indicates a shallow well, “B” indicates an intermediate depth well and “C” indicates a deep well. The surface water sample is collected from the former borrow pit located on the northern portion of the landfill. A Site Plan showing the groundwater and surface water sampling locations is provided as Figure 2.

5.0 MONITORING WELL INSTALLATION

Due to the past detections of benzene above its GCTL in down gradient monitoring wells MW-7A, MW-13A, MW-3B and MW-14B, the City of Jacksonville installed additional monitoring wells in order to delineate the groundwater impacts. The locations of the newly installed wells were at the approximate locations proposed in the previous routine semi-annual monitoring reports.

Between July 31 and August 2, 2012, the City of Jacksonville, in conjunction with Aerostar Environmental Services and Groundwater Protection, installed shallow monitoring wells MW-16A, MW-17A and MW-18A on the northern portion of the eastern adjoining property and also installed double-cased, intermediate depth monitoring wells MW-19B and MW-20B on the central portion of the eastern adjoining property. The monitoring wells were installed utilizing a truck-mounted drill rig equipped with hollow stem augers. The shallow depth monitoring wells were completed down to a depth of approximately 12 feet below ground surface (bgs) and the intermediate depth wells were completed to a total depth of approximately 52 feet bgs. The monitoring wells consisted of ten feet of two-inch diameter, 0.01 inch factory slotted well screen threaded to two-inch diameter schedule 40 PVC riser. Surface completion of the monitoring

wells included a two foot by two foot concrete pad and approximately three feet of riser stick-up placed in a protective aluminum casing. The shallow water table was between three and four feet bgs at the time of the well installations. The soil boring logs and well construction and development logs for the monitoring well installations are included as Attachment B. The well driller's well completion reports and well permits are provided as Attachment C. A Site Plan showing the locations of the existing and newly installed monitoring wells located at the site is provided as Figure 2.

6.0 SITE SPECIFIC GROUNDWATER CHARACTERISTICS

6.1 Groundwater Flow Direction

On September 14, 2012, depth to water measurements were collected by City of Jacksonville Solid Waste Division personnel from monitoring wells BW-1A, BW-1B, MW-1A, MW-1B, MW-2A, MW-2B, MW-3A, BW-3B, MW-3C, MW-4A, MW-4B, MW-4C, MW-5A, MW-5B, MW-6A, MW-6B, MW-7A, MW-7B, MW-8A, MW-9A, MW-10A, MW-10B, MW-13A, MW-14B, MW-15B, MW-16A, MW-17A, MW-18A, MW-19B and MW-20B. Table 1 provides depth to water measurement data and the corresponding groundwater elevation data. Top of casing elevations, in conjunction with depth to water measurements, were used to calculate the groundwater elevation data. The newly installed wells were surveyed for location and top of casing elevations by Atlantic Gulf Surveying Company of Jacksonville, Florida (Attachment D). Groundwater elevation contour maps for the shallow and intermediate zones are provided as Figures 3 and 4, respectively. Since there are only two deep zone monitor wells, a deep zone flow direction map was not generated. Due to the apparent anomalous data from well cluster MW-10, the elevations from this location were not utilized in determining flow direction.

The elevation contour maps indicate that the shallow water table generally slopes towards the northeast and the pieziometric surface of the intermediate zone generally slopes towards the east-northeast. The northeastward sloping gradient of the water table and the pieziometric surface of the intermediate zones indicates that the groundwater flow beneath the Sandler Road Landfill is to the east-northeast. These flow directions are similar to the historical flow direction beneath the landfill.

In the well clusters containing shallow zone and intermediate zone wells, the pieziometric surface of the shallow zone shows no consistent correlation with the pieziometric surface of the intermediate zone. In four of these well clusters, the vertical hydraulic gradient between the shallow and intermediate zones is in a downward direction while in five of the well clusters, the vertical hydraulic gradient is in an upward direction. In the two well clusters that contain deep wells (MW-3 and MW-4), the pieziometric surface of the deep zone is lower than the water table elevation in the intermediate aquifer (Table 1). This indicates that there is a general vertical hydraulic gradient in the downward direction between the intermediate to deep zones at the landfill.

6.2 Groundwater Flow Velocity

On August 7, 2012, Aerostar Environmental Services conducted slug-in and slug-out tests on shallow monitor wells MW-6A, MW-16A, and MW-17A and on intermediate depth monitor wells MW-3B, MW-19B and MW-20B. A slug was introduced into the well and removed from the well, the static water depths, initial water levels and either the falling or rising head depths were plotted over time. Slug test plots (Bower/Rice) were calculated for each run to determine the hydraulic conductivity. Water level depths, distance between two wells with the recorded water levels and hydraulic conductivity were used to calculate the groundwater flow velocity. Based on calculations, the average velocity in the shallow and intermediates zones is approximately 0.011 feet/day. Slug test plots are contained in Attachment E.

7.0 GROUNDWATER SAMPLING AND ANALYTICAL RESULTS

Between July 19 - 25, 2012, American Environmental Services (AES) collected samples from 20 wells at the Sandler Road landfill as part of the routine semi-annual monitoring of the site. Between August 24 – 29, 2012, AES collected samples from the five newly installed monitoring wells at the site. During each sampling event, depth to water and total depth of well measurements were used to calculate the amount of water in one well volume which was then purged from each well. Establishment of stable purging parameters of the monitoring wells was then carried out in general accordance with the FDEP Standard Operating Procedures (FS 2200) before the wells were sampled.

Following the standard purging activities, groundwater samples were collected from the monitoring wells. The collected samples were placed in laboratory-supplied bottles, stored on ice, and submitted to a State of Florida approved analytical laboratory, Test America, in Tallahassee, Florida, NELAC number E81005. Groundwater samples from all monitoring wells were analyzed for volatile organic aromatic and volatile organic halocarbon compounds by EPA Method 8260, cadmium, chromium, iron, lead and sodium by EPA Method 6010B, mercury by EPA Method 7470A, bicarbonate by EPA Method SM2320B, nitrate by EPA Method 353.2, ammonia by EPA Method 350.1, total dissolved solids (TDS) by EPA Method SM2540C, total organic carbon (TOC) by EPA Method SM5310C, and chloride by EPA Method 300. The pH of the groundwater was determined in the field.

A summary of the groundwater analytical data is presented as Table 2. The laboratory analytical data, field sampling logs, and chain of custody documentation are presented as Appendix F on the attached CD.

7.1 Shallow Groundwater Analytical Summary

The analytical results and field observations of the groundwater samples collected from the shallow monitor wells indicated that levels of iron, sodium, chloride, TDS, ammonia, benzene, and pH did not conform to FDEP Groundwater Cleanup Target Levels (GCTLs) as defined in Chapter 62-777, F.A.C. in one or more wells. All other monitored parameters were at or below

FDEP criteria. All shallow wells, including background well BW-1A, contained elevated levels of iron. The highest concentration of iron detected was a level of 30 mg/L in MW-1A. Sodium and chloride were detected at elevated concentrations in monitor well MW-9A. TDS was detected at elevated levels in shallow monitoring wells MW-1A, MW-7A and MW-9A with the highest concentration detected in MW-1A at a level of 1,000 mg/L. Ammonia was detected at elevated levels in shallow monitoring wells MW-1A, MW-2A, MW-3A, MW-4A, MW-7A, MW-9A and MW-13A. The highest concentration of ammonia detected was 75 mg/L in MW-2A. Benzene was detected at slightly elevated levels in shallow monitor wells MW-2A (2.7 ug/L), MW-7A (1.3 ug/L) and MW-13A (1.7 ug/L). The levels of pH detected in all of the shallow wells but MW-1A and MW-5A, including the background well BW-1A, were below 6.5 standard units (SU). The lowest pH detected at the landfill was 3.76 SU in MW-16A. The background well pH was 4.92 SU.

Of the newly installed shallow wells (MW-16A, MW-17A and MW-18A), only levels of iron and pH were detected above GCTLs. The groundwater sample from MW-18A indicated a total lead level of 18 ug/L; however, the turbidity of this groundwater sample was 400 NTUs and the dissolved (filtered) lead result from this monitoring well was 8.3 ug/L, below the GCTL of 15 ug/L.

7.2 Intermediate Groundwater Analytical Summary

The analytical results and field parameters of the intermediate depth wells indicated that levels of iron, sodium, chloride, ammonia, TDS, benzene, and pH did not conform to FDEP GCTLs as defined in Chapter 62-777, F.A.C. All other monitored parameters were at or below FDEP criteria. All intermediate depth wells, including background well BW-1B, contained elevated levels of iron. Dissolved (filtered) iron results from the two newly installed intermediate depth wells showed iron concentrations below its GCTL. The highest concentration of iron detected in the intermediate zone was a level of 26 mg/L in MW-3B. Sodium was detected at an elevated level in MW-19B (190 mg/L). Chloride was detected at a slightly elevated concentration in monitor well MW-3B (280 mg/L). Ammonia was detected at elevated levels in intermediate depth monitor wells MW-4B and MW-5B. The highest concentration of ammonia detected in the intermediate depth zone was 18 mg/L in MW-5B. TDS was detected at an elevated level in MW-19B (820 mg/L). Benzene was detected at a slightly elevated level in monitor well MW-3B (1.7 ug/L). The levels of pH detected in all of the intermediate depth wells except MW-19B and MW-20B, were below 6.5 standard units (SU). The lowest pH detected in the intermediate depth zone was 4.37 SU in MW-14B which was similar to the background well pH of 4.96 SU. The pH of MW-20B was above the acceptable pH range at a level of 11.00 SUs.

Of the newly installed shallow wells (MW-19B and MW-20B), only levels of total iron, sodium, TDS and pH were detected above GCTLs.

7.3 Deep Groundwater Analytical Summary

The analytical results and field parameters of the deep depth wells indicated that levels of iron and pH did not conform to FDEP GCTLs as defined in Chapter 62-777, F.A.C. Iron was detected in MW-3C at a level of 5.1 mg/L and in MW-4C at a level of 6.6 mg/L. The pH of MW-3C was 11.35 SU which is likely due to installation of this well in or adjacent to a limerock layer.

8.0 SURFACE WATER SAMPLING AND ANALYTICAL RESULTS

On July 25, 2012, American Environmental Services collected one surface water sample at the landfill. Surface water runoff from the Sandler Road Landfill facility is collected in a pond system (former borrow pit) along the northern boundary of the site. Surface water sample SW-3 was collected from the southeastern portion of the former borrow pit. The location of the surface water sample point is shown on Figure 2.

The collected samples were placed in laboratory-supplied bottles, stored on ice, and submitted to Test America. The surface water samples were analyzed for volatile organic aromatic and volatile organic halocarbon compounds by EPA Method 8260, arsenic, cadmium, chromium, copper, iron, lead, sodium and zinc by EPA Method 6010B, mercury by EPA Method 7470A, bicarbonate by EPA Method SM2320B, unionized ammonia by EPA Method 350.1, nitrate by EPA Method 353.2, total organic carbon by EPA Method 5310C, TDS by EPA Method 2540C and phosphorus by EPA Method 365.1. The pH of the surface water was determined in the field.

A summary of the surface water analytical data is presented as Table 3. The laboratory analytical data, field sampling logs, and chain of custody documentation, are presented as Appendix F on the attached CD.

The analytical results of surface water sample SW-3 indicated that all analyzed parameters met Class III surface water quality criteria, as defined in Chapter 62-302, F.A.C., with the exception of bicarbonate alkalinity. Bicarbonate alkalinity was detected at a level of 8.6 mg/L. Alkalinity has regulatory criteria in Chapter 62-302, F.A.C. that states it shall not be depressed below 20 mg/L.

9.0 CONCLUSIONS

Based on the findings of this site assessment, the City of Jacksonville concludes the following:

- The groundwater elevation data indicates that there is a general groundwater flow to the east-northeast. This flow direction is similar to the historical flow direction beneath the landfill.
- The groundwater elevation data indicates the pieziometric surface of the shallow zone shows no consistent vertical gradient correlation with the pieziometric surface of the intermediate zone. There is a general vertical hydraulic gradient in the downward direction between the intermediate to deep zones at the landfill.
- The average groundwater flow velocity in the shallow and intermediate zones is approximately 0.011 feet/day.

- Groundwater analytical results indicate the presence of elevated levels of iron in the shallow, intermediate and deep groundwater zones. Elevated levels of iron were also detected in the background monitoring wells. The highest iron concentration detected at the site was 30 mg/L in MW-1A.
- Groundwater analytical results indicate the presence of a slightly elevated level of sodium in one well in the shallow groundwater zone and in one well in the intermediate zone but not in any of the monitor wells in the deep groundwater zone. Sodium was detected at a concentration of 220 mg/L in monitor well MW-9A and 190 mg/L in monitor well MW-19B.
- Groundwater analytical results indicate the presence of slightly elevated levels of chloride in one well of both the shallow and intermediate zones but not in the deep groundwater zone. Chloride was detected in monitoring well MW-9A at a level of 480 mg/L and in MW-3B at a level of 280 mg/L.
- Groundwater analytical results indicate the presence of elevated levels of TDS in the shallow groundwater zone and in one monitor well of the intermediate zone. TDS levels were not excessive in the deep groundwater zone. The highest TDS concentration detected at the site was 1,000 mg/L in MW-1A.
- Groundwater analytical results indicated the presence of slightly elevated levels of benzene in the shallow and intermediate zones but not in the deep groundwater zone. The highest concentration of benzene was detected in monitoring well MW-2A at a level of 2.7 ug/L.
- Groundwater analytical results indicated the presence of elevated levels of ammonia in the shallow and intermediate groundwater zones but not in the deep groundwater zone. Monitor well MW-3A contained the highest concentration of ammonia (75 mg/L).
- The levels of pH detected in 20 of the 25 monitor wells at the site, including the background wells, indicate pH levels less than 6.5 SU. The lowest pH detected at the landfill was 3.76 SUs in MW-16A. Two wells, MW-20B and MW-3C, contained pH levels between 11.00 and 11.35 SUs. These elevated pH levels are believed to be due to the likely presence of limerock layer in this vicinity.
- The analytical results of the surface water sample indicated that all analyzed parameters met Class III surface water quality criteria, as defined in Chapter 62-302, F.A.C., with the exception of bicarbonate alkalinity. Bicarbonate alkalinity was detected at a level of 8.6 mg/L. Alkalinity has regulatory criteria in Chapter 62-302, F.A.C. that states it shall not be depressed below 20 mg/L.

10.0 DISCUSSION AND RECOMMENDATIONS

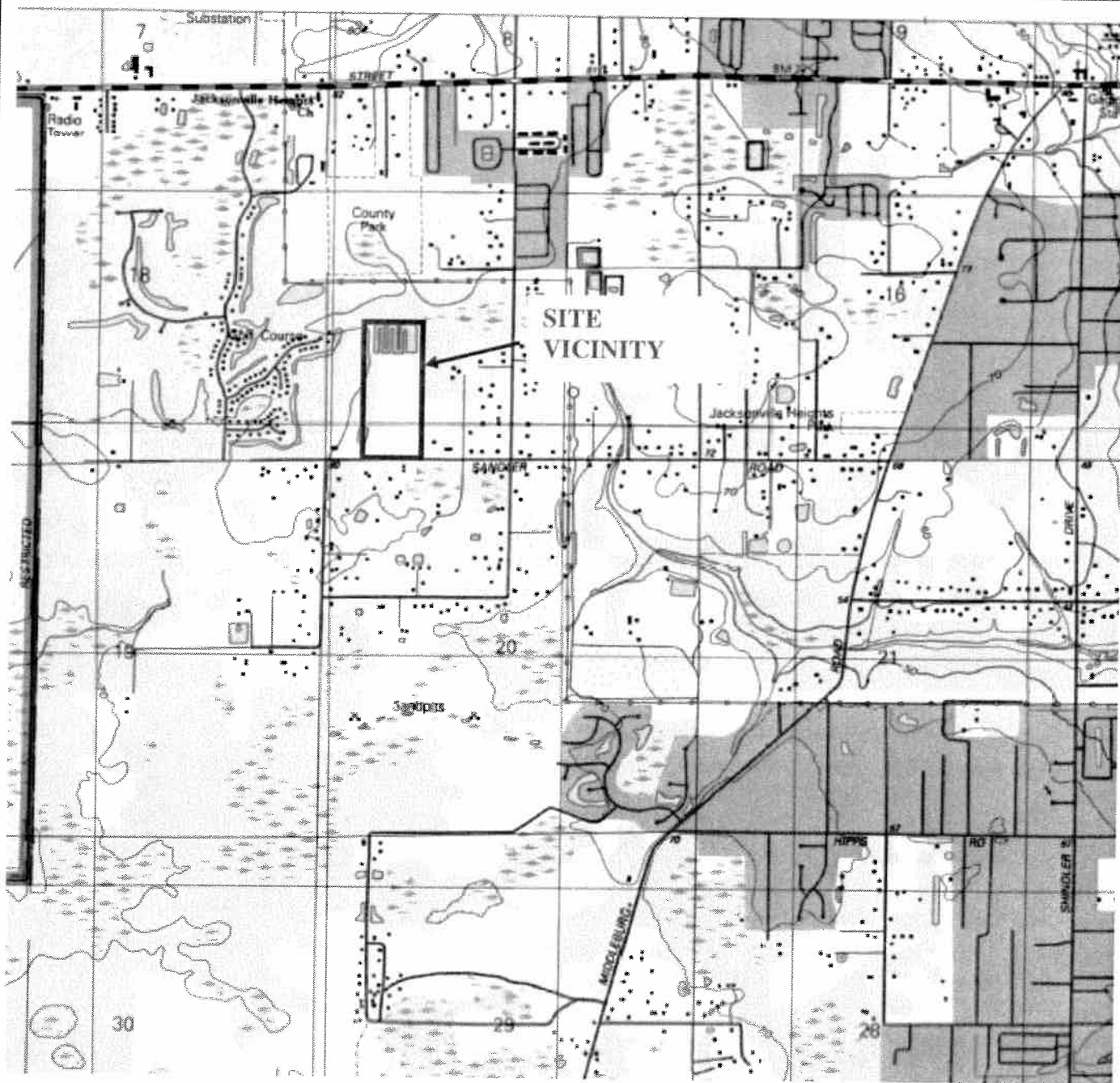
Based on the information obtained during this site assessment, the majority of the regulatory criteria exceedances detected in the groundwater and/or surface water of the site are attributable to natural occurrence or elevated sample turbidity. The levels of iron and pH detected in the groundwater are not uncommon for Northeast Florida and are likely attributable to the native soil

conditions within the landfill environment. This is further evidenced in the levels of these parameters detected in the background wells. The levels of sodium, chloride, TDS and ammonia detected in the wells are consistent with the historic data for the site. The detected levels of benzene in the shallow and intermediate groundwater zones at the landfill represent a contaminant concern beneath the landfill; however, the concentrations of benzene detected are only slightly above its GCTL and appear to be at relatively stable or reducing concentrations. The analytical results do not indicate that the benzene concentrations of the landfill have impacted the deeper groundwater zone and the horizontal extents of the impacts have been defined. The surface water results indicate that the landfill does not appear to be affecting the on-site surface water conditions.

Off-site impacts to the east of the former landfill have been detected. The levels of impacts to the groundwater appear to be at stable or shrinking concentrations. Proper notices of off-site impacts were given to the adjoining property owners in accordance with FDEP regulations in October 2011. The City of Jacksonville's Environmental Quality Division has no record of any wells (aside from monitor wells) on either of the eastern adjoining properties. The horizontal and vertical extents of the impacts have been defined and none of the impacts are at levels that warrant active remediation.

Based on the results of this investigation, the City of Jacksonville recommends that the benzene plume be addressed through natural attenuation monitoring through the addition of monitoring wells MW-16A, MW-17A, MW-18A, MW-19B and MW-20B to the routine semi-annual monitoring events.

FIGURES

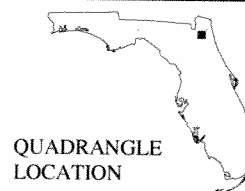


JACKSONVILLE HEIGHTS,
FLORIDA

DATED 1994

7.5 MINUTE SERIES
TOPOGRAPHIC MAP

CONTOUR INTERVAL 10 FEET



QUADRANGLE
LOCATION



NATIONAL GEODETIC VERTICAL DATUM OF 1929

FIGURE 1. TOPOGRAPHIC SITE LOCATION MAP



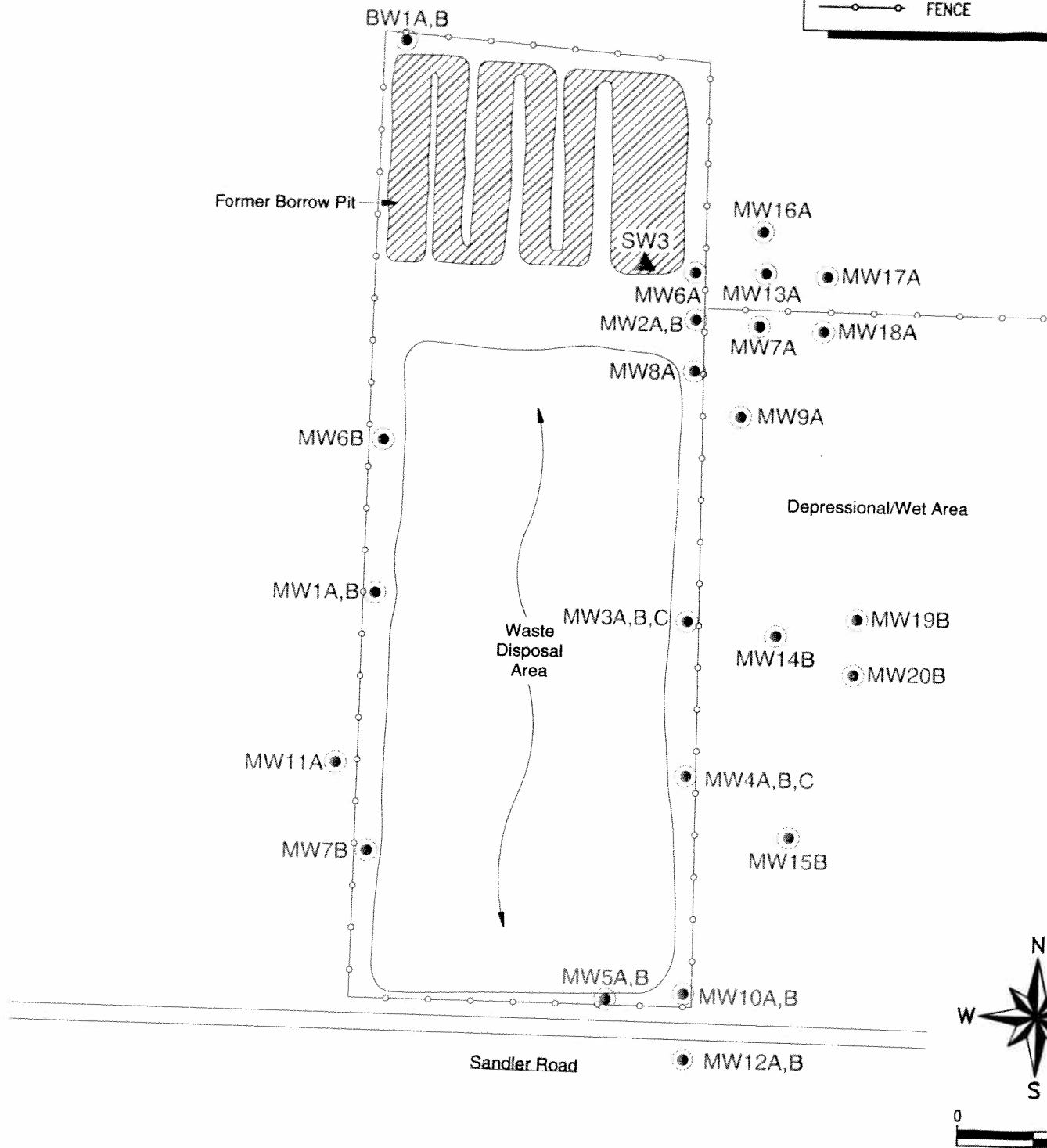
SANDLER ROAD LANDFILL
10500 SANDLER ROAD
JACKSONVILLE,
DUVAL COUNTY, FLORIDA

DATE: OCTOBER 2012

REFERENCE: MAP OF
JACKSONVILLE HEIGHTS,
FLORIDA
PREPARED BY: USGS

LEGEND

- MW7A,B,C ● MONITORING WELL (CLUSTER)
- MW7A ● MONITORING WELL (SINGLE)
- SW3 ▲ SURFACE WATER LOCATION
- FENCE



JOB: M3001.1289.05

FIGURE 2. SITE PLAN



SANDLER ROAD LANDFILL SITE
10500 SANDLER ROAD
JACKSONVILLE, DUVAL COUNTY, FLORIDA

SCALE: 1" = 300'-0"
DATE: SEPTEMBER 2012
REVIEWED BY: E. FULLER

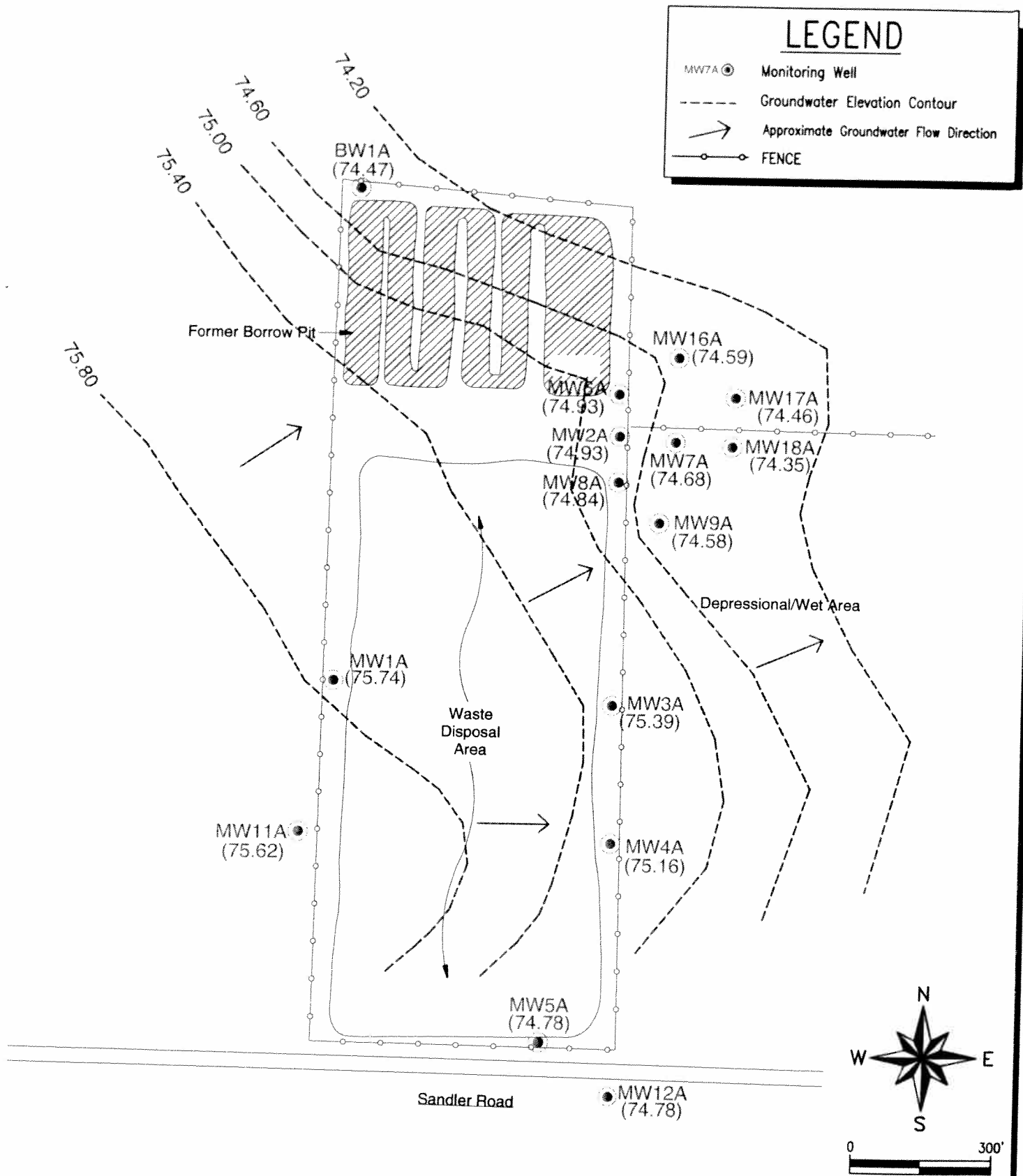


FIGURE 3. SHALLOW ZONE GROUNDWATER ELEVATION (SEPT. 14, 2012)

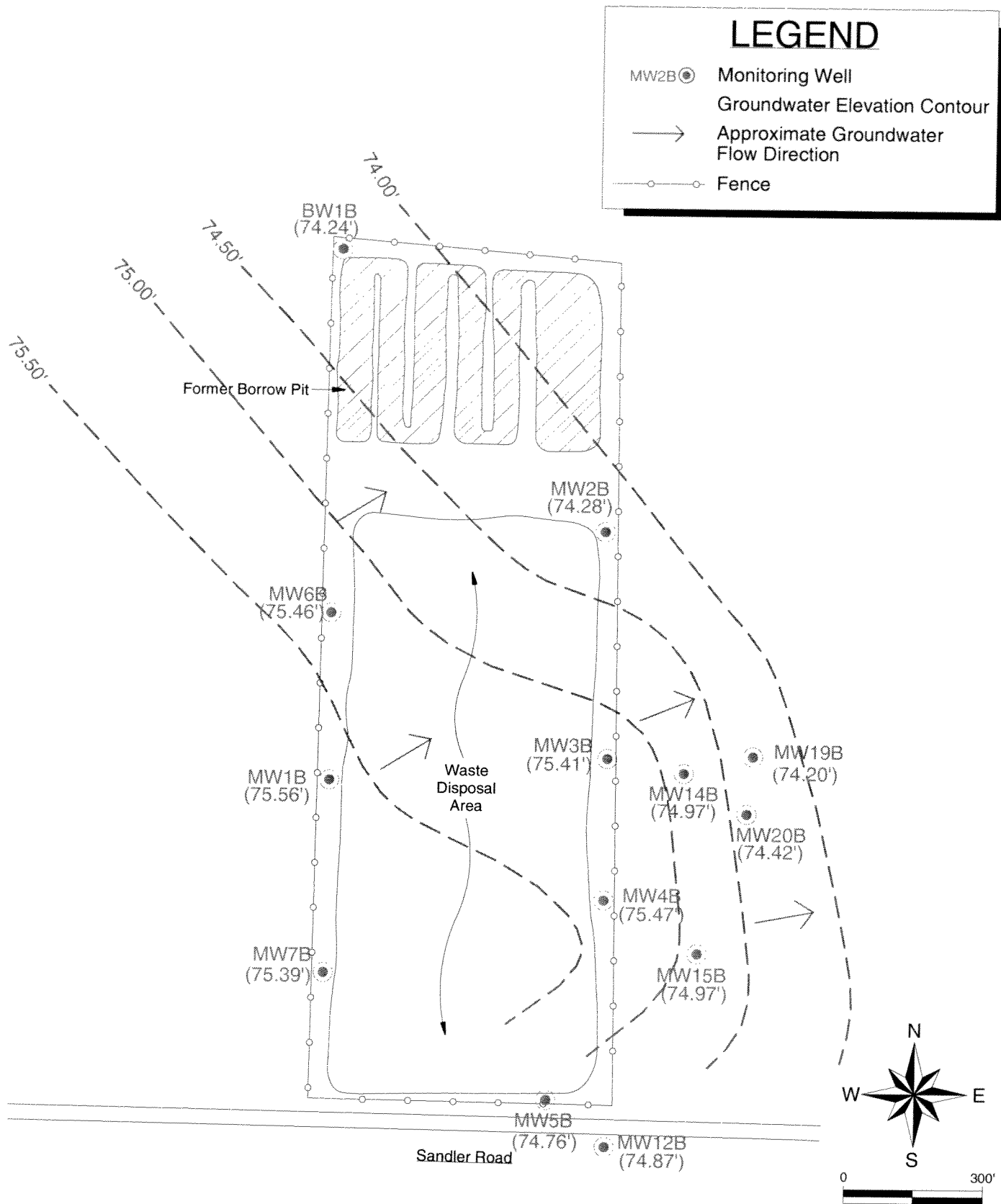


Figure 4 - Intermediate Zone Groundwater Elevation Map (Sept. 14, 2012)



Sandler Road Landfill Site
10500 Sandler Road
Jacksonville, Duval County, Florida

Scale: 1" = 300'-0"

Date: September 2012

Reviewed By: E. Fuller

TABLES

TABLE 1: GROUNDWATER ELEVATION SUMMARY

Facility Name: Sandler Road Sanitary Landfill Facility ID : NED/16/00032164

WELL NO.	MW-1A	MW-2A	MW-3A	MW-4A	MW-5A	MW-6A	MW-7A	MW-8A
DIAMETER	2"	2"	2"	2"	2"	2"	2"	2"
WELL DEPTH	18.14	16.32	14.47	16.04	16.82	15.00	15.00	15.00
TOC ELEVATION	79.36	77.35	78.55	79.98	81.74	76.84	77.12	77.87
	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW
08/03/11	71.96	7.40	71.05	7.50	71.57	10.17	70.98	5.86
02/08/12	70.40	8.96	69.49	9.06	69.51	12.23	69.51	7.33
07/13/12	75.36	4.00	74.34	4.21	75.35	6.39	73.81	3.03
09/14/12	75.74	3.62	75.39	3.16	74.78	6.96	74.93	1.91
AVERAGE	73.83	5.53	73.07	5.48	73.21	8.53	72.75	4.09
WELL NO.	MW-1B	MW-2B	MW-3B	MW-4B	MW-5B	MW-6B	MW-7B	
DIAMETER	2"	2"	2"	2"	2"	2"	2"	
WELL DEPTH	59.19	56.32	42.23	43.77	53.22	50.00	50.00	
TOC ELEVATION	80.36	77.42	78.36	79.98	81.61	79.33	81.58	
	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW
08/03/11	71.89	8.47	71.40	6.96	71.15	10.46	71.87	7.46
02/08/12	70.28	10.08	69.87	8.49	69.37	12.24	70.28	9.05
07/13/12	75.02	5.34	74.68	3.68	75.24	6.37	74.78	4.55
09/14/12	75.56	4.80	75.41	2.95	74.76	6.85	75.46	3.87
AVERAGE	73.19	7.17	72.84	5.52	72.63	8.98	73.10	6.23
WELL NO.	MW-3C	MW-4C						
DIAMETER	2"	2"						
WELL DEPTH	97.24	98.27						
TOC ELEVATION	78.00	79.73						
	ELEV	DTW	ELEV	DTW				
08/03/11	70.06	7.94	70.93	8.80				
02/08/12	68.48	9.52	69.31	10.42				
07/13/12	72.98	5.02	73.87	5.86				
09/14/12	73.73	4.27	74.68	5.05				
AVERAGE	71.31	6.69	72.20	7.53				

ND = No data

TABLE 1: GROUNDWATER ELEVATION SUMMARY

Facility Name: Sandler Road Sanitary Landfill Facility ID : NED/16/00032164

WELL NO.	MW-17A		MW-18A						BW-1A	
DIAMETER	2"		2"						2"	
WELL DEPTH	15.00		15.00						15.00	
TOC ELEVATION	78.08		78.00						79.23	
	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW
08/03/11									71.77	7.46
02/08/12									70.36	8.87
07/13/12									73.73	5.50
09/14/12	74.46	3.62	74.35	3.65					74.47	4.76
AVERAGE	74.46	3.62	74.35	3.65					72.58	6.65
WELL NO.			MW-19B		MW-20B				BW-1B	
DIAMETER			2"		2"				2"	
WELL DEPTH			55.00		55.00				50.00	
TOC ELEVATION			78.37		78.67				79.47	
	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW	ELEV	DTW
08/03/11									71.88	7.59
02/08/12									70.44	9.03
07/13/12									74.24	5.23
09/14/12			74.20	4.17	74.42	4.25			75.02	4.45
AVERAGE			74.20	4.17	74.42	4.25			72.90	6.58
WELL NO.										
DIAMETER										
WELL DEPTH										
TOC ELEVATION										
AVERAGE										

ND = No data

TABLE 2: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY

Facility Name: Sandler Road Sanitary Landfill Facility ID: NED/16/00032164

Well	Unit	Cadmium	Chromium	Iron	Lead	Sodium	
	EPA Method	µg/L	µg/L	µg/L	µg/L	µg/L	
	FDEP GCTLs	6010B	6010B	6010B	6010B	6010B	
	Sampling Date	5	100	300	15	160000	
Shallow Wells	BW-1A	3/23/11 7/12/11 2/2/12 7/24/12	0.47 U 0.47 U 0.47 U 1.0 U	1.1 U 1.41 1.1 U 2.0 U	830 790 V 790 850	3.1 U 3.1 U 3.1 U 3.2 U	5300 7900 5300 5300
	MW-1A	3/17/11 7/12/11 2/1/12 7/23/12	0.47 U 0.47 U 0.47 U 1.0 U	1.3 U 2.8 U 3.0 U 2.4 U	28000 35000 V 18000 30000	3.1 U 3.1 U 3.1 U 3.8 U	42000 59000 190000 100000
	MW-2A	3/23/11 7/6/11 1/30/12 7/23/12	0.47 U 0.47 U 0.47 U 1.0 U	3.6 U 4.4 U 4.0 4.3 U	1100 1300 V 1800 2400	3.1 U 3.1 U 3.1 U 2.3 U	89000 140000 110000 99000
	MW-3A	3/18/11 7/6/11 1/30/12 7/20/12	0.47 U 0.47 U 0.47 U 1.0 U	4.3 U 6.4 U 7.2 U 4.8 U	430 620 V 620 790	3.1 U 3.1 U 3.1 U 2.0 U	45000 190000 240000 70000
	MW-4A	3/18/11 7/11/11 1/19/12 7/20/12	0.47 U 0.47 U 0.47 U 1.0 U	1.7 U 1.9 U 3.5 U 2.2 U	4500 2300 2200 2100	3.1 U 3.1 U 3.1 U 2.0 U	14000 24000 21000 8200
	MW-5A	3/17/11 7/11/11 1/19/12 7/19/12	0.47 U 0.47 U 0.47 U 1.0 U	1.6 U 1.4 U 1.6 U 2.0 U	12000 9100 6700 7100	3.1 U 3.1 U 3.1 U 2.0 U	3800 4500 4700 3900
	MW-7A	3/23/11 7/13/11 2/3/12 7/25/12	0.47 U 0.47 U 0.47 U 1.0 U	4.0 U 2.9 U 6.3 U 5.8 U	1400 900 790 V 3000	3.1 U 3.1 U 3.1 U 3.0 U	95000 150000 170000 100000
	MW-9A	3/24/11 7/13/11 2/3/12 7/25/12	0.47 U 0.47 U 0.47 U 1.0 U	1.1 U 1.1 U 1.4 U 2.0 U	5100 2700 3100 4400	3.1 U 3.1 U 3.1 U 2.0 U	210000 170000 200000 220000
	MW-13A	NS NS 2/2/12 7/24/12	NS NS 0.47 U 1.0 U	NS NS 2.8 U 3.0 U	NS NS 750 850	NS NS 3.1 U 2.0 U	NS NS 160000 130000
	MW-16A	8/24/12	*1.0 U / **1.0 U	*5.3 U / **3.5 U	*1100 / **1000	*4.8 U / **5.7 U	*6200 / **6100
MW-17A	8/24/12	*1.0 / **1.0 U	*3.9 U / **2.3 U	*5900 / **5800	*5.2 U / **2.6 U	*23000 / **23000	
MW-18A	8/24/12	*1.0 / **1.0 U	*13 / **5.4 U	*2600 / **2100	*18 U / **8.3 U	*13000 / **12000	

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U - analyte not detected above laboratory method detection limit
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TABLE 2: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY

Facility Name: Sandler Road Sanitary Landfill Facility ID: NED/16/00032164

Well	Unit	EPA Method	FDEP GCTLs	Sampling Date	Cadmium µg/L	Chromium µg/L	Iron µg/L	Lead µg/L	Sodium µg/L
Intermediate Wells	BW-1B	6010B	5	3/23/11	0.47 U	1.1 U	620	3.1 U	4400
				7/12/11	0.47 U	1.1 U	650 V	3.4 IV	4400
				2/2/12	0.47 U	1.1 U	600	3.1 U	4200
				7/24/12	1.0 U	2.0 U	660	2.0 U	4500
	MW-1B	6010B	5	3/17/11	0.47 U	1.1 U	1900	3.1 U	4700
				7/12/11	0.47 U	1.1 U	2300 V	3.1 U	4800
				2/1/12	0.47 U	1.1 U	2100	3.1 U	4600
				7/23/12	1.0 U	2.0 U	1800	3.1 U	4900
	MW-2B	6010B	5	3/23/11	0.47 U	1.1 U	4400	3.1 U	15000
				7/6/11	0.47 U	1.1 U	3200 V	3.1 U	14000
				1/30/12	0.47 U	1.1 U	3000	3.1 U	9500
				7/23/12	1.0 U	2.0 U	4100	2.0 U	21000
	MW-3B	6010B	5	3/18/11	0.47 U	1.1 U	25000	3.1 U	150000
				7/6/11	0.47 U	1.1 U	26000 V	3.1 U	160000
				2/1/12	0.47 U	1.1 U	26000	3.1 U	140000
				7/20/12	1.0 U	2.0 U	26000	3.3 I	140000
	MW-4B	6010B	5	3/18/11	0.47 U	2.4 I	1000	3.1 U	88000
				7/11/11	0.47 U	3.9 I	1200	3.1 U	96000
				1/19/12	0.47 U	2.6 I	1800	3.1 U	97000
				7/20/12	1.0 U	3.0 I	1300	2.0 U	96000
	MW-5B	6010B	5	3/17/11	0.47 U	2.5 I	390	3.1 U	35000
				7/11/11	0.47 U	2.3 I	430	3.1 U	34000
				1/19/12	0.47 U	1.9 I	350	3.1 U	34000
				7/19/12	1.0 U	2.0 U	340	2.0 U	31000
	MW-6B	6010B	5	3/23/11	0.47 U	1.1 U	850	3.1 U	4200
				7/12/11	0.47 U	1.1 U	740 V	3.1 U	4100
				2/2/12	0.47 U	1.1 U	670	3.1 U	4100
				7/24/12	1.0 U	2.0 U	670	2.0 U	4300
	MW-7B	6010B	5	3/17/11	0.47 U	1.1 U	840	3.1 U	5600
				7/11/11	0.47 U	1.1 U	1000	3.1 U	5600
				2/2/12	0.47 U	1.1 U	980	3.1 U	5300
				7/24/12	1.0 U	2.0 U	1000	2.2 I	5200
	MW-14B	6010B	5	3/24/11	0.47 U	1.1 U	5300	3.1 U	76000
				7/13/11	0.47 U	1.1 U	5700	3.1 U	84000
				2/3/12	0.47 U	1.3 I	4700 V	3.1 U	74000
				7/25/12	1.0 U	2.0 U	3500	2.0 I	56000
Deep Wells	MW-19B	6010B	5	8/29/12	*1.0 U/**1.0 U	*44/**6.9 I	*3400/**92 I	*15/**4.1 I	*190000/**190000
				8/29/12	*1.0 U/**1.0 U	*43/**24	*6000/**180 I	*14/**4.7 I	*64000/**140000
				3/18/11	0.47 U	1.1 U	72	3.1 U	14000
				7/6/11	0.47 U	1.1 U	33 IV	3.1 U	14000
	MW-3C	6010B	5	2/1/12	0.47 U	1.1 U	440	5.3	4600
				7/20/12	1.0 U	2.0 U	510	2.0 U	5200
				3/18/11	0.47 U	1.1 U	1200	3.1 U	29000
				7/11/11	0.47 U	1.1 U	2200	3.1 U	39000
	MW-4C	6010B	5	1/30/12	0.47 U	1.1 U	510	3.1 U	6600
				7/20/12	1.0 U	2.0 U	660	2.0 U	7200

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TABLE 2: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY

Facility Name: Sandler Road Sanitary Landfill Facility ID: NED/16/00032164

Well	pH		Total Chloride mg/L	Nitrate mg/L	Ammonia mg/L	Alkalinity as CaCO3 mg/L	TDS mg/L	TOC mg/L	
	S.U.								
	field sampled								
	6.5-8.5								
Unit		FDEP GCTLs		Sampling Date					
BW-1A	3/23/11	5.84	8.7	0.0047 U	0.130	5.4	47	7	
	7/12/11	4.91	13.0	0.0047 U	0.580	2.8	58	13	
	2/2/12	4.92	9.1	0.036	0.240	5.3	37	6.6	
	7/24/12	4.92	7.1	0.0047 U	0.084	200.0	14	6.2	
MW-1A	3/17/11	7.12	37.0	0.024	32.000	670.0	770	41	
	7/12/11	6.45	50.0	0.0047 U	39.000	610.0	730	68	
	2/1/12	6.51	230.0	0.130	95.000	980.0	1200	110	
	7/23/12	6.54	120.0	0.0047 U	65.000	540.0	1000	66	
MW-2A	3/23/11	6.96	110.0	0.0099 I	62.000	620.0	630	83	
	7/6/11	6.20	150.0	0.0047 U	92.000	740.0	890	110	
	1/30/12	6.22	110.0	0.034	90.000	700.0	750	77	
	7/23/12	6.31	100.0	0.094	75.000	480.0	280	76	
MW-3A	3/18/11	6.60	80.0	0.0047 U	6.900	120.0	420	110	
	7/6/11	5.95	370.0	0.0047 U	100.000	470.0	940	150	
	1/30/12	5.90	460.0	0.053	120.000	460.0	1000	130	
	7/20/12	5.90	150.0	0.0047 U	17.000	120.0	350	73	
MW-4A	3/18/11	6.46	15.0	0.012	7.400	270.0	370	37	
	7/11/11	5.98	17.0	0.0047 U	14.000	360.0	460	54	
	1/19/12	5.98	14.0	0.014	12.000	310.0	420	50	
	7/20/12	6.01	5.6	0.0047 U	2.900	170.0	180	27	
MW-5A	3/17/11	6.90	5.2	0.013	1.400	270.0	360	33	
	7/11/11	6.20	5.3	0.0047 U	1.900	290.0	390	54	
	1/19/12	6.13	4.4	0.022	1.700	240.0	350	41	
	7/19/12	7.08	4.3	0.0047 U	1.600	260.0	400	43	
MW-7A	3/23/11	6.65	140.0	0.012	31.000	190.0	420	81	
	7/13/11	5.70	190.0	0.024	54.000	250.0	600	77	
	2/3/12	5.72	310.0	0.040	67.000	260.0	760	110	
	7/25/12	5.76	190.0	0.0047 U	21.000	170.0	540	81	
MW-9A	3/24/11	5.29	490.0	0.012	21.000	0.39 U	720	18	
	7/13/11	4.22	370.0	0.012	20.000	0.39 U	770	17	
	2/3/12	4.25	500.0	0.091	25.000	0.39 U	660	19	
	7/25/12	4.30	480.0	0.0047 U	24.000	5.0 U	740	21	
MW-13A	NS	NS	NS	NS	NS	NS	NS	NS	
	NS	NS	NS	NS	NS	NS	NS	NS	
	2/2/12	5.43	200.0	0.039	17.000	140.0	520	70	
	7/24/12	5.50	160.0	0.0047 U	12.000	120.0	470	61	
MW-16A	8/24/12	3.76	6.5	0.029	0.310	5.0 U	100	89	
MW-17A	8/24/12	4.28	40.0	0.0047 U	0.390	5.0 U	50 U	53	
MW-18A	8/24/12	4.89	23.0	0.011	0.720	15.0	80	96	

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TABLE 2: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY

Facility Name: Sandler Road Sanitary Landfill Facility ID: NED/16/00032164

Well	Unit	pH	Total Chloride mg/L	Nitrate mg/L	Ammonia mg/L	Alkalinity as CaCO3 mg/L	TDS mg/L	TOC mg/L
	EPA Method	field sampled	300	353.2	350.1	310.1	2540C	5310C
	FDEP GCTLs	6.5-8.5	250	10	2.8	NL	500	NL
	Sampling Date							
Intermediate Wells	BW-1B	7/23/11	5.4	0.097	0.030	4.3	32	3.1
		7/12/11	4.8	0.060	0.022	4.3	40	3.0
		2/2/12	4.89	0.031	0.021	4.2	22	2.6
		7/24/12	4.96	0.0047	0.032	220.0	8	2.7
		3/17/11	5.5	0.510	0.100	47.0	81	8.1
		7/12/11	5.71	0.0047	0.830	48.0	85	9.2
		2/1/12	5.72	0.130	0.220	42.0	78	6.7
		7/23/12	4.51	0.600	0.240	39.0	44	6.6
		3/23/11	6.13	0.0088	0.220	32.0	170	7.4
		7/6/11	6.25	0.0047	0.720	52.0	180	7.1
		1/30/12	6.23	0.041	0.140	17.0	89	3.4
		7/23/12	6.31	0.0047	0.320	60.0	160	13.0
Intermediate Wells	MW-1B	3/18/11	5.33	0.066	5.700	0.39	610	16.0
		7/6/11	4.26	0.0047	5.600	5.1	650	15.0
		2/1/12	4.32	0.690	4.400	4.4	530	13.0
		7/20/12	4.39	0.0047	1.600	5.0	460	12.0
		3/18/11	6.12	0.015	5.500	120.0	420	85.0
		7/11/11	5.56	0.0047	4.100	110.0	470	140.0
		1/19/12	5.70	0.027	4.400	78.0	420	65.0
		7/20/12	5.82	0.0047	3.800	74.0	310	75.0
		3/17/11	6.64	0.0073	19.000	320.0	470	130.0
		7/11/11	5.73	0.0047	18.000	320.0	530	300.0
		1/19/12	5.74	0.0047	16.000	280.0	480	100.0
		7/19/12	5.83	0.0047	18.000	240.0	400	120.0
Intermediate Wells	MW-6B	3/23/11	5.21	0.0047	0.040	2.6	33	4.2
		7/12/11	4.68	0.0047	0.023	3.2	31	4.2
		2/2/12	4.71	0.035	0.023	2.5	31	3.6
		7/24/12	4.80	0.0047	0.051	5.0	14	3.5
		3/17/11	5.42	0.024	0.057	4.1	35	4.8
		7/11/11	4.80	0.0047	0.080	4.2	40	6.5
		2/2/12	4.88	0.042	0.086	2.1	32	4.5
		7/24/12	4.95	0.0047	0.079	310.0	8	4.2
		3/24/11	5.08	0.015	0.440	2.4	330	20.0
		7/13/11	4.28	0.0055	0.510	1.7	320	21.0
		2/3/12	4.34	0.095	0.440	3.8	260	16.0
		7/25/12	4.37	0.0047	0.390	5.0	190	17.0
Deep Wells	MW-19B	8/29/12	6.67	0.0047	0.890	9.5	820	37.0
		8/29/12	11.00	0.0047	0.660	22.0	500	82.0
		3/18/11	12.31	0.100	5.000	0.39	1100	15.0
		7/6/11	11.52	0.0047	4.200	160.0	1400	16.0
		2/1/12	11.49	0.019	0.057	220.0	240	2.5
		7/20/12	11.35	0.0047	0.096	200.0	180	2.5
		3/18/11	7.25	0.0078	1.600	350.0	660	13.0
		7/11/11	6.36	0.0047	1.700	400.0	740	17.0
		1/30/12	7.04	0.0050	0.100	260.0	290	3.0
		7/20/12	7.08	0.0047	0.170	230.0	220	3.8
		8/29/12	12.0	0.0047	0.170	230.0	220	3.8
		8/29/12	12.0	0.0047	0.170	230.0	220	3.8

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TABLE 2: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY

Facility Name: Sandler Road Sanitary Landfill Facility ID: NED/16/00032164

Well	Sampling Date	Benzene		Chlorobenzene		MTBE		Total Xylenes		Toluene		1,1-Dichloroethane		Dichlorodifluoromethane		All Other Volatile Organic Hydrocarbons	
		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
		8260B	1	8260B	100	8260	20	8260	20	8260	40	8260	70	8260	8260	8260	Various
Shallow Wells	BW-1A	3/23/11	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		7/12/11	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		2/2/12	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		7/24/12	0.13 U	0.13 U	0.13 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.20 U	0.20 U	BDL	BDL	BDL	BDL
	MW-1A	3/17/11	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		7/12/11	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		2/1/12	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		7/23/12	0.13 U	0.13 U	0.13 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.20 U	0.20 U	BDL	BDL	BDL	BDL
	MW-2A	3/23/11	2.2	14	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	BDL	BDL	BDL	BDL	1,4-Dichlorobenzene (1.3)	1,4-Dichlorobenzene (1.4)
		7/6/11	5.6	15	0.21 U	0.86 U	0.86 U	0.86 U	0.86 U	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
		1/30/12	4.6	14	0.21 U	0.98 U	0.98 U	0.98 U	0.98 U	0.25 U	0.25 U	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		7/23/12	2.7	11	0.13 U	0.44 U	0.44 U	0.44 U	0.44 U	0.36 U	0.36 U	0.20 U	0.20 U	BDL	BDL	BDL	BDL
	MW-3A	3/18/11	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		7/6/11	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		1/30/12	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		7/20/12	0.13 U	0.13 U	0.13 U	0.44 U	0.44 U	0.44 U	0.44 U	26	26	0.20 U	0.20 U	BDL	BDL	BDL	BDL
		3/18/11	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
	MW-4A	7/11/11	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		1/19/12	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		7/20/12	0.13 U	0.13 U	0.13 U	0.44 U	0.44 U	0.44 U	0.44 U	BDL	BDL	0.20 U	0.20 U	BDL	BDL	BDL	BDL
		3/17/11	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
	MW-5A	7/11/11	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		1/19/12	0.28 U	0.27 U	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	BDL	BDL
		7/19/12	0.13 U	0.13 U	0.13 U	0.44 U	0.44 U	0.44 U	0.44 U	BDL	BDL	0.20 U	0.20 U	BDL	BDL	BDL	BDL
		3/23/11	1.8	3.6	0.21 U	0.68 U	0.68 U	0.68 U	0.68 U	BDL	BDL	0.18 U	0.18 U	BDL	BDL	Ethylbenzene (0.39 U)	Ethylbenzene (0.83 U)
	MW-7A	7/13/11	3.5	4.5	0.26	0.68 U	0.68 U	0.68 U	0.68 U	0.33 U	0.33 U	0.43 U	0.43 U	BDL	BDL	Ethylbenzene (1.4)	cis-1,2-Dichloroethane (0.30 U)
		2/3/12	3.7	4.5	0.41 U	1.1 U	1.1 U	1.1 U	1.1 U	0.40 U	0.40 U	0.76 U	0.76 U	BDL	BDL	Ethylbenzene (1.4)	cis-1,2-Dichloroethane (0.30 U)
		7/25/12	1.3	1.6	0.13 U	0.44 U	0.44 U	0.44 U	0.44 U	0.19 U	0.19 U	0.20 U	0.20 U	BDL	BDL	Ethylbenzene (0.50 U)	Ethylbenzene (0.50 U)
	MW-9A	3/24/11	0.69 U	0.45 U	0.39 U	0.68 U	0.68 U	0.68 U	0.68 U	0.31 U	0.31 U	0.45 U	0.45 U	BDL	BDL	Methylene Chloride (1.4 U)	Methylene Chloride (1.4 U)
		7/13/11	0.62 U	0.73 U	0.27 U	0.68 U	0.68 U	0.68 U	0.68 U	0.31 U	0.31 U	0.45 U	0.45 U	BDL	BDL	Methylene Chloride (1.4 U)	Methylene Chloride (1.4 U)
		2/3/12	0.61 U	0.70 U	0.39 U	0.68 U	0.68 U	0.68 U	0.68 U	0.26 U	0.26 U	0.18 U	0.18 U	BDL	BDL	Methylene Chloride (1.3 U)	Methylene Chloride (1.3 U)
		7/25/12	0.65 U	0.59 U	0.31 U	0.44 U	0.44 U	0.44 U	0.44 U	0.30 U	0.30 U	0.20 U	0.20 U	BDL	BDL	Methylene Chloride (1.2 U)	Methylene Chloride (1.2 U)
	MW-13A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/2/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		7/24/12	1.8	3.3	0.76 U	0.90 U	0.90 U	0.90 U	0.90 U	0.31 U	0.31 U	0.18 U	0.18 U	BDL	BDL	Ethylbenzene (0.36 U)	Ethylbenzene (0.40 U)
		8/24/12	1.7	2.8	0.55 U	0.57 U	0.57 U	0.57 U	0.57 U	BDL	BDL	0.20 U	0.20 U	BDL	BDL	Ethylbenzene (0.40 U)	Ethylbenzene (0.40 U)
	MW-16A	8/24/12	0.13 U	0.13 U	0.13 U	0.44 U	0.44 U	0.44 U	0.44 U	0.14 U	0.14 U	0.20 U	0.20 U	0.28 U	0.28 U	BDL	BDL
	MW-17A	8/24/12	0.13 U	0.13 U	0.13 U	0.44 U	0.44 U	0.44 U	0.44 U	0.14 U	0.14 U	0.20 U	0.20 U	0.28 U	0.28 U	BDL	BDL
	MW-18A	8/24/12	0.13 U	0.13 U	0.13 U	0.44 U	0.44 U	0.44 U	0.44 U	0.14 U	0.14 U	0.20 U	0.20 U	0.28 U	0.28 U	BDL	BDL

Notes: FDEP - Florida Department of Environmental Protection
 GCTLs - Groundwater Cleanup Target Levels
 mg/L - Milligrams per Liter
 µg/L - Micrograms per Liter
 NL - Not Listed
 NS - Not Sampled (Well Damaged)
 U - analyte not detected above laboratory method detection limit
 I - result between laboratory method detection limit and laboratory
 V - analyte detected in laboratory blank
 BDL - analytes not detected above laboratory method detection limit
 Bolded entries indicate an exceedance of a regulatory level

TABLE 3: SURFACE WATER ANALYTICAL SUMMARY

Facility Name: Sandler Road Sanitary Landfill

Facility ID : NED/16/00032164

Sample	FDEP CTLs	Sampling Date	pH S.U. (field sampling)	Bicarbonate Alkalinity mg/L (EPA Method 310.1)	Nitrate mg/L (EPA Method 300)	Unionized Ammonia mg/L (Calculation)	TDS mg/L (EPA Method 160.1)	TOC mg/L (EPA Method SM 415.1)	Chloride mg/L (EPA Method 300)	All Volatile Organic Hydrocarbons ug/L (Method 8260)
SW-3		3/24/2011	6.0-8.5	>20	NL	0.02	500	NL	NL	Various
		7/13/2011	7.26	16.0	0.180	0.00480	88	19	13	BDL
		2/3/2012	6.69	12.0	0.0047 U	0.00028 U	81	19	13	BDL
		7/25/2012	7.24	9.6	0.029	0.00040	85	22	13	BDL
			7.22	8.6	0.0047 U	0.00079	46	19	10	Toluene (0.28 l)

Sample	FDEP CTLs	Sampling Date	Iron ug/L (EPA Method 6010B)	Sodium ug/L (EPA Method 3010A)	Arsenic ug/L (EPA Method 6020)	Chromium ug/L (EPA Method 6020)	Copper ug/L (EPA Method 6020)	Lead ug/L (EPA Method 6020)	Zinc ug/L (EPA Method 6020)	All Other Metals Methods 6010B, 6020, 7470A
SW-3		3/24/2011	1000	NL	50	11*	3.7**	8.5**	86**	Various
		7/13/2011	45 l	9700	2.5 U	1.1 U	1.9 U	3.1 U	8.6 l V	BDL
		2/3/2012	39 lV	10000	2.5 U	1.1 U	1.9 U	3.1 U	4.2 U	BDL
		7/25/2012	120 V	9800	2.5 U	1.1 U	1.9 U	3.1 U	4.2 U	BDL
			70 l	8800	4.0 U	2.0 U	2.9 U	2.9 l	5.2 l	BDL

Notes:

FDEP - Florida Department of Environmental Protection

mg/L - Milligrams per Liter

ug/L - Micrograms per Liter

NL - Not Listed

NA - Not Analyzed

* - Criteria for Hexavalent Chromium (trivalent standard calculated)

U - analyte not detected above laboratory method detection limit

l - result between laboratory method detection

V - analyte detected in laboratory blank

BDL - analytes not detected above laboratory method detection limits

Bolded entries indicate an exceedance of a regulatory level

** - Criteria for Class III Marine Waters, Fresh Water Criteria based on calculation

ATTACHMENT A

FDEP Review Letter dated November 29, 2011



Florida Department of Environmental Protection

Northeast District
7825 Baymeadows Way, Suite 200B
Jacksonville, Florida 32256

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

November 29, 2011

Transmitted via email to: jsfoster@coj.net

Jeffrey S. Foster, P.G., P.E.
City of Jacksonville
Department of Public Works
Solid Waste Division
1031 Superior Street
Jacksonville, Florida 32254

**Re: Sandler Road Landfill (Closed)
Facility WACS Identification No. 32164
2011 2nd Semi-Annual Monitoring Report Comment Letter
Department Review Letter
Duval County – Solid Waste**

Dear Mr. Foster:

The Florida Department of Environmental Protection (DEP) has reviewed the 2011 2nd Semi-Annual Monitoring Report Comment Letter (Report) for the Sandler Road Landfill. The Report, which was prepared by the City of Jacksonville, for the above-referenced site pursuant to DEP Permit No. 0067214-005-SO, was dated and received September 9 and 15, 2011, respectively. While the information provided in the Report is acceptable, DEP has the following comments:

1. Section 1.0 indicates that, due to labeling issues and monitor well damage, there were discrepancies in the Report concerning MW-7A, MW-9A and MW-13A. Please reconcile these discrepancies and provide the corrected data, tables, and figures in all future reports.
2. In Section 3.1, the sodium concentrations for MW-3A and MW-9A were reported as 170 milligrams per liter (mg/L) and 190 mg/L, respectively. Per review of the laboratory analytical data as well as Table 2, these concentrations appear to have been reversed (the sodium concentrations for MW-3A and MW-9A should have been 190 mg/L and 170 mg/L, respectively). For future reports, please ensure the data is correctly summarized in the text.
3. The groundwater elevation data and locations of MW-8A, MW-10A and BW-1A were not included on Figure 3 (Shallow Zone Groundwater Elevation Map). Additionally, the groundwater elevation data and locations of MW-6B, MW-7B, MW-10B and BW-1B were not included on Figure 4 (Intermediate Zone Groundwater Elevation Map). For future reports, please include all data points on the applicable site maps or provide an explanation for their exclusion.

Mr. Jeffrey Foster, P.G., P.E.
Sandler Road Landfill (Closed)
November 29, 2011
Page 2

4. On Table 1, the groundwater elevation calculations for MW-3C and MW-4C on March 29, 2011 appear incorrect. For future reports, please ensure the groundwater elevation calculations are correctly presented in the applicable Table(s).
5. On Table 2, the Nitrate concentration for MW-14B should have been reported as 0.0055-1 mg/L and the TDS concentration for MW-4C should have been reported as 740 mg/L. For future reports, please ensure the data is correctly summarized in the applicable Table(s).
6. None of the Groundwater Sampling Logs included monitor well screen intervals. Additionally, the Groundwater Sampling Log for MW-5B did not include the tubing diameter. For future reports, please ensure that all applicable cells on the Groundwater Sampling Logs are filled out in their entirety.

Based on the presence of benzene in exceedence of the Groundwater Cleanup Target Level (GCTL) in the downgradient monitor wells (i.e., MW-2A, MW-7A, MW-3B and MW-14B), additional site assessment activities to delineate these impacts are required. As such, DEP agrees with the installation of the proposed shallow monitor well downgradient of MW-2A and MW-7A, installation of the two proposed intermediate monitor wells downgradient of MW-3B and MW-14B, repair of MW-13A, and the addition of MW-9A to the semi-annual sampling schedule for the next sampling event. Pursuant to Chapter 62-780, F.A.C, please submit a Site Assessment Report by August 27, 2012.

Should you have any questions concerning this matter, please direct all correspondence to me at the letterhead address or at Neil.Hornick@dep.state.fl.us, or contact me by telephone at 904.256.1574.

Sincerely,



Neil Hornick, P.G.
Professional Geologist
Solid Waste Section

/lp

Enclosure(s)

ec: Mr. Eric Fuller, P.E., City of Jacksonville (EFuller@coj.net)

ATTACHMENT B

Soil Boring Logs and Well Construction and Development Logs

BORING LOG

Page 1 of 1

Boring/Well Number: MW-16A		Permit Number:		FDEP Facility Identification Number:	
Site Name: Sandler Road Landfill		Borehole Start Date: 07/31/12	Borehole Start Time: 1640	<input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	
		End Date: 07/31/12	End Time: 1743	<input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	
Environmental Contractor: Aerostar SES LLC		Geologist's Name: Jessica Gibson		Environmental Technician's Name: Robert Gallego	
Drilling Company: Groundwater Protection, Inc.		Pavement Thickness (inches):	Borehole Diameter (inches): 3.25	Borehole Depth (feet): 12	
Drilling Method(s): PH/RM	Apparent Borehole DTW (in feet from soil moisture content): 3	Measured Well DTW (in feet after water recharges in well):	OVA (list model and check type): <input checked="" type="checkbox"/> FID <input type="checkbox"/> PID		
Disposition of Drill Cuttings [check method(s)]: <input checked="" type="checkbox"/> Drum <input type="checkbox"/> Spread <input type="checkbox"/> Backfill <input type="checkbox"/> Stockpile <input type="checkbox"/> Other (describe if other or multiple items are checked):					
Borehole Completion (check one): <input checked="" type="checkbox"/> Well <input type="checkbox"/> Grout <input type="checkbox"/> Bentonite <input type="checkbox"/> Backfill <input type="checkbox"/> Other (describe)					

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
PH	1			<10	-	<10	1	Gray, fine SAND, no odor	SP	M	
PH	2			<10	-	<10	2	Dark gray, fine SAND, no odor	SP	M	
PH	3			20	15.2	5	3	Dark brown, silty fine SAND, no odor	SM	W	
PH	4			13.7	11.5	2.2	4	Dark brown, silty fine SAND, no odor	SM	S	
PH	5			<10	-	<10	5	Dark brown, silty fine SAND, no odor	SM	S	
SS	6			<10	-	<10	6	Dark brown, silty fine SAND, no odor	SM	S	
SS	7			<10	-	<10	7	Dark brown, silty fine SAND, no odor	SM	S	
SS	8			<10	-	<10	8	Dark brown, silty fine SAND, no odor	SM	S	
SS	9			<10	-	<10	9	Dark brown, silty fine SAND, no odor	SM	S	
SS	10			<10	-	<10	10	Dark brown, silty fine SAND, no odor	SM	S	
SS	11			<10	-	<10	11	Dark brown, silty fine SAND, no odor	SM	S	
SS	12			<10	-	<10	12	Dark brown, fine SAND, no odor	SP	S	

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

BORING LOG

Page 1 of 1

Boring/Well Number: MW-17A		Permit Number:		FDEP Facility Identification Number:	
Site Name: Sandler Road Landfill		Borehole Start Date: 08/01/12	Borehole Start Time: 740 <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM		
		End Date: 08/01/12	End Time: 845 <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM		
Environmental Contractor: Aerostar SES LLC		Geologist's Name: Jessica Gibson		Environmental Technician's Name: Robert Gallego	
Drilling Company: Groundwater Protection, Inc.		Pavement Thickness (inches):	Borehole Diameter (inches): 3.25	Borehole Depth (feet): 12	
Drilling Method(s): PH/RM		Apparent Borehole DTW (in feet from soil moisture content): 4	Measured Well DTW (in feet after water recharges in well):	OVA (list model and check type): <input checked="" type="checkbox"/> FID <input type="checkbox"/> PID	
Disposition of Drill Cuttings [check method(s)]: <input checked="" type="checkbox"/> Drum <input type="checkbox"/> Spread <input type="checkbox"/> Backfill <input type="checkbox"/> Stockpile <input type="checkbox"/> Other (describe if other or multiple items are checked):					
Borehole Completion (check one): <input checked="" type="checkbox"/> Well <input type="checkbox"/> Grout <input type="checkbox"/> Bentonite <input type="checkbox"/> Backfill <input type="checkbox"/> Other (describe)					

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
PH	1			<10	-	<10	1	Gray, fine SAND, no odor	SP	M	
PH	2			<10	-	<10	2	Brown, fine SAND, no odor	SP	M	
PH	3			<10	-	<10	3	Brown, fine SAND, no odor	SP	M	
PH	4			<10	-	<10	4	Brown, fine SAND, no odor	SP	W	
PH	5			<10	-	<10	5	Brown, fine SAND, no odor	SP	S	
SS	6			<10	-	<10	6	Brown, fine SAND, no odor	SP	S	
SS	7			<10	-	<10	7	Brown, fine SAND, no odor	SP	S	
SS	8			<10	-	<10	8	Dark brown, silty fine SAND, no odor	SM	S	
SS	9			17.8	12.5	5.3	9	Dark brown, silty fine SAND, no odor	SM	S	
SS	10			<10	-	<10	10	Dark brown, silty fine SAND, no odor	SM	S	
SS	11			31.2	25.7	5.5	11	Dark brown, silty fine SAND, no odor	SM	S	
SS	12			<10	-	<10	12	Dark brown, silty fine SAND, no odor	SM	S	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

Page 1 of 1

Boring/Well Number: MW-18A		Permit Number:		FDEP Facility Identification Number:							
Site Name: Sandler Road Landfill		Borehole Start Date: 08/01/12	Borehole Start Time: 845 <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM								
		End Date: 08/01/12	End Time: 1000 <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM								
Environmental Contractor: Aerostar SES LLC		Geologist's Name: Jessica Gibson		Environmental Technician's Name: Robert Gallego							
Drilling Company: Groundwater Protection, Inc.		Pavement Thickness (inches):	Borehole Diameter (inches): 3.25	Borehole Depth (feet): 12							
Drilling Method(s): PH/RM		Apparent Borehole DTW (in feet from soil moisture content): 4	Measured Well DTW (in feet after water recharges in well):	OVA (list model and check type): <input checked="" type="checkbox"/> FID <input type="checkbox"/> PID							
Disposition of Drill Cuttings [check method(s)]: <input checked="" type="checkbox"/> Drum <input type="checkbox"/> Spread <input type="checkbox"/> Backfill <input type="checkbox"/> Stockpile <input type="checkbox"/> Other (describe if other or multiple items are checked):											
Borehole Completion (check one): <input checked="" type="checkbox"/> Well <input type="checkbox"/> Grout <input type="checkbox"/> Bentonite <input type="checkbox"/> Backfill <input type="checkbox"/> Other (describe)											
Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
PH	1			<10	-	<10	1	Gray, fine SAND, no odor	SP	M	
PH	2			<10	-	<10	2	Gray, fine SAND, no odor	SP	M	
PH	3			<10	-	<10	3	Brown, fine SAND, no odor	SP	M	
PH	4			<10	-	<10	4	Brown, fine SAND, no odor	SP	W	
PH	5			<10	-	<10	5	Dark brown, silty fine SAND, no odor	SM	S	
SS	6			<10	-	<10	6	Dark brown, silty fine SAND, no odor	SM	S	
SS	7			<10	-	<10	7	Dark brown, silty fine SAND, no odor	SM	S	
SS	8			<10	-	<10	8	Dark brown, silty fine SAND, no odor	SM	S	
SS	9			17.8	12.5	5.3	9	Dark brown, silty fine SAND, no odor	SM	S	
SS	10			<10	-	<10	10	Dark brown, silty fine SAND, no odor	SM	S	
SS	11			31.2	25.7	5.5	11	Dark brown, silty fine SAND, no odor	SM	S	
SS	12			<10	-	<10	12	Dark brown, silty fine SAND, no odor	SM	S	

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

BORING LOG

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Boring/Well Number: MW-19B		Permit Number:		FDEP Facility Identification Number:	
Site Name: Sandler Road Landfill		Borehole Start Date: 07/31/12	Borehole Start Time: 1230	<input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	
		End Date: 08/02/12	End Time: 1040	<input checked="" type="checkbox"/> AM <input type="checkbox"/> PM	
Environmental Contractor: Aerostar SES LLC		Geologist's Name: Jessica Gibson		Environmental Technician's Name: Robert Gallego	
Drilling Company: Groundwater Protection, Inc.		Pavement Thickness (inches):	Borehole Diameter (inches): 3.25	Borehole Depth (feet): 52	
Drilling Method(s): PH/RM	Apparent Borehole DTW (in feet from soil moisture content): 4	Measured Well DTW (in feet after water recharges in well):		OVA (list model and check type): <input checked="" type="checkbox"/> FID <input type="checkbox"/> PID	
Disposition of Drill Cuttings [check method(s)]: <input checked="" type="checkbox"/> Drum <input type="checkbox"/> Spread <input type="checkbox"/> Backfill <input type="checkbox"/> Stockpile <input type="checkbox"/> Other (describe if other or multiple items are checked):					
Borehole Completion (check one): <input checked="" type="checkbox"/> Well <input type="checkbox"/> Grout <input type="checkbox"/> Bentonite <input type="checkbox"/> Backfill <input type="checkbox"/> Other (describe)					

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
PH	1			<10	-	<10	1	Light brown, fine SAND, no odor	SP	M	
PH	2			<10	-	<10	2	Light brown, fine SAND, no odor	SP	M	
PH	3			<10	-	<10	3	Brown, fine SAND, no odor	SP	M	
PH	4			<10	-	<10	4	Brown, fine SAND, no odor	SP	W	
PH	5			<10	-	<10	5	Brown, fine SAND, no odor	SP	S	
SS	6			<10	-	<10	6	Dark brown, silty fine SAND, no odor	SM	S	
SS	7			<10	-	<10	7	Dark brown, silty fine SAND, no odor	SM	S	
SS	8			<10	-	<10	8	Dark brown, silty fine SAND, no odor	SM	S	
SS	9			17.8	12.5	5.3	9	Dark brown, silty fine SAND, no odor	SM	S	
SS	10			<10	-	<10	10	Dark brown, silty fine SAND, no odor	SM	S	
SS	11			31.2	25.7	5.5	11	Dark brown, silty fine SAND, no odor	SM	S	
SS	12			<10	-	<10	12	Dark brown, silty fine SAND, no odor	SM	S	

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

BORING LOG

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Boring/Well Number:		FDEP Facility Identification Number:				Site Name:		Borehole Start Date:		07/31/12	
MW-19B						Sandler Road Landfill		End Date:		08/02/12	
Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
SS	13			<10	-	<10	13	Dark brown, silty fine SAND, no odor	SM	S	
SS	14			<10	-	<10	14	Dark brown, silty fine SAND, no odor	SM	S	
SS	15			<10	-	<10	15	Dark brown, silty fine SAND, no odor	SM	S	
							16				
							17				
							18				
							19				
SS	20			<10	-	<10	20	Orange/brown, fine SAND, no odor	SP	S	
							21				
							22				
							23				
							24				
SS	25			<10	-	<10	25	Orange, fine SAND, no odor	SP	S	
							26				
							27				
							28				
							29				
SS	30			<10	-	<10	30	Brown, fine SAND, no odor	SP	S	

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings
 Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

BORING LOG

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Boring/Well Number:		FDEP Facility Identification Number:		Site Name:		Borehole Start Date:		07/31/12			
MW-19B				Sandler Road Landfill		End Date:		08/02/12			
Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
SS	35			<10	-	<10	31 32 33 34 35 36 37 38 39	Brown, fine SAND, no odor	SP	S	
SS	40			<10	-	<10	40 41 42 43 44	Brown/gray, fine SAND, no odor	SP	S	
SS	45			<10	-	<10	45 46 47 48	Gray, fine SAND, no odor	SP	S	

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

BORING LOG

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Boring/Well Number: MW-19B			FDEP Facility Identification Number:				Site Name: Sandler Road Landfill		Borehole Start Date: 07/31/12		End Date: 08/02/12	
Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)	
SS	50			<10	-	<10	49 50	Gray, fine SAND, no odor	SP	S		
SS	52			<10	-	<10	51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66	Gray, fine SAND, no odor	SP	S		

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings
 Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

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Boring/Well Number: MW-20B		Permit Number:		FDEP Facility Identification Number:	
Site Name: Sandler Road Landfill		Borehole Start Date: 08/01/12	Borehole Start Time: 1050 <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM		
		End Date: 08/02/12	End Time: 1345 <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM		
Environmental Contractor: Aerostar SES LLC		Geologist's Name: Jessica Gibson		Environmental Technician's Name: Robert Gallego	
Drilling Company: Groundwater Protection, Inc.		Pavement Thickness (inches):	Borehole Diameter (inches): 3.25	Borehole Depth (feet): 52	
Drilling Method(s): PH/RM	Apparent Borehole DTW (in feet from soil moisture content): 4	Measured Well DTW (in feet after water recharges in well):		OVA (list model and check type): <input checked="" type="checkbox"/> FID <input type="checkbox"/> PID	
Disposition of Drill Cuttings [check method(s)]: <input checked="" type="checkbox"/> Drum <input type="checkbox"/> Spread <input type="checkbox"/> Backfill <input type="checkbox"/> Stockpile <input type="checkbox"/> Other (describe if other or multiple items are checked):					
Borehole Completion (check one): <input checked="" type="checkbox"/> Well <input type="checkbox"/> Grout <input type="checkbox"/> Bentonite <input type="checkbox"/> Backfill <input type="checkbox"/> Other (describe)					

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
PH	1			<10	-	<10	1	Gray, fine SAND, no odor	SP	M	
PH	2			20.2	12	8.2	2	Gray, fine SAND, no odor	SP	M	
PH	3			<10	-	<10	3	Brown, fine SAND, no odor	SP	W	
PH	4			<10	-	<10	4	Brown, fine SAND, no odor	SP	S	
PH	5			<10	-	<10	5	Brown, fine SAND, no odor	SP	S	
SS	6			<10	-	<10	6	Brown, fine SAND, no odor	SP	S	
SS	7			<10	-	<10	7	Dark brown, silty fine SAND, no odor	SM	S	
SS	8			<10	-	<10	8	Dark brown, silty fine SAND, no odor	SM	S	
SS	9			<10	-	<10	9	Dark brown, silty fine SAND, no odor	SM	S	
SS	10			<10	-	<10	10	Dark brown, silty fine SAND, no odor	SM	S	
SS	11			<10	-	<10	11	Dark brown, silty fine SAND, no odor	SM	S	
SS	12			<10	-	<10	12	Brown, fine SAND, no odor	SP	S	

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings

Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

BORING LOG

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Boring/Well Number: MW-20B			FDEP Facility Identification Number:				Site Name: Sandler Road Landfill		Borehole Start Date: 08/01/12		End Date: 08/02/12	
Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)	
SS	13			<10	-	<10	13	Brown, fine SAND, no odor	SM	S		
SS	14			<10	-	<10	14	Brown, fine SAND, no odor	SM			
SS	15			<10	-	<10	15	Brown, fine SAND, no odor	SM	S		
							16					
							17					
							18					
							19					
SS	20			<10	-	<10	20	Brown, silty fine SAND, no odor	SM	S		
							21					
							22					
							23					
							24					
SS	25			<10	-	<10	25	Brown, silty fine SAND, no odor	SM	S		
							26					
							27					
							28					
							29					
SS	30			<10	-	<10	30	Brown, fine SAND, no odor	SP	S		

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill CuttingsMoisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

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Boring/Well Number: MW-20B			FDEP Facility Identification Number:			Site Name: Sandler Road Landfill		Borehole Start Date: 08/01/12			
								End Date: 08/02/12			
Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
SS	35			<10	-	<10	31 32 33 34 35 36 37 38 39	Brown, fine SAND, no odor	SP	S	
SS	40			<10	-	<10	40 41 42 43	Gray, fine SAND, no odor	SP	S	
SS	45			<10	-	<10	44 45 46 47 48	Gray, fine SAND, no odor	SP	S	

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings
 Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

BORING LOG

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Boring/Well Number: MW-20B			FDEP Facility Identification Number:			Site Name: Sandler Road Landfill			Borehole Start Date: 08/01/12			End Date: 08/02/12		
Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)			
SS	50			<10	-	<10	49 50	Gray, fine SAND, no odor	SP	S				
SS	52			<10	-	<10	51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66	Gray, fine SAND, no odor	SP	S				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings
 Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA				
Well Number: MW-16A	Site Name: Sandler Road Landfill		FDEP Facility I.D. Number:	Well Install Date(s): 7/31/12
Well Location and Type (check appropriate boxes): <input checked="" type="checkbox"/> On-Site <input type="checkbox"/> Right-of-Way <input checked="" type="checkbox"/> Off-Site Private Property <input checked="" type="checkbox"/> Above Grade (AG) <input type="checkbox"/> Flush-to-Grade		Well Purpose: <input type="checkbox"/> Perched Monitoring <input checked="" type="checkbox"/> Shallow (Water-Table) Monitoring <input type="checkbox"/> Intermediate or Deep Monitoring <input type="checkbox"/> Remediation or Other (describe)		Well Install Method: Hollow Stem Auger
If AG, list feet of riser above land surface: 3				Surface Casing Install Method:
Borehole Depth (feet): 12	Well Depth (feet): 12	Borehole Diameter (inches):	Manhole Diameter (inches): 8	Well Pad Size: 2 feet by 2 feet
Riser Diameter and Material: Schedule 40 PVC	Riser/Screen Connections: <input checked="" type="checkbox"/> Flush-Threaded <input type="checkbox"/> Other (describe)	Riser Length: 2 feet from 0 feet to 2 feet		
Screen Diameter and Material: Schedule 40 PVC	Screen Slot Size: 0.010-inch	Screen Length: 10 feet from 2 feet to 12 feet		
1 st Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary	1 st Surface Casing I.D. (inches):	1 st Surface Casing Length: _____ feet from 0 feet to _____ feet		
2 nd Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary	2 nd Surface Casing I.D. (inches):	2 nd Surface Casing Length: _____ feet from 0 feet to _____ feet		
3 rd Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary	3 rd Surface Casing I.D. (inches):	3 rd Surface Casing Length: _____ feet from 0 feet to _____ feet		
Filter Pack Material and Size: 20/30 Silica Sand	Prepacked Filter Around Screen (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Filter Pack Length: 11 feet from 1 feet to 12 feet		
Filter Pack Seal Material and Size:	30/65 Silica Sand	Filter Pack Seal Length: 0.5 feet from 0.5 feet to 1 feet		
Surface Seal Material:	Grout	Surface Seal Length: 0.5 feet from 0 feet to 0.5 feet		

WELL DEVELOPMENT DATA			
Well Development Date: 08/02/12	Well Development Method (check one): <input checked="" type="checkbox"/> Surge/Pump <input type="checkbox"/> Pump <input type="checkbox"/> Compressed Air <input type="checkbox"/> Other (describe)		
Development Pump Type (check): <input type="checkbox"/> Centrifugal <input type="checkbox"/> Peristaltic <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Other (describe)	Depth to Groundwater (before developing in feet): NA		
Pumping Rate (gallons per minute): NA	Maximum Drawdown of Groundwater During Development (feet): NA	Well Purged Dry (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Pumping Condition (check one): <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent	Total Development Water Removed (gallons): 55	Development Duration (minutes): 25	Development Water Drummed (check one): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water Appearance (color and odor) At Start of Development: Turbid brown, no odor		Water Appearance (color and odor) At End of Development: Turbid brown, no odor	

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA					
Well Number: MW-17A		Site Name: Sandler Road Landfill		FDEP Facility I.D. Number:	
Well Location and Type (check appropriate boxes): <input checked="" type="checkbox"/> On-Site <input type="checkbox"/> Right-of-Way <input checked="" type="checkbox"/> Off-Site Private Property <input checked="" type="checkbox"/> Above Grade (AG) <input type="checkbox"/> Flush-to-Grade		Well Purpose: <input type="checkbox"/> Perched Monitoring <input checked="" type="checkbox"/> Shallow (Water-Table) Monitoring <input type="checkbox"/> Intermediate or Deep Monitoring <input type="checkbox"/> Remediation or Other (describe)		Well Install Date(s): 8/1/12	
If AG, list feet of riser above land surface: 3				Well Install Method: Hollow Stem Auger	
Borehole Depth (feet): 12		Well Depth (feet): 12	Borehole Diameter (inches):	Manhole Diameter (inches): 8	Well Pad Size: 2 feet by 2 feet
Riser Diameter and Material: Schedule 40 PVC		Riser/Screen Connections: <input checked="" type="checkbox"/> Flush-Threaded <input type="checkbox"/> Other (describe)	Riser Length: 2 feet from 0 feet to 2 feet		
Screen Diameter and Material: Schedule 40 PVC		Screen Slot Size: 0.010-inch	Screen Length: 10 feet from 2 feet to 12 feet		
1 st Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		1 st Surface Casing I.D. (inches):	1 st Surface Casing Length: _____ feet from 0 feet to _____ feet		
2 nd Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		2 nd Surface Casing I.D. (inches):	2 nd Surface Casing Length: _____ feet from 0 feet to _____ feet		
3 rd Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		3 rd Surface Casing I.D. (inches):	3 rd Surface Casing Length: _____ feet from 0 feet to _____ feet		
Filter Pack Material and Size: 20/30 Silica Sand		Prepacked Filter Around Screen (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Filter Pack Length: 11 feet from 1 feet to 12 feet	
Filter Pack Seal Material and Size:		30/65 Silica Sand		Filter Pack Seal Length: 0.5 feet from 0.5 feet to 1 feet	
Surface Seal Material:		Grout		Surface Seal Length: 0.5 feet from 0 feet to 0.5 feet	

WELL DEVELOPMENT DATA			
Well Development Date: 08/02/12		Well Development Method (check one): <input checked="" type="checkbox"/> Surge/Pump <input type="checkbox"/> Pump <input type="checkbox"/> Compressed Air <input type="checkbox"/> Other (describe)	
Development Pump Type (check): <input type="checkbox"/> Centrifugal <input type="checkbox"/> Peristaltic <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Other (describe)		Depth to Groundwater (before developing in feet): NA	
Pumping Rate (gallons per minute): NA	Maximum Drawdown of Groundwater During Development (feet): NA	Well Purged Dry (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Pumping Condition (check one): <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent	Total Development Water Removed (gallons): 55	Development Duration (minutes): 30	Development Water Drummed (check one): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water Appearance (color and odor) At Start of Development: Turbid brown, no odor		Water Appearance (color and odor) At End of Development: Light brown, no odor	

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA					
Well Number: MW-18A		Site Name: Sandler Road Landfill		FDEP Facility I.D. Number:	
Well Install Date(s): 8/1/12					
Well Location and Type (check appropriate boxes): <input checked="" type="checkbox"/> On-Site <input type="checkbox"/> Right-of-Way <input checked="" type="checkbox"/> Off-Site Private Property <input checked="" type="checkbox"/> Above Grade (AG) <input type="checkbox"/> Flush-to-Grade		Well Purpose: <input type="checkbox"/> Perched Monitoring <input checked="" type="checkbox"/> Shallow (Water-Table) Monitoring <input type="checkbox"/> Intermediate or Deep Monitoring <input type="checkbox"/> Remediation or Other (describe)		Well Install Method: Hollow Stem Auger	
If AG, list feet of riser above land surface: 3				Surface Casing Install Method:	
Borehole Depth (feet): 12	Well Depth (feet): 12	Borehole Diameter (inches):	Manhole Diameter (inches): 8	Well Pad Size: 2 feet by 2 feet	
Riser Diameter and Material: Schedule 40 PVC		Riser/Screen Connections: <input checked="" type="checkbox"/> Flush-Threaded <input type="checkbox"/> Other (describe)		Riser Length: 2 feet from 0 feet to 2 feet	
Screen Diameter and Material: Schedule 40 PVC		Screen Slot Size: 0.010-inch		Screen Length: 10 feet from 2 feet to 12 feet	
1 st Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		1 st Surface Casing I.D. (inches):		1 st Surface Casing Length: _____ feet from 0 feet to _____ feet	
2 nd Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		2 nd Surface Casing I.D. (inches):		2 nd Surface Casing Length: _____ feet from 0 feet to _____ feet	
3 rd Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		3 rd Surface Casing I.D. (inches):		3 rd Surface Casing Length: _____ feet from 0 feet to _____ feet	
Filter Pack Material and Size: 20/30 Silica Sand		Prepacked Filter Around Screen (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Filter Pack Length: 11 feet from 1 feet to 12 feet	
Filter Pack Seal Material and Size:		30/65 Silica Sand		Filter Pack Seal Length: 0.5 feet from 0.5 feet to 1 feet	
Surface Seal Material:		Grout		Surface Seal Length: 0.5 feet from 0 feet to 0.5 feet	

WELL DEVELOPMENT DATA			
Well Development Date: 08/02/12		Well Development Method (check one): <input checked="" type="checkbox"/> Surge/Pump <input type="checkbox"/> Pump <input type="checkbox"/> Compressed Air <input type="checkbox"/> Other (describe)	
Development Pump Type (check): <input type="checkbox"/> Centrifugal <input type="checkbox"/> Peristaltic <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Other (describe)		Depth to Groundwater (before developing in feet): NA	
Pumping Rate (gallons per minute): NA	Maximum Drawdown of Groundwater During Development (feet): NA	Well Purged Dry (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Pumping Condition (check one): <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent	Total Development Water Removed (gallons): 45	Development Duration (minutes): 20	Development Water Drummed (check one): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water Appearance (color and odor) At Start of Development: Turbid brown, no odor		Water Appearance (color and odor) At End of Development: Light brown, no odor	

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA					
Well Number: MW-19B		Site Name: Sandler Road Landfill		FDEP Facility I.D. Number:	
Well Location and Type (check appropriate boxes): <input type="checkbox"/> On-Site <input type="checkbox"/> Right-of-Way <input checked="" type="checkbox"/> Off-Site Private Property <input checked="" type="checkbox"/> Above Grade (AG) <input type="checkbox"/> Flush-to-Grade		Well Purpose: <input type="checkbox"/> Perched Monitoring <input type="checkbox"/> Shallow (Water-Table) Monitoring <input checked="" type="checkbox"/> Intermediate or Deep Monitoring <input type="checkbox"/> Remediation or Other (describe)		Well Install Date(s): 7/31/12 - 8/2/12	
If AG, list feet of riser above land surface: 3				Well Install Method: Mud Rotary	
Borehole Depth (feet): 52		Well Depth (feet): 52	Borehole Diameter (inches):	Manhole Diameter (inches): 8	Well Pad Size: 2 feet by 2 feet
Riser Diameter and Material: Schedule 40 PVC		Riser/Screen Connections: <input checked="" type="checkbox"/> Flush-Threaded <input type="checkbox"/> Other (describe)	Riser Length: 42 feet from 0 feet to 42 feet		
Screen Diameter and Material: Schedule 40 PVC		Screen Slot Size: 0.010-inch	Screen Length: 10 feet from 42 feet to 52 feet		
1 st Surface Casing Material: also check: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		1 st Surface Casing I.D. (inches): 6	1 st Surface Casing Length: 39 feet from 0 feet to 39 feet		
2 nd Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		2 nd Surface Casing I.D. (inches):	2 nd Surface Casing Length: feet from feet to feet		
3 rd Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		3 rd Surface Casing I.D. (inches):	3 rd Surface Casing Length: feet from feet to feet		
Filter Pack Material and Size: 20/30 Silica Sand		Prepacked Filter Around Screen (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Filter Pack Length: 51 feet from 1 feet to 52 feet	
Filter Pack Seal Material and Size:		30/65 Silica Sand		Filter Pack Seal Length: 0.5 feet from 0.5 feet to 1 feet	
Surface Seal Material:		Grout		Surface Seal Length: 0.5 feet from 0 feet to 0.5 feet	

WELL DEVELOPMENT DATA			
Well Development Date: 08/02/12		Well Development Method (check one): <input checked="" type="checkbox"/> Surge/Pump <input type="checkbox"/> Pump <input type="checkbox"/> Compressed Air <input type="checkbox"/> Other (describe)	
Development Pump Type (check): <input type="checkbox"/> Centrifugal <input type="checkbox"/> Peristaltic <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Other (describe)		Depth to Groundwater (before developing in feet): NA	
Pumping Rate (gallons per minute): NA	Maximum Drawdown of Groundwater During Development (feet): NA		Well Purged Dry (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Pumping Condition (check one): <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent	Total Development Water Removed (gallons): 55	Development Duration (minutes): 46	Development Water Drummed (check one): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water Appearance (color and odor) At Start of Development: Turbid brown, no odor		Water Appearance (color and odor) At End of Development: Light brown, no odor	

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA					
Well Number: MW-20B		Site Name: Sandler Road Landfill		FDEP Facility I.D. Number:	
Well Location and Type (check appropriate boxes): <input type="checkbox"/> On-Site <input type="checkbox"/> Right-of-Way <input checked="" type="checkbox"/> Off-Site Private Property <input checked="" type="checkbox"/> Above Grade (AG) <input type="checkbox"/> Flush-to-Grade		Well Purpose: <input type="checkbox"/> Perched Monitoring <input type="checkbox"/> Shallow (Water-Table) Monitoring <input checked="" type="checkbox"/> Intermediate or Deep Monitoring <input type="checkbox"/> Remediation or Other (describe)		Well Install Date(s): 8/1/12 - 8/2/12	
If AG, list feet of riser above land surface: 3				Well Install Method: Mud Rotary	
				Surface Casing Install Method: Hollow Stem Auger	
Borehole Depth (feet): 52	Well Depth (feet): 52	Borehole Diameter (inches):	Manhole Diameter (inches): 8	Well Pad Size: 2 feet by 2 feet	
Riser Diameter and Material: Schedule 40 PVC		Riser/Screen Connections: <input checked="" type="checkbox"/> Flush-Threaded <input type="checkbox"/> Other (describe)		Riser Length: 42 feet from 0 feet to 42 feet	
Screen Diameter and Material: Schedule 40 PVC		Screen Slot Size: 0.010-inch		Screen Length: 10 feet from 42 feet to 52 feet	
1 st Surface Casing Material: also check: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Temporary		1 st Surface Casing I.D. (inches): 6		1 st Surface Casing Length: 38 feet from 0 feet to 38 feet	
2 nd Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		2 nd Surface Casing I.D. (inches):		2 nd Surface Casing Length: feet from feet to feet	
3 rd Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		3 rd Surface Casing I.D. (inches):		3 rd Surface Casing Length: feet from feet to feet	
Filter Pack Material and Size: 20/30 Silica Sand		Prepacked Filter Around Screen (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Filter Pack Length: 51 feet from 1 feet to 52 feet	
Filter Pack Seal Material and Size:		30/65 Silica Sand		Filter Pack Seal Length: 0.5 feet from 0.5 feet to 1 feet	
Surface Seal Material:		Grout		Surface Seal Length: 0.5 feet from 0 feet to 0.5 feet	

WELL DEVELOPMENT DATA			
Well Development Date: 08/02/12		Well Development Method (check one): <input checked="" type="checkbox"/> Surge/Pump <input type="checkbox"/> Pump <input type="checkbox"/> Compressed Air <input checked="" type="checkbox"/> Other (describe)	
Development Pump Type (check): <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Centrifugal <input type="checkbox"/> Peristaltic <input type="checkbox"/> Other (describe)		Depth to Groundwater (before developing in feet): NA	
Pumping Rate (gallons per minute): NA	Maximum Drawdown of Groundwater During Development (feet): NA		Well Purged Dry (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Pumping Condition (check one): <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent	Total Development Water Removed (gallons): 55	Development Duration (minutes): 37	Development Water Drummed (check one): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water Appearance (color and odor) At Start of Development: Turbid gray, no odor		Water Appearance (color and odor) At End of Development: Light brown, no odor	

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

ATTACHMENT C

Well Driller Monitoring Well Completion Reports and Permits

WELL COMPLETION LOG

Water Mgmt. Dist.:

Permit Number:

Work Order: 712046

Type of Well: Monitor

Well Number: MW 16A

Method Used: H S A

Borehole Diaz. 8"

Site Information:

Name: Sandler Landfill

Address: 10500 Sandler Rd.

C,S,Z: Jacksonville, FL

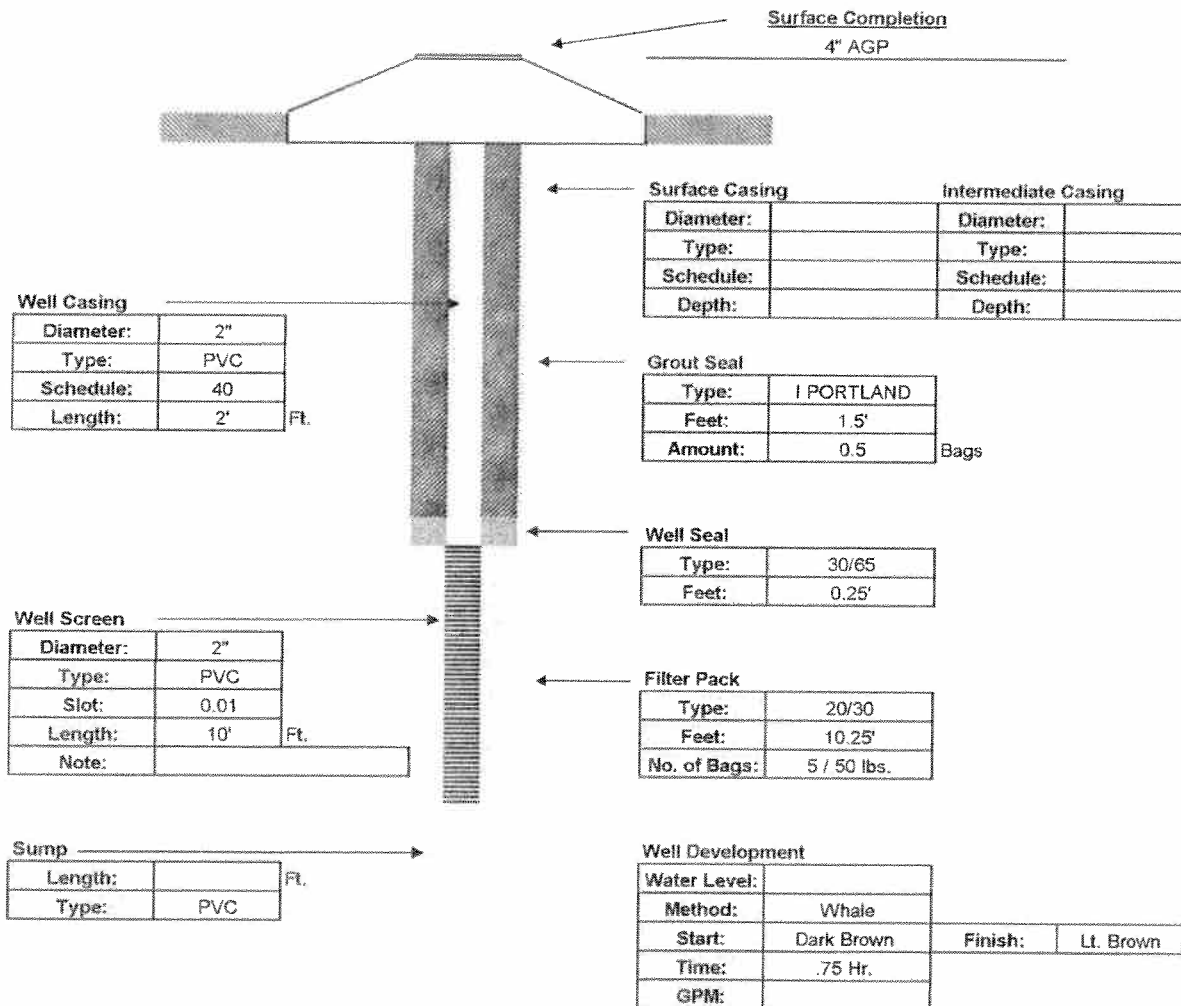
S/T/R:

Client / Consultant Information

Consultant: Aerostar

Field Rep: Jessica Gibson

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12'	10'	2'	0.5	5 / 50 lbs.	20/30	30/65
40	Schedule	Slot Size:	0.01		1.5'	Feet	10.25'	0.25'



Contractor Information

Contractor #:	9311
Completion:	8/1/2012
Driller:	Jared Link
Lead Hand:	Nick Bishop
3rd Man:	Wade Halcomb
Drill Rig:	D120B

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

Water Mgmt. Dist.:

Permit Number:

Work Order: 712046

Type of Well: Monitor

Well Number: MW 17A

Method Used: H.S.A.

Borehole Diaz: 8"

Site Information:

Name: Sandler Landfill

Address: 10500 Sandler Rd.

C.S.Z: Jacksonville, FL

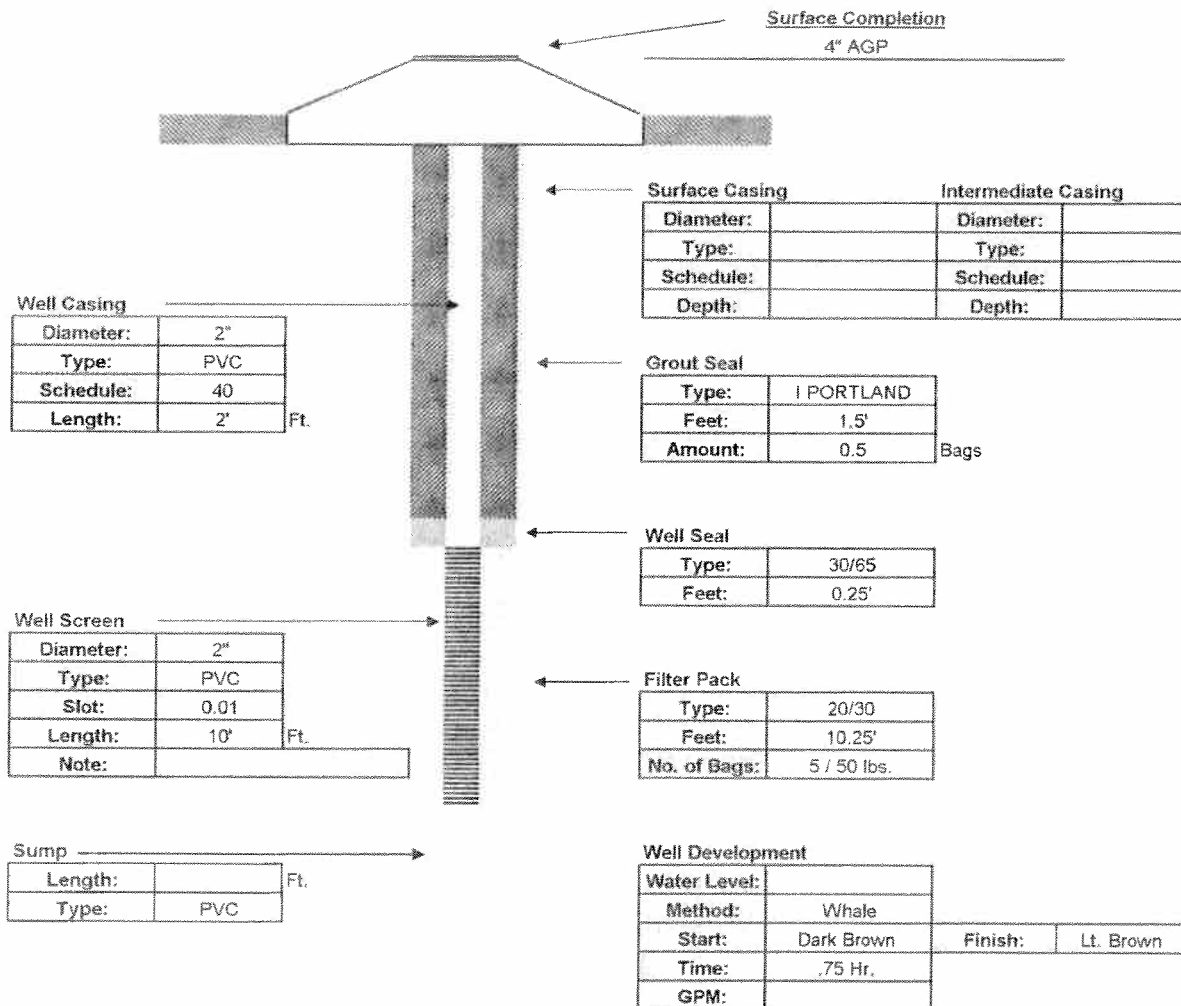
S/I/R:

Client / Consultant Information

Consultant: Aerostar

Field Rep: Jessica Gibson

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12'	10'	2'	0.5	5 / 50 lbs.	20/30	30/65
40	Schedule	Slot Size:	0.01		1.5'	Feet	10.25'	0.25'



Contractor Information

Contractor #:	9311
Completion:	8/1/2012
Driller:	Jared Link
Lead Hand:	Nick Bishop
3rd Man:	Wade Halcomb
Drill Rig:	D120B

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

Water Mgmt. Dist.:

Permit Number:

Work Order: 712046

Type of Well: Monitor

Well Number: MW 18A

Method Used: H.S.A.

Borehole Diaz: 8"

Site Information:

Name: Sandler Landfill

Address: 10500 Sandler Rd.

C.S.Z: Jacksonville, FL

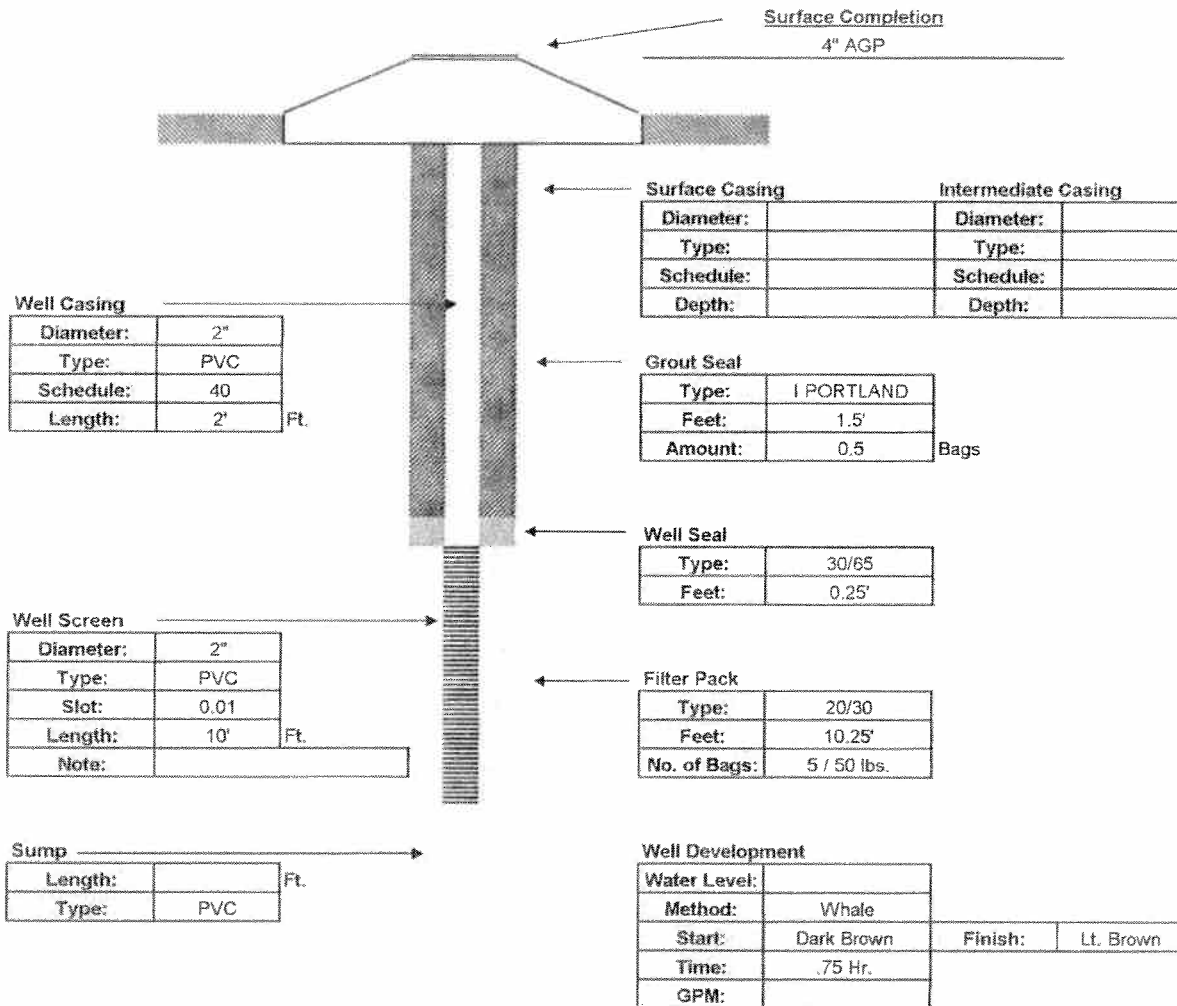
S/T/R:

Client / Consultant Information

Consultant: Aerostar

Field Rep: Jessica Gibson

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12'	10'	2'	0.5	5 / 50 lbs.	20/30	30/65
40	Schedule	Slot Size:	0.01		1.5'	Feet	10.25'	0.25'



Contractor Information

Contractor #:	9311
Completion:	8/1/2012
Driller:	Jared Link
Lead Hand:	Nick Bishop
3rd Man:	Wade Halcomb
Drill Rig:	D120B

Company: Drillpro LLC d/b/a Groundwater Protection

Address: 2300 Silver Star Road

C.S.Z: Orlando, Florida 32804-3310

Phone/FAX: (407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

Water Mgmt. Dist.:

Permit Number:

Work Order: 712046

Type of Well: Monitor

Well Number: MWV 19B

Method Used: Rotary

Borehole Dia: 6"

Site Information:

Name: Sandler Landfill

Address: 10500 Sandler Rd.

C,S,Z: Jacksonville, FL

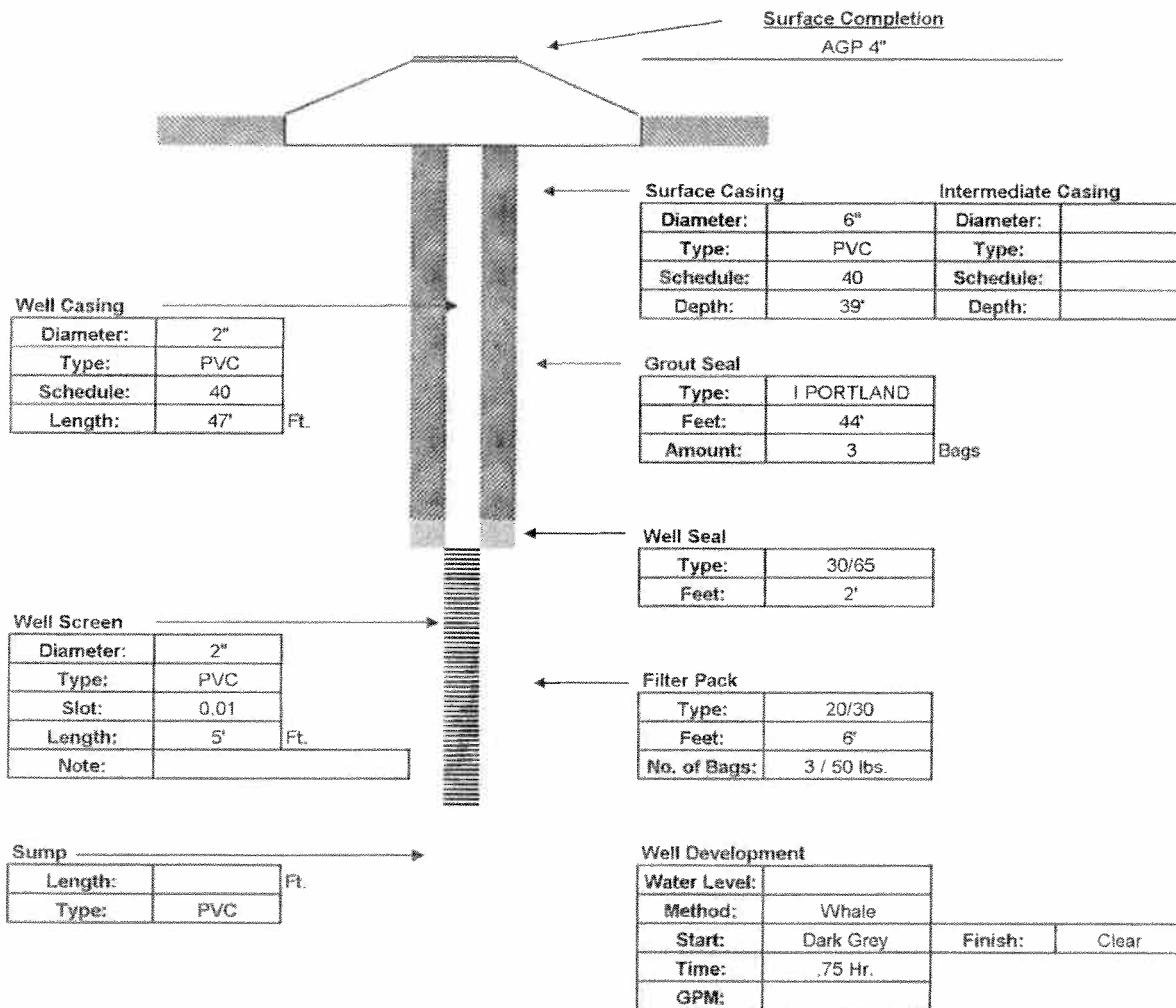
S/T/R:

Client / Consultant Information

Consultant: Aerostar

Field Rep: Jessica Gibson

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	52'	5'	47'	3	3 / 50 lbs.	20/30	30/65
40	Schedule	Slot Size: 0.01			44'	Feet	6'	2'



Contractor Information

Contractor #:	9311
Completion:	8/2/2012
Driller:	Jared Link
Lead Hand:	Nick Bishop
3rd Man:	Wade Halcomb
Drill Rig:	D120B

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

Water Mgmt. Dist.:

Permit Number:

Work Order: 712046

Type of Well: Monitor

Well Number: MW 20B

Method Used: Rotary

Borehole Diaz. 6"

Site Information:

Name: Sandler Landfill

Address: 10500 Sandler Rd.

C,S,Z: Jacksonville, FL

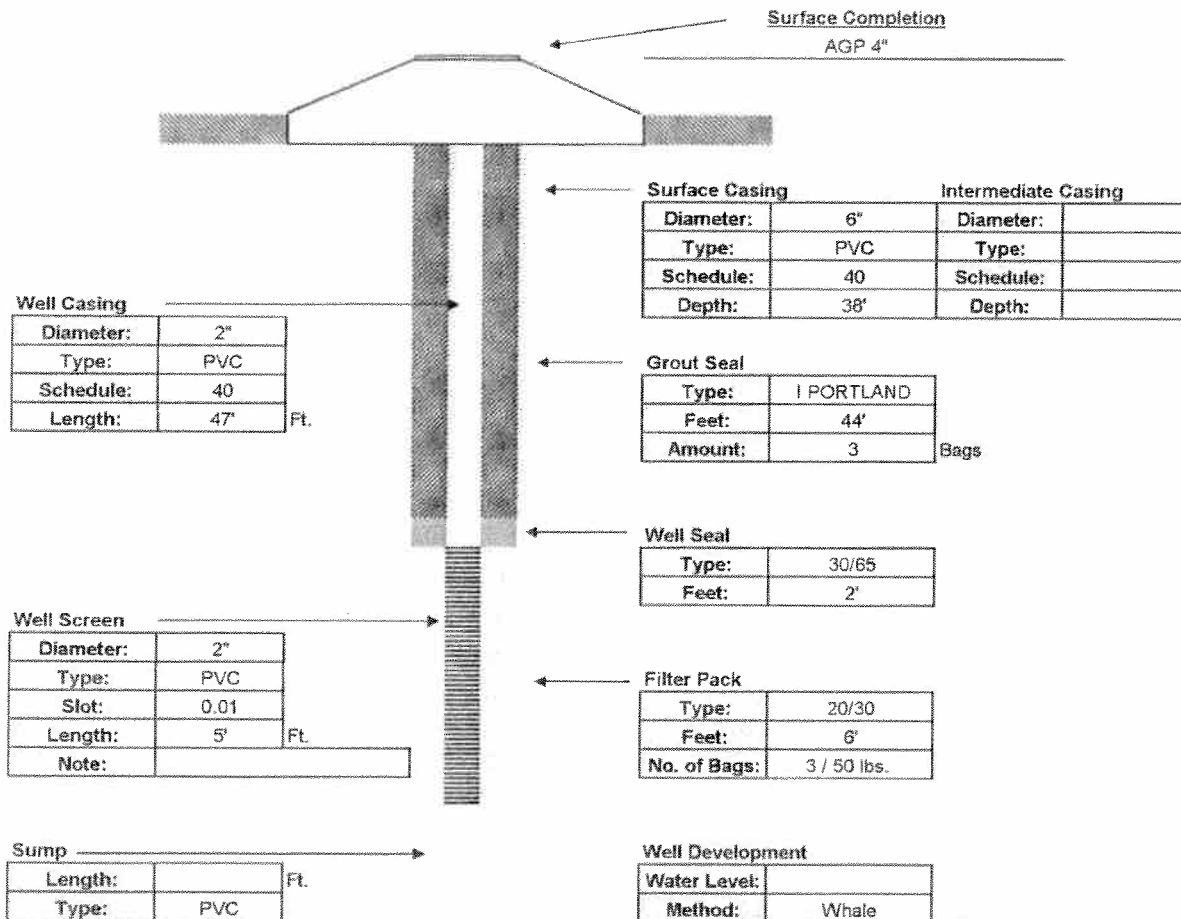
S/T/R:

Client / Consultant Information

Consultant: Aerostar

Field Rep: Jessica Gibson

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	52'	5'	47'	3	3 / 50 lbs.	20/30	30/65
40	← Schedule	Slot Size: →	0.01		44'	← Feet →	6'	2'



Contractor Information

Contractor #:	9311
Completion:	8/2/2012
Driller:	Jared Link
Lead Hand:	Nick Bishop
3rd Man:	Wade Halcomb
Drill Rig:	D120B

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

STATE OF FLORIDA WELL COMPLETION REPORT



- ☐ Southwest
☐ Northwest
☐ St. Johns River
☐ South Florida
☐ Suwannee River
☐ DEP
☒ Delegated Authority (if Applicable):

PLEASE FILL OUT ALL APPLICABLE FIELDS
 (* Denotes Required Fields Where Applicable)

City of Jacksonville

Date Stamp

Official Use Only

1 *Permit Number 2012-0870 CUP/WUP No. _____ DID Number _____ 62-524 Delineation No. _____

2 * Number of permitted wells constructed, repaired, or abandoned 2 * Number of permitted wells not constructed, repaired, or abandoned 0

3. * Owner's Name City of Jacksonville 4. * Completion Date 8/9/2012 5. Florida Unique ID _____

6. 0 Sandler Rd - Jacksonville
 * Well Location - Address, Road Name or Number, City, ZIP _____

7 * County Clay * Section 17 Land Grant _____ * Township 3S * Range 25E

8 Latitude _____ Longitude _____

9. Data Obtained From: _____ GPS _____ Map _____ Survey _____ Datum: _____ NAD 27 _____ NAD 83 _____ WGS 84

10* TYPE OF WORK: ☒ Construction _____ Repair _____ Modification _____ Abandonment _____

11. Specify Intended Use(s) of Well(s):

<input type="checkbox"/> Domestic	<input type="checkbox"/> Landscape Irrigation	<input type="checkbox"/> Agricultural Irrigation	<input type="checkbox"/> Site Investigation
<input type="checkbox"/> Bottled Water Supply	<input type="checkbox"/> Recreation Area Irrigation	<input type="checkbox"/> Livestock	<input checked="" type="checkbox"/> Monitoring
<input type="checkbox"/> Public Water Supply (Limited Use/DOH)	<input type="checkbox"/> Nursery Irrigation	<input type="checkbox"/> Test	<input type="checkbox"/> Earth - Coupled Geothermal
<input type="checkbox"/> Public Water Supply (Community or Non Community/DEP)	<input type="checkbox"/> Commercial / Industrial	<input type="checkbox"/> HVAC Supply	<input type="checkbox"/> HVAC Return
<input type="checkbox"/> Class I Injection	<input type="checkbox"/> Golf Course Irrigation		

Class V Injection: _____ Recharge _____ Commercial/Industrial Disposal _____ Aquifer Storage & Recovery _____ Drainage

Remediation: _____ Recovery _____ Air Sparge _____ Other (Describe) _____

Other (Describe) _____

12. *Drill Method. _____ Auger _____ Cable Tool _____ Rotary ☒ Combination (Two or More Methods) _____ Jetted _____ Sonic _____
 _____ Horizontal Drilling _____ Hydraulic Point (Direct Push) _____ Other _____

13. *Measured Static Water Level _____ ft. Measured Pumping Water Level NA ft. After NA hours a NA GPM

14. *Measuring Point (Describe) Land Surface Which is 0 ft. _____ Above _____ Below Land Surface * Flowing _____ Yes _____ No ☒

15. * Casing Material: _____ Black Steel _____ Galvanized ☒ PVC _____ Stainless Steel _____ Not Cased _____ Other _____

16. * Total Well Depth: 52 ft. Cased Depth 47 ft. Open Hole From: NA to NA ft. Screen From 47 to 52 ft. Slot Size 0.010

* ABANDONMENT OTHER (Explain)

From _____ ft. To _____ ft. No of Bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
From _____ ft. To _____ ft. No of Bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
From _____ ft. To _____ ft. No of Bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
From _____ ft. To _____ ft. No of Bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

* SURFACE CASING DIAMETER & DEPTH

Diam. <u>6</u> in. From <u>0</u> ft. To <u>38</u> ft. (MW 20B) <u>3</u>	Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement _____ Bentonite _____ Other _____
Diam. <u>6</u> in. From <u>0</u> ft. To <u>39</u> ft. (MW 19B) <u>3</u>	Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement _____ Bentonite _____ Other _____

* PRIMARY CASING DIAMETER & DEPTH

Diam. <u>2</u> in. From <u>0</u> ft. To <u>44</u> ft. # of bags <u>3</u>	Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement _____ Bentonite _____ Other _____
Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

* LINER CASING DIAMETER & DEPTH

Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

* TELESCOPE CASING DIAMETER & DEPTH

Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

PUMP TYPE (If Known) _____ Centrifugal _____ Jet _____ Submersible _____ Turbine _____

Horsepower _____ Pump Capacity (GPM) _____

Pump depth _____ ft. Intake Depth _____ ft.

CHEMICAL ANALYSIS (When Required)

Iron _____ ppm	Sulfate _____ ppm	Chloride _____ ppm
Laboratory Test _____		Field Test Kit _____

WATER WELL CONTRACTOR

* Contractor Name: James Hinst * License No. 9311 Email Address: Jim@drillprolic.com

* Contractor's Signature: James Hinst * Driller's Name: Jared Link

I certify that the information in this report is accurate & true

ENVIRONMENTAL QUALITY DIVISION



Well Permit 2012-0870

Granted To:	COJ Solid Waste Division co Eric Fuller 1031 Superior Street Jacksonville, FL 32254	Well Type:	Monitoring Well
		Permit #:	2012-0870
		Well #:	28330
Well Location:	10500 Sandler Road Jacksonville, 32222	Contractor:	James Hinst
		License #:	9311

Authorization is hereby granted to construct, repair, alter or abandon well(s) at the above location in accordance with information supplied on the application for permit form according to the following provisions, and with the authority of Chapter 366, City of Jacksonville Ordinance Code (OC). The permittee and any future property owners hereby hold the City of Jacksonville harmless from responsibility to comply with or obtain permits pursuant to any other federal, state, or local law. All permitted work must be accomplished by a well contractor with a valid EQD registration within one year of the issue date. This well shall not be used for the purpose(s) other than that indicated via the following provisions.

Provisions

1. There may be a difference between the items requested in the application for the well and the requirements issued by EQD.
2. This well must be constructed, abandoned, repaired or modified in accordance with Chapters 62-532 and 40C-3 FAC.
3. A legible and completed copy of the State of Florida Well Completion Report shall be submitted to the Groundwater Section (GS) within 30 days after completion of the permitted well activity.
4. A copy of this permit should be given to any future property owner when the property is sold.
5. Wells shall be located, constructed, cased, grouted, plugged, capped, or sealed to prevent uncontrolled surface flow, uncontrolled movement of water from one aquifer or water bearing zone to another, contamination of groundwater or surface water resources, or other adverse impacts.
6. If confining units are penetrated by a well, construction shall include a casing and grout seal to the confining unit to protect underlying aquifers of differing quality groundwater.
7. Bentonite grout shall not be used on well(s) constructed in any identified contamination site.

ENVIRONMENTAL QUALITY DIVISION

8. Well(s) shall be constructed with a locking cap or other security devices(s) meeting the Florida Department of Environmental Protection (FDEP) and SJRWMD specifications.
9. Wells permitted or constructed as a monitoring well shall not be used for contamination removal and/or product recovery without first obtaining a recovery well permit from the EQD.
10. All wells shall be plugged by a state licensed well contractor within six (6) months after their use has been permanently discontinued, or when the well is determined to be in a state of disrepair and/or subject to abandonment pursuant to Chapter 366, OC, EPB Rule 8, Chapters 62-532 and 40C-3, Florida Administrative Code (FAC), or as otherwise noted in subsequent provisos.
11. In the event that the location of monitor well(s) to be constructed/abandoned can not be known until the day of construction, an updated site sketch shall be provided to show the location of each well, with a corresponding identification number, along with the well completion/abandonment report.
12. The upper terminus of the well shall extend either to land surface or to finished grade, whichever is higher.
13. This permit allows for the construction of 5 well(s) to be used for environmental monitoring. Individually this/these well(s) is/are 2 inch(es) diameter to be completed to an estimated depth of 52 feet below land surface.

Kevin R. Hayes

Issued By

8/6/2012

Date

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE (352) 796-7211 OR (800) 423-1476
WWW.SWFWM.DISTRICT.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1427
PHONE: (386) 329-4500
WWW.SJRWM.DISTRICT.FL.US

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA FL 32333-4712
(US HIGHWAY 90, 10 MILES WEST OF TALLAHASSEE)
PHONE: (850) 539-5999
WWW.NWFWMD.DISTRICT.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 OR (800) 226-1066 (FLORIDA ONLY)
WWW.MYSUWANNEERIVER.COM

DRILL CUTTINGS LOG (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zones.)

From <u>0</u> ft.	To <u>2</u> ft.	Color <u>Dark Gray</u>	Grain Size (F, M, C) <u>NA</u>	Material <u>Sand</u>
From <u>2</u> ft.	To <u>20</u> ft.	Color <u>Dark Brown</u>	Grain Size (F, M, C) <u>NA</u>	Material <u>Flowing Sand</u>
From <u>20</u> ft.	To <u>45</u> ft.	Color <u>Lt. Reddish/Brown</u>	Grain Size (F, M, C) <u>NA</u>	Material <u>Flowing Sand</u>
From <u>45</u> ft.	To <u>52</u> ft.	Color <u>Gray/Brown</u>	Grain Size (F, M, C) <u>F</u>	Material <u>Sand</u>
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____

COMMENTS _____

Detailed Site Map of Well Location

GP WO 712046
MW 19B
MW 20B



Give distances from all reference point or structures, septic systems, sanitary hazards, and contamination sources within 500 ft. of well

STATE OF FLORIDA WELL COMPLETION REPORT



- ☐ Southwest
☐ Northwest
☐ St. Johns River
☐ South Florida
☐ Suwannee River
☐ DEP
☒ Delegated Authority (if Applicable):

PLEASE FILL OUT ALL APPLICABLE FIELDS
 (* Denotes Required Fields Where Applicable)

City of Jacksonville

Date Stamp

Official Use Only

1 *Permit Number 2012-0870 CUPAWUP No. _____ DID Number _____ 62-524 Delineation No. _____
 2 * Number of permitted wells constructed, repaired, or abandoned 3 * Number of permitted wells not constructed, repaired, or abandoned 0
 3 * Owner's Name City of Jacksonville 4 * Completion Date 8/9/2012 5 Florida Unique ID _____

6. 0 Sandler Rd - Jacksonville

* Well Location - Address, Road Name or Number, City, ZIP

7 * County Clay * Section 17 Land Grant _____ * Township 3S * Range 25E

8 Latitude _____ Longitude _____

9 Data Obtained From: _____ GPS _____ Map _____ Survey _____ Datum: _____ NAD 27 _____ NAD 83 _____ WGS 84

10* TYPE OF WORK: ☒ Construction _____ Repair _____ Modification _____ Abandonment

11. Specify Intended Use(s) of Well(s):

Domestic _____ Landscape Irrigation _____ Agricultural Irrigation _____ Site Investigation _____
 Bottled Water Supply _____ Recreation Area Irrigation _____ Livestock _____ ☒ Monitoring _____
 Public Water Supply (Limited Use/DOH) _____ Nursery Irrigation _____ Test _____
 Public Water Supply (Community or Non Community/DEP) _____ Commercial / Industrial _____ Earth - Coupled Geothermal _____
 Class I Injection _____ Golf Course Irrigation _____ HVAC Supply _____
 _____ HVAC Return _____

Class V Injection: _____ Recharge _____ Commercial/Industrial Disposal _____ Aquifer Storage & Recovery _____ Drainage

Remediation: _____ Recovery _____ Air Sparge _____ Other (Describe) _____

Other (Describe) _____

12 *Drill Method: _____ Auger _____ Cable Tool _____ Rotary ☒ Combination (Two or More Methods) _____ Jetted ☒ Sonic _____
 _____ Horizontal Drilling _____ Hydraulic Point (Direct Push) _____ Other _____

13 *Measured Static Water Level _____ ft Measured Pumping Water Level NA ft After NA hours a NA GPM

14 *Measuring Point (Describe) Land Surface Which is 0 ft _____ Above _____ Below Land Surface * Flowing _____ Yes _____ No ☒

15 * Casing Material: _____ Black Steel _____ Galvanized ☒ PVC _____ Stainless Steel _____ Not Cased _____ Other _____

16.* Total Well Depth: 12 ft Cased Depth 2 ft Open Hole From: NA to NA ft Screen From 2 to 12 ft Slot Size 0.010

* ABANDONMENT

OTHER (Explain)

From _____ ft. To _____ ft. No of Bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
From _____ ft. To _____ ft. No of Bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
From _____ ft. To _____ ft. No of Bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
From _____ ft. To _____ ft. No of Bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
From _____ ft. To _____ ft. No of Bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

* SURFACE CASING DIAMETER & DEPTH

Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

* PRIMARY CASING DIAMETER & DEPTH

Diam. <u>2</u> in. From <u>0</u> ft. To <u>1.5</u> ft. # of bags <u>0.5</u>	Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement _____ Bentonite _____ Other _____
Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

* LINER CASING DIAMETER & DEPTH

Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

* TELESCOPE CASING DIAMETER & DEPTH

Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Diam. _____ in. From _____ ft. To _____ ft. # of bags _____	Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

PUMP TYPE (if Known)

CHEMICAL ANALYSIS (When Required)

Centrifugal _____ Jet _____ Submersible _____ Turbine _____ Iron _____ ppm Sulfate _____ ppm Chloride _____ ppm
 Horsepower _____ Pump Capacity (GPM) _____ Laboratory Test _____ Field Test Kit _____
 Pump depth _____ ft Intake Depth _____ ft

WATER WELL CONTRACTOR

* Contractor Name: James Hinst * License No. 9311 Email Address: jim@drillproll.com

* Contractor's Signature: James Hinst * Driller's Name: Jared Link

I certify that the information in this report is accurate & true

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE (352) 796-7211 OR (800) 423-1476
WWW.SWFWMDCOM

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1427
PHONE: (386) 329-4500
WWW.SJRWMDCOM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA FL 32333-4712
(US HIGHWAY 90, 10 MILES WEST OF TALLAHASSEE)
PHONE: (850) 539-5999
WWW.NWFWMDSTATEFLUS

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMDGOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 OR (800) 226-1066 (FLORIDA ONLY)
WWW.MYSUWANNEERIVER.COM

DRILL CUTTINGS LOG (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zones.)

From <u>0</u> ft.	To <u>2</u> ft.	Color <u>Dark Gray</u>	Grain Size (F, M, C) <u>NA</u>	Material <u>Sand</u>
From <u>2</u> ft.	To <u>12</u> ft.	Color <u>Dark Brown</u>	Grain Size (F, M, C) <u>NA</u>	Material <u>Flowing Sand</u>
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____
From _____ ft.	To _____ ft.	Color _____	Grain Size (F, M, C) _____	Material _____

COMMENTS _____

Detailed Site Map of Well Location

GP WO 712046
MW 16A
MW 17A
MW 18A



Give distances from all reference point or structures, septic systems, sanitary hazards, and contamination sources within 500 ft. of well

ATTACHMENT D

Newly Installed Well Location and Elevation Survey

**MAP SHOWING SPECIFIC PURPOSE SURVEY OF
THE NEW MONITORING WELLS AT THE SANDLER ROAD LANDFILL SITE,
10500 SANDLER ROAD, CITY OF JACKSONVILLE, FLORIDA.**

MONITORING WELL ELEVATIONS

MONITORING WELL 16A	GROUND 75.22'
N.RIM	PVC 78.07'
MONITORING WELL 17A	GROUND 75.44'
N.RIM	PVC 78.08'
MONITORING WELL 18A	GROUND 75.09'
N.RIM	PVC 78.00'
MONITORING WELL 19B	GROUND 75.71'
N.RIM	PVC 78.37'
MONITORING WELL 20B	GROUND 76.06'
N.RIM	PVC 78.67'

MW 16A
N 11507.9013
E 11402.4438

MW 17A
N 11405.2180
E 11537.8652

MW 18A
N 11508.8290
E 11532.8840

MW 19B
N 10758.6434
E 11608.2280

MW 20B
N 10864.8938
E 11588.3438

WIRE FENCE

SANDLER ROAD

SURVEYORS REPORT & NOTES:

- 1) THIS IS NOT A BOUNDARY SURVEY. THE SPECIFIC PURPOSE OF THIS SURVEY IS TO SHOW THE LOCATION AND ELEVATIONS OF THE NEW MONITORING WELLS ON SITE.
- 2) ELEVATIONS ARE BASED ON THE TOP OF PIPE ELEVATION OF WELL 2A, AS SHOWN ON THE MAP BY ROONEY & SONS, AS PROVIDED BY THE CLIENT, SAID WELL HAVING AN ELEVATION OF 77.27 FEET (NGVD'29 DATUM).
- 2) COORDINATES ARE BASED ON THE COORDINATES OF WELLS 2A AND 10A, AS SHOWN ON THE MAP BY ROONEY & SONS, AS PROVIDED BY THE CLIENT (NO DATUM GIVEN).



CLIENT: AEROSTAR SES, LLC



ATLANTIC ~ GULF SURVEYING CO.
LAND & ENGINEERING SURVEYS

LICENSED BUSINESS NUMBER L.B. 6228
5736 TIMUQUANA ROAD
JACKSONVILLE, FLORIDA 32210
PHONE 904-771-6412
FAX 904-778-8578

JOB NO. 12-52333
DATE OF SURVEY 08-13-2012
FIELD BOOK 403
DATE 08-14-2012
DRAFTER PBD
SCALE 1"=150'

I HEREBY CERTIFY THAT THIS SURVEY WAS MADE UNDER MY RESPONSIBLE CHARGE AND MEETS THE MINIMUM TECHNICAL STANDARDS FOR LAND SURVEYING AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS CHAPTER 5J-17.051, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.

Charles P. DelCambre 8-16-2012
CHARLES P. DELCAMBRE, P.S.M., FL. REG. #5100 DATE

ATTACHMENT E

Slug Test Graphs

Aerostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c:/aqt/3Bout.dat
09/10/12

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

8/7/12

TEST WELL:

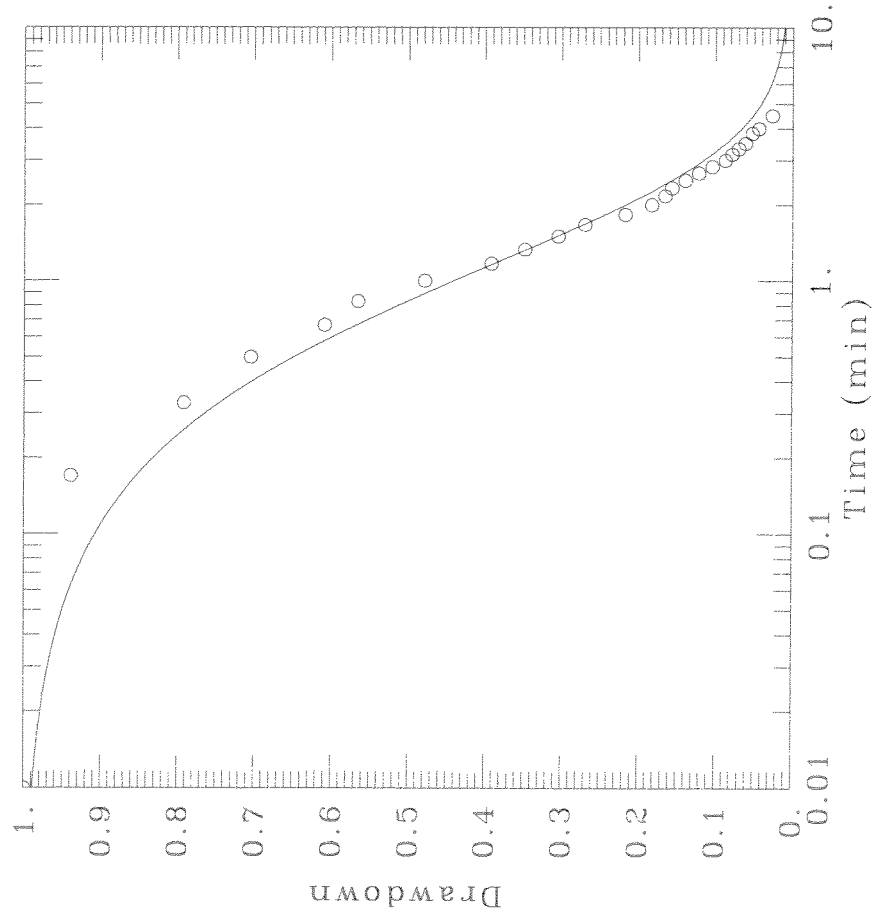
MW 3B

ESTIMATED PARAMETERS:

$T = 0.02527 \text{ ft}^2/\text{min}$
 $S = 1. \text{E-}08$

TEST DATA:

$H_0 = 1.15 \text{ ft}$
 $rc = 0.08333 \text{ ft}$
 $rw = 0.26 \text{ ft}$



Aerostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c:\agt\3Bout.dat

09/10/12

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

8/7/12

TEST WELL:

MV 3B

ESTIMATED PARAMETERS:

K = 0.001012 ft/min

y0 = 1.2 ft

TEST DATA:

H0 = 1.15 ft

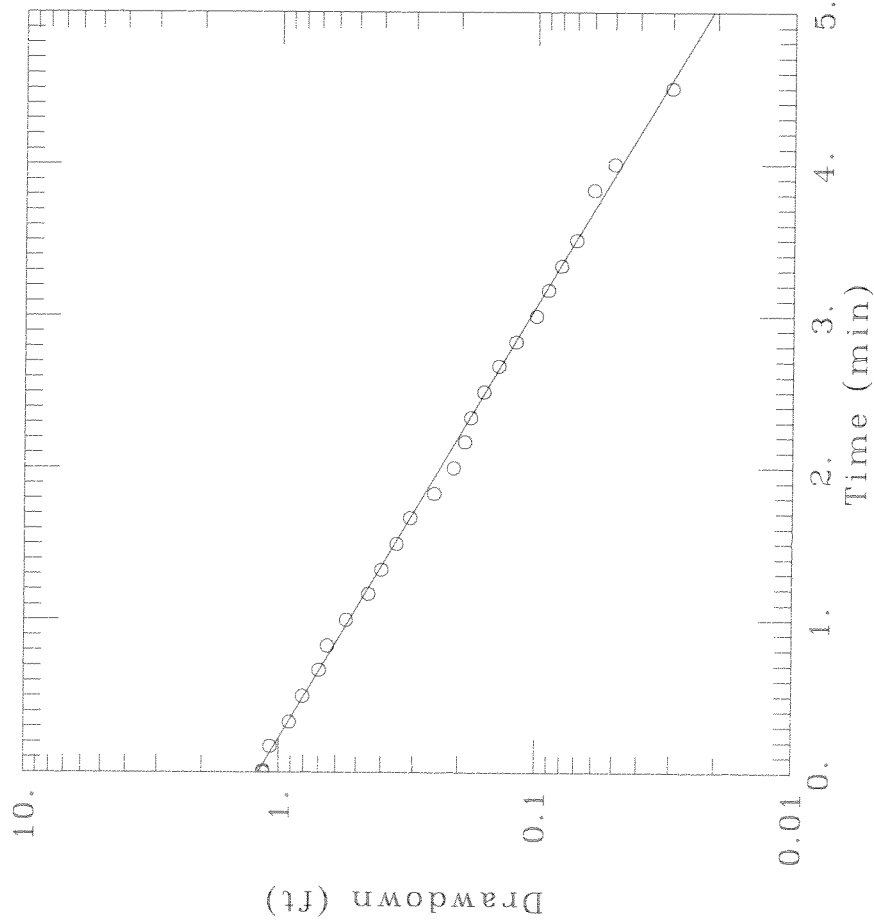
rc = 0.08333 ft

rw = 0.26 ft

L = 10. ft

b = 38.79 ft

H = 38.79 ft



Acrostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c: / aqf / 3Bl n. dat

09/10/12

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

8/7/12

TEST WELL:

MV 3B

ESTIMATED PARAMETERS:

$T = 0.01842 \text{ ft}^2/\text{min}$

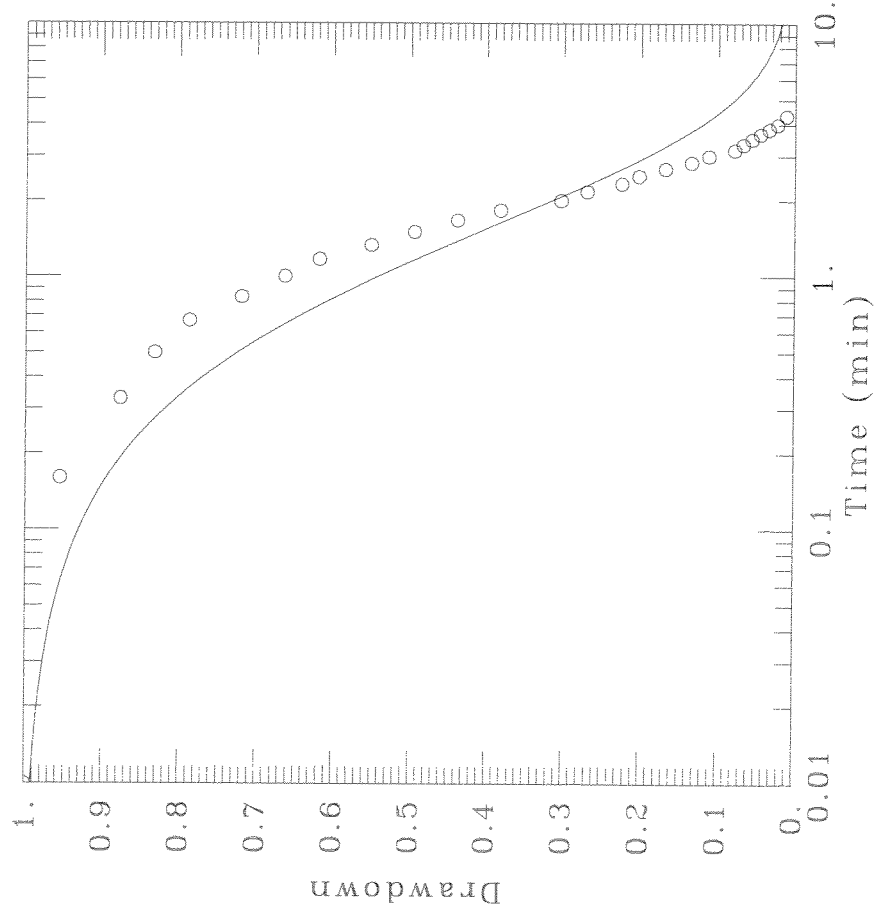
$S = 1.E-08$

TEST DATA:

$H_0 = 0.89 \text{ ft}$

$rc = 0.08333 \text{ ft}$

$rw = 0.26 \text{ ft}$



Aerostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c: / aqt / 3Bl n. dat

09/10/12

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

8/7/12

TEST WELL:

MV3B

ESTIMATED PARAMETERS:

K = 0.001248 ft/min

y0 = 1.968 ft

TEST DATA:

H0 = 0.89 ft

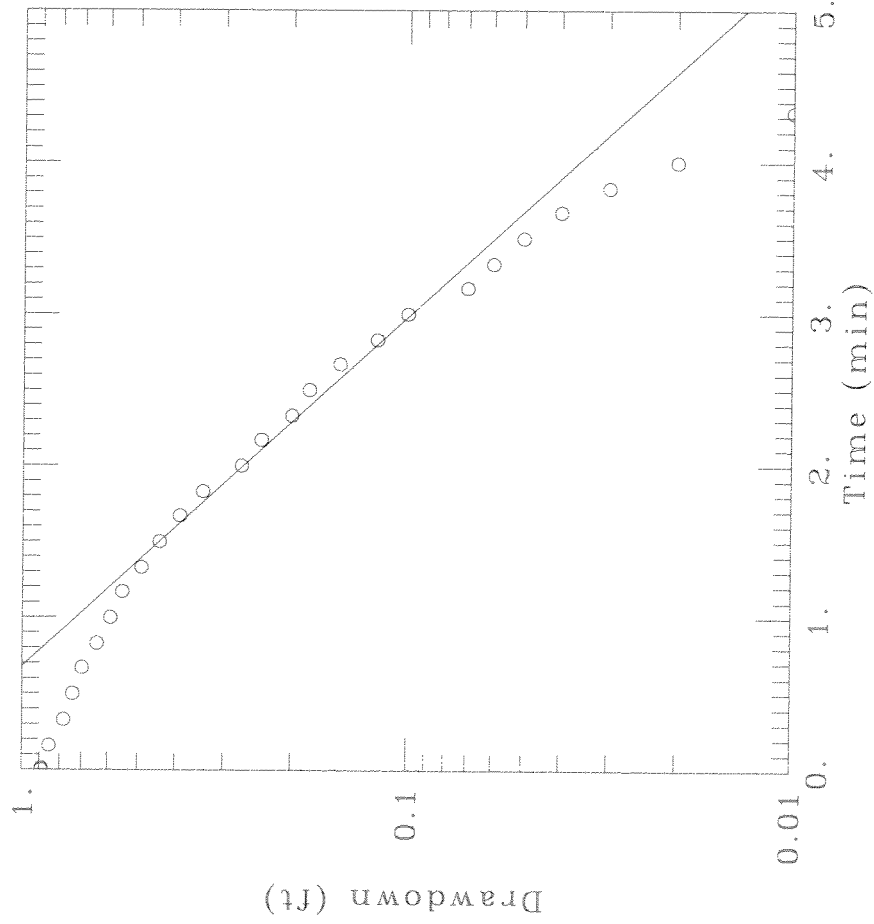
rc = 0.08333 ft

rw = 0.26 ft

L = 10. ft

b = 38.79 ft

H = 38.79 ft



Aerostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c:\aqt\6A\ n.dat
09/10/12

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

8/7/12

TEST WELL:

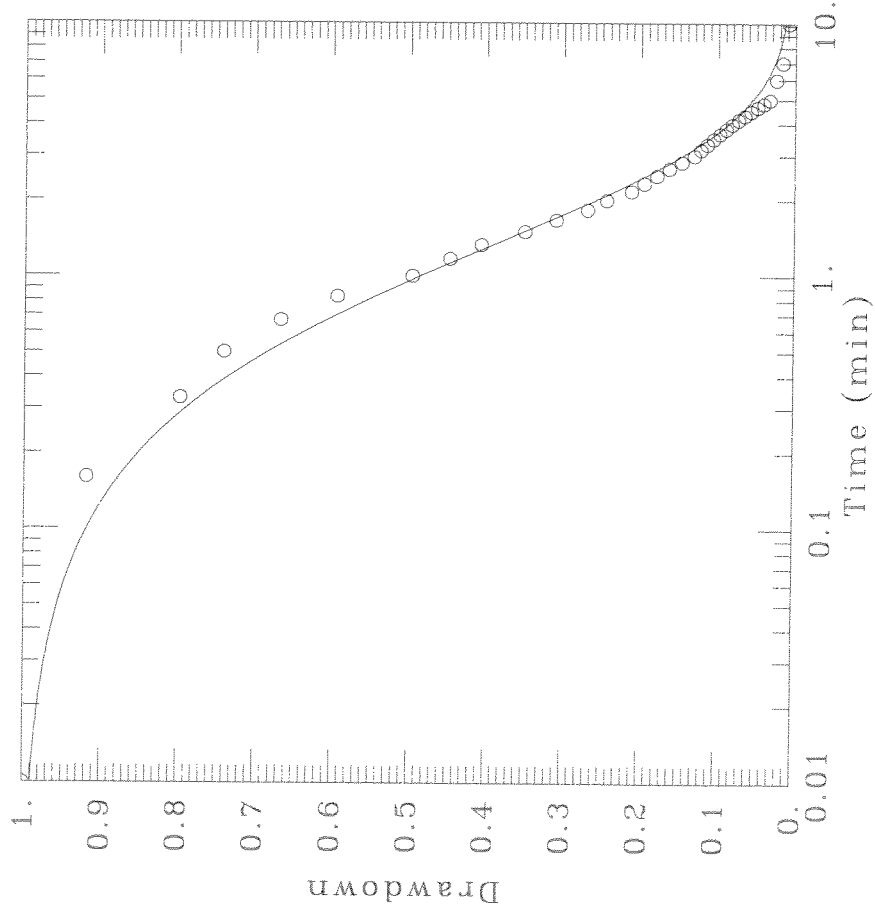
MV 6A

ESTIMATED PARAMETERS:

T = 0.02202 ft²/min
S = 1.E-08

TEST DATA:

H0 = 1.23 ft
rC = 0.08333 ft
rW = 0.26 ft



Acrostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c:\aqt\6A\ n. dat
09/10/12

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

8/7/12

TEST WELL:

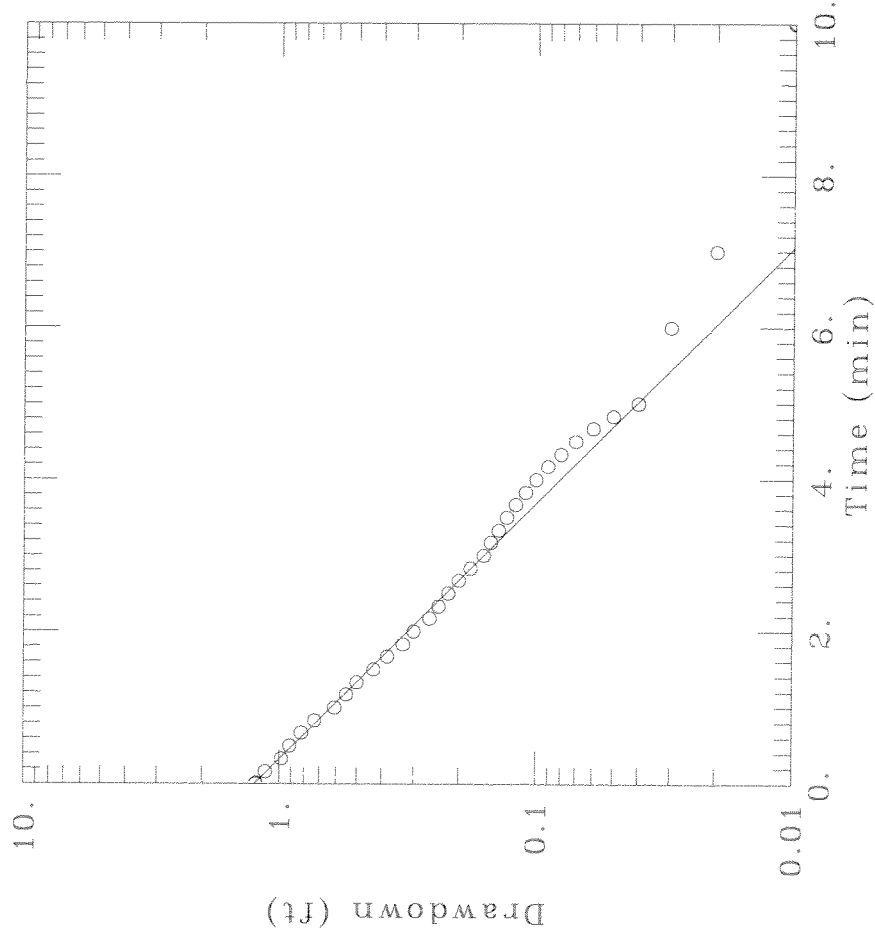
MY 6A

ESTIMATED PARAMETERS:

K = 0.0006941 ft/min
y0 = 1.25 ft

TEST DATA:

H0 = 1.23 ft
rc = 0.08393 ft
rw = 0.26 ft
L = 10. ft
b = 12.47 ft
H = 12.47 ft



Acrostar

Client: COJ

Project No.: M3001.1288.00

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c:/aq1/6Aout.dat

09/10/12

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

8/7/12

TEST WELL:

1WV6A

ESTIMATED PARAMETERS:

$T = 0.02762 \text{ ft}^2/\text{min}$

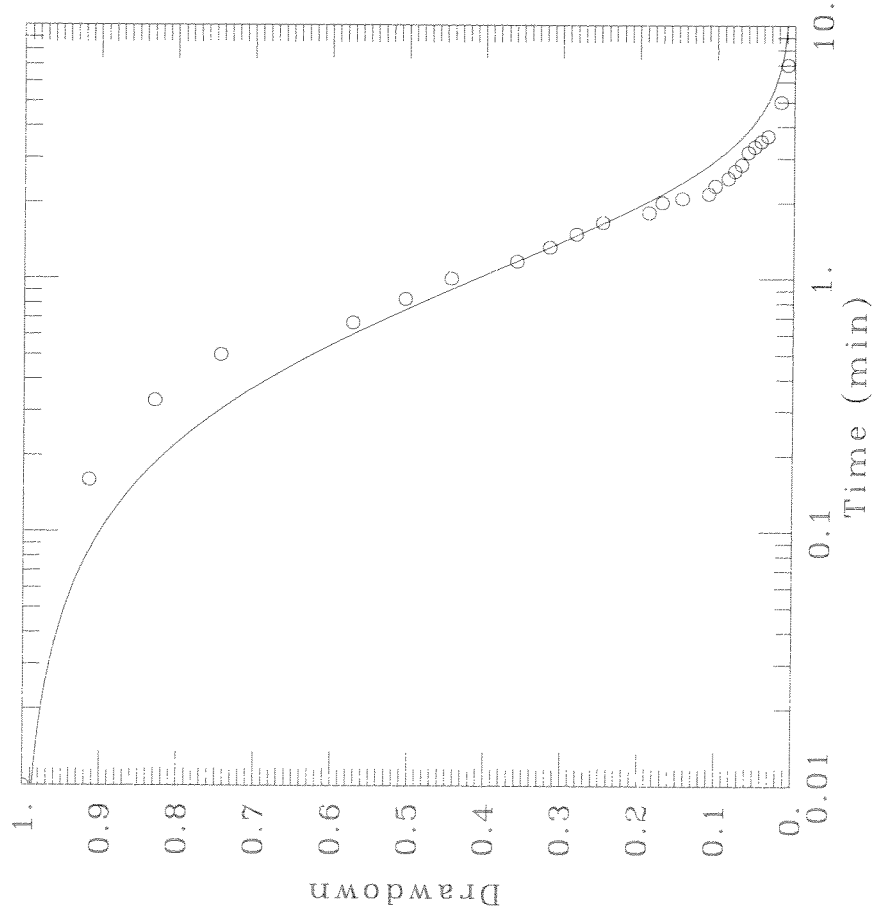
$S = 1. \text{E-}08$

TEST DATA:

$H_0 = 1.17 \text{ ft}$

$r_c = 0.08333 \text{ ft}$

$r_w = 0.26 \text{ ft}$



Aerostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c:/aqt/6Aout.dat

09/10/12

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

8/7/12

TEST WELL:

MY6A

ESTIMATED PARAMETERS:

K = 0.0009198 ft/min

Y0 = 1.245 ft

TEST DATA:

H0 = 1.17 ft

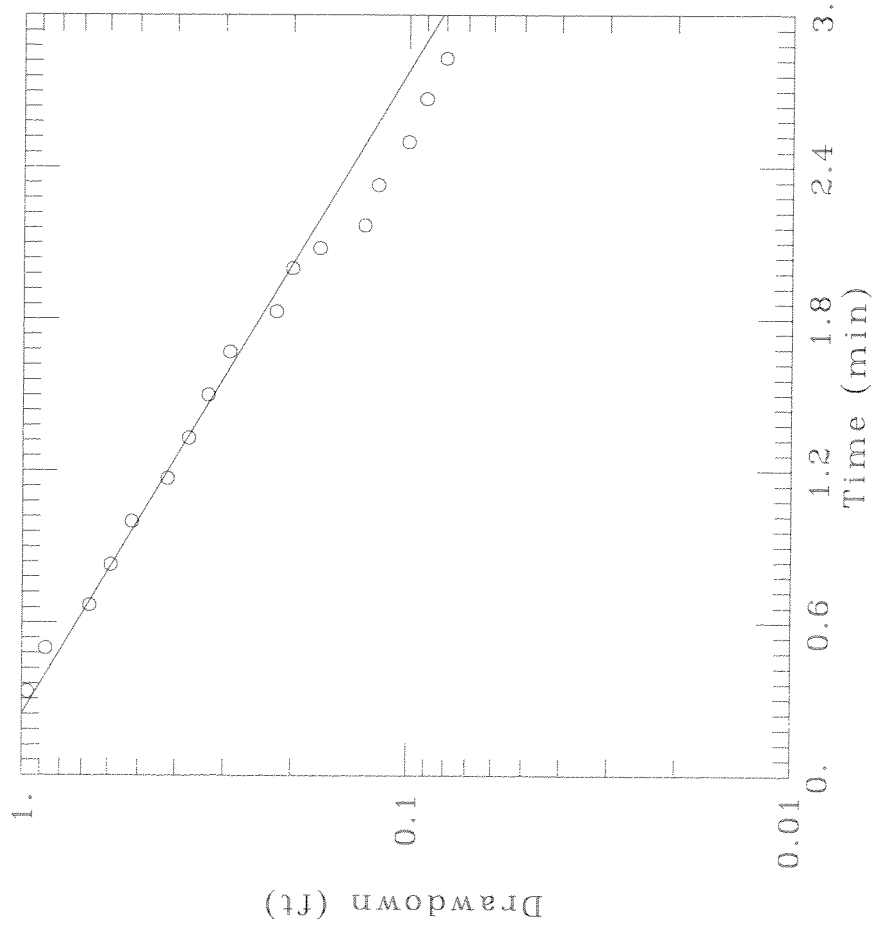
rc = 0.08333 ft

rw = 0.26 ft

L = 10. ft

b = 12.47 ft

H = 12.47 ft



Aerostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c:/aqt/16Aout.dat
09/10/12

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

8/7/12

TEST WELL:

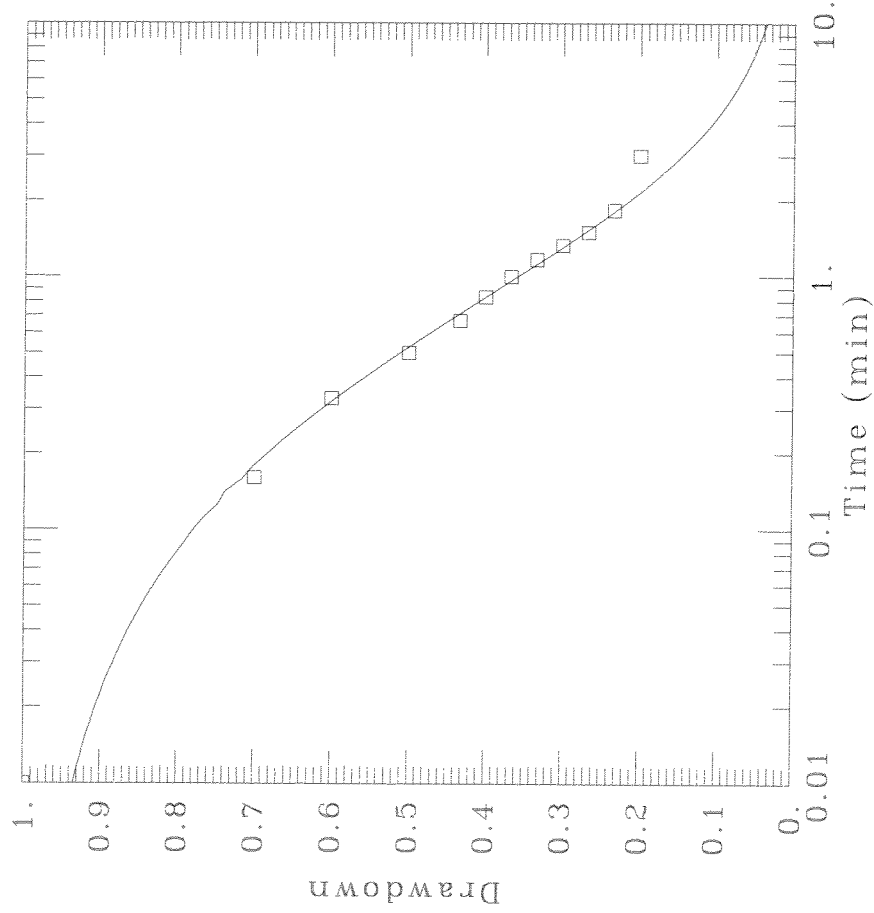
MW 16A

ESTIMATED PARAMETERS:

T = 0.005936 ft²/min
S = 0.008571

TEST DATA:

H0 = 0.3 ft
rC = 0.08333 ft
rW = 0.26 ft



Aerostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c: / aq1 / 16Aout . dat

09/10/12

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

8/7/12

TEST WELL:

MW 16A

ESTIMATED PARAMETERS:

$K = 0.0008914 \text{ ft/min}$

$y_0 = 0.2646 \text{ ft}$

TEST DATA:

$H_0 = 0.3 \text{ ft}$

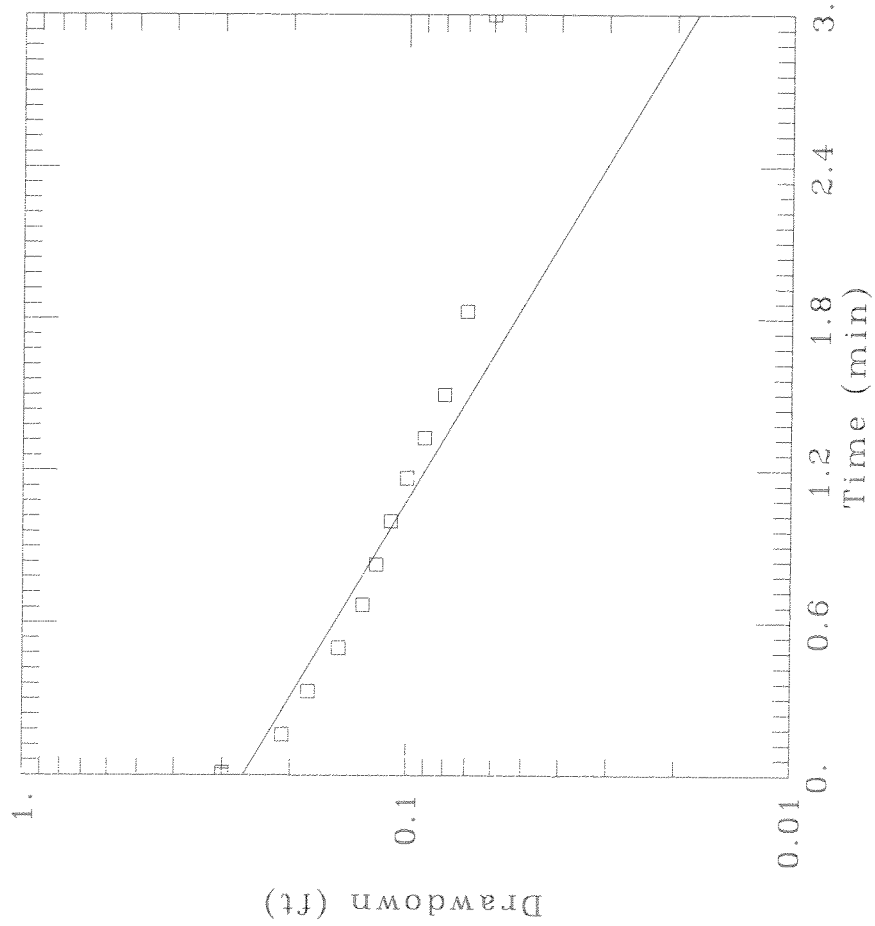
$r_c = 0.06333 \text{ ft}$

$r_w = 0.26 \text{ ft}$

$L = 10. \text{ ft}$

$b = 11.1 \text{ ft}$

$H = 11.1 \text{ ft}$



Acrostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c: /aqt/16A/n.dat

09/10/12

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

8/7/12

TEST WELL:

MW 16A

ESTIMATED PARAMETERS:

$T = 0.07144 \text{ ft}^2/\text{min}$

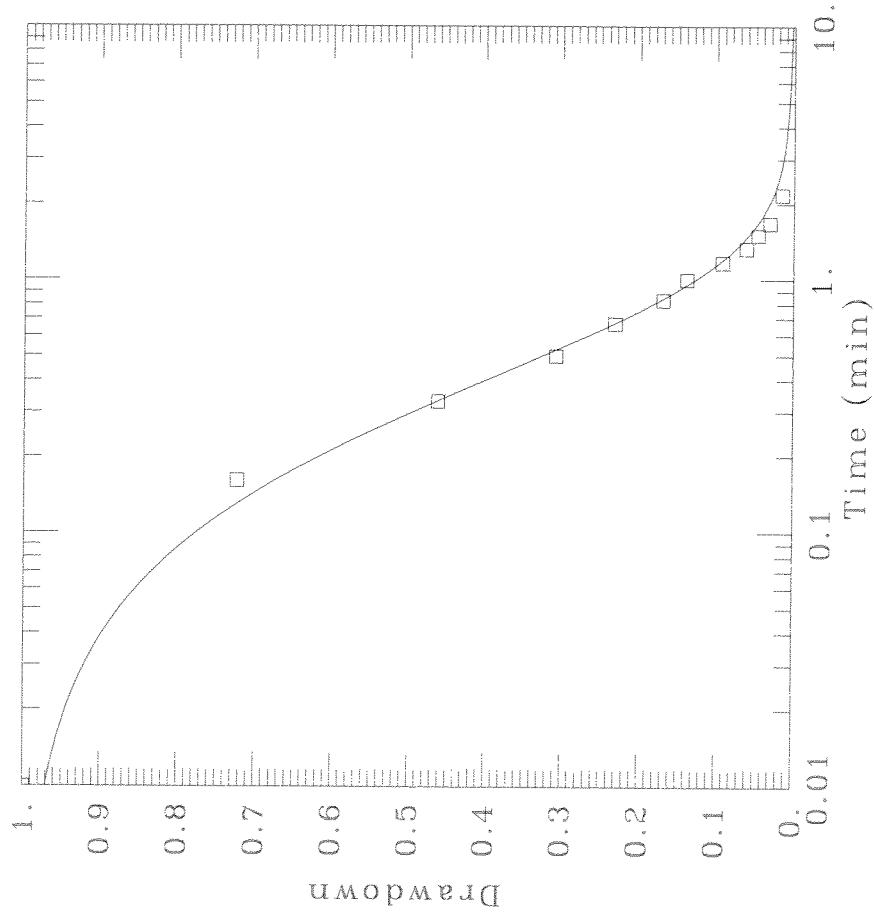
$S = 1. \text{E-}08$

TEST DATA:

$H_0 = 0.65 \text{ ft}$

$rc = 0.08333 \text{ ft}$

$rw = 0.26 \text{ ft}$



Acrostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c:/aqt/16A/n.dat

09/10/12

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

8/7/12

TEST WELL:

MW 16A

ESTIMATED PARAMETERS:

$K = 0.002195 \text{ ft/min}$

$y_0 = 0.6601 \text{ ft}$

TEST DATA:

$H_0 = 0.65 \text{ ft}$

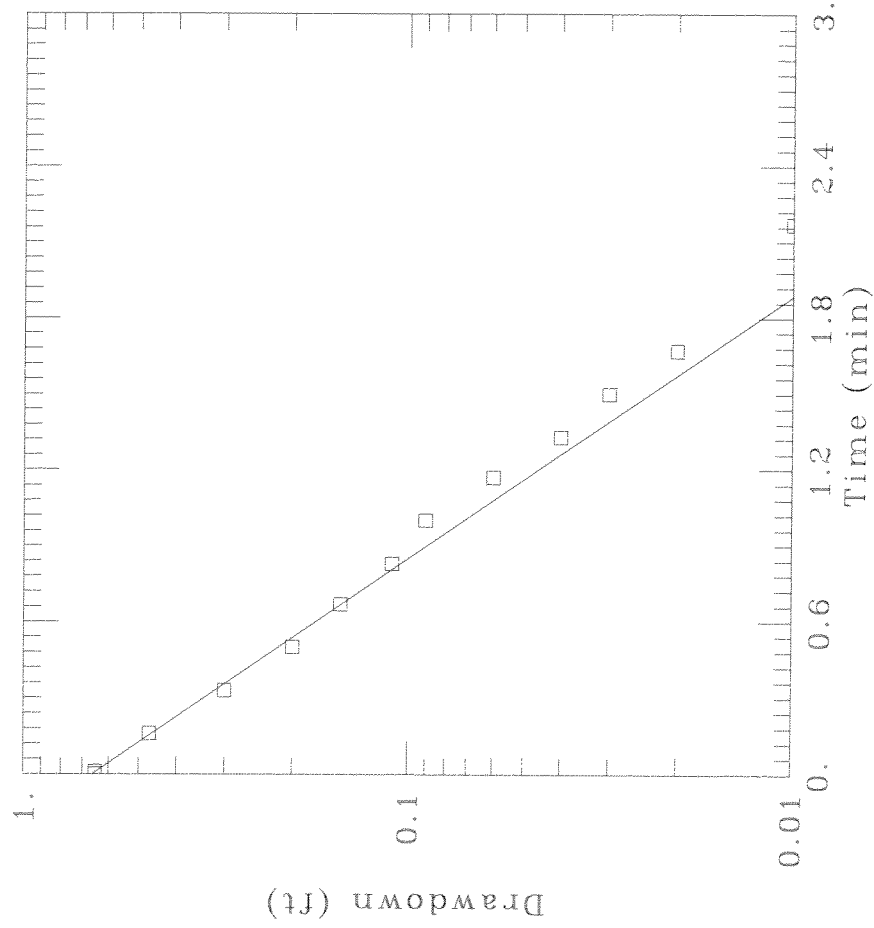
$r_c = 0.08333 \text{ ft}$

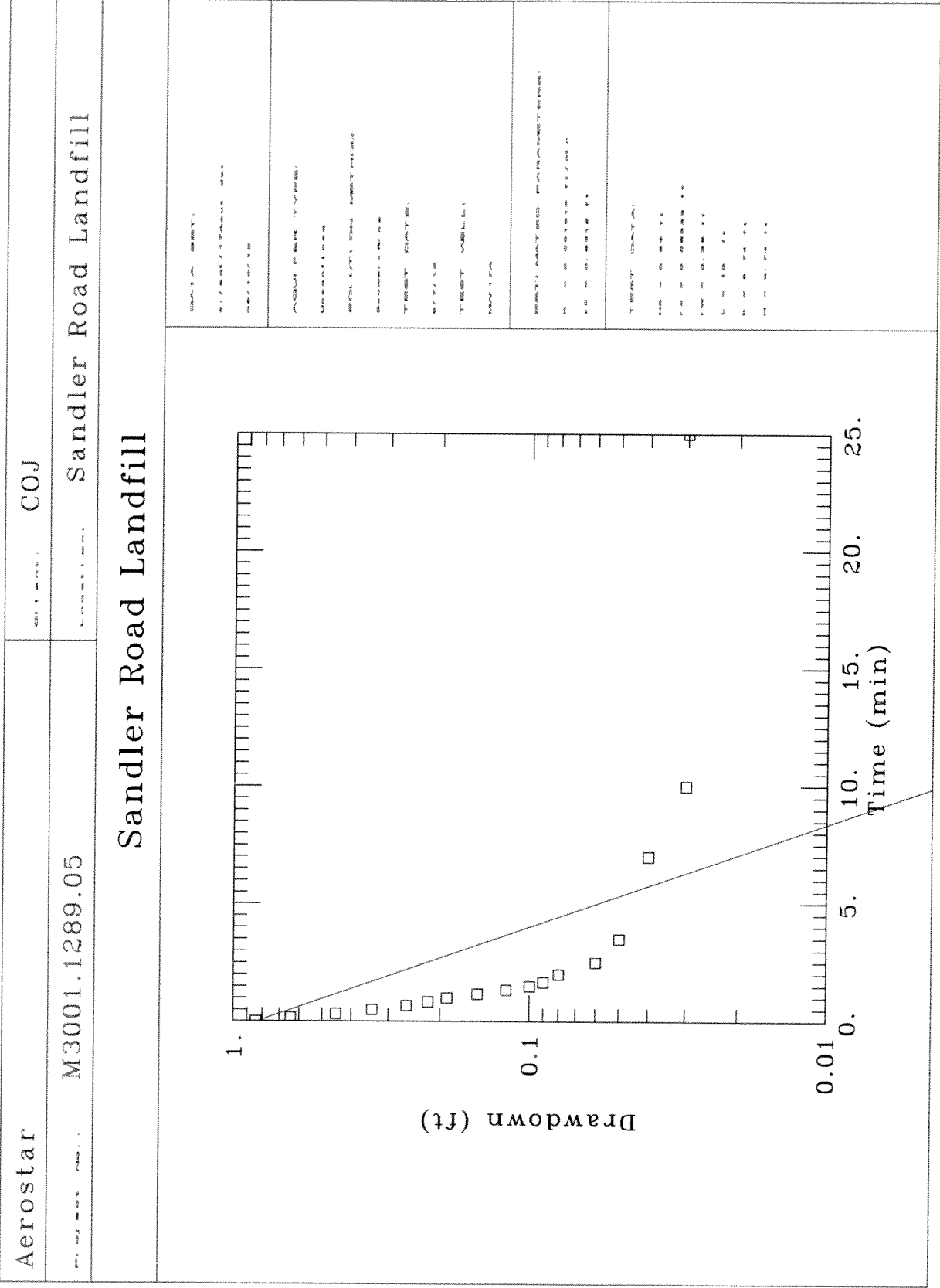
$r_w = 0.26 \text{ ft}$

$L = 10.1 \text{ ft}$

$b = 11.1 \text{ ft}$

$H = 11.1 \text{ ft}$





Aerostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c:/aqt/17A/n.dat

09/10/12

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

8/7/12

TEST WELL:

MW 17A

ESTIMATED PARAMETERS:

T = 0.005978 ft²/min

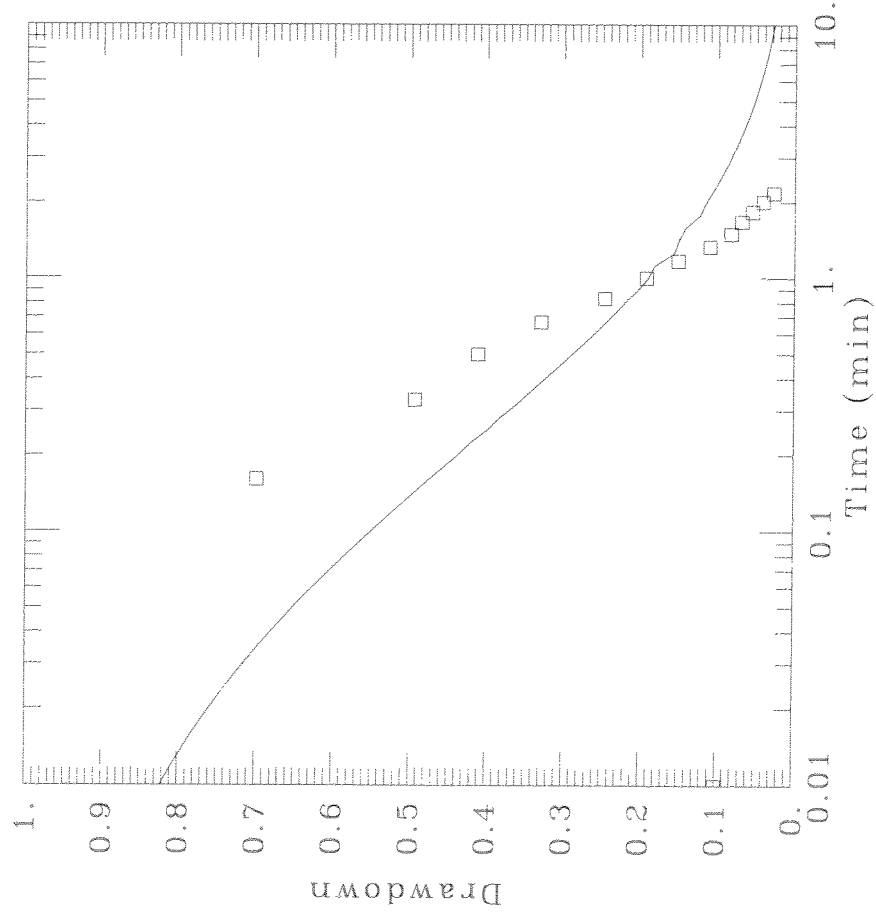
S = 0.09259

TEST DATA:

H0 = 0.73 ft

rc = 0.08333 ft

rw = 0.26 ft



Aerostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c:/aqt/17A/n.dat

09/10/12

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

8/7/12

TEST WELL:

MY 17A

ESTIMATED PARAMETERS:

K = 0.001451 ft/min

y0 = 0.6186 ft

TEST DATA:

H0 = 0.73 ft

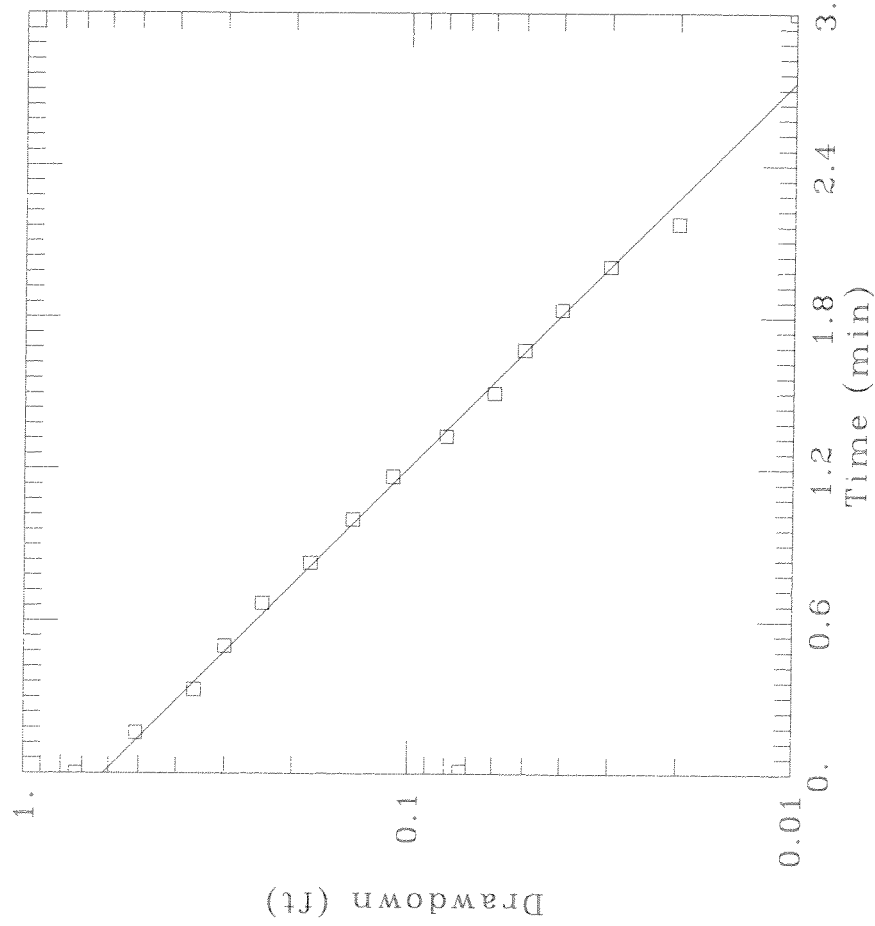
rc = 0.08333 ft

rw = 0.26 ft

L = 10. ft

b = 9.74 ft

H = 9.74 ft



Acrostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c: / aqt / 19Bl n. dat
09/10/12

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

8/7/12

TEST WELL:

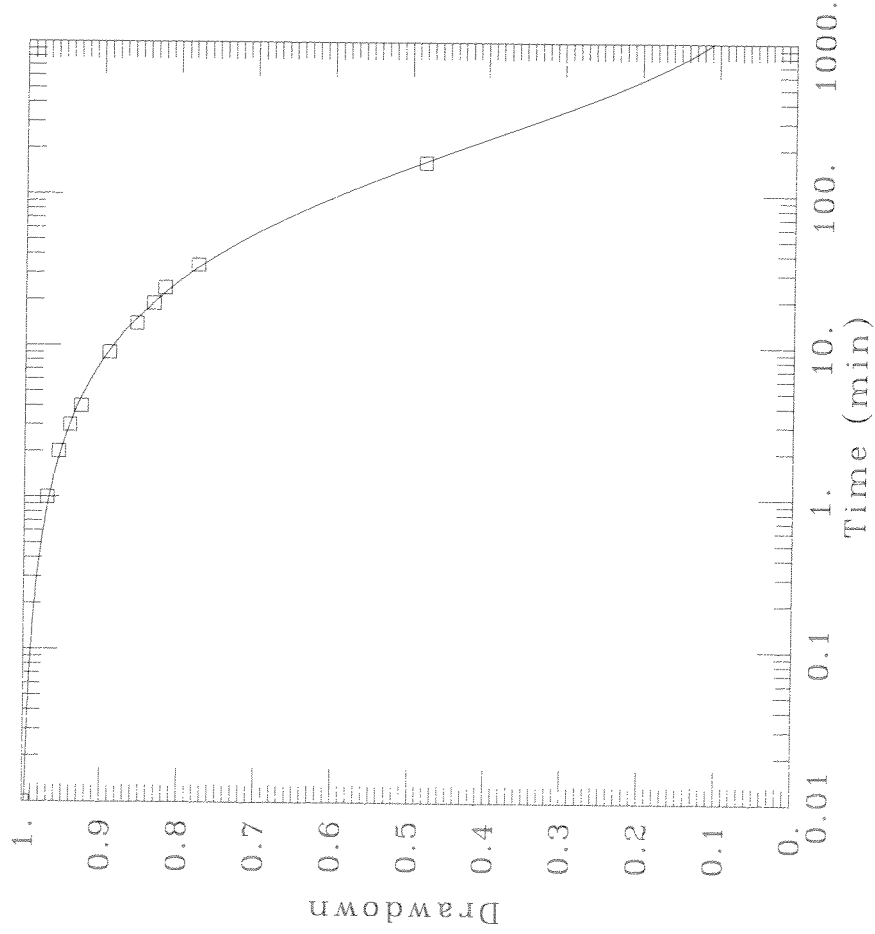
MW 19B

ESTIMATED PARAMETERS:

T = 2.6288E-05 ft²/min
S = 0.00433

TEST DATA:

H0 = 1.39 ft
rc = 0.08333 ft
rw = 0.26 ft



Acrostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c: / aqt / 1981 n. dat

09/10/12

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

8/7/12

TEST WELL:

MY 19B

ESTIMATED PARAMETERS:

$K = 5.9274E-06$ ft/mn

$y_0 = 1.315$ ft

TEST DATA:

$H_0 = 1.39$ ft

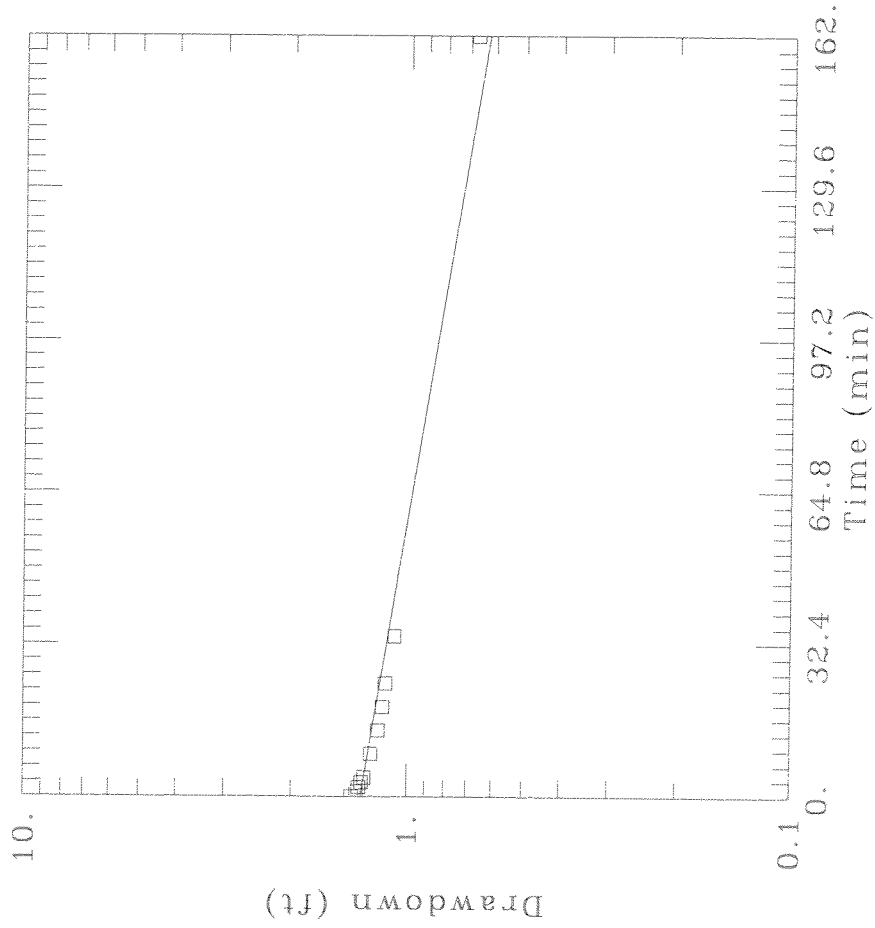
$r_c = 0.08333$ ft

$r_w = 0.26$ ft

$L = 10.$ ft

$b = 47.53$ ft

$H = 47.53$ ft



Aerostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c: / aqt / 20bl n. dat
09/10/12

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

8/7/12

TEST WELL:

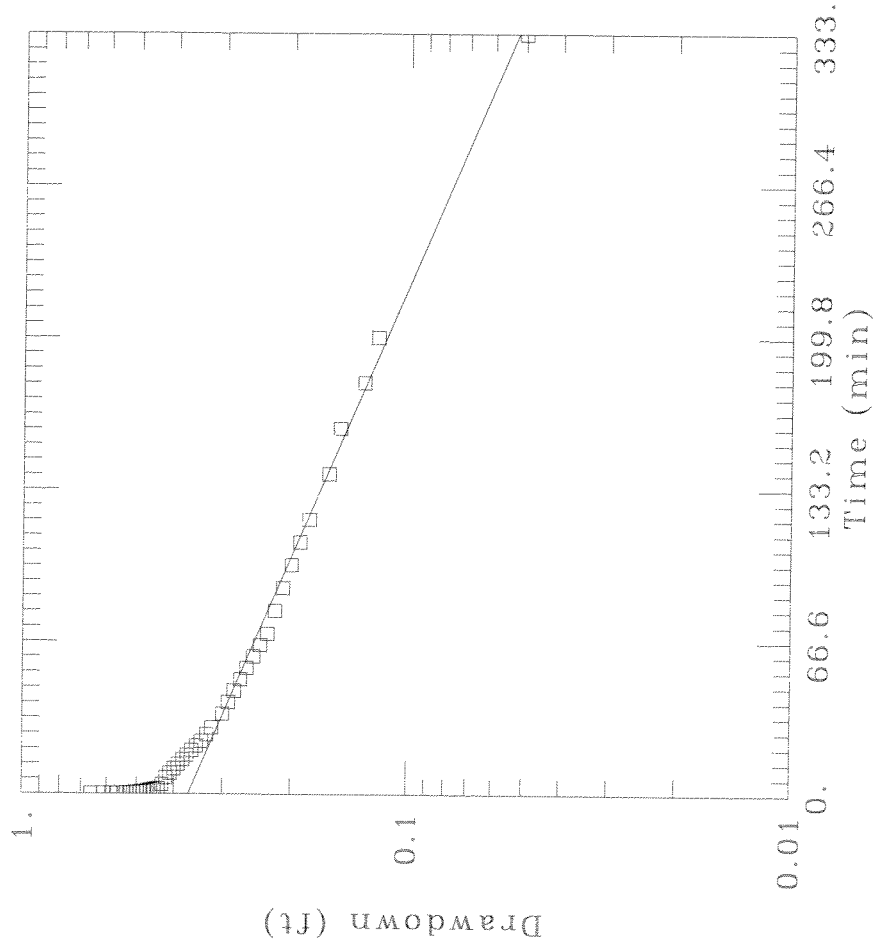
MW 20B

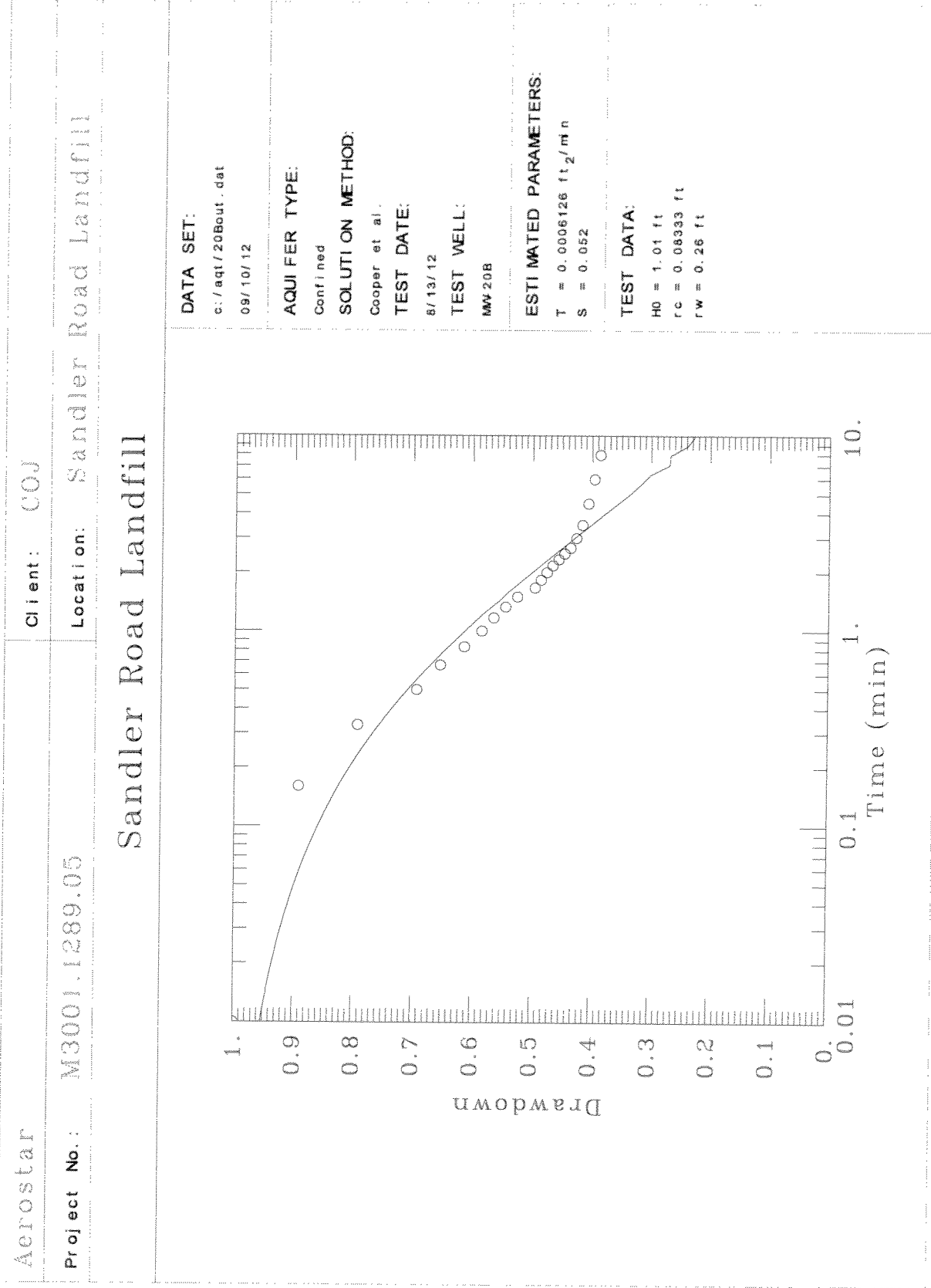
ESTIMATED PARAMETERS:

K = 1.3679E-05 ft/min
y0 = 0.3663 ft

TEST DATA:

H0 = 0.66 ft
rc = 0.08333 ft
rw = 0.26 ft
L = 5. ft
b = 47.39 ft
H = 47.39 ft





Acrostar

Client: COJ

Project No.: M3001.1289.05

Location: Sandler Road Landfill

Sandler Road Landfill

DATA SET:

c: /eqt / 20Bout . dat

09/10/12

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer - Rice

TEST DATE:

8/13/12

TEST WELL:

MW 20B

ESTIMATED PARAMETERS:

K = 0.0002412 ft/mn

y0 = 0.7853 ft

TEST DATA:

H0 = 1.01 ft

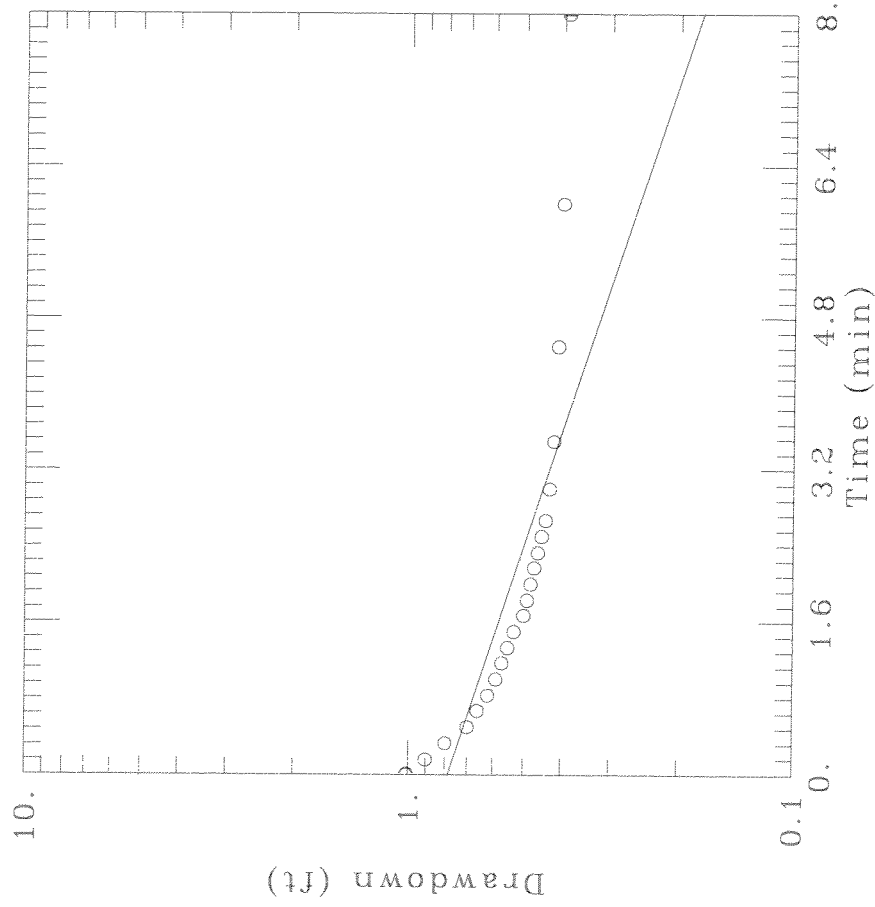
rc = 0.08333 ft

rw = 0.26 ft

L = 10. ft

b = 47.39 ft

H = 47.39 ft



ATTACHMENT F

CD Containing Laboratory Analytical Reports, Filed Sampling Forms and Chain of
Custodies