

SUMTER COUNTY
(CLOSED) LANDFILL
QUARTERLY GROUNDWATER
MONITORING REPORT
Quarter I (February) 2011

Prepared for:

**SUMTER COUNTY
SOLID WASTE DEPARTMENT
SUMTER COUNTY, FLORIDA**

Prepared by:

THE COLINAS GROUP, INC.
377 Maitland Avenue, Suite 2012
Altamonte Springs, Florida 32701

April 2011

THE COLINAS GROUP, INC.
HYDROGEOLOGISTS & ENGINEERS

April 11, 2011

Mr. John Morris, P.G.
Florida Department of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, Florida 33637

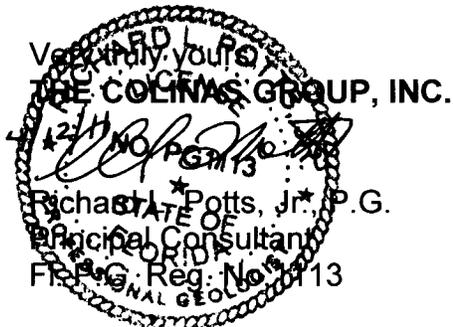
Subj: **Quarter I 2011 Groundwater Monitoring Report
Sumter County Closed Class I Landfill
Sumter County, Florida
FDEP Permit No. 22926-003-SF**

Dear Mr. Morris:

On behalf of Sumter County Board of County Commissioners, The Colinas Group, Inc. (TCG) herewith submits one Electronic Data Deliverable and one (1) paper copy of the report prepared by TCG entitled:

**Sumter County (Closed) Landfill Quarterly Groundwater Monitoring Report,
Quarter I (February) 2011**

The report was prepared and is submitted in satisfaction of part of the requirements of the Sumter County Closed Landfill Long-Term Care Permit. If you have any questions concerning the contents of the report please do not hesitate to contact me at your convenience.



cc: Mr. Jackey Jackson (Sumter County)
Ms. Denise Warnock (Sumter County)

**SUMTER COUNTY (CLOSED) LANDFILL
GROUNDWATER MONITORING REPORT,
SUMTER COUNTY, FLORIDA
Quarter I (February) 2011**

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**Sumter County (Closed) Landfill
Quarterly Groundwater Monitoring Report
Quarter I (February) 2011**

INTRODUCTION

The Colinas Group, Inc. (TCG) has reviewed the groundwater monitoring well sampling and analytical results for the Quarter I 2011 sampling event at the Sumter County (Closed) Landfill near Lake Panasoffkee in Sumter County. The sampling event was completed in accordance with the quarterly water quality monitoring and reporting requirements of the closed landfill Long -Term Care Permit #22926-003-SF.

The Groundwater Monitoring Plan for the closed landfill was amended in 2004 to replace three (3) existing monitoring wells deemed unsuitably located with respect to closed solid waste disposal areas. Existing wells MW-1, MW-7 and MW-9 were replaced by installation of new wells MW-11, MW-10 and MW-9A, respectively. The existing wells continue to be used as water level measuring points (piezometers).

New monitoring wells MW-4A and MW-4B, installed as part of a Preliminary Contamination Assessment completed at the landfill in January 2006, were added by the Florida Department of Environmental Protection (FDEP) to the facility groundwater monitoring network in May 2006. Groundwater sample analytical results for these new wells are included in this report. The current array of groundwater monitoring wells and piezometers at the facility is shown on Figure 1 (Attachment 1).

In accordance with Specific Condition 16d of the facility Long-Term Care Permit, sampling and analytical chemical parameters for this sampling event included the normal list of quarterly monitoring parameters. The Long-Term Care Permit requires an expanded parameter list, to include 40 CFR Appendix II parameters, during Quarter IV of each year.

SAMPLING EVENT

The Quarter I 2011 sampling event at the Sumter County Landfill occurred on March 2 and 3, 2011. Sampling was performed by TCG personnel in accordance with the FDEP Standard Operating Procedures (SOP) for Field Activities. Water samples collected from the facility groundwater monitoring wells were tested for the required field parameters. Monitoring wells were purged and the groundwater discharge allowed to stabilize prior to sample collection.

The results of field testing were recorded on Groundwater Sampling Logs (Attachment 3) and are listed in Table I. All samples were preserved and stored as required prior to shipment to the analytical laboratory. Laboratory analytical services were provided by Advanced Environmental Laboratories, Inc. (AEL) in accordance with the laboratory's NELAC and FDHRS Certification No. E53076, E84589, and E82574. The original analytical reports prepared by AEL are presented in Attachment 2 to this report.

Water table depth measurements in each facility groundwater monitoring well and piezometer were recorded on March 2, 2011. These measurements were used to develop the Groundwater Contour Map shown on Figure 1 (Attachment 1) for the uppermost receiving groundwater aquifer beneath the site. Depth to water table measurements and corresponding groundwater elevations are listed in Table II.

The wellhead at monitoring well **MW-9A** was damaged during the quarter and recently repaired by Sumter County. In good working order, a new top of casing elevation will be determined by a licensed land surveyor and mapper prior to the next quarterly sampling event in May. Water level measured in the well for this event is not used for groundwater contour map construction.

RESULTS

Field Tested Parameters

Results of field testing completed at groundwater monitoring wells for the Quarter I (February) 2011 sampling event are summarized in Table I. Field tests were completed by TCG sampling personnel in strict accordance with the FDEP SOP requirements using properly calibrated field instruments (see Attachment 5).

pH

The field testing results indicate pH of groundwater in the uppermost aquifer was within the FDEP secondary standard (6.5 - 8.5 pH units) at eight (8) of the nine (9) groundwater monitoring wells sampled. The nearly neutral to slightly basic pH values measured are consistent across the landfill property and appear normal considering the monitoring well screen intervals at and near the top of carbonate rocks and sediments. One well (**MW-4B**) produced water with a pH above the upper FDEP range at **8.60** pH units. This well has consistently produced pH values above 8.5 since sampling of the well began in Quarter II of 2006.

Fluid Temperature

Temperature of each water sample was measured in the field immediately following discharge into the flow cell used to accept flow from the purging pump. Temperature measurements of groundwater from the monitoring wells ranged from a low of 24.12 C at well **MW-8** to 26.54 C at **MW-4**.

Dissolved Oxygen

Dissolved oxygen (DO) exceeded the FDEP sampling guidance level of 20% saturation at four (4) of the nine (9) monitoring wells sampled, including the facility background monitoring well **MW-6A**. These wells consistently produce groundwater with elevated DO concentrations.

Specific Conductance

Specific conductance of groundwater samples collected during this sampling event are included in Table I. Specific conductance values varied through a relatively narrow range of 148 umhos/cm at well **MW-4B** to 887 umhos/cm at detection well **MW-9A**.

Turbidity

The FDEP recommends attainment of turbidity values less than 10 to 20 NTUs in groundwater samples obtained from monitoring wells. As shown in Table I, groundwater samples collected at all wells had measured turbidity values less than 20 NTUs. Fluid turbidity at most wells was less than 10 NTUs.

Regulatory Exceedances

A summary of groundwater laboratory analytical results for the February 2011 sample set is presented in Table III. As shown, six (6) analytical parameters were reported for certain monitoring wells at concentrations that exceed applicable regulatory levels. Exceeded parameters were aluminum, chromium, iron, manganese, nitrate nitrogen, and radionuclides (gross alpha + radium 226/228).

Aluminum

Aluminum was detected at concentrations above the Florida Secondary Drinking Water Standards (FSDWS) MCL (200 ug/l) in samples from five (5) monitoring wells: **MW-4** (820 ug/l), **MW-4B** (720 ug/l), **MW-9A** (360 ug/l), **MW-10** (1,300 ug/l), and **MW-11** (960 ug/l).

Chromium

Chromium was detected at low concentrations at all wells, including background monitoring well **MW-6A**. A chromium concentration exceeding the Florida Primary Drinking Water Standards (FPDWS) MCL (100 ug/l) was reported for former Preliminary Contamination

Assessment Plan well **MW-4B** at 120 ug/l. At TCG's request, a second aliquot from the sample was tested by the laboratory with a confirmed result of 120 ug/l

Review of historical results for this well indicates that chromium was consistently either below the laboratory Method Detection Limit (MDL) or ranged through very low values of 3.3 ug/l to 8.7 ug/l over the past four years. The last result for chromium at **MW-4B** in Quarter IV 2010 was a qualified 4.8 ug/l (chromium was detected in the laboratory blank).

Iron

Dissolved iron was detected in three (3) monitoring wells at concentrations above the FSDWS MCL of 300 ug/l. Iron was reported at 640 ug/l at well **MW-4B**, 630 ug/l at well **MW-9A** and 600 ug/l at **MW-10**. Iron was detected at concentrations less than 300 ug/l at two (2) other wells, and was below the laboratory MDL at the remaining monitoring wells.

Manganese

Manganese was reported above the FSDWS MCL of 50 ug/l in monitoring well **MW-9A** at 81 ug/l. Manganese was detected in all other wells at concentrations below the 50 ug/l MCL.

Nitrate Nitrogen

Nitrate was reported slightly above the 10 mg/l FPDWS MCL at monitoring well **MW-4A** at 12 mg/l. Elevated nitrate levels less than the MCL are noted in well **MW-4** at 8.1 mg/l and the facility background monitoring well **MW-6A** at 6.3 mg/l. Nitrate was reported at lower concentrations in the remaining monitoring wells.

Radionuclides

The sum of gross alpha plus radium 226/228 (corrected for the negative error range) reported for **MW-11** (16.6 pCi/l) slightly exceeded the FPDWS MCL of 15 pCi/l.

No other exceedance of a parameter regulatory concentration level was reported in the laboratory analytical results for samples from groundwater monitoring wells at the Sumter County Closed Landfill.

Other Detected Parameters

Ammonia was detected in groundwater samples from most monitoring wells at very low concentrations below the FPDWS MCL of 2.8 mg/l. Ammonia was reported below the laboratory MDL (not detected) at the three wells.

Antimony was detected in groundwater samples from all monitoring wells at concentrations ranging from 0.083 ug/l to 1.0 ug/l, well below the FPDWS MCL of 6 ug/l.

Cadmium was detected in groundwater samples from two (2) monitoring wells (**MW-9A** and **MW-11**) at concentrations less than the FPDWS MCL. Cadmium was reported below the laboratory MDL in remaining monitoring wells.

Chloride was detected in groundwater samples from all monitoring wells at levels well below the FPDWS MCL of 250 mg/l. Chloride ranged from 4.2 mg/l to 27 mg/l.

Lead was detected in five (5) monitoring wells at levels well below the FPDWS MCL of 15 ug/l. Lead concentrations at these wells ranged from 0.096 ug/l to 0.75 ug/l. Lead was reported below the laboratory MDL in remaining monitoring wells.

Mercury was detected at very low concentrations at five (5) monitoring wells, including background well **MW-6A**. Reported concentrations were well below the FPDWS MCL of 2 ug/l, and were less than the laboratory MDL in samples from remaining wells.

Sodium and **chloride** concentrations reported for six (6) of the nine (9) monitoring wells appear consistent between individual wells and typical for natural shallow groundwaters in Florida. Although significantly below respective regulatory MCLs, sodium/chloride concentrations at monitoring wells **MW-4**, **MW-4A**, and **MW-9A** are somewhat elevated above concentrations measured in samples from other monitoring wells.

Thallium was reported at low concentrations in four (4) wells: **MW-4** (0.091 ug/l), **MW-4A** (0.22 ug/l), **MW-9A** (0.16 ug/l) and **MW-11** (0.086 ug/l). The FPDWS MCL for thallium is 2 ug/l. Remaining wells were reported below the laboratory MDL.

Total Dissolved Solids (TDS) was reported at concentrations ranging from 84 mg/l (**MW-4B**) to 500 mg/l (**MW-9A**).

SUMMARY

Chemical characteristics of groundwater monitored at the Sumter County Landfill are reported for the Quarter I 2011 sampling event. Exceedances of specific constituent regulatory levels and MCLs are reported at specific monitoring wells for **aluminum**, **chromium**, **iron**, **manganese**, **nitrate nitrogen**, and **total radionuclides**.

Elevated **dissolved oxygen (DO)** levels were measured in four of the nine groundwater monitoring wells, including the facility background monitoring well. Prior sampling data indicate that elevated DO levels occur frequently and in many of the same monitoring wells, suggesting that high DO in groundwater at these locations is likely a natural condition

Aluminum was detected in samples from five wells (**MW-4**, **MW-4B**, **MW-9A**, **MW-10**, and **MW-11**) at concentrations above the FSDWS MCL of 200 ug/l. Aluminum was detected below the MCL in remaining monitoring wells, including the facility background well **MW-6A**. The most likely source of aluminum measured in groundwater samples is natural deposits of aluminum-silicate clay minerals within and near the groundwater monitoring zone tapped by wells at the landfill.

Chromium was reported above the FPDWS MCL (100 ug/l) at former Preliminary Contamination Assessment Plan (PCAP) well **MW-4B** at 120 ug/l. Chromium results for this well have ranged from below the laboratory MDL (not detected) to 8.7 ug/l since initial sampling of the PCAP well in 2006. Historical chromium levels reported for **MW-4B** are similar to values reported for other monitoring wells at the landfill, including background well **MW-6A**.

Radionuclide radioactivity, the sum of **gross alpha** and **radium 226/228**, exceeded the 15 pCi/l FPDWS MCL in a groundwater sample from well **MW-11**, reported at a range of 16.6 - 21.2 pCi/l. Gross alpha individually ranged from 13.6 - 17.2 pCi/l in the groundwater sample.

Manganese was reported above the FSDWS MCL in the sample from **MW-9A**, one of the more recently-constructed monitoring wells. **Iron** was detected slightly above the FSDWS MCL in wells **MW-9A** and **MW-10**. Both of these elements occur naturally in sediments and carbonate rocks penetrated by the monitoring wells.

Nitrate nitrogen dissolved in groundwater was reported above the FPDWS MCL of 10 mg/l at well **MW-4A** (11 mg/l). As shown on the groundwater contour map for the February 2011 sampling event (Figure 1) well **MW-4A** was upgradient of well **MW-4** and the closed landfill waste disposal areas. Elevated concentrations of nitrate nitrogen were also reported at well **MW-6A** and at all but one of the remaining monitoring wells at levels considered above naturally-occurring nitrate concentrations typically found in groundwater in Florida.

* * * * *

TABLE I
FIELD PARAMETER RESULTS SUMMARY,
SUMTER COUNTY (CLOSED) LANDFILL
SUMTER COUNTY, FLORIDA
Quarter I (February) 2011

Sampling Point	Temp. (C)	Dissolved Oxygen (mg/l)	pH	Specific Conductance (umhos/cm)	Turbidity (NTU)
MW-2	25.66	5.72	6.97	320	0.79
MW-4	26.54	0.59	7.15	608	9.25
MW-4A	26.52	0.30	7.02	679	7.51
MW-4B	26.12	4.02	8.60	148	9.04
MW-6A	24.40	7.04	6.92	264	4.93
MW-8	24.12	4.56	7.10	358	0.86
MW-9A	25.03	0.35	6.35	887	5.73
MW-10	25.20	1.55	6.87	513	13.2
MW-11	25.69	0.70	6.55	544	13.4

Notes: **Bold** lettering indicates: Exceedance of FDEP 20% saturation dissolved oxygen limit
Exceedance of pH range (6.5 - 8.5)
Exceedance of FDEP-recommended turbidity (20 NTU)

TABLE II
QUARTER I 2011
SUMMARY OF GROUNDWATER LEVELS
SUMTER COUNTY (CLOSED) LANDFILL
SUMTER COUNTY, FLORIDA
(March 2, 2011)

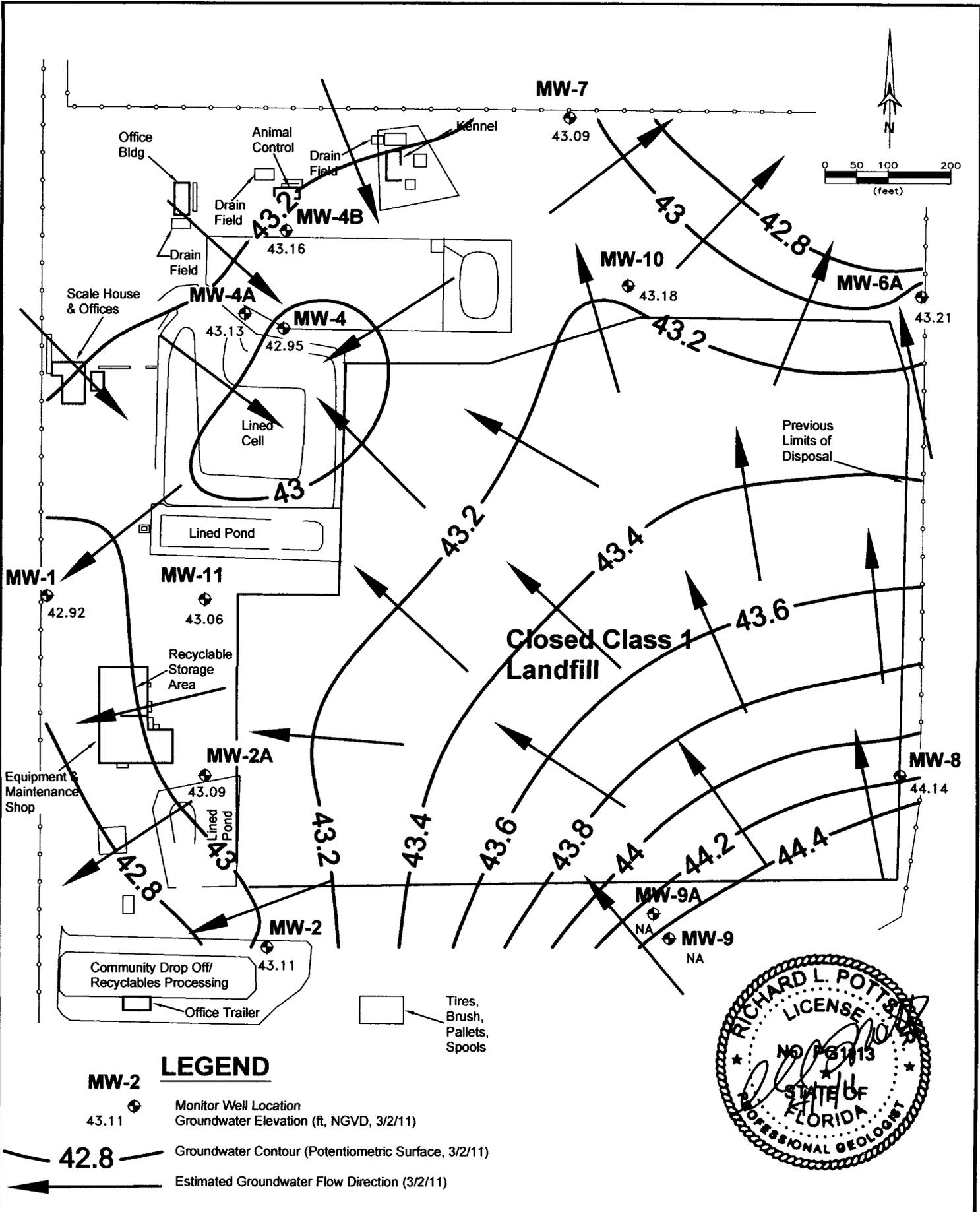
Well No.	Measuring Point Elevation ^{1/} (ft. +NGVD)	Depth to Water (ft. - MP) ^{2/}	Groundwater Elevation (ft. +NGVD)
MW-1	70.17	27.25	42.92
MW-2	69.13	26.02	43.11
MW-2A	72.11	29.02	43.09
MW-4	70.36	27.41	42.95
MW-4A	75.73	32.60	43.13
MW-4B	73.83	30.67	43.16
MW-6A	77.54	34.33	43.21
MW-7	73.14	30.05	43.09
MW-8	69.26	25.12	44.14
MW-9	71.95	29.66	42.29
MW-9A	74.26 ^{3/}	32.12	42.14
MW-10	68.28	25.10	43.18
MW-11	70.21	27.15	43.06

Notes: ^{1/} Measuring Point is top of PVC well casing.
^{2/} Water levels recorded on March 2, 2011.
^{3/} Wellhead recently repaired, TOC elevation unreliable.

**TABLE III
SUMMARY OF LABORATORY RESULTS
SUMTER COUNTY (CLOSED) LANDFILL, QUARTER I (February) 2011**

Parameter	units	MW-2	MW-4	MW-4A	MW-4B	MW-6A	MW-8	MW-9A	MW-10	MW-11	MCL
Ammonia	mg/l	0.030	0.030	BDL	0.030	BDL	0.039	0.41	0.071	BDL	2.8
Aluminum	ug/l	BDL	820	100	720	BDL	BDL	360	1,300	960	200
Antimony	ug/l	1.0	0.36	0.16	0.17	0.083	0.095	0.11	0.20	0.13	6
Cadmium	ug/l	BDL	BDL	BDL	BDL	BDL	BDL	1.3	BDL	2.6	5
Chloride	mg/l	5.8	21	27	5.4	8.8	9.1	21	8.0	4.2	250
Chromium	ug/l	1.0	29	2.7	120	5.2	3.6	3.8	19	6.6	100
Fluoride	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	4
Gross Alpha	pCi/l	1.5 ± 1.2	7.6 ± 1.6	3.6 ± 0.8	2.6 ± 1.0	2.1 ± 1.1	< 1.2 ± 0.8	6.4 ± 1.9	9.9 ± 1.1	15.4 ± 1.8	15
Iron	ug/l	BDL	220	BDL	640	BDL	BDL	630	600	170	300
Lead	ug/l	BDL	0.52	BDL	0.20	BDL	BDL	0.096	0.72	0.75	15
Manganese	ug/l	2.3	14	7.6	18	1.0	0.87	81	22	4.6	50
Mercury	ug/l	BDL	BDL	BDL	0.040	0.018	0.047	0.55	BDL	0.067	2
Nitrate, as N	mg/l	2.1	8.1	12	3.4	6.3	2.1	0.60	3.0	4.3	10
Radium 226	pCi/l	0.4 ± 0.2	0.8 ± 0.3	0.9 ± 0.3	0.4 ± 0.2	1.3 ± 0.3	0.7 ± 0.3	2.4 ± 0.4	1.7 ± 0.4	3.5 ± 0.5	---
Radium 228	pCi/l	< 0.7 ± 0.5	0.7 ± 0.5	< 0.6 ± 0.4	< 0.7 ± 0.5	< 0.6 ± 0.4	< 0.7 ± 0.4	0.8 ± 0.5	< 0.7 ± 0.4	< 0.6 ± 0.4	---
Silver	ug/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	100
Sodium	mg/l	3.9	40	26	9.0	3.0	5.3	19	6.1	9.6	160
TDS	mg/l	190	350	430	84	200	210	500	290	300	500
Thallium	ug/l	BDL	0.091	0.22	BDL	BDL	BDL	0.16	BDL	0.086	2

Notes: 1). BDL means below laboratory method detection limit 2). **Bold lettering** indicates result exceeds MCL/Guidance concentration



The Colinas Group, Inc. 377 Maitland Avenue Suite 2012 Altamonte Springs, Florida 32701	PROJ. NO.: P-431	GROUNDWATER CONTOUR MAP QUARTER 1 (MARCH) 2011 SUMTER COUNTY LANDFILL	FIGURE 1
	DATE: MARCH 2011		
	SCALE: 1" = 200'		

GROUNDWATER SAMPLING LOG

SITE NAME: Sumter County Landfill		SITE LOCATION: Sumterville, FL	
WELL NO: MW-2	SAMPLE ID: MW-2	DATE: 3/3/11	

PURGING DATA

WELL 2" PVC	TUBING 3/8" / 1/4"	WELL SCREEN INTERVAL	STATIC DEPTH 26.02'	PURGE PUMP TYPE							
DIAMETER (inches):	DIAMETER (inches):	DEPTH: feet to feet	TO WATER (feet):	OR BAILER: PP							
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY <i>Well Vol = (31.92' feet - 26.02' feet) X .16 gallons/foot = .944 gallons</i>											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME 1 Equip Vol = .02 gallons + (.006 gallons/foot X feet) + .125 gallons = gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~28'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~28'	PURGING INITIATED AT: 1100	PURGING ENDED AT: 1123	TOTAL VOLUME PURGED (gallons): 1.20							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1119	.96	.96	.06	26.10	7.01	25.25	325	5.64	1.46	Clear	None
1121	1.12	1.08	.06	26.10	6.99	25.49	322	5.57	0.97	Clear	None
1123	1.12	1.20	.06	26.10	6.97	25.46	320	5.72	0.79	Clear	None
<i>No screen</i>											
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 6" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: H. L. Claytor, Colinas Group, Inc.		SAMPLER/SIGNATURES: <i>[Signature]</i>		SAMPLING INITIATED AT: 1124	SAMPLING ENDED AT: 1140				
PUMP OR TUBING DEPTH IN WELL (feet): ~28'		SAMPLE PUMP FLOW RATE (mL per minute): < 250 mL		TUBING MATERIAL CODE: PE					
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N		FIELD-FILTERED: Y <input checked="" type="radio"/> N Filtration Equipment Type: _____		FILTER SIZE: _____ µm					
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N		DUPLICATE: Y <input checked="" type="radio"/> N							
SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
MW-2	2	PE	1 Ltr	HN03	None	---	GrossAlpha, RA226RA228		APP
"	1	PE	250 mL	H2S04	None	---	Total Ammonia		APP
"	1	PE	250 mL	HN03	None	---	Metals		APP
"	1	PE	500 mL	None	None	---	Chloride, Fluoride, Nitrate, TDS		APP

REMARKS:
1100: Set dedicated 1/4" PE tubing @ ~28' stoc and began purging @ .03 gpm with a PP.
1106: WL 26.07' @ .03 gpm, increased flow to .06 gpm. GW is clear.
1109: WL 26.10' @ .06 gpm, GW is clear. DO is high @ 5.60 mg/L, but is typical for this well. Will use optional stabilization criteria below.
1116: WL 26.10' @ .06 gpm, GW is clear. DO is still high @ 5.64 mg/L. Drawdown is stable.

Notes: 1) Used a graduated 5 gallon bucket and timed to measure purge volumes
2) Packed samples on ice immediately upon collection

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

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

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

2. STABILIZATION CRITERIA FOR RANGE VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)H: ± 0.2 units; Temperature: ± 0.2 degrees C; Specific Conductance: ± 5%; Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2), optionally, ± .02 mg/L or ± 10% (whichever is greater); Turbidity: all readings ≤ 20 NTU, optionally ± 5 NTU or ± 10% (whichever is greater)

GROUNDWATER SAMPLING LOG

SITE NAME: Sumter County Landfill	SITE LOCATION: Sumterville, FL
WELL NO: MW-4	SAMPLE ID: MW-4
DATE: 3/2/11	

PURGING DATA

WELL 2" PVC	TUBING 3/8"	WELL SCREEN INTERVAL	STATIC DEPTH 27.41'	PURGE PUMP TYPE OR BAILER: ESP							
DIAMETER (inches):	DIAMETER (inches):	DEPTH: feet to feet	TO WATER (feet):								
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable $1 \text{ Well Vol} = (36.35' \text{ feet} - 27.41' \text{ feet}) \times .16 \text{ gallons/foot} = 1.4304 \text{ gallons}$											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) 1 Equip Vol = .02 gallons + (.006 gallons/foot X feet) + .125 gallons = gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~31'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~31'	PURGING INITIATED AT: 1409	PURGING ENDED AT: 1427	TOTAL VOLUME PURGED (gallons): 2.70							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1419	1.50	1.50	.15	27.29	7.55	26.71	610	.90	22.4	Clear	None
1423	.60	2.10	.15	27.25	7.23	26.53	609	.61	14.3	Clear	None
1425	.30	2.40	.15	27.25	7.19	26.54	608	.59	11.4	Clear	None
1427	.30	2.70	.15	27.25	7.15	26.54	608	.59	9.25	Clear	None
No screens											
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: H. L. Claytor, Colinas Group, Inc.		SAMPLER(S) SIGNATURES: 		SAMPLING INITIATED AT: 1428	SAMPLING ENDED AT: 1440			
PUMP OR TUBING DEPTH IN WELL (feet): ~31'		SAMPLE PUMP FLOW RATE (mL per minute): < 250 mL		TUBING MATERIAL CODE: PE				
FIELD DECONTAMINATION: <input checked="" type="radio"/> Y <input type="radio"/> N		FIELD-FILTERED: <input checked="" type="radio"/> Y <input type="radio"/> N Filtration Equipment Type: _____		FILTER SIZE: _____ µm DUPLICATE: <input type="radio"/> Y <input checked="" type="radio"/> N				
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
MW-4	2	PE	1 Ltr	HN03	None	---	Gross Alpha, RA226RA228	ESP
"	1	PE	250 mL	H2S04	None	---	Ammonia	ESP
"	1	PE	250 mL	HN03	None	---	Metals	ESP
"	1	PE	500 mL	None	None	---	Chloride, Fluoride, Nitrate, TDS	ESP

REMARKS:

1409: Inserted SS ESP and dedicated 3/8" PE tubing to ~31' static and began purging @ .15 gpm.

1417: WL 27.29' @ .15 gpm, GW is turbid @ 30 NTUs.

1419: GW is turbid @ 27 NTUs, will over purge to clean it up.

Notes: 1) Used a graduated 5 gallon bucket and timed to measure purge volumes
 2) Packed samples on ice immediately upon collection

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

SAMPLING/PURGING: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

EQUIPMENT CODES: RFPF = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Notes: 1. The above do not constitute all the information required by Chapter 62-160, F.A.C.
 2. STABILIZATION CRITERIA FOR RANGE VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3): H: ± 0.2 units; Temperature: ± 0.2 degrees C; Specific Conductance: ± 5%; Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2), optionally, ± .02 mg/L or ± 10% (whichever is greater); Turbidity: all readings ≤ 20 NTU, optionally ± 5 NTU or ± 10% (whichever is greater)

GROUNDWATER SAMPLING LOG

SITE NAME: Sumter County Landfill	SITE LOCATION: Sumterville, FL
WELL NO: MW-4A	SAMPLE ID: MW-4A
DATE: 3/2/11	

PURGING DATA

WELL 2" PVC	TUBING 3/8"	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH 32.60' TO WATER (feet):	PURGE PUMP TYPE OR BAILER: ESP
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)				
= (45.23' feet - feet) X gallons/foot = gallons				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME x3 = 1.245 (only fill out if applicable)				
1 Equip Vol = .02 gallons + (.006 gallons/foot X 45' feet) + .125 gallons = .415 gallons				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~40'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~40'	PURGING INITIATED AT: 1454	PURGING ENDED AT: 1511	TOTAL VOLUME PURGED (gallons): 5.70

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1507	5.30	5.30	.1	32.64	7.07	26.30	677	.28	8.55	Clear	None
1509	.2	5.50	.1	32.64	7.05	26.37	677	.30	8.53	Clear	None
1511	.2	5.70	.1	32.64	7.02	26.52	679	.30	7.51	Clear	None
No screen											

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: H. L. Claytor, Colinas Group, Inc.		SAMPLER(S) SIGNATURES: 		SAMPLING INITIATED AT: 1512	SAMPLING ENDED AT: 1525
PUMP OR TUBING DEPTH IN WELL (feet): ~40'		SAMPLE PUMP FLOW RATE (mL per minute): < 250 mL		TUBING MATERIAL CODE: PE	
FIELD DECONTAMINATION: <input checked="" type="radio"/> Y <input type="radio"/> N		FIELD-FILTERED: <input checked="" type="radio"/> Y <input type="radio"/> N FILTER SIZE: _____ µm		DUPLICATE: <input type="radio"/> Y <input checked="" type="radio"/> N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
MW-4A	2	PE	1 Ltr	HN03	None	—	Gross Alpha, RA226RA228	ESP
"	1	PE	500 mL	H2S04	None	—	Total Ammonia	ESP
"	1	PE	250 mL	HN03	None	—	Metals	ESP
"	1	PE	500 mL	None	None	—	Chloride, Fluoride, Nitrate, TDS	ESP

REMARKS:
1454: Inserted 55 ESP and dedicated 3/8" PE tubing to ~40' btoe and began purging @ .5 gpm. This well typically is turbid at beginning of purge requiring even purging at a higher flow rate to clean it up.
1500: Turbidity is @ 23 NTUs, continuing to purge.
1504: Turbidity is @ 13 NTUs, reduced flow to .1 gpm.
1506: WL 32.64 @ .1 gpm, GW is clear. Drawdown is stable.

Notes: 1) Used a graduated 5 gallon bucket and timed to measure purge volumes
 2) Packed samples on ice immediately upon collection

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

SAMPLING/PURGING APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump
 EQUIPMENT CODES: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Notes: 1. The above do not constitute all the information required by Chapter 62-160, F.A.C.
 2. STABILIZATION CRITERIA FOR RANGE VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)H: ± 0.2 units; Temperature: ± 0.2 degrees C; Specific Conductance: ± 5%; Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2), optionally, ± .02 mg/L or ± 10% (whichever is greater); Turbidity: all readings ≤ 20 NTU, optionally ± 5 NTU or ± 10% (whichever is greater)

GROUNDWATER SAMPLING LOG

SITE NAME: Sumter County Landfill	SITE LOCATION: Sumterville, FL
WELL NO: MW-4B	SAMPLE ID: MW-4B
DATE: 3/2/11	

PURGING DATA

WELL 2" PVC	TUBING 3/8"	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH 30.67 TO WATER (feet):	PURGE PUMP TYPE OR BAILER: ESP
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable $1 \text{ Well Vol} = (38.49' \text{ feet} - 30.67' \text{ feet}) \times .16 \text{ gallons/foot} = 1.2512 \text{ gallons}$				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) $1 \text{ Equip Vol} = .02 \text{ gallons} + (.006 \text{ gallons/foot} \times \text{feet}) + \text{gallons} = \text{gallons}$				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~34'		FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~34'		PURGING INITIATED AT: 1323
				PURGING ENDED AT: 1340
TOTAL VOLUME PURGED (gallons): 1.70				

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1336	1.30	1.30	.1	30.74	8.56	26.08	148	4.08	10.2	Clear	None
1338	.2	1.50	.1	30.74	8.58	26.09	148	4.10	9.77	Clear	None
1340	.2	1.70	.1	30.74	8.60	26.12	148	4.02	9.04	Clear	None
No Screen											

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: H. L. Claytor, Colinas Group, Inc.		SAMPLER(S) SIGNATURES: 		SAMPLING INITIATED AT: 1341	SAMPLING ENDED AT: 1352
PUMP OR TUBING DEPTH IN WELL (feet): ~34'		SAMPLE PUMP FLOW RATE (mL per minute): < 250 mL		MATERIAL CODE: PE	
FIELD DECONTAMINATION: <input checked="" type="radio"/> Y <input type="radio"/> N		FIELD-FILTERED: <input checked="" type="radio"/> Y <input type="radio"/> N FILTER SIZE: _____ µm		DUPLICATE: <input type="radio"/> Y <input checked="" type="radio"/> N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
MW-4B	2	PE	1 Ltr	HN03	None	—	Gross Alpha, RA228RA228	ESP
"	1	PE	500 mL	H2SO4	None	—	Total Ammonia	ESP
"	1	PE	250 mL / 1 Ltr	HN03	None	—	Metals	ESP
"	1	PE	500 mL	None	None	—	Chloride, Fluoride, Nitrate, TDS	ESP

REMARKS:

1323: ~~Start~~ Inserted SS ESP and dedicated 3/8" PE tubing to ~34' b/c and began purging @ .1 gpm.

1328: WL 30.75' @ .1 gpm, GW is slightly turbid @ 27 NTUs.

1335: WL 30.74' @ .1 gpm, drawdown is stable. GW is clear. DO is high @ 4.38 mg/L, but is typical for this well. Will use optional stabilization criteria below.

Notes: 1) Used a graduated 5 gallon bucket and timed to measure purge volumes
 2) Packed samples on ice immediately upon collection

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

SAMPLING/PURGING: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump
 EQUIPMENT CODES: RFP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Notes: 1. The above do not constitute all the information required by Chapter 62-160, F.A.C.
 2. STABILIZATION CRITERIA FOR RANGE VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)H: ± 0.2 units; Temperature: ± 0.2 degrees C; Specific Conductance: ± 5%; Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2), optionally, ± .02 mg/L or ± 10% (whichever is greater); Turbidity: all readings ≤ 20 NTU, optionally ± 5 NTU or ± 10% (whichever is greater)

GROUNDWATER SAMPLING LOG

SITE NAME: Sumter County Landfill	SITE LOCATION: Sumterville, FL
WELL NO: MW-6A	SAMPLE ID: MW-6A
DATE: 3/3/11	

PURGING DATA

WELL 2" PVC	TUBING 3/8"	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH 34.33 TO WATER (feet):	PURGE PUMP TYPE OR BAILER: ESP							
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)											
= (50.84' feet - feet) X gallons/foot = gallons											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME X 3 = 1.515 (only fill out if applicable)											
1 Equip Vol = .02 gallons + (.006 gallons/foot X 60' feet) + .125 gallons = .505 gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~45'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~45'	PURGING INITIATED AT: 0852	PURGING ENDED AT: 0922	TOTAL VOLUME PURGED (gallons): 15							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
0918	13	13	.5	34.41	6.54	24.38	263	6.97	6.41	Clear	None
0920	1	14	.5	34.41	6.73	24.38	263	7.00	6.62	Clear	None
0922	1	15	.5	34.41	6.92	24.40	264	7.04	4.93	Clear	None
<i>No Screen</i>											
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 6" = 1.02; 8" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: H. L. Clayton, Colinas Group, Inc.		SAMPLER(S) SIGNATURES: <i>[Signature]</i>		SAMPLING INITIATED AT: 0923	SAMPLING ENDED AT: 0933			
PUMP OR TUBING DEPTH IN WELL (feet): ~45'		SAMPLE PUMP FLOW RATE (mL per minute): < 250 mL		MATERIAL CODE: PE				
FIELD DECONTAMINATION: <input checked="" type="radio"/> Y <input type="radio"/> N		FIELD-FILTERED: <input checked="" type="radio"/> Y <input type="radio"/> N FILTER SIZE: _____ µm		DUPLICATE: <input type="radio"/> Y <input checked="" type="radio"/> N				
SAMPLE CONTAINER SPECIFICATION		SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE		
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
MW-6A	2	PE	1 Ltr	HN03	None	—		Gross Alpha, RA226RA228
"	1	PE	250 mL	H2S04	None	—		Total Ammonia
"	1	PE	250 mL	HN03	None	—		Metals
"	12	PE	500 mL	None	None	—		Chloride, Fluoride, Nitrate, TDS

REMARKS:
0852: Inserted SS ESP and new 3/8" PE tubing to ~45' btoe and began purging @ .5 gpm. This well is typically extremely turbid at beginning of purge requiring over purging at a higher rate of flow to clean it up.
0915: WL 34.41' @ .5 gpm, GW is clear @ 9 NTUs. WL is stable.
0917: WL 34.41' @ .5 gpm. DO is high @ 6.91 mg/L, but is typical for this well. Will use optional stabilization criteria below.

Notes: 1) Used a graduated 5 gallon bucket and timed to measure purge volumes
2) Packed samples on ice immediately upon collection

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

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

Notes: 1. The above do not constitute all the information required by Chapter 62-160, F.A.C.
2. STABILIZATION CRITERIA FOR RANGE VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)H: ± 0.2 units; Temperature: ± 0.2 degrees C; Specific Conductance: ± 5%; Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2), optionally, ± .02 mg/L or ± 10% (whichever is greater); Turbidity: all readings ≤ 20 NTU, optionally ± 5 NTU or ± 10% (whichever is greater)

GROUNDWATER SAMPLING LOG

SITE NAME: Sumter County Landfill	SITE LOCATION: Sumterville, FL
WELL NO: MW-8	SAMPLE ID: MW-8 DATE: 3/2/11

PURGING DATA

WELL 2" PVC	TUBING 3/8"	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH 25.12' TO WATER (feet):	PURGE PUMP TYPE OR BAILER: ESP							
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable)											
= (43.24' feet - 25.12' feet) X 0.006 gallons/foot = 0.403 gallons											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME x3 = 1.209 (only fill out if applicable)											
1 Equip Vol = .02 gallons + (.006 gallons/foot X 43' feet) + .125 gallons = 0.403 gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~38'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~38'	PURGING INITIATED AT: 1110	PURGING ENDED AT: 1124	TOTAL VOLUME PURGED (gallons): 4.2							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1120	3	3	.3	25.20'	7.12	24.13	361	4.57	1.54	Clear	None
1122	.6	3.6	.3	25.20'	7.11	24.14	360	4.56	1.43	Clear	None
1124	.6	4.2	.3	25.20'	7.10	24.12	358	4.56	0.86	Clear	None
<i>No screen</i>											
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: H. L. Claytor, Colinas Group, Inc.		SAMPLER(S) SIGNATURES: <i>[Signature]</i>		SAMPLING INITIATED AT: 1125	SAMPLING ENDED AT: 1135		
PUMP OR TUBING DEPTH IN WELL (feet): ~38'		SAMPLE PUMP FLOW RATE (mL per minute): < 250 mL		TUBING MATERIAL CODE: PE			
FIELD DECONTAMINATION: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N		FIELD-FILTERED: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N FILTER SIZE: _____ µm		DUPLICATE: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N			
SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)		
MW-8	2	PE	1 Ltr	HN03	None	—	GrossAlpha, RA226RA228 Total Ammonia Metals Chloride, Fluoride, Nitrate, TDS
"	1	PE	250 mL	H2SO4	None	—	
"	1	PE	250 mL	HN03	None	—	
"	12	PE	500 mL	None	None	—	

REMARKS:
1110: Inserted SS ESP and dedicated 3/8" PE tubing to ~38' b/c and began purging @ .3 gpm.
1117: WL 25.20' @ .3 gpm, GW is clear.
1119: WL 25.20' @ .3 gpm, drawdown is stable. DO is high @ 4.62 mg/L, but is typical for this well. Will use optional stabilization criteria below.

Notes: 1) Used a graduated 5 gallon bucket and timed to measure purge volumes
 2) Packed samples on ice immediately upon collection

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

Notes: 1. The above do not constitute all the information required by Chapter 62-160, F.A.C.
 2. STABILIZATION CRITERIA FOR RANGE VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)H: ± 0.2 units; Temperature: ± 0.2 degrees C; Specific Conductance: ± 5%; Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2), optionally, ± .02 mg/L or ± 10% (whichever is greater); Turbidity: all readings ≤ 20 NTU, optionally ± 5 NTU or ± 10% (whichever is greater)

GROUNDWATER SAMPLING LOG

SITE NAME: Sumter County Landfill	SITE LOCATION: Sumterville, FL
WELL NO: MW-9A	SAMPLE ID: MW-9A
DATE: 3/2/11	

PURGING DATA

WELL 2" PVC DIAMETER (inches):	TUBING 3/8" DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH 32.12 TO WATER (feet):	PURGE PUMP TYPE OR BAILER: ESP
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable)				
= (50.17' feet - _____ feet) X _____ gallons/foot = _____ gallons				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)				
1 Equip Vol = .02 gallons + (.006 gallons/foot X 50 feet) + .125 gallons = 1.335 gallons				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~4.5		FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~4.5		PURGING INITIATED AT: 0936
				PURGING ENDED AT: 1030
TOTAL VOLUME PURGED (gallons): 26.6				

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1026	2.5	2.5	0.5	38.70	6.31	25.05	889	.53	9.35	Clear	None
1028	.8	25.8	.4	38.70	6.33	25.04	885	.44	7.26	Clear	Same
1030	.8	26.6	.4	38.71	6.35	25.03	887	.35	5.73	Clear	None
<i>No screen</i>											

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: H. L. Claytor, Colinas Group, Inc.		SAMPLER(S) SIGNATURES: 		SAMPLING INITIATED AT: 1031	SAMPLING ENDED AT: 1042
PUMP OR TUBING DEPTH IN WELL (feet): ~4.5		SAMPLE PUMP FLOW RATE (mL per minute):		MATERIAL CODE: PE	
FIELD DECONTAMINATION: <input checked="" type="radio"/> Y <input type="radio"/> N		FIELD-FILTERED: <input checked="" type="radio"/> Y <input type="radio"/> N FILTER SIZE: _____ µm		DUPLICATE: <input type="radio"/> Y <input checked="" type="radio"/> N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
MW-9A	2	PE	1 Ltr	HN03	None	---	Gross Alpha, RA226RA228	ESP
"	1	PE	500 mL	H2S04	None	---		
"	1	PE	250 mL	HN03	None	---	Total Ammonia	ESP
"	1	PE	500 mL	None	None	---	Metals	ESP
"	1	PE	500 mL	None	None	---	Chloride, Fluoride, Nitrate, TDS	ESP

REMARKS:

0936: Inserted SS ESP and dedicated 3/8" PE tubing to ~4.5' static and began purge @ .5 gpm. This well is typically extremely turbid at beginning of purge requiring over purging to clean it up.

1016: Turbidity is @ 30 NTUs, continuing purge.

1022: WL 38.71 @ .5 gpm, GW is clear. Turbidity is @ 14 NTUs.

1024: WL 38.71 @ .5 gpm, drawdown is stable. Reduced flow slightly for field measurements.

- Notes: 1) Used a graduated 5 gallon bucket and timed to measure purge volumes
 2) Packed samples on ice immediately upon collection

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

SAMPLING/PURGING APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

EQUIPMENT CODES: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Notes: 1. The above do not constitute all the information required by Chapter 62-160, F.A.C.
 2. STABILIZATION CRITERIA FOR RANGE VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)H: ± 0.2 units; Temperature: ± 0.2 degrees C; Specific Conductance: ± 5%; Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2), optionally, ± .02 mg/L or ± 10% (whichever is greater); Turbidity: all readings ≤ 20 NTU, optionally ± 5 NTU or ± 10% (whichever is greater)

GROUNDWATER SAMPLING LOG

SITE NAME: Sumter County Landfill	SITE LOCATION: Sumterville, FL
WELL NO: MW-11	SAMPLE ID: MW-11
DATE: 3/2/11	

PURGING DATA

WELL 2" PVC	TUBING 3/8"	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet): 27.15	PURGE PUMP TYPE OR BAILER: ESP
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable)				
= (40.15' feet - feet) X gallons/foot = gallons				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME x3 = 1.155 (only fill out if applicable)				
1 Equip Vol = .02 gallons + (.006 gallons/foot X 40' feet) + .125 gallons = .385 gallons				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~35'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~35'	PURGING INITIATED AT: 1013	PURGING ENDED AT: 1032	TOTAL VOLUME PURGED (gallons): 9.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1028	2.5	2.5	.5	27.31	6.55	25.69	534	.83	17.0	Clear	None
1030	1	8.5	.5	27.30	6.56	25.69	539	.73	15.1	Clear	None
1032	1	9.5	.5	27.30	6.55	25.69	544	.70	13.4	Clear	None
<i>No screen</i>											

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: H. L. Claytor, Colinas Group, Inc.		SAMPLER(S) SIGNATURES: <i>[Signature]</i>		SAMPLING INITIATED AT: 1033	SAMPLING ENDED AT: 1045
PUMP OR TUBING DEPTH IN WELL (feet): ~35'		SAMPLE PUMP FLOW RATE (mL per minute): < 250 mL		MATERIAL CODE: PE	
FIELD DECONTAMINATION: <input checked="" type="radio"/> Y <input type="radio"/> N		FIELD-FILTERED: <input checked="" type="radio"/> Y <input type="radio"/> N Filtration Equipment Type: _____		DUPLICATE: <input type="radio"/> Y <input checked="" type="radio"/> N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
MW-11	2	PE	1 Ltr	HN03	None	---	Gross Alpha, RA226, RA228	ESP
"	1	PE	500 mL	H2S04	None	---	Total Ammonia	ESP
"	1	PE	800 mL	HN03	None	---	Metals	ESP
"	12	PE	500 mL	None	None	---	Chloride, Fluoride, Nitrate, TDS	ESP

REMARKS:

1013: Inserted SS ESP and dedicated 3/8" PE tubing to ~35' b/c and began purging @ .5 gpm. This well typically is extremely turbid at beginning of purge requiring over purging to clean it up.

1023: Turbidity is @ 15 NTUs. WL 27.31 @ .5 gpm, draw down is stable.

1027: WL 27.31 @ .5 gpm.

Notes: 1) Used a graduated 5 gallon bucket and timed to measure purge volumes
2) Packed samples on ice immediately upon collection

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

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

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

2. STABILIZATION CRITERIA FOR RANGE VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)H: ± 0.2 units; Temperature: ± 0.2 degrees C; Specific Conductance: ± 5%; Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2), optionally, ± .02 mg/L or ± 10% (whichever is greater); Turbidity: all readings ≤ 20 NTU, optionally ± 5 NTU or ± 10% (whichever is greater)



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Page 1

A1101554

Client Name: The Colinas Group, Inc.
Address: 509 North Virginia Ave
City: Winter Park, Florida 32789
Phone: 407-622-8176
Fax: 407-622-8196
Contact: Dale Clayton
Sampled By: Dale Clayton
 RUSH

P.O. Number/Project Number: P-431
Project Location: Sumterville off
 REMAINING SPECIAL INSTRUCTIONS:

Client Name: Sumter Co. Landfill - GW Sampling

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING		MATRIX	NO. COUNT	ANALYSIS REQUIRED	BOTTLE SIZE & TYPE	LABORATORY I.D. NUMBER						
			DATE	TIME					Gross Alpha	Ra 226 + Ra 228	Sb, Al, Cd, Cr, Fe, Pb, Mn, Hg, Ag, Na, TI	TDS	Ammonia	F, Cl, NO3	
	Equipment Blank	G	3/2/11	0930	W	6			X	X	X	X	X	X	01
	MW-2	G	3/2/11	1140	W	6			X	X	X	X	X	X	02
	MW-4	G	3/2/11	1440	W	6			X	X	X	X	X	X	03
	MW-4A	G	1	1505	W	6			X	X	X	X	X	X	04
	MW-4B	G	1	1550	W	6			X	X	X	X	X	X	05
	MW-6A	G	3/2/11	0933	W	6			X	X	X	X	X	X	06
	MW-8	G	3/2/11	1135	W	6			X	X	X	X	X	X	07
	MW-9A	G	1	1042	W	6			X	X	X	X	X	X	08
	MW-10	G	1	1055	W	6			X	X	X	X	X	X	09
	MW-11	G	3/2/11	1045	W	6			X	X	X	X	X	X	10

Matrix Code: MW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge
 No Temp taken from sample Temp from temp blank Where required, pH checked
 Device used for measuring Temp by unique identifier (circle IR temp gun used) J-9A G-11 L12 T-10A 3A
 Temperature when received: (in degrees Celsius)

FOR DRINKING WATER USE:
 Supplier of Water: _____
 Contact Person: _____
 Site Address: _____
 Phone: _____

1	2	3	4
Received on site	Date	Time	
Form revised 2/8/06	3/2/11	1301	3/2/11/1301
Relinquished by:	Date	Time	
	3/2/11	1301	3/2/11/1301

Field Instrument Calibration Records

INSTRUMENT (MAKE/MODEL#) YSI 556/Hanna **INSTRUMENT #** _____

PARAMETERS:

- TEMPERATURE
 CONDUCTIVITY
 SALINITY
 pH
 ORP
 TURBIDITY
 RESIDUAL CL
 DO
 OTHER _____

STANDARDS: [Bracket calibrated meters pH 4 – 7 and Turbidity 1 – 10 NTU's]

Standard A Oakton pH Standard 4.01 Units Exp: 3/2012

Standard B Oakton pH Standard 7.00 Units Exp: 5/2012

Standard C Oakton Conductivity Standard 1500 uS/cm Exp: 9/2011

Standard D Hanna 0.1 NTU Standard Exp: 5/2011

Standard E Hanna 15 NTU Standard Exp: 5/2011

DATE (yy/mm/dd)	TIME (hr:min)	STD (A, B, C)	STD VALUE	INSTRUMENT RESPONSE	% DEV	CALIBRATED (YES, NO)	TYPE (INIT, CONT)	SAMPLER INITIALS	
3/3/11	0905	A	4.01	4.01		Yes	IC	/	pH
		B	7.00	7.00					pH
		C	1500	1414 @ 21.58°C	OK				Cond
		--	--	8.89					DO
		--	--	21.12					Temp
		D	0.1	0.1					Turb
		E	15	15.0					Turb
3/3/11	0915	A	4.01	4.03		Yes	ICV	/	pH
		B	7.00	6.98					pH
		C	1500	1404 @ 21.65°C	OK				Cond
		--	--	8.88					DO
		--	--	21.23					Temp
		D	0.1	0.07					Turb
		E	15	15.0					Turb
3/3/11	1315	A	4.01	—		Yes	CC	/	pH
		B	7.00	6.96					pH
		C	1500	1409 @ 21.70°C	OK				Cond
		--	--	8.69					DO
		--	--	22.46					Temp
		D	0.1	—					Turb
		E	15	14.9					Turb



ANALYTICAL RESULTS

Workorder: A1101554 Sumter Co Landfill GW Sampling

Lab ID: **A1101554001** Date Received: 03/03/11 13:01 Matrix: Water
Sample ID: **EQ BLANK** Date Collected: 03/02/11 09:20

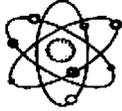
Sample Description: Location:

Parameters	Results	Units	Qual	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B		Preparation Method: SW-846 3010A						
Analysis, Water		Analytical Method: SW-846 6010						
Aluminum	61	ug/L	U	1	200	61	3/10/2011 19:41	J
Cadmium	0.32	ug/L	U	1	0.60	0.32	3/10/2011 19:41	J
Chromium	0.52	ug/L	I	1	4.0	0.50	3/10/2011 19:41	J
Iron	38	ug/L	U	1	200	38	3/10/2011 19:41	J
Manganese	1.0	ug/L	U	1	1.0	0.24	3/10/2011 19:41	J
Sodium	0.026	mg/L	U	1	0.20	0.026	3/10/2011 19:41	J
Analysis Desc: SW846 6020B		Preparation Method: SW-846 3010A						
Analysis, Total		Analytical Method: SW-846 6020						
Antimony	0.099	ug/L	I	1	0.60	0.073	3/8/2011 00:12	J
Lead	0.076	ug/L	U	1	0.70	0.076	3/8/2011 00:12	J
Silver	0.059	ug/L	U	1	0.30	0.059	3/8/2011 00:12	J
Thallium	0.067	ug/L	U	1	0.20	0.067	3/8/2011 00:12	J
Analysis Desc: SW846 7470A		Preparation Method: SW-846 7470A						
Analysis, Water		Analytical Method: SW-846 7470A						
Mercury	0.014	ug/L	U	1	0.10	0.014	3/9/2011 15:14	J
WET CHEMISTRY								
Analysis Desc: IC,E300.0,Water		Analytical Method: EPA 300.0						
Chloride	0.81	mg/L	U	1	10	0.81	3/3/2011 20:12	A
Fluoride	0.15	mg/L	U	1	0.20	0.15	3/3/2011 20:12	A
Nitrate	0.043	mg/L	U	1	0.20	0.043	3/3/2011 20:12	A
Analysis Desc: Ammonia,E350.1,Water		Analytical Method: EPA 350.1						
Ammonia (N)	0.069	mg/L	I	1	0.10	0.025	3/8/2011 14:22	T
Analysis Desc: Tot Dissolved Solids,SM2540C		Analytical Method: SM 2540C						
Total Dissolved Solids	10	mg/L	U	1	10	10	3/7/2011 13:37	T

CERTIFICATE OF ANALYSIS

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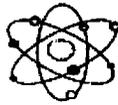


Florida Radiochemistry Services, Inc.

Sample Login

Client:	Advanced Environmental Laboratories, Inc.	Date / Time Received	Work order #
Client Contact:	Myrna Santiago	03/04/11 09:00	1103040
Client P.O.			
Project I.D.	A1101554		

Lab Sample I.D.	Client Sample I.D.	Sample Date/Time	Analysis Requested
1103040-01	A1101554001	03/02/11 09:20	Ga, Ra226, Ra228
1103040-02	A1101554002	03/02/11 11:40	Ga, Ra226, Ra228
1103040-03	A1101554003	03/02/11 14:40	Ga, Ra226, Ra228
1103040-04	A1101554004	03/02/11 15:25	Ga, Ra226, Ra228
1103040-05	A1101554005	03/02/11 13:52	Ga, Ra226, Ra228
1103040-06	A1101554006	03/03/11 09:33	Ga, Ra226, Ra228
1103040-07	A1101554007	03/02/11 11:35	Ga, Ra226, Ra228
1103040-08	A1101554008	03/02/11 10:42	Ga, Ra226, Ra228
1103040-09	A1101554009	03/02/11 12:55	Ga, Ra226, Ra228
1103040-10	A1101554010	03/03/11 10:45	Ga, Ra226, Ra228



QA Page

Analyte	Sample #	Date Analyzed	Sample Result	Amount Spiked	Spike Result	Spike /Dup Result	Spike % Rec.	Spike Dup % Rpd
Gross Alpha	1103040-02	03/09/11	1.5	10.2	10.4	8.8	87	16.7
Radium 226	1103040-06	03/15/11	1.3	26.2	25.7	26.5	97	3.1
Radium 228	1103040-06	03/14/11	<0.6	4.5	3.7	3.8	82	2.7

Quality Control Limits

% RPD % Rec.

Gross Alpha	25.0	60-125
Radium 226	23.4	78-125
Radium 228	23.9	67-125