Board of County Commissioners

Department of Public Works

Post Office Box 167, Lecanto, Florida 34460

(904) 746-4107 — Fax (904) 746-1203

REPLY TO:
P. O. Box 340
Lecanto, FL 34460-0340

October 16, 1995

RECEIVED
OCT 17 1995
Solid Waste Section

4009 C00086
WACS ID # 39859

Allison Amram, P.G.
Solid Waste Section
Department of Environmental Protection
3804 Coconut Palm Drive
Tampa, Florida 33609

Re: Citrus County Central Landfill
Leachate Plant, Groundwater Monitoring
Permit No. S009-187229, Pending Permit No. S009-274381

Dear Ms. Amram:

During our meeting at your office held on September 19, we discussed the status of the leachate treatment plant and groundwater monitoring. Since then we have received results from additional testing of effluent from the leachate treatment plant and are presenting that to you with this transmittal. Routine leachate analyses for the month of September are also included for your review. In addition, we are requesting that we be allowed to discharge treated effluent from the plant to the on-site percolation ponds as soon as we receive approval from the Department.

Also included in this package are responses to your comments on the groundwater and leachate monitoring segments of our operating permit application. The most significant of these is that we are requesting that the separate zone of discharge of the percolation ponds be eliminated, with the downgradient (west) perimeter of the entire landfill site be considered the zone of discharge.

LEACHATE EFFLUENT ANALYSES

RETEST - Results of the sampling and analysis of leachate effluent in July revealed THM's and EDB in excess of the maximum contaminant levels. My letter of September 18 indicated our interpretation of these results and offered additional analytical work to test those interpretations. The attached analyses (Attachment 1) include: Disinfection solution (sodium hypochlorite) for

bromide as a source of bromine to form THM's; Methanol for THM's and EDB; Non-chlorinated effluent for THM's and EDB plus fecal coliform and fecal strep; Low-dose chlorinated effluent for THM's and EDB.

The results are very positive in terms of effluent quality, however did not provide conclusive evidence of the source or cause of previous THM and EDB levels. The interference from the chlorine in the sodium hypochlorite disinfection solution did not allow determination of bromide content at realistic detection levels. Likewise, interference in analysis of methanol for trihalomethanes and EDB resulted in very high detection levels and unmeaningful results. Therefore it cannot be determined whether either of these process chemicals contributed THM's or EDB to the effluent.

The results of analysis of unchlorinated effluent for EDB and THM's shows that those compounds are not detectable. The chlorinated effluent analysis shows a very minor amount (2ug/l) of chloroform only. This level is well below the acceptable limit. These results may indicate potential for THM formation during the chlorination process, however the amounts are not at a level to cause concern for violation of standards.

Analysis of unchlorinated effluent showed fecal coliform at 22 cfu/100ml, well below the permit limit of 200. Fecal strep was at 85 cfu/100ml. According to a 1979 text by Metcalf & Eddy, Inc. entitled Wastewater Engineering - Treatment, Disposal and Reuse, published by McGraw-Hill, this predominance of strep indicates the source is more likely animal (probably bird) than human. Thus the potential for human infection is reduced. The proposed treated effluent discharge point in the ponds is about 100 feet above the water table. Since bacteria are quite large and can reasonably be expected to be filtered out in sand, small amounts of bacteria in the effluent are not a concern for their impact on groundwater. These results indicate that chlorination may not be required to achieve the required effluent quality and may produce unwanted by-product compounds. We propose to continue with low level chlorination under normal operating conditions.

ROUTINE TESTING, SEPTEMBER - All analytical results of leachate testing according to the interim period requirements of Specific Condition 13b of our operating permit for the month of September are attached (Attachment 2). The monthly operating report with leachate flows is also included. The leachate samples were obtained from paired sets of influent/effluent from September 6/7, 13/14, 20/21, and 27/28.

The average daily leachate volume treated was about 13,600 gallons, the highest since we restarted the plant. This is less than the permit maximum of 30,000 gallons per day.

Nitrogen removal was excellent, with total nitrogen less than the nitrate limit of 12 mg/l for all samples. The maximum nitrate level was 8.6 mg/l, the minimum was 0.04 mg/l.

Total suspended solids, fecal coliform and pH of the effluent were all within permit limits throughout the month.

One sample for BOD was greater than the 20 mg/l limit at 34.4 mg/l, however all other analyses were at 3.1 or less. COD results ranged between 63.2 and 159 mg/l.

This completes the fourth month of provisional operation while disposing of effluent offsite.

EFFLUENT DISPOSAL

Based upon the results of the required three-month test period, conducted after plant modifications were complete, plus the additional analytical work and a further month's testing, we believe that the quality of effluent is appropriate for disposal on-site. The primary concern had been nitrate removal. All results with the exception of one week in the four-month period, for which we are not certain the laboratory was correct, met the drinking water standard for nitrate. Most were less than 1% of the maximum contaminant level.

The results of the additional testing indicate that the trihalomethanes and ethylene dibromide found previously are not present. The source was not confirmed but was suggested to be the chlorination process.

The only remaining concern is that the concentration of sodium which remains in the effluent may cause violations of primary groundwater standards, or that chloride or total solids may cause violations of secondary groundwater standards. In order to test this concept, we propose to perform a solute transport model study including the entire 140-acre combined landfill site. Although analysis of samples from well #6 have indicated elevated values for TDS, chloride and sodium, we do not feel that there will be any offsite impact. That well is less than 50 feet from the ponds, however due to the site configuration, there is no other appropriate monitoring point until the west property boundary. We feel that the results of modeling will confirm this concept.

We have received a proposal from our consultant (CH2M HILL) for this study (a copy of the technical approach - Attachment 3) and can present it to our Board for approval on November 7 if we receive your concurrence by October 20th. We expect that the project can be completed and results submitted to you by February 7, 1996. In the interim, please review this proposed study approach. If you have any questions, comments or objections, please contact me as soon as possible.

Our request is for permission to begin disposing of treated effluent on-site in the percolation ponds as soon as possible. If the results of the solute transport model study indicate that groundwater standards may be violated offsite as a result of using the ponds, an alternate disposal method will be proposed. Otherwise, we would request that the disposal site and method be allowed for the term of the permit.

RESPONSES TO OPERATING PERMIT COMMENTS

The following are in response to comments offered in your August 15, 1995 letter to Kim Ford concerning Pending Permit No. S009-274381. Your comments are repeated in bold type with our response immediately following.

1. Section 3.6.2.2 In the last two quarter, monitoring well MW-6 exceeded the Primary Drinking Water Standard for both nitrate and sodium. This well monitors the edge of the zone of discharge for the leachate effluent percolation ponds. According to F.A.C. 62-522.300(1), no exceedances of groundwater quality standards or criteria are allowed outside of a zone of discharge. Please inform the florida Department of Environmental Protection (Department) of the County's plans to address this issue.

We feel that the source for nitrate found in monitoring well MW-6 was from the percolation ponds for leachate effluent. As described earlier in this letter, the modifications to the leachate treatment plant have successfully eliminated nitrate from the effluent. Therefore, with the source eliminated, the water quality in terms of nitrate can be expected to improve with time and dilution from renewed use of the ponds.

The source for sodium is also felt to be the treated leachate. The existing plant cannot remove sodium. We do not intend to provide removal for sodium, due to the cost of adding treatment units which could achieve sodium/chloride/total dissolved solids reduction. However we do intend to model groundwater quality through use of solute transport modeling techniques described above. We intend to show that groundwater standards will not be violated at the next available downgradient measuring point, the west side of the closed landfill.

Citrus County has previously proposed in the Groundwater Monitoring Plan updated September 1995 to combine the groundwater monitoring requirements of both the closed 60-acre and adjacent active 80-acre landfill sites. In order to clarify our intent, we have requested a single zone of discharge, with the western boundary of the closed site as the compliance line. We feel that a separate zone of discharge for the percolation ponds or any other sub-element of the waste management facility is contrary to the requirements of 62-701 and 62-550 although

intermediate monitoring where physically feasible is appropriate. Therefore, we are requesting that the requirement for a zone of discharge for the percolation ponds be removed from the permit. Further, we are requesting that wells numbered 4 and 5 be removed as monitoring wells in the permit and that the designation of well 6 be as an intermediate detection well rather than a compliance well.

2. Section 4.1 The Department acknowledges the request to conduct field filtering of the groundwater samples from the site. however, the filtering must be conducted in accordance with the Department's Technical Document Determining Representative Ground Water Samples, Filtered or Unfiltered, dated January 1994. A copy of this document is attached for your reference.

Citrus County intends to collect filtered samples according to the Technical Document provided. We have submitted that document to our sampling and analysis contractor.

3. Section 4.2 This section states that the groundwater monitoring for both the 60-acre closed landfill, and the 80-acre expansion section will be conducted as one site. To this end, the Department proposes to include all groundwater monitoring activities in the operational permit, and delete the specific conditions concerning groundwater monitoring activities in the landfill's closure permit once the new operational permit is issued.

Citrus County concurs with your proposal to combine all groundwater monitoring in the operational permit.

4. Section 4.2(7) Please note that F.A.C. Chapter 17-21 has been renumbered to F.A.C. Chapter 62-532.

The change has been noted.

5. Section 4.4 Leachate sampling locations should be located prior to any conditions that may change the leachate characteristics. Are the current sampling points located in the first point of access to the leachate? Please describe the leachate sampling points, and provide a figure the location of these sampling locations, and how the sample is collected.

Leachate influent sampling takes place as a grab sample at the discharge from the holding facility, which is currently Tank #1 of the Zimpro plant, into tank #2 which is the first treatment vessel. See attached diagram (Attachment 4) for the locations of current and proposed sampling locations. Leachate is hard piped from the lift stations to the plant, therefore, the inlet to Tank #1 would be the first access point to the leachate. The point at which we are sampling is the point where treatment begins and is the first point where we have a representative mix

of the batch to be treated. Influent from the various sources may be segregated or mixed in unknown proportions and since the leachate delivery pumps operate automatically they are not predictable for sampling purposes. We request that the defining factor be the leachate to be treated, which is in fact a proportional sample from the mixed waste stream. Effluent is currently (during the provisional operating period) sampled either from the recirculation in the flow equalization tank (#4) or at the discharge of the line which feeds from the anoxic tank(#3) to the flow equalization tank (#4). This location is also shown on the attached diagram. Samples are grab samples. Because this is a batch plant, a grab sample from the effluent is expected to be representative of the batch as it is for influent.

After on-site disposal is approved, we would intend to take the effluent sample as a grab from the discharge line after final filtration takes place as show on the attached diagram.

6. Sections 4.5.1 and 4.5.3 Sampling of new wells is proposed for four consecutive quarters, and then semi-annually. It is not required that all new wells, background or detection, be monitored quarterly. The Department will require the new site wells to be sampled initially for all parameters listed in F.A.C. Rule 62-701.510(8)(a) and (d), and then semi-annually for the parameters listed in F.A.C. Rule 62-701.510(8)(a). If the County wishes to conduct more frequent monitoring, and for the additional proposed parameters, the Department requests that the data be submitted to the Solid Waste section. However, this additional monitoring above the rule requirements will be required by the Department. The proposed new well locations and construction are acceptable to the Department.

The proposed groundwater monitoring plan was revised, with page replacements provided at our September 19 meeting. Those revisions included semi-annual monitoring in accordance with the requirements of 62-701.510(8)(a).

7. Section 4.7(2) F.A.C. Rule 62-701.510(9)(b) requires an evaluation of the groundwater monitoring systems every two years. This was changed from annually to every two years when the monitoring frequency changed from quarterly to semi-annually. Again, if the county would like to conduct a more frequent evaluation of their groundwater monitoring plan than the required two years, the Department will review the evaluation to provide technical support to the County. Please note that this section of the rule requires the plan to be updated at the time of permit renewal.

The revised groundwater monitoring plan reflects the requirements of the rule for evaluation of the plan every two years. The submittal which was reviewed in August and its September revision is intended to fulfill the requirement for an updated plan at the time of permit renewal.

Thank you for your attention to these matters. Our most urgent priority would be for approval of the proposed solute transport model study, next would be the request for on-site treated leachate effluent discharge and finally the groundwater monitoring program requests and responses to your earlier comments. Please call me if you need more information or would like to discuss any of these matters.

Yours truly,

Susan J. Metcalfe

Susan J. Metcalfe, Director,
Division of Solid Waste Management

SJM:cms

cc: Gary Kuhl, Dir. Dept. Public Works
Ralph Hedgecoth, Dir. Utilities Div.
Bob Merkel, Utilities Operation Supervisor
John Miller, Hydro Q
Marty Clasen, CH2M Hill
John Wood, CH2M Hill
Dave Beula, Zimpro
Dave Weber, Post Buckley, Schuh & Jernigan
Chongman Lee, FDEP, Tallahassee

ATTACHMENT ONE

ADDITIONAL SAMPLING AND ANALYSIS

Orlando Laboratories, Inc.
P.O. Box 149127, Orlando, FL 32814
(407) 896-6645 FAX (407) 898-6588

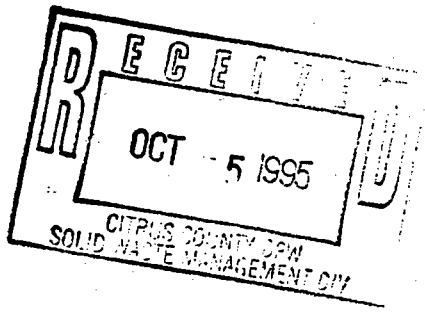
REPORT OF ANALYSIS

Citrus County
Department of Solid Waste
P. O. Box 340
Lecanto, FL 34460-0340
Attn: Cathy Winter

Work Order # : 95-09-255
Date Received: 09/20/95
Report Due by: 10/02/95
OLI Contact: J_BEATO

Work ID: Citrus County
Samples collected by: OLI Field Team
Total Samples: 3

Sample Identification	Description of Analysis	Description of Analysis
01A Liquid Methanol	Trihalomethanes Field Data	VOC: Ethylene Dibromide
02A Sodium Hypochloride	Bromide	Field Data
03A Method Blank	Trihalomethanes QC for Wet Chemistry	VOC: Ethylene Dibromide



Respectfully Submitted,
ORLANDO LABORATORIES, INC.

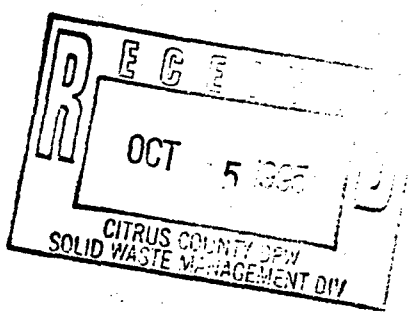
Authorized Laboratory Signature

Results of Analysis

Work ID: Citrus County Work Order: 95-09-255

Client Number:		Liquid Methanol	Method Blank	
OLI Number:		01A	03A	
Dilution:		50	1	
Trihalomethanes: Water				
EPA 501 1	Units	Result/Flag	Result/Flag	MDL
Chloroform	ug/l	50 U	1.0 U	1.0
Dichlorobromomethane	ug/l	50 U	1.0 U	1.0
Dibromochloromethane	ug/l	50 U	1.0 U	1.0
Bromoform	ug/l	50 U	1.0 U	1.0
THM's Total	ug/l	50 U	1.0 U	1.0

Client Number:		Liquid Methanol	Method Blank	
OLI Number:		01A	03A	
Dilution:		10	1	
VOC: Ethylene Dibromide: Water				
EPA 504	Units	Result/Flag	Result/Flag	MDL
EDB	ug/l	3.5 U	0.35 U	0.35



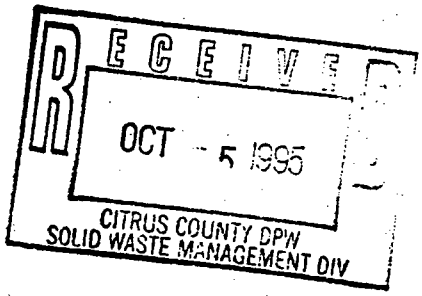
Re: EPA 501 - Sample 01:
ELevated detection limits caused by dilution of sample due to matrix interference.

Re: EPA 504 - Sample 01:
Elevated detection limits caused by dilution of sample due to matrix interference.

Results of Analysis

Work ID: Citrus County Work Order: 95-09-255

Client Number:		Sodium Hypochloride	
OLI Number:		02A	
Analyte	Units	Result/Flag	MDL
Bromide	mg/l	5000 U	0.5



Re: Bromide - Sample 02:
Sample was diluted because of matrix interference.

Results of Analysis

Work ID: Citrus County Work Order: 95-09-255

Client Number: Liquid
Methanol
OLI Number: 01A

Field Data by: OLI Field Team

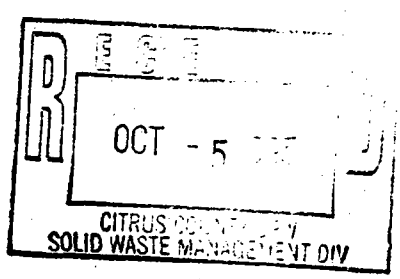
SAMPLE TYPE Grab Date Written 10/02/95

Well Specifications		Field Parameters	
Diameter	NA in.	Temperature	NA ^C
Water Level	NA ft.	Conductivity	NA umhos/cm @ 25C
Total Depth	NA ft.	pH	NA units
Column Height	NA ft.	Dissolved Oxygen	NA mg/L
Column Volume	NA gal.	Residual Cl	NA mg/L
Evacuation	NA gal.	Hydrogen Sulfide	NA mg/L
Actual	NA gal.		

Well Evacuation Method NA
Sampling Method Grab

Sample Appearance		Environmental Conditions	
Tint	None	Air Temperature	33.0^C
Color	Clear	Wind	W/0-5
Turbidity	None	Rain	None
Odor	Methanol	Atmosphere	Clear
		Other	NA

Comments



Results of Analysis

Work ID: Citrus County Work Order: 95-09-255

Client Number: Sodium Hypochloride

OLI Number: 02A

Field Data by: OLI Field Team

SAMPLE TYPE Grab Date Written 10/02/95

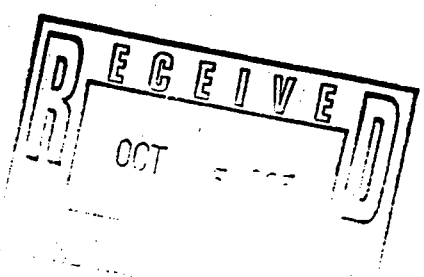
Well Specifications		Field Parameters	
Diameter	NA in.	Temperature	NA ^C
Water Level	NA ft.	Conductivity	NA umhos/cm @ 25C
Total Depth	NA ft.	pH	NA units
Column Height	NA ft.	Dissolved Oxygen	NA mg/L
Column Volume	NA gal.	Residual Cl	NA mg/L
Evacuation	NA gal.	Hydrogen Sulfide	NA mg/L
Actual	NA gal.		

Well Evacuation Method NA

Sampling Method Grab

Sample Appearance		Environmental Conditions	
Tint	Light	Air Temperature	33.0^C
Color	Yellow	Wind	W/0-5
Turbidity	None	Rain	None
Odor	Chlorine	Atmosphere	Clear
		Other	NA

Comments



QA for Analysis

Work ID: Citrus County

Work Order: 95-09-255

Client No: Liquid Methanol
OLI No: 01A
Matrix: Water
Collected: 09/20/95 11:30:00

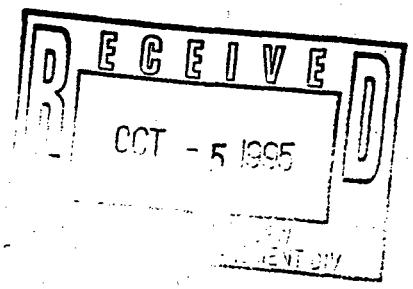
Test Description	Method	Prep	Run	Analyst
Trihalomethanes	EPA_501_1	NA	09/28/95	NAF
VOC: Ethylene Dibromide	EPA_504	NA	09/20/95	LG

Client No: Sodium Hypochloride
OLI No: 02A
Matrix: Water
Collected: 09/20/95 11:40:00

Test Description	Method	Prep	Run	Analyst
Bromide	EPA_300_0	NA	09/26/95	BB

Client No: Method Blank
OLI No: 03A
Matrix: Method Blank
Collected: Not specified

Test Description	Method	Prep	Run	Analyst
Trihalomethanes	EPA_501_1	NA	09/28/95	NAF
VOC: Ethylene Dibromide	EPA_504	NA	09/20/95	LG

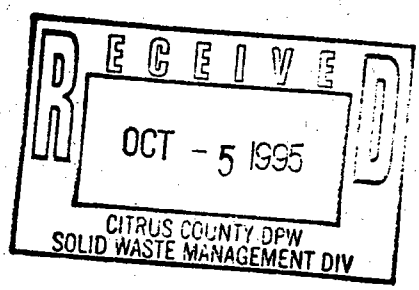


Citrus County
Attn: Cathy Winter

Report Number: 95-09-255

Quality Control Data Sheets

Parameter	OLI Sample #	Matrix Spike % Recovery	Matrix Spike Dup % Recovery	Relative Percent Difference	Analysis Date	Analyst
Bromide by IC	9509255-02	43	41	5	09/26/95	BB



ORLANDO LABORATORIES, INC.

GC ORGANICS

MATRIX SPIKE RESULTS

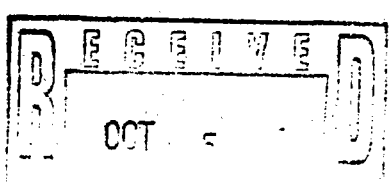
MATRIX : Water
REPORT DATE: 9-29-1995
EPA METHOD : 501.1

LAB SAMPLE #: 9509149-03
ANALYSIS DATE: 9/28/95

COMPOUND	AMOUNT SPIKED	SAMPLE RESULT	MS RESULT	MS % RECOVERY	MSD RESULT	MSD % RECOVERY	RPD
Chloroform	50	0	50.0	100	44.0	88	13
Bromodichloromethane	50	0	45.0	90	42.0	84	7
Dibromochloromethane	50	0	49.0	98	48.0	96	2
Bromoform	50	0	50.0	100	50.0	100	0

MATRIX SPIKE QUALITY CONTROL LIMITS

COMPOUND	WATER LOWER	WATER UPPER	WATER RPD	SOIL LOWER	SOIL UPPER	SOIL RPD
Chloroform	82	124	18	NA	NA	NA
Bromodichloromethane	79	124	20	NA	NA	NA
Dibromochloromethane	86	127	18	NA	NA	NA
Bromoform	79	131	21	NA	NA	NA



ORLANDO LABORATORIES, INC.

GC ORGANICS

MATRIX SPIKE RESULTS

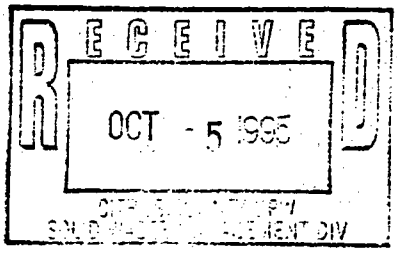
MATRIX : Water
REPORT DATE: 9-22-1995
EPA METHOD : 504

LAB SAMPLE #: 9509255-01
ANALYSIS DATE: 09-20-95

COMPOUND	AMOUNT SPIKED	SAMPLE RESULT	MS RESULT	MS % RECOVERY
Ethylene Dibromide	100	0	68.0	68 *
Dibromochloropropane	100	0	55.0	55 *

MATRIX SPIKE QUALITY CONTROL LIMITS

COMPOUND	WATER LOWER	WATER UPPER	WATER RPD	SOIL LOWER	SOIL UPPER	SOIL RPD
Ethylene Dibromide	69	122	10	NA	NA	NA
Dibromochloropropane	75	124	14	NA	NA	NA



NOTE: * Parameter outside of QC limits due to matrix effects.

Orlando Laboratories, Inc.
P.O. Box 149127, Orlando, FL 32814
(407) 896-6645 FAX (407) 898-6588

CHAIN-OF-CUSTODY RECORD

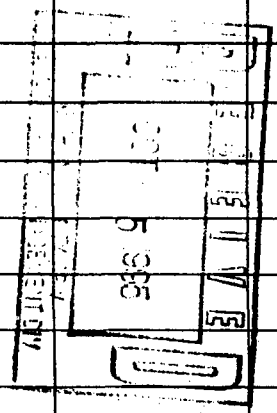
(INSTRUCTIONS ON BACK)

Page 1 of 1

904-746-5000

① INVOICE TO: (Company and Individual) ADDRESS (City, State, Zip)	② CONTACT PERSON/PHONE # INVOICE	③ RB NUMBER	④ OLI WORK ORDER #
Citrus County Dept. of Solid Waste P.O. Box 340 Lecanto, FL 34460-0340	Cathy Winker	AF669	
⑤ ORIGINAL REPORT TO: (Company and Individual) ADDRESS (City, State, Zip)	⑥ CONTACT PERSON/PHONE # REPORT		
Same As Above	Same	9509255	
⑦ (OPTIONAL) ADDITIONAL REPORTS SENT TO: ADDRESS (City, State, Zip)			
None			
⑧ CLIENT PROJECT NAME	⑨ CLIENT PROJECT #		
Citrus County Landfill Extra			

	⑩ SAMPLE IDENTIFICATION	⑪ DATE/TIME	⑫ COMP	GRAB	WATER	SOIL	OTHER	⑬ SAMPLE DESCRIPTION	⑰ NUMBER OF CONTAINERS	⑯ REQUESTED ANALYSIS: 504 PL, 504 GC, BROMIDE	⑱ REMARKS
1	Liquid Methanol	9-20-95 1130		X			X		5	X	Bubbles in Vials Unable to Remove Sample Taken From Tank (JW)
2	Sodium Hypochlorite	9-20-95 1140		X			X	9% Solution	1	X (JW)	



TRANSFER NUMBER	⑭ RELINQUISHED BY	⑮ DATE/TIME	⑯ ACCEPTED BY
1st		0730 9/19/95	
2nd		9-20-95 15:00	
3rd			

⑳ ADDITIONAL REMARKS: OLI Field Team.

㉑ COOLER #'S: A0224

㉒ SAMPLER'S SIGNATURE

OL-001 (6/93)

Orlando Laboratories, Inc.
P.O. Box 149127, Orlando, FL 32814
(407) 896-6645 FAX (407) 898-6588

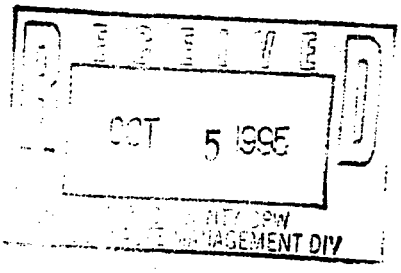
REPORT OF ANALYSIS

Citrus County
Department of Solid Waste
P. O. Box 340
Lecanto, FL 34460-0340
Attn: Cathy Winter

Work Order # : 95-09-300
Date Received: 09/21/95
Report Due by: 10/02/95
OLI Contact: J_BEATO

Work ID: Citrus County Landfill Ex
Samples collected by: OLI Field Team
Total Samples: 3

Sample Identification	Description of Analysis	Description of Analysis
01A Unchlorinated Eff	Trihalomethanes Fecal Coliform Bact. MF Field Data	VOC: Ethylene Dibromide Fecal Streptococcus MF
02A Chlorinated Eff	Trihalomethanes Field Data	VOC: Ethylene Dibromide
03A Method Blank	Trihalomethanes QC for Microbiology	VOC: Ethylene Dibromide



Respectfully Submitted,
ORLANDO LABORATORIES, INC.

Authorized Laboratory Signature

Results of Analysis

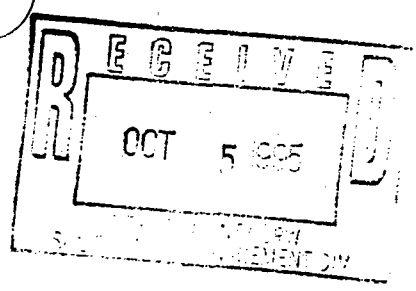
9-21-95

Work ID: Citrus County Landfill Ex Work Order: 95-09-300

Client Number:		Unchlorinated Eff	Chlorinated Eff	Method Blank	
OLI Number:		01A	02A	03A	
Dilution:		1	1	1	
Trihalomethanes: Water					
EPA 501 1	Units	Result/Flag	Result/Flag	Result/Flag	MDL
Chloroform	ug/l	1.0 U	2.0	1.0 U	1.0
Dichlorobromomethane	ug/l	1.0 U	1.0 U	1.0 U	1.0
Dibromochloromethane	ug/l	1.0 U	1.0 U	1.0 U	1.0
Bromoform	ug/l	1.0 U	1.0 U	1.0 U	1.0
THM's Total	ug/l	1.0 U	2.0	1.0 U	1.0

Client Number:		Unchlorinated Eff	Chlorinated Eff	Method Blank	
OLI Number:		01A	02A	03A	
Dilution:		1	1	1	
VOC: Ethylene Dibromide: Water					
EPA 504	Units	Result/Flag	Result/Flag	Result/Flag	MDL
EDB	ug/l	0.02 U	0.02 U	0.02 U	0.02

Client Number:		Unchlorinated Eff
OLI Number:		01A
Fecal Coliform Bact. MF: Water		
EPA SM9222D	Units	Result/Flag	MDL
Fecal Coliform	cfu/100ml	22	1



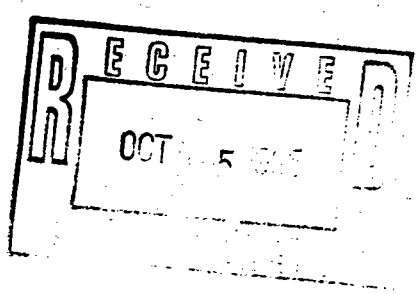
Results of Analysis

Work ID: Citrus County Landfill Ex Work Order: 95-09-300

Client Number:	Unchlorinated Eff
OLI Number:	01A

Fecal Streptococcus MF: Water

EPA SM9230C	Units	Result/Flag	MDL
Fecal Strep	cfu/100ml	85	1



Results of Analysis

Work ID: Citrus County Landfill Ex Work Order: 95-09-300

Client Number: Unchlorinated Eff

OLI Number: 01A

Field Data by: OLI Field Team

SAMPLE TYPE Grab Date Written 10/02/95

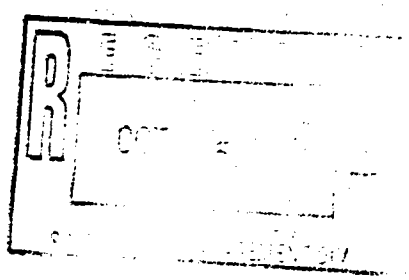
Well Specifications		Field Parameters	
Diameter	NA in.	Temperature	31.0 ^C
Water Level	NA ft.	Conductivity	2000 umhos/cm @ 25C
Total Depth	NA ft.	pH	8.32 units
Column Height	NA ft.	Dissolved Oxygen	NA mg/L
Column Volume	NA gal.	Residual Cl	NA mg/L
Evacuation	NA gal.	Hydrogen Sulfide	NA mg/L
Actual	NA gal.		

Well Evacuation Method NA

Sampling Method Grab

Sample Appearance		Environmental Conditions	
Tint	None	Air Temperature	30.7^C
Color	Clear	Wind	E/0-5
Turbidity	Slight	Rain	None
Odor	None	Atmosphere	Partly Cloudy
		Other	NA

Comments



Results of Analysis

Work ID: Citrus County Landfill Ex Work Order: 95-09-300

Client Number: Chlorinated Eff

OLI Number: 02A

Field Data by: OLI Field Team

SAMPLE TYPE Grab Date Written 10/02/95

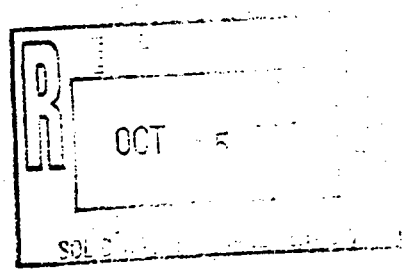
Well Specifications		Field Parameters	
Diameter	NA in.	Temperature	31.0 ^C
Water Level	NA ft.	Conductivity	2000 umhos/cm @ 25C
Total Depth	NA ft.	pH	8.37 units
Column Height	NA ft.	Dissolved Oxygen	NA mg/L
Column Volume	NA gal.	Residual Cl	NA mg/L
Evacuation	NA gal.	Hydrogen Sulfide	NA mg/L
Actual	NA gal.		

Well Evacuation Method NA

Sampling Method Grab

Sample Appearance		Environmental Conditions	
Tint	None	Air Temperature	31.2^C
Color	Clear	Wind	E/0-5
Turbidity	Slight	Rain	None
Odor	Slight/Chlorine	Atmosphere	Partly Cloudy
		Other	NA

Comments



QA for Analysis

Work ID: Citrus County Landfill Ex Work Order: 95-09-300

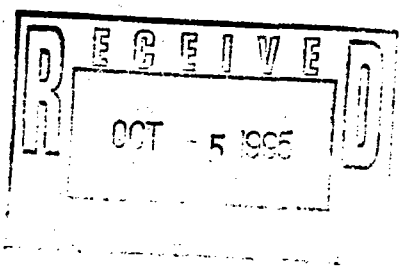
	Test Description	Method	Prep	Run	Analyst
Client No: Unchlorinated Eff OLI No: 01A	Trihalomethanes VOC: Ethylene Dibromide	EPA_501_1 EPA_504	NA 09/25/95	09/28/95 09/25/95	NAF LG

	Test Description	Method	Setup	Read	Analyst
Matrix: Water	Fecal Coliform Bact. MF	EPA_SM9222D	09/21/95 15:10:00	09/22/95 15:55:00	SW

	Test Description	Method	Setup	Read	Analyst
Collected: 09/21/95 10:30:00	Fecal Streptococcus MF	EPA_SM9230C	09/21/95 15:10:00	09/22/95 15:55:00	SW

	Test Description	Method	Prep	Run	Analyst
Client No: Chlorinated Eff OLI No: 02A Matrix: Water Collected: 09/21/95 11:05:00	Trihalomethanes VOC: Ethylene Dibromide	EPA_501_1 EPA_504	NA 09/25/95	09/28/95 09/25/95	NAF LG

	Test Description	Method	Prep	Run	Analyst
Client No: Method Blank OLI No: 03A Matrix: Method Blank Collected: Not specified	Trihalomethanes VOC: Ethylene Dibromide	EPA_501_1 EPA_504	NA 09/25/95	09/28/95 09/25/95	NAF LG



Citrus County
Attn: Cathy Winter

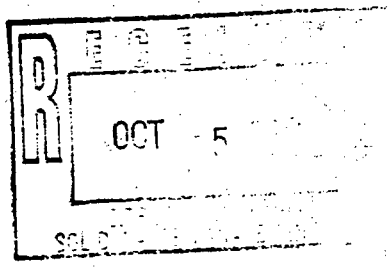
Report Number: 95-09-300

Quality Control Data Sheets

Parameter	OLI Sample #	Matrix Spike % Recovery	Matrix Spike Dup % Recovery	Relative Percent Difference	Analysis Date	Analyst
Fecal Coliform*	9509300-01	NA	NA	40	09/21/95	SW
Fecal Coliform*	9509300-01	NA	NA	40	09/21/95	SW
Fecal Streptococci*	9509300-01	NA	NA	12	09/21/95	SW

Parameter	Sample #	Case Narrative for 95-09-300
Fecal Coliform*	01	Fecal coliform was confirmed positive.
Fecal Coliform*	QC	High relative percent difference (RPD) is due to low analyte concentration.
Fecal Streptococci*	01	Fecal streptococcus was confirmed positive.

* Relative Percent Difference (RPD) was calculated from results of sample and sample duplicate.



ORLANDO LABORATORIES, INC.

GC ORGANICS

MATRIX SPIKE RESULTS

MATRIX : Water
REPORT DATE: 9-29-1995
EPA METHOD : 501.1

LAB SAMPLE #: 9509149-03
ANALYSIS DATE: 9/28/95

COMPOUND	AMOUNT SPIKED	SAMPLE RESULT	MS RESULT	MS % RECOVERY	MSD RESULT	MSD % RECOVERY	RPD
Chloroform	50	0	50.0	100	44.0	88	13
Bromodichloromethane	50	0	45.0	90	42.0	84	7
Dibromochloromethane	50	0	49.0	98	48.0	96	2
Bromoform	50	0	50.0	100	50.0	100	0

MATRIX SPIKE QUALITY CONTROL LIMITS

COMPOUND	WATER LOWER	WATER UPPER	WATER RPD	SOIL LOWER	SOIL UPPER	SOIL RPD
Chloroform	82	124	18	NA	NA	NA
Bromodichloromethane	79	124	20	NA	NA	NA
Dibromochloromethane	86	127	18	NA	NA	NA
Bromoform	79	131	21	NA	NA	NA

ORLANDO LABORATORIES. INC.

GC ORGANICS

MATRIX SPIKE RESULTS

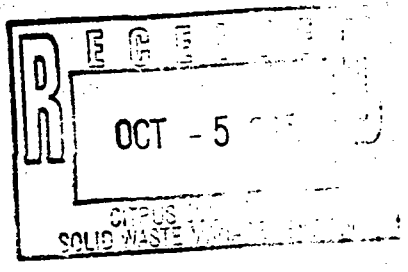
MATRIX : Water
REPORT DATE: 9-25-1995
EPA METHOD : 504

LAB SAMPLE #: 9509285-01
ANALYSIS DATE: 09-25-95

COMPOUND	AMOUNT SPIKED	SAMPLE RESULT	MS RESULT	MS % RECOVERY	MSD RESULT	MSD % RECOVERY	RPD
Ethylene Dibromide	30	0	25.2	84	25.2	84	0
Dibromochloropropane	30	0	29.1	97	28.6	95	2

MATRIX SPIKE QUALITY CONTROL LIMITS

COMPOUND	WATER LOWER	WATER UPPER	WATER RPD	SOIL LOWER	SOIL UPPER	SOIL RPD
Ethylene Dibromide	69	122	10	NA	NA	NA
Dibromochloropropane	75	124	14	NA	NA	NA



P.O. Box 149127, Orlando, FL 32814
(407) 896-6645 FAX (407) 898-6588

(INSTRUCTIONS ON BACK)

904-746-5000

① INVOICE TO: (Company and Individual) / ADDRESS (City, State, Zip)	② CONTACT PERSON/PHONE # INVOICE	③ RB NUMBER	④ OLI WORK ORDER #
Citrus County Dept. of Solid Waste P.O. Box 340 Lecanto, FL 34460-0340	Cathy Winter	A8670	
⑤ ORIGINAL REPORT TO: (Company and Individual) / ADDRESS (City, State, Zip)	⑥ CONTACT PERSON/PHONE # REPORT		
Same As Above	Same	9509380	
⑦ (OPTIONAL) ADDITIONAL REPORTS SENT TO: / ADDRESS (City, State, Zip)			
None			
⑧ CLIENT PROJECT NAME: Citrus County Landfill Extra.	⑨ CLIENT PROJECT #:		

⑰ NUMBER OF CONTAINERS — ⑱ REQUESTED ANALYSIS: Fclcol, Fclstp / SDH FL, SD/ 6C

9s = 0.5 hrs (.25 hrs each)

⑩ SAMPLE IDENTIFICATION	⑪ DATE/TIME	⑫ COMP	GRAB	WATER	SOIL	OTHER	⑬ SAMPLE DESCRIPTION	⑰ NUMBER OF CONTAINERS	Fclcol, Fclstp	SDH FL, SD/6C							⑲ REMARKS
Unchlorinated Eff.	9.21.95 1030		X	X				6	X	X							
Chlorinated Eff	9.21.95 1105		X	X				5		X							

OCT 5 1995

TRANSFER NUMBER	⑭ RELINQUISHED BY	⑮ DATE/TIME	⑯ ACCEPTED BY
1st	[signature]	0945 9/19/95	Jim Weber
2nd	Jim Weber	9.21.95	[signature]
3rd			

⑳ ADDITIONAL REMARKS: OLI Field Team

㉑ COOLER #'S: A0061

㉒ SAMPLER'S SIGNATURE: Jim Weber

OL-001 (6/93)

LAB

ATTACHMENT TWO

SEPTEMBER, 1995 ANALYSIS

53R

Order #: 95-09-044-01A
Client: Citrus County

Orlando Laboratories, Inc.
Report of Analysis for DER

Page: 2

Citrus County Landfill

PARAMETER MONITORING REPORT

Part III: Analytical Results

-2
(F5)
749

Facility GMS # : 4009C00086
Test Site ID # : NA
Well Name: TANK #2 INF.
Classification of Groundwater: NA

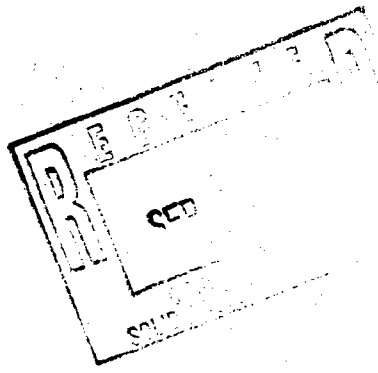
Ground Water Elevation (NGVD): NA
or (MSL): ____

Sampling Date/Time: 09/06/95 11:40:00
Report Period: NA
Well Purged (Y/N) NA
Well type: [ ] Background
[ ] Intermediate
[ ] Compliance
[ ] Other

STORET Code	Parameter Monitored	Samp Meth	Fld Filt Y/N	Analysis Method	Analysis Date/Time	Analysis Results/Units	Detection Limits/Units
00400	Field pH	Grab	N	EPA_150_1	09/06/95	7.69 Units	NA Units
00010	Temperature	Grab	N	EPA_170_1	09/06/95	28.5 ^C	NA ^C
00094	Conductivity	Grab	N	EPA_120_1	09/06/95	4000 umhos/cm	1.0 umhos/cm
00410	Alkalinity	Grab	N	EPA_310_1	09/11/95	2650 mgCaC03/	2.0 mgCaC03/
00310	BOD 5 Day	Grab	N	SM_5210_B	09/07/95 15:45	21.8 mg/l	2.0 mg/l
00940	Chloride	Grab	N	EPA_325_2	09/13/95	431 mg/l	1.0 mg/l
00340	Chemical Oxygen Demand	Grab	N	EPA_410_4	09/12/95	347 mg/l	10 mg/l
00610	Nitrogen: Ammonia	Grab	N	EPA_350_1	09/12/95	10.1 mg/l	0.01 mg/l
83341	Nitrogen: Ammonium	Grab	N	EPA_DER_SOP	09/11/95	9.75 mg/l	0.01 mg/l
00620	Nitrogen: Nitrate	Grab	N	EPA_353_2	09/07/95	0.07 mg/l	0.02 mg/l
70300	Total Dissolved Solids	Grab	N	EPA_160_1	09/06/95	1690 mg/l	10 mg/l
00625	Nitrogen: Total Kjeldahl	Grab	N	EPA_351_2	09/13/95	22.1 mg/l	0.10 mg/l
00530	Total Suspended Solids	Grab	N	EPA_160_2	09/06/95	299 mg/l	5.0 mg/l

BOD: Setup Date/Time: 09/07/95 15:45:00 Read Date/Time: 09/12/95 11:00:00

Well development: pumping the well prior to sampling to obtain representative ground water samples.
DER form 17-522.900(2) Effective: April, 1994



Citrus County Landfill

PARAMETER MONITORING REPORT

Part III: Analytical Results

(FL)

Facility GMS # : 4009C00086
Test Site ID # : NA
Well Name: TANK #4 EFF
Classification of Groundwater: NA

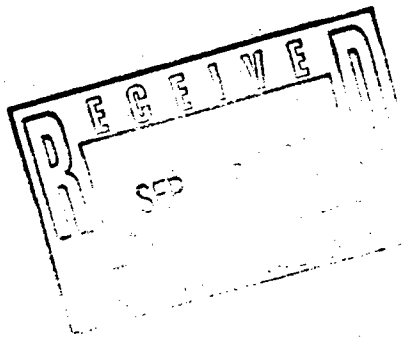
Ground Water Elevation (NGVD): NA
or (MSL):

Sampling Date/Time: 09/07/95 11:30:00
Report Period: NA
Well Purged (Y/N) NA
Well type:
[ ] Background
[ ] Intermediate
[ ] Compliance
[ ] Other

STORET Code	Parameter Monitored	Samp Meth	Fld Filt Y/N	Analysis Method	Analysis Date/Time	Analysis Results/Units	Detection Limits/Units
00400	Field pH	Grab	N	EPA_150_1	09/07/95	7.97 Units	NA Units
00010	Temperature	Grab	N	EPA_170_1	09/07/95	27.1 ^C	NA ^C
00094	Conductivity	Grab	N	EPA_120_1	09/07/95	790 umhos/cm	1.0 umhos/cm
00310	Carbonaceous BOD	Grab	N	SM_5210_B	09/07/95 13:45	3.1 mg/l	2.0 mg/l
00940	Chloride	Grab	N	EPA_325_2	09/13/95	377 mg/l	1.0 mg/l
00340	Chemical Oxygen Demand	Grab	N	EPA_410_4	09/12/95	122 mg/l	10 mg/l
31616	Fecal Coliform	Grab	N	EPA_SM9222D	09/07/95 15:00	17 cfu/100m	1 cfu/100m
00929	Sodium	Grab	N	EPA_6010	09/12/95	330 mg/l	1.0 mg/l
00610	Nitrogen: Ammonia	Grab	N	EPA_350_1	09/11/95	<0.01 mg/l	0.01 mg/l
00620	Nitrogen: Nitrate	Grab	N	EPA_353_2	09/15/95	8.60 mg/l	0.02 mg/l
70300	Total Dissolved Solids	Grab	N	EPA_160_1	09/12/95	1510 mg/l	10 mg/l
00600	Total Nitrogen	Grab	N	EPA_SM4500N	09/13/95	11.2 mg/l	0.10 mg/l
00665	Total Phosphorus	Grab	N	EPA_365_1	09/12/95	0.20 mg/l	0.01 mg/l
00530	Total Suspended Solids	Grab	N	EPA_160_2	09/12/95	11 mg/l	5.0 mg/l

F. Coli: Setup Date/Time: 09/07/95 15:00:00 Read Date/Time: 09/08/95 15:00:00
BOD: Setup Date/Time: 09/07/95 13:45:00 Read Date/Time: 09/12/95 11:00:00

Well development: pumping the well prior to sampling to obtain representative ground water samples.
DER form 17-522.900(2) Effective: April, 1994



Weekly Influent

PARAMETER MONITORING REPORT

Part III: Analytical Results

Facility GMS # : 4009C00086
Test Site ID # : NA
Well Name: TANK #2 INF.
Classification of Groundwater: NA

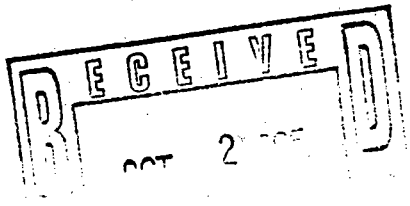
Ground Water Elevation (NGVD): NA
or (MSL): _____

Sampling Date/Time: 09/13/95 11:25:00
Report Period: NA
Well Purged (Y/N) NA
Well type:
[ ] Background
[ ] Intermediate
[ ] Compliance
[ ] Other

STORET Code	Parameter Monitored	Samp Meth	Fld Filt Y/N	Analysis Method	Analysis Date/Time	Analysis Results/Units	Detection Limits/Units
00400	Field pH	Grab	N	EPA_150_1	09/13/95	7.15 Units	NA Units
00010	Temperature	Grab	N	EPA_170_1	09/13/95	29.8 ^C	NA ^C
00094	Conductivity	Grab	N	EPA_120_1	09/13/95	900 umhos/cm	1.0 umhos/c
00410	Alkalinity	Grab	N	EPA_310_1	09/15/95	902 mgCaC03/	2.0 mgCaC03
00310	BOD 5 Day	Grab	N	SM_5210_B	09/14/95 14:10	382 mg/l	2.0 mg/l
00940	Chloride	Grab	N	EPA_325_2	09/19/95	274 mg/l	1.0 mg/l
00340	Chemical Oxygen Demand	Grab	N	EPA_410_4	09/18/95	648 mg/l	10 mg/l
00610	Nitrogen: Ammonia	Grab	N	EPA_350_1	09/18/95	38.5 mg/l	0.01 mg/l
83341	Nitrogen: Ammonium	Grab	N	EPA_DER_SOP	09/20/95	38.1 mg/l	0.01 mg/l
00620	Nitrogen: Nitrate	Grab	N	EPA_353_2	09/14/95	0.14 mg/l	0.02 mg/l
70300	Total Dissolved Solids	Grab	N	EPA_160_1	09/14/95	1230 mg/l	10 mg/l
00625	Nitrogen: Total Kjeldahl	Grab	N	EPA_351_2	09/29/95	88.8 mg/l	0.10 mg/l
00530	Total Suspended Solids	Grab	N	EPA_160_2	09/14/95	96 mg/l	5.0 mg/l

BOD: Setup Date/Time: 09/14/95 14:10:00 Read Date/Time: 09/19/95 10:40:00

Well development: pumping the well prior to sampling to obtain representative ground water samples.
DER form 17-522.900(2) Effective: April, 1994



Citrus County Landfill

PARAMETER MONITORING REPORT

Part III: Analytical Results

Facility GMS # : 4009C00086
Test Site ID # : NA
Well Name: TANK #4 EFF.
Classification of Groundwater: NA

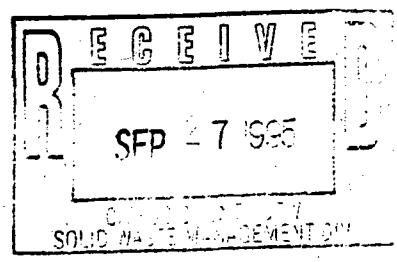
Ground Water Elevation (NGVD): NA
or (MSL): ____

Sampling Date/Time: 09/14/95 12:20:00
Report Period: NA
Well Purged (Y/N) NA
Well type: [ ] Background
[ ] Intermediate
[ ] Compliance
[ ] Other

STORET Code	Parameter Monitored	Samp Meth	Fld Filt Y/N	Analysis Method	Analysis Date/Time	Analysis Results/Units	Detection Limits/Units
00400	Field pH	Grab	N	EPA_150_1	09/14/95	7.37 Units	NA Units
00010	Temperature	Grab	N	EPA_170_1	09/14/95	37.4 ^C	NA ^C
00094	Conductivity	Grab	N	EPA_120_1	09/14/95	2100 umhos/cm	1.0 umhos/c
00310	Carbonaceous BOD	Grab	N	SM_5210_B	09/15/95 11:25	34.4 mg/l	2.0 mg/l
00940	Chloride	Grab	N	EPA_325_2	09/19/95	334 mg/l	1.0 mg/l
00340	Chemical Oxygen Demand	Grab	N	EPA_410_4	09/18/95	159 mg/l	10 mg/l
31616	Fecal Coliform	Grab	N	EPA_SM9222D	09/14/95 15:50	2 cfu/100m	1 cfu/100
00929	Sodium	Grab	N	EPA_6010	09/18/95	250 mg/l	1.0 mg/l
00610	Nitrogen: Ammonia	Grab	N	EPA_350_1	09/18/95	<0.01 mg/l	0.01 mg/l
00620	Nitrogen: Nitrate	Grab	N	EPA_353_2	09/15/95	4.20 mg/l	0.02 mg/l
70300	Total Dissolved Solids	Grab	N	EPA_160_1	09/20/95	1170 mg/l	10 mg/l
00600	Total Nitrogen	Grab	N	EPA_SM4500N	09/21/95	4.43 mg/l	0.10 mg/l
00665	Total Phosphorus	Grab	N	EPA_365_1	09/21/95	0.08 mg/l	0.01 mg/l
00530	Total Suspended Solids	Grab	N	EPA_160_2	09/20/95	9.5 mg/l	5.0 mg/l

F. Coli: Setup Date/Time: 09/14/95 15:50:00 Read Date/Time: 09/15/95 15:20:00
BOD: Setup Date/Time: 09/15/95 11:25:00 Read Date/Time: 09/20/95 09:00:00

Well development: pumping the well prior to sampling to obtain representative ground water samples.
DER form 17-522.900(2) Effective: April, 1994



Citrus County Landfill

PARAMETER MONITORING REPORT

Part III: Analytical Results

Facility GMS # : 4009600086
Test Site ID # : NA
Well Name: TANK #2 INF.
Classification of Groundwater: NA

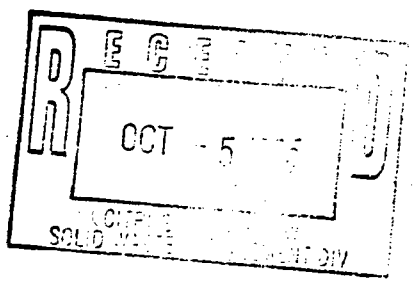
Ground Water Elevation (NGVD): NA
or (MSL): _____

Sampling Date/Time: 09/20/95 10:55:00
Report Period: NA
Well Purged (Y/N) NA
Well type: [ ] Background
[ ] Intermediate
[ ] Compliance
[ ] Other

STORET Code	Parameter Monitored	Samp Meth	Fld Filt Y/N	Analysis Method	Analysis Date/Time	Analysis Results/Units	Detection Limits/Units
00400	Field pH	Scoop	N	EPA_150_1	09/20/95	7.24 Units	NA Units
00010	Temperature	Scoop	N	EPA_170_1	09/20/95	30.0 ^C	NA ^C
00094	Conductivity	Scoop	N	EPA_120_1	09/20/95	3650 umhos/cm	1.0 umhos/c
00410	Alkalinity	Scoop	N	EPA_310_1	09/26/95	3700 mgCaC03/	2.0 mgCaC03
00310	BOD 5 Day	Scoop	N	SM_5210_B	09/21/95 16:35	631 mg/l	2.0 mg/l
00940	Chloride	Scoop	N	EPA_325_2	09/27/95	356 mg/l	1.0 mg/l
00340	Chemical Oxygen Demand	Scoop	N	EPA_410_4	09/26/95	569 mg/l	10 mg/l
00610	Nitrogen: Ammonia	Scoop	N	EPA_350_1	09/22/95	190 mg/l	0.01 mg/l
83341	Nitrogen: Ammonium	Scoop	N	EPA_DER_SOP	09/29/95	187 mg/l	0.01 mg/l
00620	Nitrogen: Nitrate	Scoop	N	EPA_353_2	09/22/95	3.29 mg/l	0.02 mg/l
70300	Total Dissolved Solids	Scoop	N	EPA_160_1	09/26/95	1660 mg/l	10 mg/l
00625	Nitrogen: Total Kjeldahl	Scoop	N	EPA_351_2	09/29/95	145 mg/l	0.10 mg/l
00530	Total Suspended Solids	Scoop	N	EPA_160_2	09/21/95	11100 mg/l	5.0 mg/l

BOD: Setup Date/Time: 09/21/95 16:35:00 Read Date/Time: 09/26/95 14:00:00

Well development: pumping the well prior to sampling to obtain representative ground water samples.
DER form 17-522.900(2) Effective: April, 1994



Citrus County Landfill

PARAMETER MONITORING REPORT

Part III: Analytical Results

Facility GMS # : 4009600086
Test Site ID # : NA
Well Name: TANK #4 EFF.
Classification of Groundwater: G-II

Ground Water Elevation (NGVD): NA
or (MSL): _____

Sampling Date/Time: 09/21/95 10:55:00
Report Period: NA
Well Purged (Y/N) YES
Well type:
[ ] Background
[ ] Intermediate
[ ] Compliance
[ ] Other

STORET Code	Parameter Monitored	Samp Meth	Fld Filt Y/N	Analysis Method	Analysis Date/Time	Analysis Results/Units	Detection Limits/Units
00400	Field pH	Grab	N	EPA_150_1	09/21/95	8.37 Units	NA Units
00010	Temperature	Grab	N	EPA_170_1	09/21/95	31.0 ^C	NA ^C
00094	Conductivity	Grab	N	EPA_120_1	09/21/95	2050 umhos/cm	1.0 umhos/c
00310	Carbonaceous BOD	Grab	N	SM_5210_B	09/21/95 17:55	<2.0 mg/l	2.0 mg/l
00940	Chloride	Grab	N	EPA_325_2	09/27/95	330 mg/l	1.0 mg/l
00340	Chemical Oxygen Demand	Grab	N	EPA_410_4	09/26/95	63.2 mg/l	10 mg/l
31616	Fecal Coliform	Grab	N	EPA_SM9222D	09/21/95 15:00	17 cfu/100m	1 cfu/10(
00929	Sodium	Grab	N	EPA_6010	09/25/95	280 mg/l	1.0 mg/l
00610	Nitrogen: Ammonia	Grab	N	EPA_350_1	09/22/95	0.11 mg/l	0.01 mg/l
00620	Nitrogen: Nitrate	Grab	N	EPA_353_2	09/22/95	0.04 mg/l	0.02 mg/l
70300	Total Dissolved Solids	Grab	N	EPA_160_1	09/26/95	1120 mg/l	10 mg/l
00600	Total Nitrogen	Grab	N	EPA_SM4500N	09/29/95	4.23 mg/l	0.10 mg/l
00665	Total Phosphorus	Grab	N	EPA_365_1	10/04/95	1.49 mg/l	0.01 mg/l
00530	Total Suspended Solids	Grab	N	EPA_160_2	09/21/95	<5.0 mg/l	5.0 mg/l

F. Coli: Setup Date/Time: 09/21/95 15:00:00 Read Date/Time: 09/22/95 15:55:00
BOD: Setup Date/Time: 09/21/95 17:55:00 Read Date/Time: 09/26/95 15:00:00

Well development: pumping the well prior to sampling to obtain representative ground water samples.
DER form 17-522.900(2) Effective: April, 1994

RECEIVED
OCT - 5 1995
CITRUS COUNTY — DPW
SOLID WASTE MANAGEMENT DIV.

Citrus County Landfill

PARAMETER MONITORING REPORT

Part III: Analytical Results

Facility GMS # : 4009C00086
Test Site ID # : NA
Well Name: TANK #2 INF.
Classification of Groundwater: NA

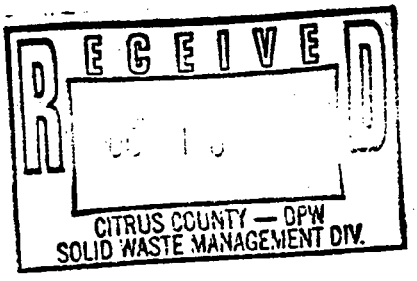
Ground Water Elevation (NGVD): NA
or (MSL): _____

Sampling Date/Time: 09/27/95 11:40:00
Report Period: NA
Well Purged (Y/N) NA
Well type: [ ] Background
[ ] Intermediate
[ ] Compliance
[ ] Other

STORET Code	Parameter Monitored	Samp Meth	Fld Filt Y/N	Analysis Method	Analysis Date/Time	Analysis Results/Units	Detection Limits/Units
00400	Field pH	Grab	N	EPA_150_1	09/27/95	7.38 Units	NA Units
00010	Temperature	Grab	N	EPA_170_1	09/27/95	33.5 ^C	NA ^C
00094	Conductivity	Grab	N	EPA_120_1	09/27/95	1110 umhos/cm	1.0 umhos/c
00410	Alkalinity	Grab	N	EPA_310_1	09/29/95	1900 mgCaC03/	2.0 mgCaC03
00310	BOD 5 Day	Grab	N	SM_5210_B	09/28/95 09:45	19.4 mg/l	2.0 mg/l
00940	Chloride	Grab	N	EPA_325_2	10/06/95	417 mg/l	1.0 mg/l
00340	Chemical Oxygen Demand	Grab	N	EPA_410_4	10/02/95	281 mg/l	10 mg/l
00610	Nitrogen: Ammonia	Grab	N	EPA_350_1	10/02/95	1.87 mg/l	0.01 mg/l
83341	Nitrogen: Ammonium	Grab	N	EPA_DER_SOP	10/02/95	1.83 mg/l	0.01 mg/l
00620	Nitrogen: Nitrate	Grab	N	EPA_353_2	10/05/95	0.91 mg/l	0.02 mg/l
70300	Total Dissolved Solids	Grab	N	EPA_160_1	09/29/95	1760 mg/l	10 mg/l
00625	Nitrogen: Total Kjeldahl	Grab	N	EPA_351_2	10/05/95	144 mg/l	0.10 mg/l
00530	Total Suspended Solids	Grab	N	EPA_160_2	09/27/95	108 mg/l	5.0 mg/l

BOD: Setup Date/Time: 09/28/95 09:45:00 Read Date/Time: 10/03/95 08:50:00

Well development: pumping the well prior to sampling to obtain representative ground water samples.
DER form 17-522.900(2) Effective: April, 1994



Citrus County
Attn: Cathy Winter

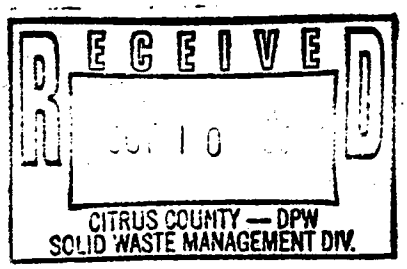
Report Number: 95-09-386

Quality Control Data Sheets

Parameter	OLI Sample #	Matrix Spike % Recovery	Matrix Spike Dup % Recovery	Relative Percent Difference	Analysis Date	Analyst
BOD 5 Day	9509386-01	108	101	7	09/28/95	SW
Total Suspended Solid*	9509297-02	NA	NA	0	09/27/95	SS
Alkalinity	9509413-03	92	92	0	09/29/95	SS
Chemical Oxygen Demand	DI SPIKE	96	89	8	10/02/95	SS
Total Dissolved Solids*	9509400-02	NA	NA	3	09/29/95	SS
Nitrate/Nitrite Combined	9509420-01	98	98	0	10/05/95	GP
Ammonia Nitrogen	9509348-05	115	111	4	10/02/95	GP
Total Kjeldahl Nitrogen	9509442-05	97	99	2	10/05/95	ORV
Chloride	9509386-01	102	101	1	10/06/95	RW

Parameter	Sample #	Case Narrative for 95-09-386
Chemical Oxygen Demand	1	Spike recovery out of QC limits due to matrix interference. A blank spike was analyzed and the recovery was .

* Relative Percent Difference (RPD) was calculated from results of sample and sample duplicate.



Citrus County Landfill

PARAMETER MONITORING REPORT

Part III: Analytical Results

Facility GMS # : 4009C00086
Test Site ID # : NA
Well Name: TANK #4 EFF.
Classification of Groundwater: NA

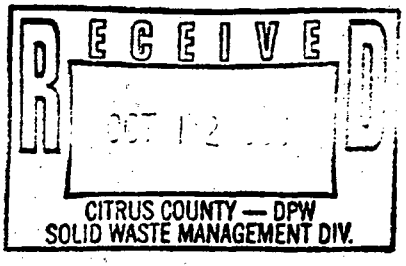
Ground Water Elevation (NGVD): NA
or (MSL): ____

Sampling Date/Time: 09/28/95 11:04:00
Report Period: NA
Well Purged (Y/N) NA
Well type:
[ ] Background
[ ] Intermediate
[ ] Compliance
[ ] Other

STORET Code	Parameter Monitored	Samp Meth	Fld Filt Y/N	Analysis Method	Analysis Date/Time	Analysis Results/Units	Detection Limits/Units
00400	Field pH	Grab	N	EPA_150_1	09/28/95	8.32 Units	NA Units
00010	Temperature	Grab	N	EPA_170_1	09/28/95	28.5 ^C	NA ^C
00094	Conductivity	Grab	N	EPA_120_1	09/28/95	710 umhos/cm	1.0 umhos/
00310	Carbonaceous BOD	Grab	N	SM_5210_B	09/28/95 17:30	<2.0 mg/l	2.0 mg/l
00940	Chloride	Grab	N	EPA_325_2	10/10/95	387 mg/l	1.0 mg/l
00340	Chemical Oxygen Demand	Grab	N	EPA_410_4	10/02/95	88.6 mg/l	10 mg/l
00929	Sodium	Grab	N	EPA_6010	10/03/95	340 mg/l	1.0 mg/l
00610	Nitrogen: Ammonia	Grab	N	EPA_350_1	10/02/95	<0.01 mg/l	0.01 mg/l
00620	Nitrogen: Nitrate	Grab	N	EPA_353_2	10/09/95	0.40 mg/l	0.02 mg/l
70300	Total Dissolved Solids	Grab	N	EPA_160_1	10/03/95	476 mg/l	10 mg/l
00600	Total Nitrogen	Grab	N	EPA_SM4500N	10/09/95	1.86 mg/l	0.10 mg/l
00665	Total Phosphorus	Grab	N	EPA_365_1	10/04/95	0.10 mg/l	0.01 mg/l
00530	Total Suspended Solids	Grab	N	EPA_160_2	09/28/95	13 mg/l	5.0 mg/l

BOD: Setup Date/Time: 09/28/95 17:30:00 Read Date/Time: 10/03/95 14:55:00

Well development: pumping the well prior to sampling to obtain representative ground water samples.
DER form 17-522.900(2) Effective: April, 1994



Citrus County Landfill

PARAMETER MONITORING REPORT

Part III: Analytical Results

Facility GMS # : 4009C00086
Test Site ID # : NA
Well Name: TANK #4 EFF.
Classification of Groundwater: NA

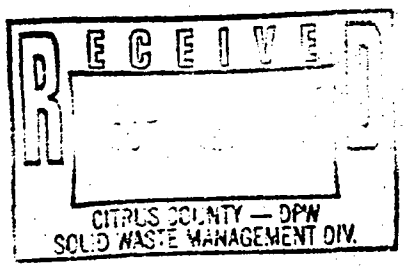
Ground Water Elevation (NGVD): NA
or (MSL): _____

Sampling Date/Time: 09/28/95 11:28:00
Report Period: NA
Well Purged (Y/N) NA
Well type:
[ ] Background
[ ] Intermediate
[ ] Compliance
[ ] Other

STORET Code	Parameter Monitored	Samp Meth	Fld Filt Y/N	Analysis Method	Analysis Date/Time	Analysis Results/Units	Detection Limits/Units
00400	Field pH	Grab	N	EPA_150_1	09/28/95	8.32 Units	NA Units
00010	Temperature	Grab	N	EPA_170_1	09/28/95	28.5 ^C	NA ^C
00094	Conductivity	Grab	N	EPA_120_1	09/28/95	710 umhos/cm	1.0 umhos/c
31616	Fecal Coliform	Grab	N	EPA_SM9222D	09/28/95 15:25	26 cfu/100m	1 cfu/10(

F. Coli: Setup Date/Time: 09/28/95 15:25:00 Read Date/Time: 09/29/95 15:20:00

Well development: pumping the well prior to sampling to obtain representative ground water samples.
DER form 17-522.900(2) Effective: April, 1994



Domestic Wastewater Treatment
Plant Title: Monthly Operating Report
Effective Date: July 1, 1991
DER Application No. _____ (Filled in by DER)

SOLID WASTE LEACHATE TREATMENT FACILITY

Monthly Operating Report

Part II - General Information

(1) Month September Year 1995

(2) Plant's DER Identification Number 4009000086

(3) Plant Name Landfill (Central) Leachate Plant

(4) Plant Address SR 44 3 miles E. Lecanto

(5) City Lecanto

(6) County Citrus

(7) Phone Number (904) 746-2694

(8) Permit Number SO09-187229

(9) Plant Type 1-C

(10) Test Site Identification Number N/A

(11) Fecal Coliform Sample Method

X Membrane Filter ___ Most Probable Number

(12) Type of Effluent Disposal or Reclaimed Water Reuse N/A

(13) Limited Wet Weather Discharge Activated

☐ Yes ☐ No ☒ Not Applicable

(14) Cumulative Days of Wet Weather Discharge N/A

(15) Plant Staffing

Day Shift Operator Class C Cert. No. 9016

Evening Shift Operator Class _____ Cert. No. _____

Night Shift Operator Class A Cert. No. _____

Lead Operator James Culey (Signature) C9016 (Cert. No.)

Parameter	Units	STORET Code	Value
(16) Monthly average daily flow	mgd	050053	.014
(17) Permitted capacity	mgd	–	.030
(18) Three-month average daily flow	mgd	–	.011
(19) Percent of permitted capacity	%	–	47%
(20) $CBOD_5$ Effluent	mg/L	080082	10.4
(21) $CBOD_5$ Effluent	lbs/day	–	N/A
(22) TSS Effluent	mg/L	900201	9.6
(23) TSS Effluent	lbs/day	–	N/A
(24) Minimum pH		–	7.9
(25) Maximum pH		–	8.2
(26) Total N	mg/L	000600	11.2
(27) TKN	mg/L	000625	N/A
(28) Ammonia (NH_3 - N)	mg/L	000610	11
(29) Nitrate	mg/L	071850	8.6
(30) Total Phosphorus	mg/L	000665	1.5
(31) Minimum Chlorine Residual	mg/L	–	1.0
(32) Maximum Chlorine Residual	mg/L	–	2.0
(33) Other Effluent Parameters			
Chloride			357
Sodium			300
TDS			1069
COD			108.2

OER Form 17-[illegible]
Form Title: Domestic Wastewater Treatment Plant Monthly Operating Report
Effective Date: July 1, 1991
OER Application No. [illegible] (Filled in by OER)

SOLID WASTE LEACHATE TREATMENT FACILITY

Monthly Operating Report

(34)

Month September Year 1995

Day of the Month	Flow (mgd)	Chlorine Residual after Contact	Chlorine Residual after Dechlorination	$CBOD_5$ Influent (mg/L)	TSS Influent (mg/L)	$CBOD_5$ Effluent (mg/L)	TSS Effluent (mg/L)	pH Effluent	TKN Effluent (mg/L)	NH_3 - N Effluent (mg/L)	Nitrate Effluent (mg/L)	Total P Effluent (mg/L)	Fecal Coliform (#/100ml)	Chloride	Sodium	TDS	COD	TOTAL N
1	.012	1.0						7.9										
2	0	—						—										
3	0	—						—										
4	0	—						—										
5	.013	1.5						8.0										
6	.007	1.2						7.9										
7	.020	1.5				3.1	11	8.0		.01	8.6	.2	17	377	330	1510	122	11.2
8	.016	1.1						8.0										
9	.026	—						—										
10	.026	—						—										
11	.015	1.6						8.1										
12	.003	1.9						8.1										
13	.012	2.0						8.0										
14	.011	2.0				34.4	9.5	8.1		.01	4.2	.08	2	334	250	1170	159	4.4
15	.011	2.0						8.0										
16	.011	—						—										
17	0	—						—										
18	.014	1.0						7.9										
19	.010	1.2						7.9										
20	.014	1.2						8.0										
21	.009	2.0				2.0	5.0	8.0		.11	.04	1.5	17	330	280	1120	63.2	4.2
22	.021	2.0						8.0										
23	.03	—						—										
24	0	—						—										
25	0	—						—										
26	.012	2.0						8.0										
27	.013	1.6						8.2										
28	.009	1.8				2.0	13	8.0		.01	.4	.1	26	387	340	1476	86	1.9
29	.014	2.0						8.1										
30	0	—						—										

Lead Operator: This is to certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief, this information is true, complete and accurate.

Signed: [signature] Date: 10-13-95

Name (Please Type) _____

Company Name _____ Telephone No. (Please Type) _____

ATTACHMENT THREE

PROPOSED SOLUTE TRANSPORT MODEL STUDY

Attachment A-10

Attachment A-10 to the AGREEMENT between CH2M HILL, INC. ("CONSULTANT"), and Citrus County ("COUNTY") for a PROJECT generally described as:

Consulting Services to Prepare Technical Evaluations, Permit Application, Construction Documents and Construction Management Services for the Citrus County Solid Waste Management Program.

The specific scope of services is as follows:

Task 32 - Computer Simulation of Solute Concentration in Groundwater at the Citrus County Landfill

This scope of services will provide Citrus County (hereinafter referred to as the "COUNTY") with the professional engineering services required for simulation of the sodium and chloride concentration in groundwater at the Citrus County Landfill.

I. Project Understanding

The COUNTY is currently operating a percolation pond for disposal of treated landfill leachate. The percolation pond is located between the closed 60-acre landfill and the active 80-acre landfill expansion. The leachate has a sodium concentration of approximately 400 mg/l and a chloride concentration of approximately 400 mg/l. The Florida Department of Environmental Regulation (FDEP) has requested the COUNTY perform computer simulation of solute transport to predict the range of sodium and chloride concentrations in the groundwater at the facility boundary. Results of the modeling will be used to support continued operation of the pecolation pond.

II. Description of Work

Task 32.1 - Literature Review

Reports documenting the hydrogeology of the study area will be reviewed and evaluated. Recent onsite investigations performed by CH2M HILL and others will also be included in the review. The COUNTY will be responsible for providing copies of onsite reports of investigation.

Task 32.2 - Conceptual Model Development

Results of the literature review will be used to develop a conceptual model of the aquifer system in the study area. The conceptual model will identify discrete hydrogeologic units and the factors influencing solute transport at the site. Representative values for aquifer characteristics will also be summarized.

Task 32.3 - Solute Transport Modeling

A three-dimension solute transport model will be constructed. The model will include infiltration from both the leachate pond and an onsite stormwater pond and will simulate solute transport in the groundwater flow system for up to a 20-year period. Model limits will extend beyond the site boundaries to facilitate evaluation of solute concentrations at the site boundaries.

A uniform hydraulic gradient will be used in the model. The magnitude and direction of the gradient will be estimated from the most recent upper Floridan aquifer potentiometric surface maps (average of May and September). Up to five simulations will be conducted to address uncertainties in aquifer parameters values.

Task 32.4 - Technical Memorandum

A brief technical memorandum (TM) will be prepared to document the solute transport modeling effort. The TM will include:

- Summary of study area hydrogeology
- Description of solute transport model construction
- Model-derived sodium and chloride iso-concentration contours plots for each model run

Five copies of the TM will be provided.

Task 32.5 - Project Meetings

Upon completion of Task 2, CH2M HILL will conduct a meeting in the Tampa office of the FDEP to present the solute transport model approach. Task 3 will not commence until FDEP comments are received and adjudicated.

III. Compensation

CH2M HILL is to be compensated for the work described in this work order as shown in Attachment B-10.

Attachment B-10

Attachment B-10 to the AGREEMENT between CH2M HILL, INC., ("CONSULTANT"), and Citrus County ("COUNTY") for a PROJECT generally described as:

Consulting Services with the professional engineering services required for simulation of the sodium and chloride concentration in groundwater at the Citrus County Landfill.

Article 2. Compensation

Compensation for this Task will not exceed the amount contained in the following table without prior authorization by the COUNTY.

Task	Lump Sum
Task 32-Solute Modeling	$15,000.00

This Attachment B-10 supersedes all prior written or oral understandings of the Compensation, and may only be changed by a written amendment executed by both parties.

IN WITNESS WHEREOF, the parties execute below:

FOR COUNTY:
CITRUS COUNTY, FLORIDA

_____ By:_____
Vicki Phillips, Chairman
BOARD OF COUNTY
COMMISSIONERS OF
CITRUS COUNTY,

Print Name:_____

FLORIDA

Date:_____

FOR CONSULTANT:
CH2M HILL, INC.

_____ By:_____

Print Name:_____ DS Holmes Vice President
Print Name and Title

IV. Assumptions

1. The solute transport model will consist of no more than three unique layers.
2. Collection and analysis of additional field data is not anticipated.
3. Aquifer characteristics are horizontally uniform.
4. Areial recharge due to precipitation will not be simulated.
5. Model calibration is not anticipated.
6. It is anticipated that all the work described in this scope of services will be completed before January 31, 1996, assuming a favorable response from the FDEP.

This Attachment A-10 supersedes all prior written or oral understandings of the Compensation, and may only be changed by a written amendment executed by both parties.

IN WITNESS WHEREOF, the parties execute below:

FOR COUNTY:
CITRUS COUNTY, FLORIDA

_____

By:_____
Vicki Phillips, Chairman
BOARD OF COUNTY
COMMISSIONERS OF
CITRUS COUNTY,

Print Name:_____

FLORIDA

Date:_____

FOR CONSULTANT:
CH2M HILL, INC.

_____

By:_____

Print Name:_____

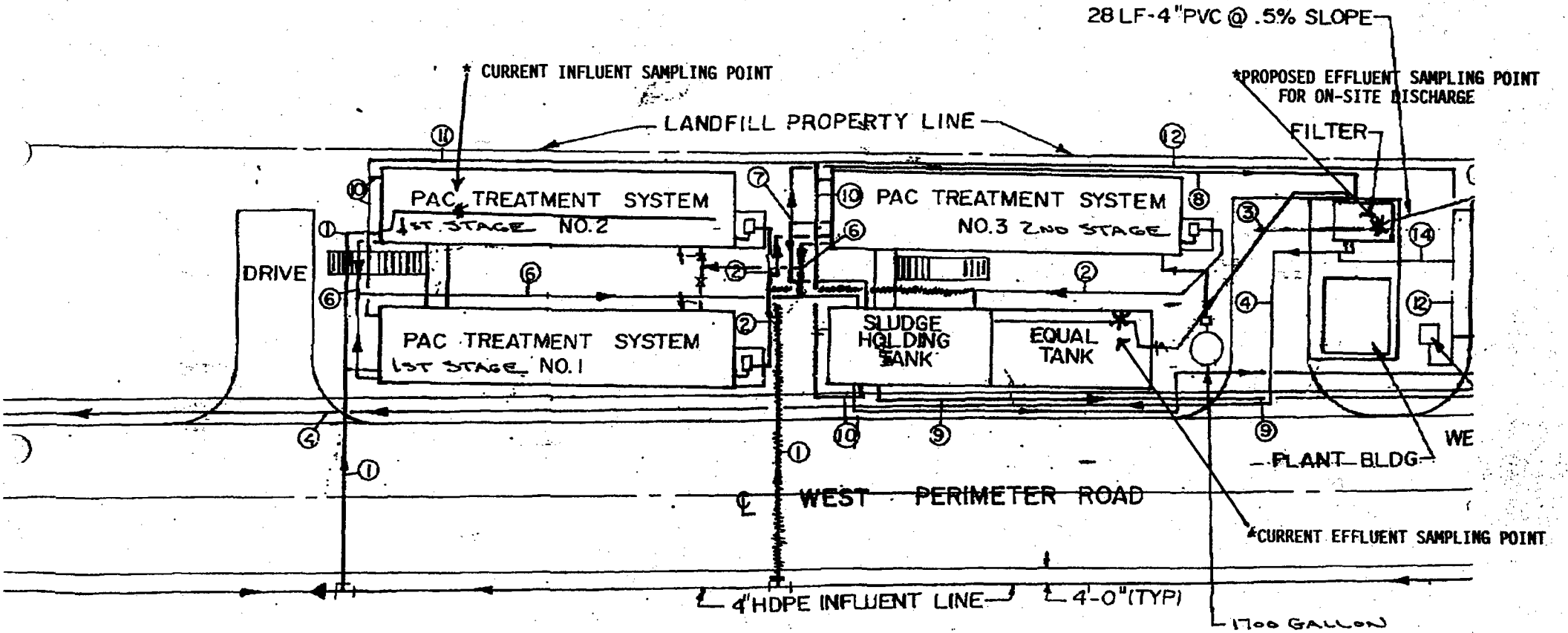
D.S. Holmes Vice President
Print Name and Title

ATTACHMENT FOUR

DIAGRAM - LEACHATE SAMPLING LOCATIONS

CITRUS COUNTY, FL

PIPING MODIFICATIONS FOR TWO STAGE DENITRIFICATION



1. 4" HDPE LEACHATE INFLUENT LINE TO P.A.C.T. TREATMENT PLANT NO. 1, 2 & 3
2. 4" HDPE EFFLUENT FORCE MAIN LINE TO EQUALIZATION TANK
3. 11/2" EFFLUENT FORCE MAIN LINE TO FILTERS
4. 4" HDPE EFFLUENT LINE TO PERCOLATION PONDS
5. 4" PVC BACKWASH DRAIN LINE TO H.R.
6. 4" HDPE W.A.S. LINE TO AEROBIC DIGESTER
7. [illegible] SLUDGE LINE TO AEROBIC DIGESTER
9. 3" PVC DECANT LINE TO PLANT DRAIN P.S. (SLOPE @ 1.75%)
10. 2" PVC NON POTABLE WATER LINE (TYP. TO ALL P.A.C.T. UNITS)
11. 3" PVC NON POTABLE WATER LINE
12. 4" PVC NON POTABLE WATER LINE
13. 3/4" PVC NON POTABLE WATER LINE TO CONTROL PANEL AREA
14. 3/4" PVC NON POTABLE WATER LINE TO FILTER
15. 1-1/4" PVC NON POTABLE WATER LINE TO SLUDGE DRYING BEDS

CITRUS COUNTY CENTRAL LANDFILL LEACHATE TREATMENT FACILITY