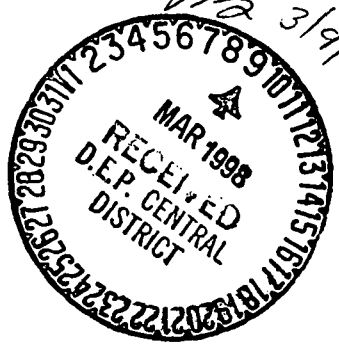
Tomoka

JW file

County of Volusia

PUBLIC WORKS SERVICES CENTER
SOLID WASTE SERVICES GROUP
1990 Tomoka Farms Road • Daytona Beach, FL 32124
Telephone (904) 947-2952 • Fax (904) 947-2955

JW 3/9/98



March 5,1998

Mr. James Bradner, P.E.
Program Manager, Solid Waste
Florida Department of Environmental Protection
3319 MaGuire Blvd., Suite 232
Orlando, Fla.
32803-3767

Re: Compliance Reporting December 1997
Tomoka Landfill Permit No. SO64-34352, IO64-39230, NPDES No. FL0037877, Permit No. SO64-171906, SO64-121811 and SO64-179781
Plymouth Landfill Permit No. SO64-58275 Monitoring Wells and Surface Water Analysis

Dear Mr. Bradner:

In accordance with specific conditions of the above referenced permits, enclosed are the December 1997 reports.

If additional information or clarification is needed please advise.

Respectfully submitted,

Susan M. Gaze

Susan M. Gaze, Environmental Specialist II
Solid Waste Service Group

C: J.L. Griffin, Director of Solid Waste Service Group
B. Gilley, Assistant Director of Solid Waste Service Group

VOLUSIA RECYCLES
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R Environmental Inc.

02/25/1998

Mr. Jim Griffin
Volusia County Solid Waste
1900 Tomoka Farms Road
Daytona Beach, Florida 32124

Dear Mr. Griffin;

The Reports for the December 1997 sampling events at Plymouth Avenue Landfill and at Tomoka Landfill are complete. The data does not indicate any significant changes from previous sampling events. The vinyl chloride at Tomoka Landfill is still significantly elevated and the nitrate values at Plymouth are still showing a significant downward trend. Both landfills still show low level volatile contamination.

The values exceeding the DEP Groundwater Guidance Document values are included in the attached tables for each landfill. Due to a recent DEP audit, the documentation requirement of the lab has caused the paper volume of the report to dramatically increased.

If I can be of further assistance please feel free to give me a call

Sincerely Yours;

Robert J Sullivan
Lab Manager

1495 South Volusia Avenue Orange City Florida 32763

KARR Environmental Inc.

1495 South Volusia Ave, Orange City FL 32763

Certification # E83325 QAPlan 910047G

Exceedences from DEP Groundwater Guidance Document

Projectname: Tomoka Landfill **Submission: 97120036**

SAMPLE	COMPOUND	METHOD	MCL	RESULT	UNITS	MDL
B 1 B	Iron	7380	300	8280	UG/L	1
B 2	Iron	7380	300	6030	UG/L	1
B 5 B	Total Dissolved Solids	160.1	500	510	MG/L	1
B 5 B	Iron	7380	300	7830	UG/L	1
B 8	Iron	7380	300	3120	UG/L	1
B 8	Toluene	8260	40	340	UG/L	1
B 8-2	Iron	7380	300	1780	UG/L	1
B 11	Iron	7380	300	3350	UG/L	1
B 11 Duplicate	Iron	7380	300	3120	UG/L	1
B 32	Iron	7380	300	5140	UG/L	1
B 33-1	Iron	7380	300	5590	UG/L	1
B 33-1 Duplicate	Iron	7380	300	5360	UG/L	1
B 33-2	Iron	7380	300	6480	UG/L	1
B 34-1	Iron	7380	300	6480	UG/L	1
B 34-2	Iron	7380	300	6030	UG/L	1
B 35-1	Iron	7380	300	2450	UG/L	1
B 35-2	Total Dissolved Solids	160.1	500	540	MG/L	1
B 35-2	Turbidity, Field	180.1F	20	41	NTU	0.1
B 35-2	Iron	7380	300	7830	UG/L	1
B 36	Total Dissolved Solids	160.1	500	524	MG/L	1
B 36	Iron	7380	300	2900	UG/L	1
B 36	Benzene	8260	1	1.2	UG/L	1
B 36	Vinyl Chloride	8260	1	3.0	UG/L	1
B 36 Duplicate	Total Dissolved Solids	160.1	500	544	MG/L	1
B 36 Duplicate	Iron	7380	300	1550	UG/L	1
B 36 Duplicate	Benzene	8260	1	1.2	UG/L	1
B 36 Duplicate	Vinyl Chloride	8260	1	3.1	UG/L	1
B 37-1	Total Dissolved Solids	160.1	500	1670	MG/L	1
B 37-1	Iron	7380	300	7380	UG/L	1
B 37-1	Benzene	8260	1	12.8	UG/L	1
B 37-2	Iron	7380	300	9620	UG/L	1
B 37-2	Vinyl Chloride	8260	1	78.7	UG/L	1
B 38-1	Iron	7380	300	6710	UG/L	1
B 38-2	Iron	7380	300	4690	UG/L	1
B 39	Turbidity, Field	180.1F	20	27	NTU	0.1
B 39	Iron	7380	300	4690	UG/L	1

All analyses performed in accordance with the latest approved edition of "Standard Methods for the Examination of Water and Wastewater" and "Methods for Chemical Analysis of Water and Wastes", unless otherwise noted.

KARR Environmental Inc.
1495 South Volusia Ave, Orange City FL 32763
Certification # E83325 QAPlan 910047G

Exceedences from DEP Groundwater Guidance Document

Projectname: Tomoka Landfill **Submission: 97120036**

SAMPLE	COMPOUND	METHOD	MCL	RESULT	UNITS	MDL
B 40-1	Iron	7380	300	6480	UG/L	1
B 40-1 Duplicate	Iron	7380	300	6030	UG/L	1
B 40-2	Iron	7380	300	5360	UG/L	1
B 41-1	Total Dissolved Solids	160.1	500	876	MG/L	1
B 41-1	Iron	7380	300	5360	UG/L	1
B 41-1	Benzene	8260	1	2.5	UG/L	1
B 41-2	Total Dissolved Solids	160.1	500	664	MG/L	1
B 41-2	Iron	7380	300	8280	UG/L	1
B 42-1	Total Dissolved Solids	160.1	500	618	MG/L	1
B 42-1	Iron	7380	300	4240	UG/L	1
B 42-2	Iron	7380	300	8720	UG/L	1
B 43-1	Total Dissolved Solids	160.1	500	580	MG/L	1
B 43-1	Turbidity, Field	180.1F	20	22.5	NTU	0.1
B 43-1	Iron	7380	300	5810	UG/L	1
B 43-2	Iron	7380	300	6480	UG/L	1
B 44	Iron	7380	300	2000	UG/L	1
B 45-1	Iron	7380	300	6930	UG/L	1
B 45-1	Benzene	8260	1	6.0	UG/L	1
B 45-1	Vinyl Chloride	8260	1	2.2	UG/L	1
B 45-2	Turbidity, Field	180.1F	20	31.0	NTU	0.1
B 45-2	Iron	7380	300	10100	UG/L	1
B 58-1	Iron	7380	300	6260	UG/L	1
B 59-1	Total Dissolved Solids	160.1	500	702	MG/L	1
B 59-1	Iron	7380	300	4020	UG/L	1
B 60	Iron	7380	300	1110	UG/L	1
B 61	Total Dissolved Solids	160.1	500	924	MG/L	1
B 61	Iron	7380	300	4020	UG/L	1
B 62-2	Iron	7380	300	8720	UG/L	1
B 63-1	Iron	7380	300	3790	UG/L	1
B 63-2	Total Dissolved Solids	160.1	500	556	MG/L	1
B 63-2	Iron	7380	300	6930	UG/L	1
B 64	Iron	7380	300	3120	UG/L	1
B 65	Iron	7380	300	7380	UG/L	1
B 66	Iron	7380	300	6030	UG/L	1
B 67	Iron	7380	300	7150	UG/L	1
B 68	Iron	7380	300	6480	UG/L	1

All analyses performed in accordance with the latest approved edition of "Standard Methods for the Examination o Water and Wastewater" and "Methods for Chemical Analysis of Water and Wastes", unless otherwise noted.

KARR Environmental Inc.

1495 South Volusia Ave, Orange City FL 32763

Certification # E83325 QAPlan 910047G

Exceedences from DEP Groundwater Guidance Document

Projectname: Tomoka Landfill **Submission: 97120036**

SAMPLE	COMPOUND	METHOD	MCL	RESULT	UNITS	MDL
B 68 Duplicate	Iron	7380	300	3120	UG/L	1
M O 5 B	Total Dissolved Solids	160.1	500	688	MG/L	1
M O 5 B	Iron	7380	300	1110	UG/L	1
Surface Water 1	Iron	7380	300	760	UG/L	1
Surface Water 2	Iron	7380	300	1000	UG/L	1
Surface Water 3	Total Dissolved Solids	160.1	500	760	MG/L	1
Surface Water 3	Iron	7380	300	930	UG/L	1
Surface Water 5	Total Dissolved Solids	160.1	500	626	MG/L	1
Surface Water 5	Turbidity, Field	180.1F	33.9	38.7	NTU	0.1
Surface Water 5	Iron	7380	300	1350	UG/L	1
Surface Water 6	Turbidity, Field	180.1F	33.9	41.5	NTU	0.1
Surface Water 10	Iron	7380	300	424	UG/L	1

Robert L. Sullivan - Laboratory Director

All analyses performed in accordance with the latest approved edition of "Standard Methods for the Examination o Water and Wastewater" and "Methods for Chemical Analysis of Water and Wastes", unless otherwise noted.

Department of Environmental Protection

Lawton Chiles
Governor

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Virginia B. Wetherell
Secretary

October 31, 1997

Volusia County Public Works Solid Waste Services Group
1990 Tomoka Farms Road
Daytona Beach, Florida 32124

OCD-SW-97-0464

Attention: Ms. Susan Gaze, Environmental Specialist

Volusia County - SW
Tomoka Farms Road Landfill
Semi-annual Monitoring Data

Dear Ms. Gaze:

Enclosed are comments from James Russell, of the Waste Cleanup Section, reference the information submitted in the Summary and Evaluation of 1992 - 1996 Monitoring Data for Tomoka Landfill. The staff of Waste Cleanup assists the Solid Waste Section in the review of ground water and surface water monitoring plans and related issues.

Please provide the information requested in the enclosed attachment within 45 days. If you should have any questions, please call Chris Aoussat in the Solid Waste Section, at 407/893-3328.

Sincerely,

Dan R. Morrical, P.E.
Program Manager
Solid Waste Program

w/ Ed
DRM/ca
Enclosures: Memo

State of Florida
DEPA. .MENT OF ENVIRONMENTAL PR(.CTION

Interoffice Memorandum

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CENTRAL DISTRICT

10/25/97 CA

TO: Dan Morrical, P.E.
Solid Waste Program Manager

OCD-WCU-97-0388

THROUGH: G. Bret LeRoux, P.G. GBL
Waste Cleanup Program Manager

FROM: James B. Russell, P.E.
Waste Cleanup Program

DATE: October 2, 1997

SUBJECT: Volusia County - Waste Cleanup
Tomoka Farms Road Landfill
Summary and Evaluation of 1992 - 1996 Monitoring Data
and Semiannual Monitoring Report

I have reviewed the above-referenced documents and have the following comments:

1. The Parameter Monitoring Reports presents the dissolved oxygen measurements as 0.5U, where U indicates less than the detection limit. However, the field Data Sheets indicate dissolved oxygen less than 1 milligram per liter. Please revise the Parameter Monitoring Reports accordingly.

2. The reported GMS ID No. 3064A15502 for monitoring point B8-2 is incorrect. This is the GMS ID No. for monitoring point B11. The correct GMS ID No. is 3064A17136. Please revise the Table of Contents and Parameter Monitoring Report for this well accordingly.

3. Data from leachate monitoring point L-1 was not included in the semiannual monitoring event. Was this location dry at the time of monitoring? If not, was this monitoring point sampled? If this location was sampled, please provide the laboratory analytical data and Parameter Monitoring Report form.

4. The summary of constituents that exceed ground water quality did not include total dissolved solids (TDS). TDS criteria were exceeded in samples collected from the following monitoring points: B33-1, B36, B41-1, B41-2, B43-1, B43-2, B45-1, B59-1, B61, B62-1, B62-2, B63-1, B64, and B68. Please revise the summary of compounds that exceed water quality standards or minimum criteria to include all constituents with exceedances.

5. Surface water quality criteria for turbidity is presented for surface water monitoring locations SW-1, SW-5, and SW-9 in the summary of constituents that exceed water quality standards or criteria. Please bear in mind that the surface water quality criteria for turbidity is less than or equal to 29 NTUs above natural background. Please modify the summary of constituents that exceed water quality standards or criteria accordingly.

6. The pH reported for surface water monitoring point SW-1 exceeds the standard for pH of 8.5 standard units. Please revise the summary of constituents that exceed water quality standards or criteria accordingly.

7. No laboratory analytical data sheets were submitted for surface water monitoring location SW-10. Please provide the laboratory analytical data sheet for this monitoring location.

8. The reported concentration of vinyl chloride in ground water monitoring location B37-2 of 126 micrograms per liter exceeds the G-II ground water primary standard. Therefore, in accordance with Chapter 62-701.510(7) Florida Administrative Code, please provide a plan to initiate assessment monitoring in the vicinity of B37-2.

9. We are not in receipt of the trend analysis document referenced by Dr. Gomberg in his summary. Please have Volusia County provide the Department with a copy of the referenced report. The referenced report was required as part of the permit renewal.

As noted on the transmittal memorandum, no ground water flow maps were provided and no water level elevation table was provided. Should you have any questions, please contact me.

Attachments

County of Volusia

PUBLIC WORKS SERVICES CENTER
SOLID WASTE SERVICES GROUP
1990 Tomoka Farms Road, Daytona Beach, FL 32124
Telephone (904) 947-2952 • Fax (904) 947-2955

March 24, 1997

Mr. Dan Morrical, P.E.
Program Manager, Solid Waste
Florida Department of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, Fl 32803-3767

Re: December Quarter 1997
Tomoka Landfill: Permit No. SO64-34352, IO64-39230, NPDES No. FI0037877, Permit No. SO64-171906,SO64-121811 and SO64-179781
Plymouth Landfill: Permit No. SO64-58275
Monitoring Wells and Surface Water Analysis

Dear Mr. Morrical:

In accordance with specific conditions of the above referenced permits, enclosed are Monitoring Wells and Surface Water Analysis Reports for the Tomoka and Plymouth Landfill Systems.
Exceedences are covered in the summary letter prepared by Karr Environmental Laboratory. When reading this summary letter you will notice new volatiles appearing in the newly constructed shallow wells, located at the Plymouth Avenue Landfill. We believe this is not a Landfill problem, but a sampling problem dealing perhaps with the new PVC casings?
These results should not be considered the final results.
The Solid Waste Division will meet with Dr. Gomberg and Bob Sullivan to determine our next move in resolving this error, keeping the Department notified of any pending activity. If we feel the wells need to be better developed, all water pumped would be collected and taken to a treatment facility.
Thanking you in advance for your consideration in this matter.

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Respectfully submitted

Susan Margaret Gaze

Susan Margaret Gaze, Environmental Specialist II
Solid Waste Service Group
SMG/smg
Enclosure(s)

C: JL Griffin, Director of Solid Waste Service Group
B. Gilley, Assistant Director of Solid Waste Service Group
Denise Kemp, Division of Records, St. Johns River Water Management District, P.O. Box 14294, Palatka, Florida 32077
Dr. David Gomberg, 2247 SE 27th Street, Cape Coral, Floirda 33904

KARR Environmental Inc.

1495 South Volusia Ave. Suite 101
Orange City, Florida 32763
904-775-0144 Fax # 904-775-4470

03/13/97

Mr. Jim Griffin
Director of Solid Waste
Volusia County
123 West Indiana Avenue
Deland, Fl 32720

Dear Mr. Griffin:

KARR Environmental sampled Tomoka Farms Road Landfill (12/03/96) and Plymouth Avenue Landfill (12/17/96). Both Landfills exhibit Volatile hits.

Tomoka Farms Road Landfill volatile hits primarily border the old landfill which is currently being used for construction and debris. Well 37-2 is of significance due to the large vinyl chloride hit of 232 ppb.

Plymouth Avenue Landfill had hits primarily on the downstream side of the landfill. The nitrates continue their downward slide in concentration and the values are under 25 ppm. Monitor well 13-1 was sampled in January due to the well being damaged prior to December and then being repaired in early January.

A complete list of excedences of DEP's Ground Water Guidance values are included in the following pages. The columns MCL (guidance values) and MDL (lower laboratory analytical range) are included with the result values for comparison purposes.

If I can be of further assistance please feel free to give me a call

Sincerely Yours,

Robert L. Sullivan
Lab Director

KARR Environmental Inc.

1495 South Volusia Ave, Orange City FL 32763

Certification # E83325 QAPlan 910047G

Projectname: Tomoka Farms Rd **Submission:** 96120035

SAMPLE	COMPOUND	METHOD	MCL	RESULT	UNITS	MDL
B 1 B	Iron	7380	300	13800	UG/L	100
B 2	Iron	7380	300	11600	UG/L	100
B 5 B	Iron	7380	300	5500	UG/L	100
B 8	Iron	7380	300	4200	UG/L	100
B 8-2	Iron	7380	300	2600	UG/L	100
B 11 B	Iron	7380	300	2000	UG/L	100
B 11 B Duplicate	Iron	7380	300	2600	UG/L	100
B 32	Iron	7380	300	2300	UG/L	100
B 33-2	Turbidity, Field	180.1F	20	132	NTU	0.1
B 34-1	Iron	7380	300	6200	UG/L	100
B 34-2	Turbidity, Field	180.1F	20	42	NTU	0.1
B 34-2	Iron	7380	300	1800	UG/L	100
B 35-2	Iron	7380	300	650	UG/L	100
B 36	Iron	7380	300	2900	UG/L	100
B 36	Benzene	8260	1	1.3	UG/L	1
B 36	Vinyl Chloride	8260	1	2.1	UG/L	1
B 36 Duplicate	Iron	7380	300	2800	UG/L	100
B 36 Duplicate	Benzene	8260	1	1.4	UG/L	1
B 36 Duplicate	Vinyl Chloride	8260	1	2.4	UG/L	1
B 37-1	Iron	7380	300	28900	UG/L	100
B 37-1	Sodium	7770	160	329	MG/L	0.5
B 37-1	Benzene	8260	1	11.9	UG/L	1
B 37-2	Iron	7380	300	15400	UG/L	100
B 37-2	Benzene	8260	1	1.8	UG/L	1
B 37-2	Vinyl Chloride	8260	1	232	UG/L	1
B 38-1	Iron	7380	300	8000	UG/L	100
B 38-2	Iron	7380	300	4000	UG/L	100
B 39	Turbidity, Field	180.1F	20	106	NTU	0.1
B 39	Iron	7380	300	9300	UG/L	100
B 40-1	Turbidity, Field	180.1F	20	23	NTU	0.1
B40-1 Duplicate	Turbidity, Field	180.1F	20	23	NTU	0.1
B 40-2	Turbidity, Field	180.1F	20	27	NTU	0.1
B 41-2	Iron	7380	300	5600	UG/L	100
B 43-1	Iron	7380	300	29000	UG/L	100
B 43-1	Sodium	7770	160	169	MG/L	0.5
B 43-1	Benzene	8260	1	8.3	UG/L	1
B 43-2	Iron	7380	300	1300	UG/L	100

l analyses performed in accordance with the latest approved edition of "Standard Methods for the Examination of Water and Wastewater" and "Methods for Chemical Analy: of Water and Wastes", unless otherwise noted.

Department of Environmental Protection

Lawton Chiles
Governor

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Virginia B. Wetherell
Secretary

March 25, 1997

McKim & Creed Engineers
483 Nova Road
Ormond Beach, Florida 32174

OCD-SW-97-0119

Attention: Mr. Scott Spooner, Senior Project Engineer

Volusia County - SW
Tomoka Farms Road Landfill
Response to March 11, 1997 Correspondence

Dear Mr. Spooner:

The Department has reviewed the correspondence from Dr. David Gomberg and concurs with his responses. The issues of concern have been addressed and the State sees no reason not to proceed with the completion of the contamination assessment.

If you should have any questions, please call Chris Aoussat in the Solid Waste Section at 407/893-3328.

Sincerely,

Dan R. Morrical, P.E.
Program Manager
Solid Waste Program

DRM/ca

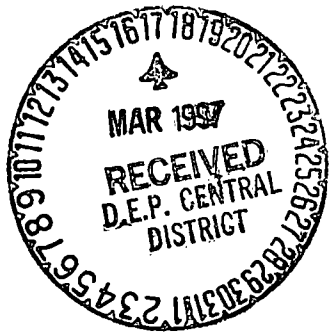
cc: James L. Griffin, Volusia County
Susan Gaze, Volusia County

McKIM & CREED

March 11, 1997 CA 3/19/97 M&C 10410002.0F

ENGINEERS
SURVEYORS
PLANNERS

Mr. Dan Morrical, P.E.
Program Manager, Solid Waste
Florida Department of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767



RE: Volusia County - SW
Tomoka Farms Road Landfill
Well B5 Contamination Assessment

Dear Mr. Morrical:

NORTH CAROLINA
FLORIDA

Enclosed please find correspondence from Dr. David Gomberg which responds to the comments contained within your correspondence of January 30, 1997.

The County stands ready to complete the contamination assessment once the State notifies all concerned that the project/work effort may proceed. If we can be of further assistance, please don't hesitate to call our office.

Sincerely,

McKIM & CREED ENGINEERS, P.A.

Scott R. Spooner, P.E.
Senior Project Engineer

/jls

Enclosure

cc: Mr. James L. Griffin, Dir., Solid Waste Services Group (w/encl.)
Ms. Susan Gaze, Environmental Specialist III (w/encl.)
Dr. David Gomberg

483 S. NOVA ROAD
ORMOND BEACH, FL 32174
904/672-5660
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601 CLEVELAND STREET
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CLEARWATER, FL 34615
813/442-7196
FAX 813/461-3827

David N. Gomberg, Ph.D.
Water Resources Consultant
3006 Surfside Blvd.
Cape Coral, FL 33914
(941) 549-1297

March 6, 1997

3/6/97

Memo to: Scott R. Spooner, P.E.
McKim & Creed

Re: Tomoka Landfill Contamination Assessment Near Well B5 -
Response to Jan. 30, 1997 Letter from Dan R. Morrical, P.E. of FDEP

cc: James L. Griffin, Volusia Co.
Susan Gaze, Volusia Co.

The referenced letter from Dan Morrical was accompanied by a Jan. 15, 1997, two-item memo prepared by James B. Russell, P.E., of the Waste Cleanup Section. That memo commented on our proposal to continue the B5 Contamination Assessment, as described in your Nov. 22, 1996 submittal to FDEP. The recent letter from Mr. Morrical requests our response to the items in the memo. My comments follow.

1. The response to Comment No. 3 states "The wells into layer 1-2 and layer 4 will be constructed using 4" I.D. hollow-stem auger." The method used to install monitoring wells should comply with Paragraph A.4 of the attached August 16, 1993 memorandum from Doug Jones, Bureau Chief, Bureau of Waste Cleanup, "For permanent monitoring wells, a minimum 2-inch filter pack annulus is required. The Internal diameter of hollow stem augers should be of sufficient size to ensure that this requirement is met. If mud rotary is used to advance the borehole prior to well installation, the bit diameter should be of sufficient size to achieve this objective." Six and one half ($6\frac{1}{2}$) inch internal diameter (ID) hollow stem augers or a $6\frac{1}{2}$-inch drill bit should be used to ensure at least a 2-inch thick filter pack around a nominal 2-inch diameter well.

I made a mistake when I wrote that wells into layer 1-2 and layer 4 would be constructed using 4" I.D. hollow-stem auger. The actual inside diameter of the auger will be $6\frac{1}{4}$ inches. I discussed this with Bret LeRoux, who pointed out that, because of the wall thickness of the 2-inch PVC casing, the annular space for the filter pack would be slightly less than 2 inches. My recollection is that Bret indicated that this small fraction of an inch reduction in filter pack thickness would not be a problem.

Incidentally, one of the reasons there are standards for filter pack thickness is to minimize turbidity in a developed well. Excessive turbidity is known on occasion to interfere with metals analyses, and to result in inaccurate, high concentrations. Metals, of course, are not at issue in this particular Contamination Assessment, though that is not to suggest that construction standards for the new wells should be lowered.

There is little information concerning the effect of turbidity on analytical results of VOC's, which are of primary interest in the B5 assessment. A study reported in the most recent (Winter) issue of Ground Water Monitoring & Remediation suggests that at least some VOC's are not sensitive to turbidity

concentrations. Paul and Puls (V.17, No. 1, p. 128-133) artificially adjusted turbidity in field and laboratory samples, and measured concentrations of trichloroethylene, dichloroethylene, and vinyl chloride. They found, in both the lab and field studies, that turbidity levels had little or no effect on the measured concentrations of those three VOC's. Again, this is not to suggest that our construction standards should be relaxed, only that it appears unlikely that increased turbidity, or a filter pack slightly less than 2 inches, will have any bearing on our Contamination Assessment.

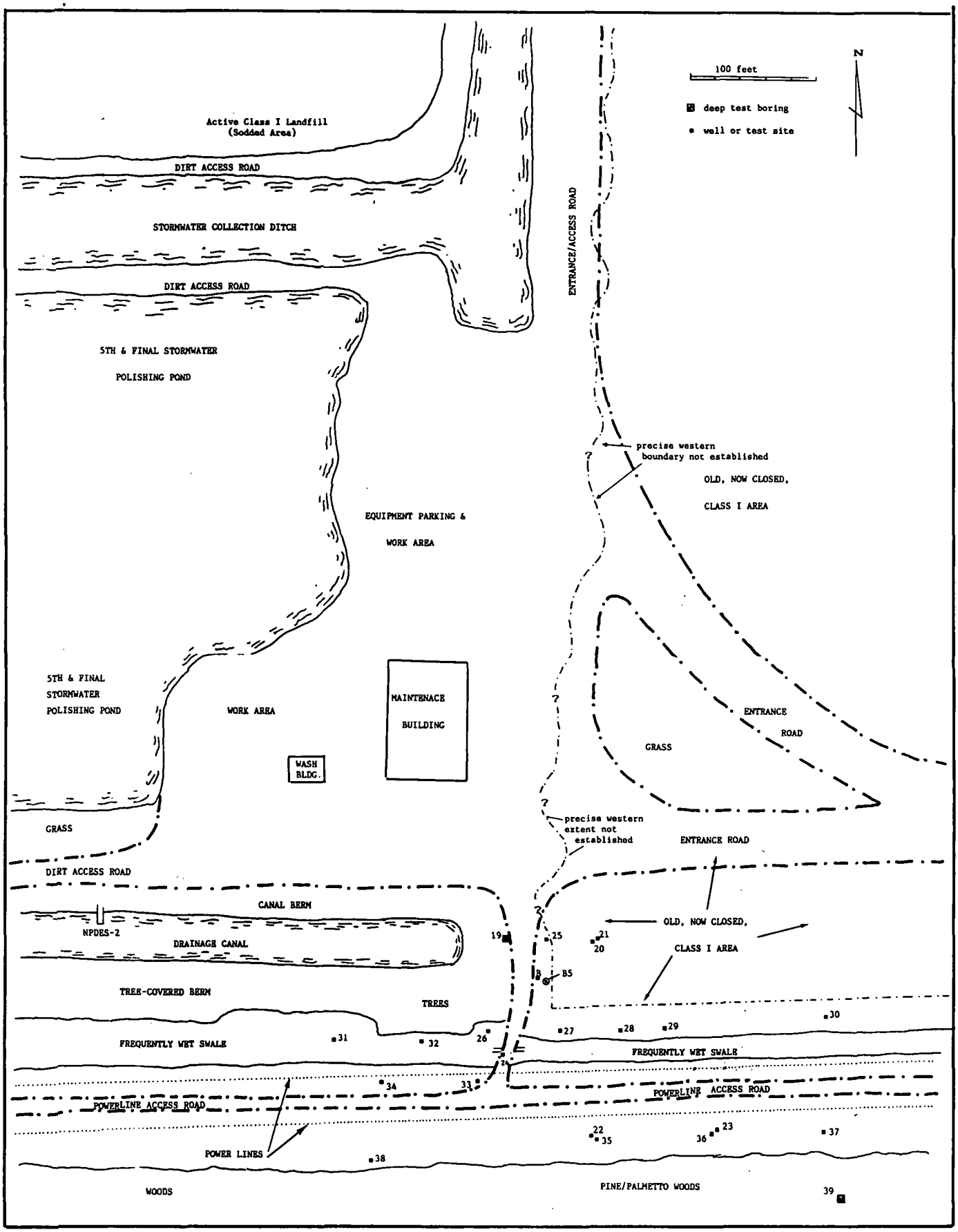
2. **As noted in the response to Comments No. 1 and 2, there are site developments and features that inhibit assessment activities. Please revise the figures to depict all onsite development or features in the vicinity of the contamination assessment that would impede site investigations.**

Bret LeRoux was kind enough to explain the thrust of this comment. It never occurred to me that DEP staff, who had not walked the site many many times as have I, would be unaware of site features that are not shown on my base map. Now it seems obvious that the map should be improved or supplemented.

Over the past few years I have used the base map to prepare numerous figures, showing proposed work plans, Geoprobe sampling sites, test boring sites, well locations, water levels, and water quality results from individual sedimentary strata. It would be a big job, not cost-effective, and would not accomplish much for me to redo those figures. Instead, I have included with this memo and "old" base map and a new one that I have prepared to illustrate important site features and work constraints. The supplemental base map shows:

- woods south of the contamination assessment area
- the power lines near B5
- swales and berms near the assessment area
- the approximate N-S boundary of the old Class I area
- the stormwater collection ditch and polishing pond which serve the existing Class I area
- the southeast corner of the existing Class I area.

As noted in my Nov. 14, 1996 memo to you, these features need to be taken into consideration when planning site assessment activities.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deep test boring
well or test site
Active Class I Landfill
(Sodded Area)
DIRT ACCESS ROAD
STORMWATER COLLECTION DITCH
DIRT ACCESS ROAD
5TH & FINAL STORMWATER
POLISHING POND
ENTRANCE/ACCESS ROAD
precise western
boundary not established
OLD, NOW CLOSED,
CLASS I AREA
EQUIPMENT PARKING &
WORK AREA
5TH & FINAL
STORMWATER
POLISHING POND
WORK AREA
MAINTENACE
BUILDING
WASH
BLDG.
ENTRANCE
ROAD
GRASS
precise western
extent not
established
ENTRANCE ROAD
GRASS
DIRT ACCESS ROAD
CANAL BERM
NPDES-2
DRAINAGE CANAL
OLD, NOW CLOSED,
CLASS I AREA
B5
TREE-COVERED BERM
TREES
FREQUENTLY WET SWALE
FREQUENTLY WET SWALE
POWERLINE ACCESS ROAD
POWERLINE ACCESS ROAD
POWER LINES
WOODS
PINE/PALMETTO WOODS
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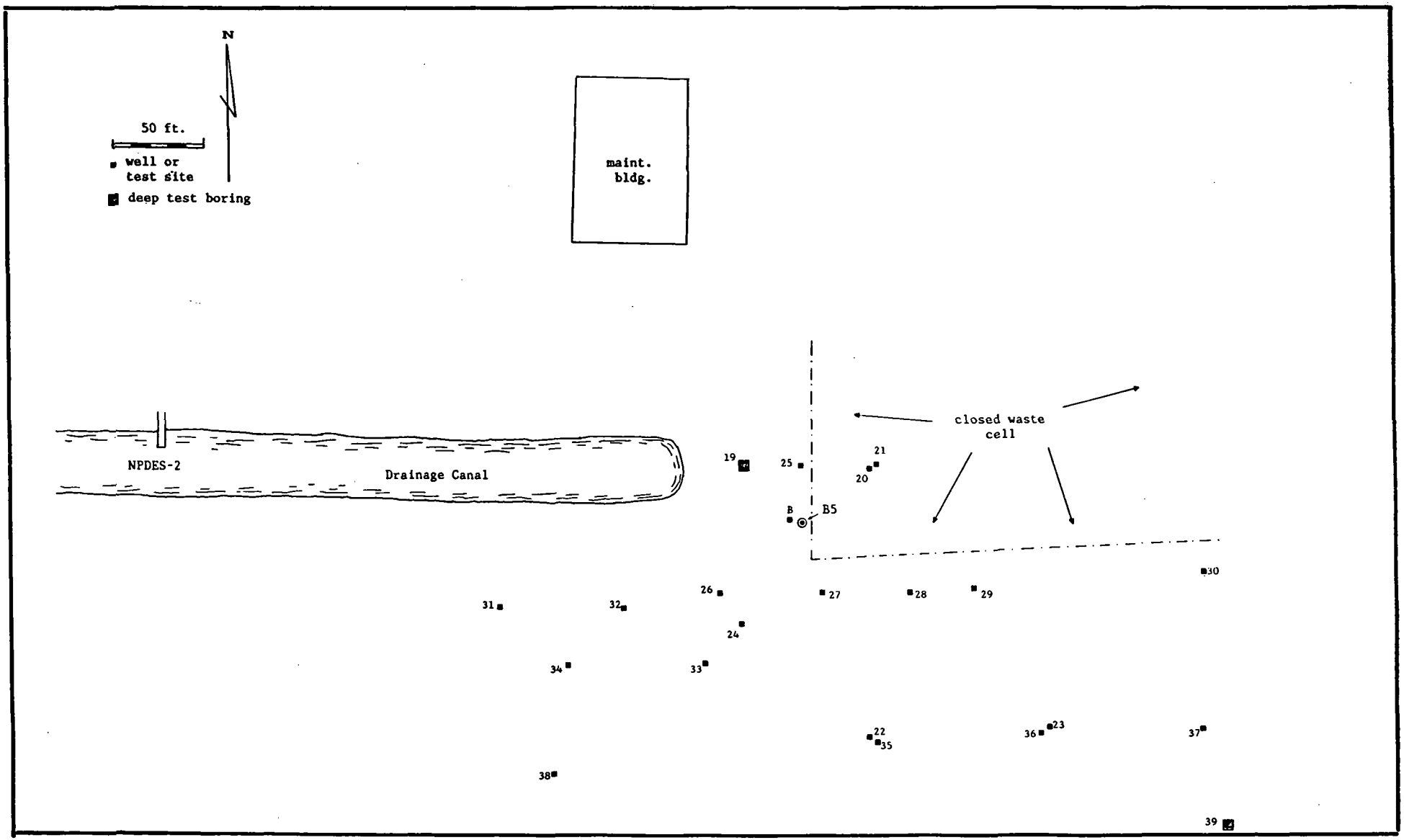
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50 ft.
well or test site
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NPDES-2
Drainage Canal
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Department of Environmental Protection

Lawton Chiles
Governor

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Virginia B. Wetherell
Secretary

January 30,1997

CERTIFIED MAIL
P-337-157-882

McKim & Creed Engineers
483 Nova Road
Ormond Beach, Florida 32174

OCD-SW-97-0043

Attention: Mr. Scott Spooner, Senior Project Engineer

Volusia County - SW
Tomoka Farms Road Landfill
Response to November 14, 1996 Correspondence

Dear Mr. Spooner:

Enclosed are comments from James Russell, of the Waste Cleanup Section, reference the information submitted by Mr. David Gomberg pertaining to the Tomoka Farms Road Landfill Well B5 Contamination Assessment. The staff of Waste Cleanup assists the Solid Waste Section in the review of groundwater and surface water monitoring plans and related issues.

Please provide the information requested in the enclosed attachment within 45 days. If you should have any questions, please call Chris Aoussat in the Solid Waste Section at 407/893-3328.

Sincerely,

Dan R. Morrical, P.E.
Program Manager
Solid Waste Program

DRM/ca
cc: James L. Griffin, Volusia County
Susan Gaze, Volusia County

Enclosures:
Memo
Construction Specifications

State of Florida
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Interoffice Memorandum

CENTRAL DISTRICT

TO: Dan Morrical, P.E. OCD-WCU-97-0016
Solid Waste Program Manager

THROUGH: G. Bret LeRoux, P.G.
Waste Cleanup Program Manager

FROM: James B. Russell, P.E.
Waste Cleanup Program

DATE: January 15, 1997

SUBJECT: Volusia County - Waste Cleanup
Tomoka Farms Road Landfill
Response to September 10, 1996 Correspondence

I have reviewed the attached above referenced document and have the the following comments.

1. The response to Comment No. 3 states "The wells into layer 1-2 and layer 4 will be constructed using 4" I.D. hollow - stem auger." The method used to install monitoring wells should comply with Paragraph A.4. of the attached August 16, 1993 memorandum from Doug Jones, Bureau Chief, Bureau of Waste Cleanup, "For permanent monitoring wells, a minimum 2-inch filter pack annulus is required. The internal diameter of hollow stem augers should be of sufficient size to ensure that this requirement is met. If mud rotary is used to advance the borehole prior to well installation, the bit diameter should be of sufficient size to achieve this objective.". Six and one half (6½) inch internal diameter (ID) hollow stem augers or a 6½-inch drill bit should be used to ensure at least a 2-inch thick filter pack around a nominal 2-inch diameter well.

2. As noted in the response to Comments No. 1 and 2, there are site developments and features that inhibit assessment activities. Please revise the figures to depict all onsite development or features in the vicinity of the contamination assessment that would impede site investigations.

If you have any questions, please feel free to contact me.

Attachment

Florida Department of

Memorandum — Environmental Protection

TO: Bureau of Waste Cleanup Staff
District Waste Program Administrators
District Waste Cleanup Supervisors
District Tanks Supervisors
Local Program Coordinators
Interested Parties

FROM: Douglas A. Jones, Chief
Bureau of Waste Cleanup

DATE: August 16, 1993

SUBJECT: Monitoring well construction specifications and related issues

---

Until now we have relied on the environmental consulting companies, during installation of monitoring wells for assessment of petroleum contaminated sites, to follow EPA's "Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells", EPA/600/4-89/034, March 1991, or unwritten Departmental guidelines, or (with necessary modifications) those in effect for construction of compliance wells (Rule 17-761.640, FAC). In addition, some general specifications and requirements for water supply wells can be found in Chapter 17-532, FAC. Because of problems encountered during review of some Contamination Assessment Reports, it has become apparent that a set of written guidelines outlining the Department's policy on this issue is necessary. The following discussion deals with detailed well construction specifications; it is assumed that generally accepted practices will be followed during monitoring well installation for those tasks not discussed here. Also outlined is the Technical Review Section's position on related issues, such as the spatial (horizontal and vertical) distribution of monitoring wells used for plume delineation during the assessment phase of each project.

A. Specifications applicable to any monitoring well, and general comments:

1. If a Water Management District has any specific requirements which are different from those discussed in this Memorandum, the WMD's requirements should take precedence unless an exemption is approved.

2. Before monitoring wells are installed, it is recommended that a soil assessment be performed in order to identify areas of excessive soil contamination, since the first phase of monitoring well installation should be largely (although not solely) dependent on the results of the soil assessment.

3. In most situations, hollow stem augers should be used for installation of water table monitoring wells and even for vertical extent monitoring wells. However, mud rotary will be necessary in some cases, particularly during installation of deeper wells or when drilling through limerock or very fine-grained, runny sands (in this case, drilling fluids should consist of native bentonite mud with no additives, such as Aquagel Gold Seal, Natural Gel, Pure Gold Gel, or equivalent). Wells hand-augered or "jetted-in" usually are not acceptable for monitoring purposes, although they may be allowed in some specific locations (prior approval should be obtained to confirm the applicability of these techniques). As long as no confining unit is breached, direct push wells are acceptable for screening purposes, in order to minimize the number of wells needed to define the plume (this approach is most effective when used in conjunction with a portable GC). If the site is in one of the reimbursement programs, it will be necessary to demonstrate that the method was cost-effective.

4. For permanent monitoring wells, a minimum 2-inch filter pack annulus is required. The internal diameter of hollow stem augers should be of sufficient size to ensure that this requirement is met. If mud rotary is used to advance the borehole prior to well installation, the bit diameter should be of sufficient size to achieve this objective.

5. It is strongly recommended to use 2-inch diameter PVC, since this size usually is sufficient for groundwater sampling and other necessary operations. Two-inch diameter wells are less expensive to install, minimize disposal problems and also save time (and therefore money) during sampling because they can be purged faster than 4-inch diameter wells due to the lower volume of water that needs to be withdrawn. However, it is advisable to install 4-inch diameter wells:

   a. In areas where free product is known or suspected to be present, because those larger wells are more efficient for free product recovery;

   b. If the well is expected to be used for long term monitoring;

   c. If the well is expected to be used for short term pumping, or as a recovery well during site remediation; and

   d. In areas with deep water tables, in order to allow development and purging operations by means of a 4-inch submersible pump if 2-inch pumps are not available.

Recycled Paper

6. Different well sections should be mechanically connected (thread-jointed or bolted); glued or welded wells are not acceptable. Minor well repairs are acceptable if the upper portion of the solid casing became damaged or needs to be extended due to regrading of the site. The repair can be accomplished by means of a slip coupling, which must be attached to the existing section with stainless steel screws (the length of the latter must be selected to prevent them from reaching the inside of the well).

7. The preferable slot size is 0.01-inch; if 0.02-inch (or greater) slotted screens are used, then care must be taken to use a coarser sand pack (some guidance is provided in the attached table, from the October 1990 ASTM document "Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers"). The 1990 ASTM document states that the sand pack (filter pack) usually is selected to have a d-30 (30% finer) grain size that is about four to 10 times greater than the d-30 grain size of the hydrologic unit being filtered. Use of a filter sock in lieu of a sand pack is not acceptable.

8. The use of fine sand instead of bentonite above the sand pack is strongly recommended. Because it cannot be tremied in, bentonite tends to "bridge" the annulus in vertical extent wells, thus a proper seal is not attained. Also, it dehydrates in monitoring wells that straddle the water table since the seal is located in the vadose zone. If bentonite is used, enough time should be allowed for hydration to occur and seal the annular space before grouting the well. If not, cement may enter the well, causing cement contamination which can be evidenced by an unusually high or elevated pH.

9. The annular space of the monitoring wells should be grouted with neat cement, or with a cement/bentonite mix (up to 6% bentonite by weight); pure bentonite or a bentonite slurry is not an acceptable grouting material. If a cement/ bentonite mix is used, care should be taken to mix the materials thoroughly in order to avoid leaving lumps of bentonite in the grout.

10. The wells should be developed only after the grout is allowed to cure, and sampling should be performed at least 24 hours after development. Fluids (including water) cannot be added to aid in development. If a well does not produce enough water it may be necessary to replace it with another well screened in a more transmissive stratum of the aquifer

Recycled Paper

(in such areas it is important to make full use of lithologic information to identify the more transmissive zones, and it may be advisable to use longer screens). "Disinfection" of wells by means of soap, alcohol or any other compound is prohibited.

11. Drill cuttings and drilling mud should be screened with an Organic Vapor Analyzer during the drilling process to determine the best, most cost-effective disposal of the material determined to be contaminated (usually, only soil generated from borings conducted during soil assessment may be returned to the borehole as long as confining layers have not been penetrated):

    a. If unpaved areas are available where soil contamination is present, small amounts can be disposed of on-site, selecting an excavated or low area in the most highly contaminated zone, with the least contaminated soil on top and covered if possible with at least six inches of soil that is no more contaminated than the background soil, as long as there is no potential for runoff.

    b. The contaminated material can be land-farmed if small amounts were generated and if more than 200 feet from the nearest residence or public gathering place.

    c. If the preceding options are not appropriate (particularly if significant petroleum vapors are detected and/or if a relatively large volume was generated), the contaminated material should be stored in metal drums, or placed on and covered with black plastic sheeting (4 mil minimum thickness) and bermed where necessary. At the latest, this material should be treated or disposed of during implementation of the Remedial Action Plan, preferably concurrently with other contaminated soil during remedial activities.

12. Disposal of development water and purge water is discussed in detail in Section 4.4.5.3 of the document "Department of Environmental Regulation, Standard Operating Procedures for Laboratory Operations and Sample Collection Activities", September 30, 1992. The following is a summary of the approved alternatives for disposal when the water is known or suspected to exceed the Maximum Contaminant Levels listed in the FAC (Chapter 17-302, 17-520, 17-550 or 17-770):

    a. It can be contained on-site in temporary storage until it is characterized by the appropriate, approved analytical method(s).

b. It can be decontaminated on-site by means of a portable treatment system (air stripper, carbon, etc.), with any disposal option (disposal to surface water must be conducted in accordance with General Permit FLG830000).

c. It can be discharged in the area around the well from which it was pumped, as long as it has been determined that the soil is excessively contaminated at the surface, and if it will infiltrate the same aquifer zone from which it was derived (or into a more contaminated aquifer zone).

d. It can be transported to an off-site facility such as a sewage treatment plant/sewer system, as long as prior approval is obtained from the wastewater treatment plant operator and all applicable permits are obtained from the wastewater facility or municipality.

If it has been determined by means of a portable GC that the groundwater is not contaminated, it is acceptable to pour it on-site, preferably on paved areas. The portable GC must be calibrated, and equipped with a column; an organic vapor analyzer or similar instrument is not acceptable for this purpose.

13. The tops of permanent wells should be protected by either a standup metal casing or flushmount manhole set in a concrete pad which is sloped away from the well to prevent surface infiltration. The top of casing should be sealed with a water tight cap for flushmount wells, whereas PVC slip caps are sufficient inside standup, lockable, metal protective casings. All permanent monitoring wells must be secured at all times (except during purging and sampling) by means of quality locks. Once it is determined that the wells are no longer needed, they must be abandoned according to the appropriate Water Management District requirements.

14. Boring Logs and Well Construction Logs should be included in the reports submitted for review. In addition, a table (which should be updated as new monitoring wells are installed) should be provided summarizing pertinent well construction data for all on-site wells (compliance wells, monitoring wells, recovery wells, production wells) and all off-site assessment wells:

a. Required: name and number (in agreement with the site map), date of installation, top of casing elevation, diameter, total depth, screened interval, and length of stickup (if completed above grade).

b. Optional: static water level (updated as appropriate), well placement rationale, well type, drilling method, slot size, and lithologic unit monitored.

B. Water table wells:

1. Normally, the horizontal extent of groundwater contamination should be defined through installation and sampling of permanent water table monitoring wells. Temporary wells usually are acceptable only in off-site locations where permission to install a permanent monitoring well cannot be obtained, for closure assessments, or in sites suspected to be uncontaminated, where one sampling event may be sufficient to complete the assessment (in the latter case, the well should be converted to a permanent well if contamination is identified). A temporary well should be sand-packed and developed properly before it can be acceptable for groundwater sampling. Even if a permit for temporary well installation is not needed, the appropriate Water Management District should be notified to determine plugging requirements.

2. The screen usually should be 10 feet long, although it is acceptable (and often advisable) to use 15 feet in sites with a deep water table (located 20 or more feet below land surface [BLS]).

3. The screen should intersect the water table at all times if possible, and should be placed taking into account that fluctuations in the water table occur (if site-specific information on water level elevation data is not available, at the time of well installation it is particularly important to be aware of whether it is the dry or rainy season). For areas with shallow water tables (less than six feet BLS) it is recommended to screen the wells between two and 12 feet BLS. If the water table is less than two feet BLS, the requirement that the screen must intersect the water table does not apply because it is not recommended to place the top of the screen less than two feet BLS.

4. If the water table is less than two feet BLS, it is recommended that a piezometer (with the screened interval intersecting the water table) be installed in areas where the presence of free product is suspected. The piezometer should not have more than five feet of screen, and the whole length of the annular space can be backfilled with native sediments.

5. Proper spacing of water table wells is important for accurate plume delineation during the assessment phase, and in order to avoid an unnecessary (and costly) overdesign of the remediation system, if needed once the Contamination Assessment Report is approved. For typical gas stations, the wells should not be placed more than 30 to 40 feet apart unless these distances cannot be achieved because of physical obstructions. For larger plumes it is acceptable to increase the distances between wells based on site conditions. Typically, the distance between monitoring wells should be proportional to the size of the plume, as long as some monitoring wells are installed between source wells and perimeter wells to provide data on intermediate contaminant concentrations. On the other hand, it is not acceptable to increase the recommended distances based only on OVA data because they have proven to be unreliable to estimate the degree of groundwater contamination.

C. Vertical extent wells:

1. Vertical extent wells should be installed near, and slightly downgradient from, the water table well showing the highest degree of contamination. Therefore, it is advisable to sample the source wells (which are the ones expected to be most contaminated) and to determine the direction of groundwater flow before a vertical extent well is installed, in order to decide if the vertical extent well is needed and to optimize well location if it is.

2. The screen should be five feet long. However, it may be necessary to use 10 feet of screen if the sediments have low transmissivity, to attain a faster recharge.

3. If the lithology is fairly homogeneous, single-cased wells are acceptable, although it is highly recommended to install double-cased wells if significant contamination was detected in the upper zone. If the well needs to be screened below a confining or semi-confining layer to verify lack of contamination in that stratum of the aquifer, multiple-cased wells are required, with a minimum of 2-inch annular space between casings.

4. The screened interval of a vertical extent well should be determined based on lithology and site-specific information, and to some extent on the concentrations detected at the water table wells (again, a portable GC can be very useful in determining optimum screen locations). Typically (if lithology is not a factor), the top of the screen of a

vertical extent well should be installed about 10 feet (and no more than 20 feet) below the bottom of the screen of the water table wells (or of any vertical extent wells screened in the stratum immediately above).

5. If a vertical extent well shows significant contaminant concentrations, in addition to a deeper vertical extent well to define the vertical extent of contamination it may be necessary to install additional (at least two) intermediate depth wells similar to the contaminated vertical extent well, in order to define the horizontal extent of the groundwater contamination in that stratum of the aquifer. The decision on whether these additional wells are needed should be based on:

   a. Site lithology;

   b. A comparison of contaminant concentrations and head differences between the first vertical extent well and the water table well closest to it; and

   c. The results of the potable and irrigation well survey.

6. Water level elevation data should be obtained from vertical extent wells (in addition to water table wells) to determine the horizontal flow direction in the different strata of the aquifer, and also to determine whether a vertical hydraulic gradient is present at the site.

If you have any questions call the Technical Review Section or the Site Investigation Section, Bureau of Waste Cleanup, at (904) 488-0190.

DAJ/gjw

TABLE 1 Recommended (Achievable) Filter Pack Characteristics for Common Screen Slot Sizes

Size of Screen Opening, mm (in.)	Slot No.	Sand Pack Mesh Size Name(s)	1 % Passing Size (D-1), mm	Effective Size, (D-10), mm	30 % Passing Size (D-30), mm	Range of Uniformity Coefficient	Roundness (Powers Scale)
0.125 (0.005)	5[A]	100	0.09 to 0.12	0.14 to 0.17	0.17 to 0.21	1.3 to 2.0	2 to 5
0.25 (0.010)	10	20 to 40	0.25 to 0.35	0.4 to 0.5	0.5 to 0.6	1.1 to 1.6	3 to 5
0.50 (0.020)	20	10 to 20	0.7 to 0.9	1.0 to 1.2	1.2 to 1.5	1.1 to 1.6	3 to 6
0.75 (0.030)	30	10 to 20	0.7 to 0.9	1.0 to 1.2	1.2 to 1.5	1.1 to 1.6	3 to 6
1.0 (0.040)	40	8 to 12	1.2 to 1.4	1.6 to 1.8	1.7 to 2.0	1.1 to 1.6	4 to 6
1.5 (0.060)	60	6 to 9	1.5 to 1.8	2.3 to 2.8	2.5 to 3.0	1.1 to 1.7	4 to 6
2.0 (0.080)	80	4 to 8	2.0 to 2.4	2.4 to 3.0	2.6 to 3.1	1.1 to 1.7	4 to 6

[A] A 5-slot (0.152-mm) opening is not currently available in slotted PVC but is available in Vee wire PVC and Stainless; 6-slot opening may be substituted in these cases.

COMET #20632 [redacted]

State of Florida
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Interoffice Memorandum

TO: BRET LEROUX FOR JIM RUSSELL

FROM: CHRIS AOUSSAT

DATE: 12/9/96

SUBJECT: County VOLUSIA Permit No. SO64-198377

Facility TOMOKA FARMS LANDFILL

Attachment RESPONSE TO CORRESPONDENCE OF 9/10/96

The attached is being sent to you for:

____ Information only

✓ Review and comments

If review and comments are needed, please respond:

✓ By 1/17/97

(Solid Waste deadline date is _____)

____ As soon as possible for your schedule.

Comments: _____

McKIM&CREED

November 22, 1996 M&C 10410002.0F

ENGINEERS

SURVEYORS

PLANNERS

Mr. Dan Morrical, P.E.
Program Manager, Solid Waste
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

RE: Volusia County - SW
Tomoka Farms Road Landfill
Well B5 Contamination Assessment

Dear Mr. Morrical:

Enclosed please find correspondence from Dr. David Gomberg which responds to the comments contained within your correspondence of September 10, 1996.

If we can be of further assistance, please don't hesitate to call our office.

Sincerely,

McKIM & CREED ENGINEERS, P.A.

Scott R. Spooner, P.E.
Senior Project Engineer

/jls

cc: Mr. James L. Griffin, Director, Solid Waste Services Group
Ms. Susan Gaze, Volusia County Environmental Spec II
Dr. David Gomberg

NORTH CAROLINA

FLORIDA

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Q:\1041\0002\112296DM.DOC

David N. Gomberg, Ph.D.
Water Resources Consultant
3006 Surfside Blvd.
Cape Coral, FL 33914
(941) 549-1297

11/14/96

November 14, 1996

Memo to: Scott R. Spooner, P.E.
McKim & Creed

Re: Tomoka Landfill Contamination Assessment Near Well B5 - Response to 9/10/96 Letter from Dan R. Morrical, P.E. of FDEP

cc: James L. Griffin, Volusia Co.
Susan Gaze, Volusia Co.

The referenced letter from Dan Morrical was accompanied by a 7-point memo prepared by James B. Russell, P.E. of the Waste Cleanup Program. That memo dealt with a DEP review of data submitted by us concerning the Contamination Assessment near well B5, on the south side of Tomoka Landfill. The memo recommended that additional field work be undertaken to further define the extent of contamination. The letter from Dan Morrical requested that we respond to the items in the memo, which I do below.

As a preface to the responses, here is an update of the water quality monitoring that has been continuing at the site. The attached table, which was last revised in April, 1996, shows that through October, 1996 the extent of detectable contamination remains unchanged. For the last year, VOC's have been searched for in 10 wells near B5 and found only in B5-28, a well that is located within 17 feet of buried waste. These results continue to show no broadening of the local contamination that we have found, and to support our conclusion that groundwater in this area moves extremely slowly.

Here are responses to the 7 DEP memo items.

Comment 1. Based on the concentration of Vinyl Chloride detected in monitoring well B5-28 during monthly ground water monitoring events, a deeper monitoring well needs to be installed adjacent to B5-28. This well should be completed in the lithologic zone identified as Zone 6.

Response 1. We reluctantly agree to install a monitor well into Layer 6, in the vicinity of well B5-28. One location might be 10-15 feet south of B5-28, which is as far south as we can get without being too close to the overhead powerlines. The proposed location can be seen on the attached Phase II Site Location Map. Construction specifications are suggested in item 3 below. A second location is proposed after the following discussion.

It may be helpful to refresh our memories regarding Layer 6. This is a stratum about 10 feet thick of silty sand and shell. The top of the layer is at 47 ft. depth at site B5-19 and at 45 ft. depth at site B5-39. (The layer is horizontal; the ground at B5-19 is 2-3 ft. higher than at B5-39). Layer 6 is overlain by the clayey confining bed of Layer 5, which is laterally continuous in the area and has permeabilities of 10^{-6} to 10^{-8} cm/sec.

Geologic logs of the two test borings are enclosed; boring locations are shown on the site plan.

There are some good reasons not to drill into Layer 6. One of these reasons is that we already have strong evidence that Layer 6 is uncontaminated. So much data has been generated in the vicinity of B5 that this evidence may have been overlooked in the recent DEP review. During our Phase I assessment, we used the Geoprobe to sample water from Layer 6 at 6 locations (shown on an attached Figure), including very near B5-28. No VOC's were detected in any sample.

Another reason to avoid construction into Layer 6 is the technical difficulty of drilling through the confining layer, constructing a well into Layer 6, but not introducing even the least bit of contamination. Recall that VOC's in the upper strata at B5-28 are about 20,000 parts per billion (ppb) and that if even a few ppb's show up in Layer 6, we will very likely need to engage in an investigation with additional well construction - of equal difficulty. In fact, it was this very issue that originally led DEP to approve our CAP, wherein no wells would be constructed into Layer 6 if the Geoprobe results for that layer were negative.

A final reason to avoid construction into Layer 6 is cost. These are expensive wells, mostly because of the precautions needed to minimize the risk of introducing contamination. The proposed well will also be expensive because we will need to address health and safety concerns. Cost would not be a legitimate concern if we did not already have evidence that Layer 6 is uncontaminated. But we do have that evidence.

All this having been said (or, in this case, written), there is still an argument to be made for installing a well into Layer 6. Such a well would, if properly constructed, be a definitive statement regarding the presence or absence of contamination. Because it is not clear whether the arguments for or against should prevail, I propose that we construct a Layer 6 well at a location that minimizes the negatives but still accomplishes the objectives.

The alternate, recommended location is shown on the Site Plan. It is about 80 feet south of B5-28, on the other side of the powerlines, adjacent to B5-22 and B5-35. No VOC's have been detected in those wells for 18 months. Thus the chances of introducing contamination into Layer 6 are greatly reduced. We also do not need a sophisticated health and safety plan, but need only take precautions to insure no unacceptable exposures. Finally, it can be noted that VOC's were initially detected at this site in June, 1990. If, after 6½ years, they are not detected in Layer 6 at a distance of 80 feet from B5-28, one might reasonably conclude that Layer 6 remains uncontaminated. In other words, it is not necessary that the Layer 6 well be drilled in the middle of the highest contamination.

IS THIS AN OK ALTERNATE SITE?

Comment 2. Based on the concentration of Trichloroethene and Vinyl Chloride in monitoring well B5-25 during the November 1994 ground water sampling event, the following monitoring well clusters are needed to determine the lateral and vertical extent of contamination: one (1) cluster should be installed due north of monitoring well B5-25 and one (1) cluster due west of monitoring well B5-25. Well clusters should include a shallow (Zone 1 & 2) and an intermediate (Zone 4) monitoring well. Additionally, one (1) deep (zone 6) monitoring well should be installed adjacent to monitoring well B5-25.

Response 2. Five wells are recommended in this comment. I respectfully suggest that two of those wells can provide useful data, but that 3 of the wells should be omitted. For background, note that well B5-25 had VOC's of about 300 ppb's in Sept., 1994 and about 200 ppb's in Oct., 1994.

For all the reasons discussed in the previous response, I would argue that the recommended Layer 6 well should not be constructed. The original agreement with DEP was that, if the Geoprobe screening showed no VOC's in Layer 6, no monitor wells would be constructed into that layer. I suggest that the new agreement be that, if the Layer 6 well near B5-22 has no VOC's, we leave Layer 6 alone. If VOC's are found in the new well, we will evaluate at that time and based on what is detected, what additional steps are appropriate.

The well cluster recommended to the north of B5-25 leads us in a direction we have no reason to go. There is no zone of discharge in that direction, because everything is landfill. To the east is old landfill; to the west is active landfill. The only exception to this is the small island that includes the maintenance building and the nearby stormwater management ponds. There has never been, nor should there be, any suggestion that the extent of contamination within the landfill should be defined. To carry this a step further, suppose we install wells north of B5-25 and find some VOC's. What do we do then? We certainly would not propose a remediation effort, because we are effectively "in" the landfill. There would also be no point in drilling more wells even farther north, because that just extends the reconaissance deeper into landfill territory.

A well cluster to the west of B5-25, near the edge of the drainage canal, would furnish evidence as to whether groundwater containing VOC's might be seeping into the canal, from where it could conceivably be discharged to wetlands. While this possibly is quite remote, there is no substitute for the data that can be provided by monitoring wells. I propose that we install one well into Layer 1-2, screened at 7-12 feet below ground, and one well into Layer 4, screened at 26-31 feet below ground. The locations are shown on the Site Plan. Additional specifications are given below.

Comment 3. Please provide monitoring well design details for the Department's review and approval, prior to monitoring well installation of the new wells discussed in comments #1 and 2. Please bear in mind, in order to properly design ground water monitoring wells, continuous exploratory borings using split spoon samplers should be performed at all of the proposed well locations. Soil samples should be collected in each boring, for grain size distribution analysis, using split spoon samplers, from the depth interval in which the well screen will be set. This lithologic and grain size data should be used to design the filter pack(s) and screen slot size(s) using established EPA or ASTM design criteria. The proposed well designs incorporating these criteria or other technically justifiable criteria, should be provided the Department for approval prior to well installation. If Tomoka Farm Road Landfill chooses not to design and construct the ground water monitoring wells based upon site specific conditions., the Department recommends that the filter pack grain size and well screen slot size be as conservative as possible. If turbidity values during purging and sampling are high and the monitoring wells were not designed for specific conditions, the Department may require the well(s) to be abandoned and replacement wells, designed for site specific conditions, installed.

Response 3. Here is my proposed construction for the well into Layer 6. I am receptive to alternate suggestions. We will drive 6" galvanized steel casing from land surface to a depth of 40 feet, or into about the middle of confining Layer 5. We will then clean out the inside of the casing using solid-stem auger or, if that doesn't work, mud rotary techniques. Then we will use hollow stem auger inside the steel casing, to install a 2" PVC well into Layer 6 with the screen set at 45-50 ft. below ground.

The wells into Layer 1-2 and Layer 4 will be constructed using 4" I.D. hollow-stem auger. The casing and screens will be 2" diameter, flush-joint, Sch. 40 PVC. We learned several years ago from Bret LeRoux, P.G. of DEP that a conservative well design consisting of .008" screen slot size and filter pack of 30/40 sand would produce an acceptable monitoring well. That is what we propose, for these two wells and for the Layer 6 well. The filter pack will extend to 2 feet above the top of the screen, followed by a cement/bentonite slurry to land surface. Wells will be finished with a locking, steel, protective cover and a 2'x2'x6" cement slab. Development will be by gentle surging and pumping, to a relatively clear, sand-free condition.

Protocols for health and safety, and for handling of auger cuttings, development water and, if required, drilling fluids, will be the same as previously approved by DEP for the original Contamination Assessment.

Comment 4. Ground water from all of the new assessment monitoring wells should be collected and laboratory analyzed by USEPA methods 601 and 602. In addition to the newly proposed monitoring wells, the following existing monitoring wells need to be sampled to provide current site conditions: B5-23, B5-24, B5-25, B5-31, B5-33, and B5-36.

Response 4. We agree to follow the recommendations of this comment.

Comment 5. Dissolved oxygen and turbidity should be included in the field parameters to be collected during ground water sampling of the monitor wells. Should dissolved oxygen exceed 20 percent of saturation, resampling should be considered, since aeration of the sample may have occurred. Turbidity for a properly designed, constructed, developed and sampled well should not exceed 20 NTU's. These parameters as well as pH, temperature and specific conductivity should be collected during well purging and sampling. Care should be taken during sampling events to ensure that neither the water column in the wells nor the samples are agitated prior to or while filling sample containers. If wells are purged by pumping, low flow rates 0.5 to 2 liters per minute should be used. If the wells are bailed, during either purging or sampling, the bailer should be lowered and raised slowly to minimize disturbing the water column in the well. Field data sheets should be submitted in conjunction with the laboratory analytical reports.

Response 5. Robert Sullivan of KARR Environmental will be responsible for carrying out the field sampling and analytical work. He is intimately familiar with the protocols and procedures, having led similar efforts many times in the past. Bob agrees with and will conduct his field exercises in accordance with the recommendations of Comment 5.

Comment 6. Ground water levels in all wells, whether sampled or not, and all piezometers must be measured to the nearest 0.01 foot and reported. All water level measurements must be made within a one (1) day period. These measurements must be referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Please provide this data in a table detailing the ground water elevation data for all monitoring wells and/or piezometers. The table should include monitoring well name, date ground water measured, top of casing elevation referenced to NGVD, depth to ground water, and ground water elevation calculated to NGVD. Additionally, these data should be used to generate ground water elevation contour maps. These maps should include monitoring well and piezometer locations, ground water elevation at each monitoring well location referenced to NGVD, a bar scale, ground water contour interval, date of measurement and ground water flow direction.

Response 6. We agree completely with the comments regarding water level measurements. In fact, water levels in all monitor wells and piezometers at the landfill are measured monthly (though not required by permit), under precisely these guidelines.

Comment 7. Based on the hydrologic data presented to date, the ground water flow rate does not warrant monthly monitoring of the on-site monitoring wells. Monthly ground water monitoring may be discontinued at the discretion of Tomoka Farms Road Landfill/Volusia County.

Response 7. We appreciate these remarks, but would respectfully point out that the monthly monitoring program was undertaken voluntarily by the County and has always been subject to termination solely at the discretion of the County. Monitoring was begun to keep track of changes in the extent of VOC contamination and in the chemistry and concentration of contaminants. The monthly monitoring was continued to and past the point at which it was clear that localized VOC contamination represents no imminent threat to health or to the environment. After a year during which no change in the extent of contamination was observed, the frequency of sampling was reduced in June, 1996 to every other month. If no changes are observed in the December results, we will probably begin sampling on a quarterly basis.

Total VOC's in monitor wells near B5,

(values in micrograms/liter)

Well	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1996 Jan.	Feb.	Mar.	April	May	Aug.	Oct.
B5-B	10	13	1.3	*	*	*	*	*	39	*	*	*	*	*	*	*	*	*	*
B5-22	2	9	2	1.2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B5-28	6916	4724	10720	16120	704	14793	12684	4054	6521	14050	17300	5883	25230	18560	23050	68434	22620	19155	22661
B5-30A	11	33	15	11	*	1.3	24	*	3	*	*	*	*	*	*	*	*	*	*
B5-30B	3	38	14	*	*	1.3	*	1.3	*	*	*	*	*	*	*	*	*	*	*
B5-32	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B5-34	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B5-35	*	21	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B5-37A	2	7	3	2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B5-37B	79	35	19	7	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

*no VOC detected at greater than 1 ug/l

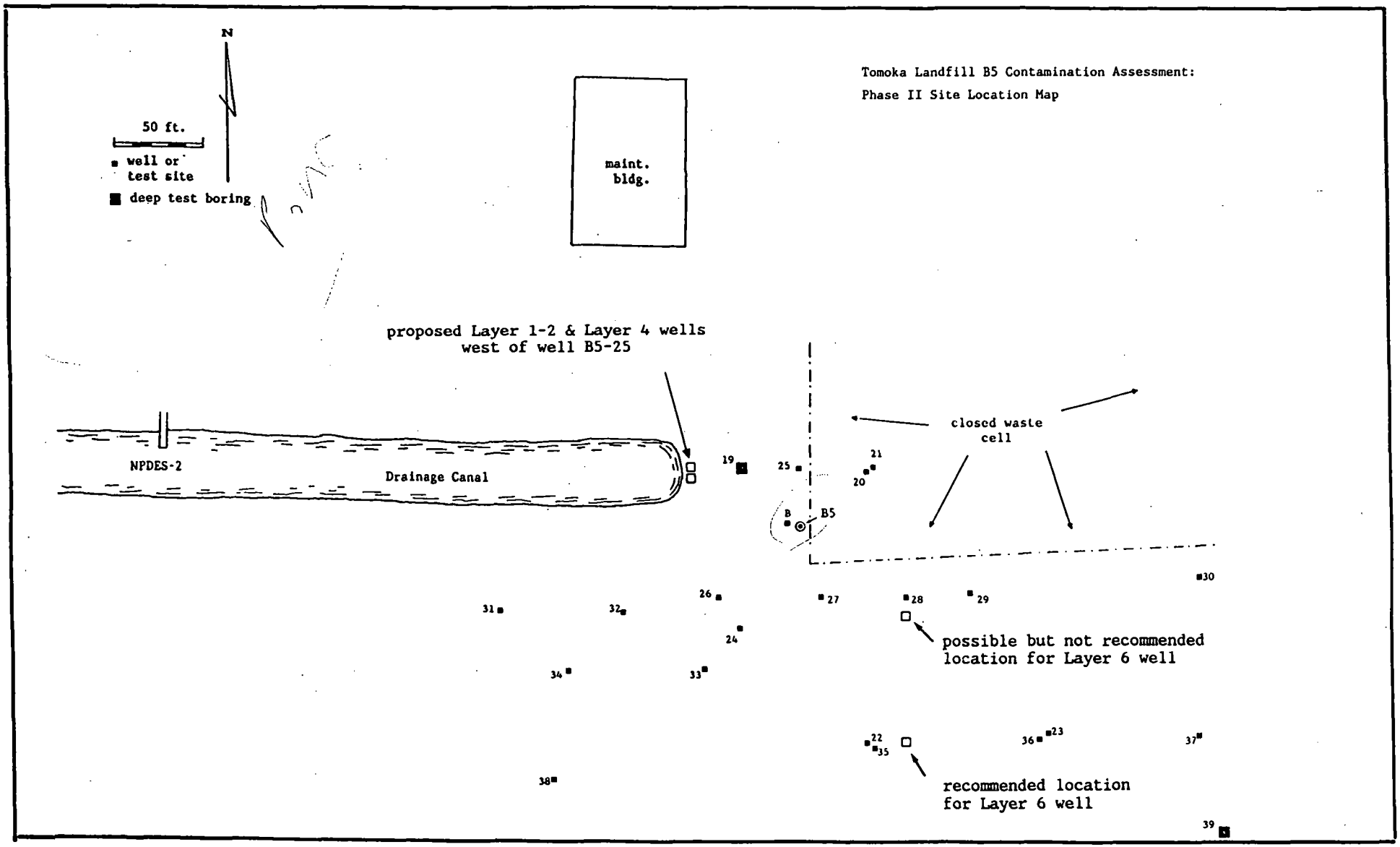
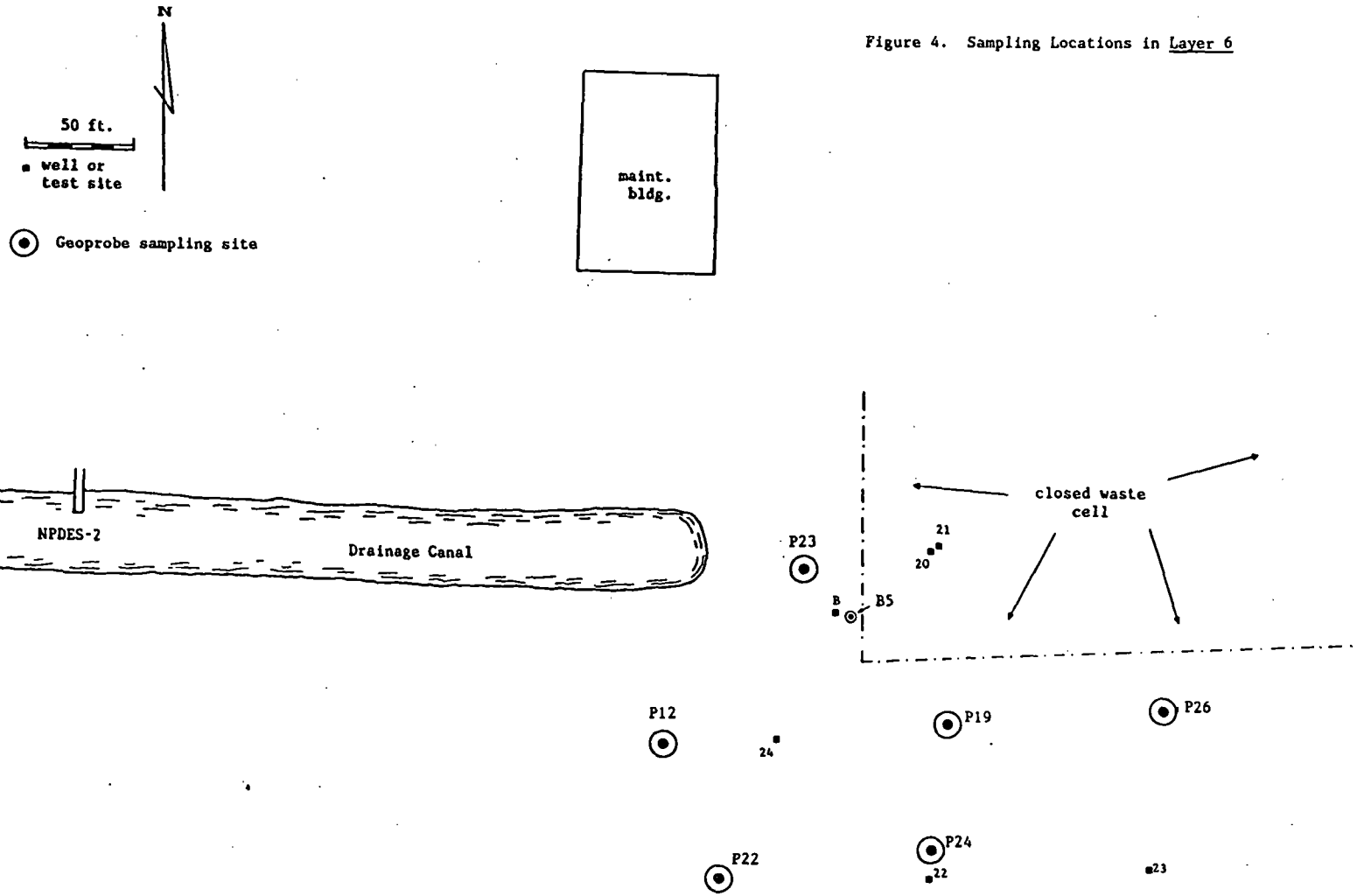
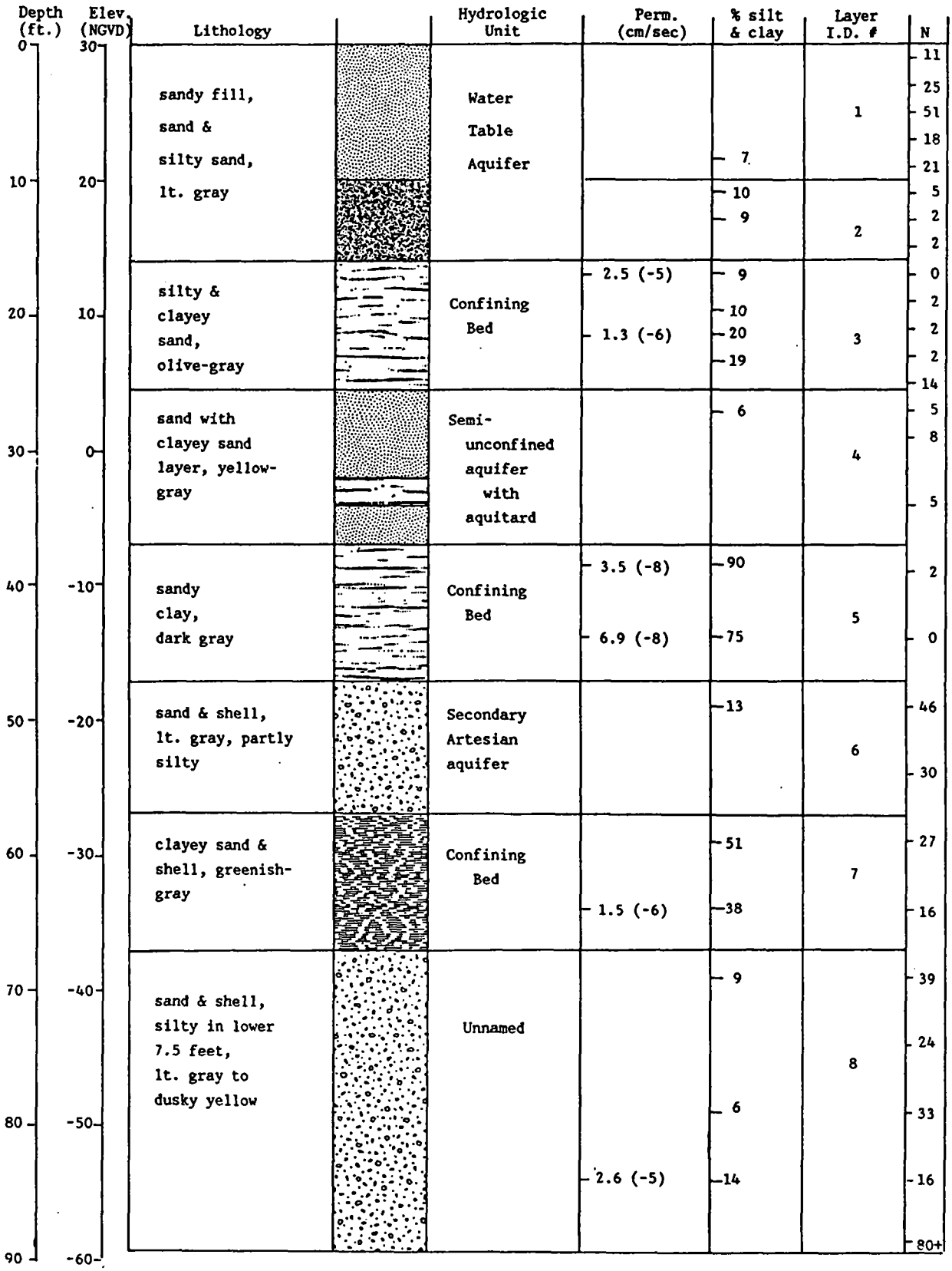
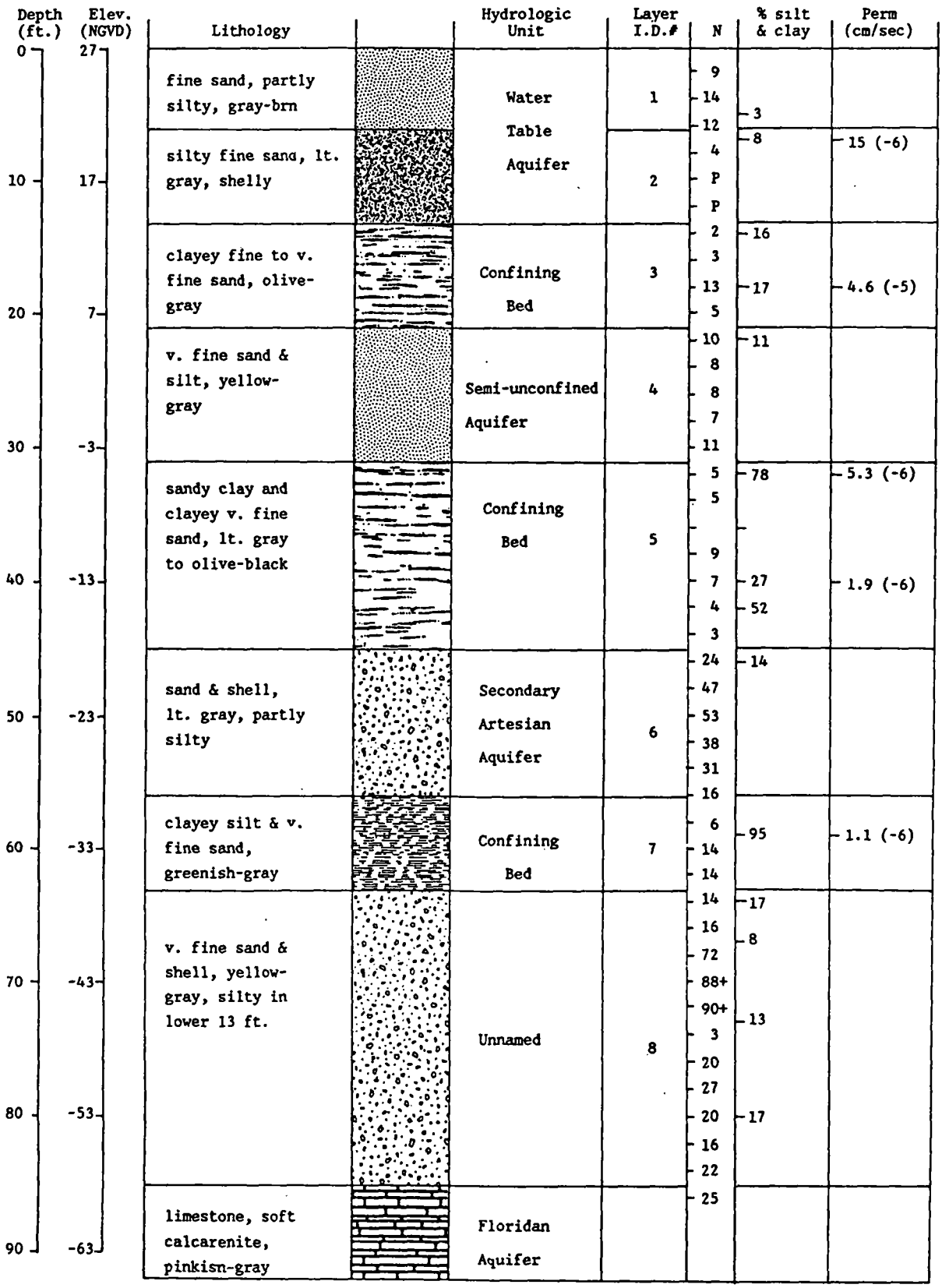

N
50 ft.
well or test site
deep test boring
maint. bldg.
Tomoka Landfill B5 Contamination Assessment:
Phase II Site Location Map
proposed Layer 1-2 & Layer 4 wells west of well B5-25
NPDES-2
Drainage Canal
closed waste cell
B5
possible but not recommended location for Layer 6 well
recommended location for Layer 6 well

Figure 4. Sampling Locations in Layer 6



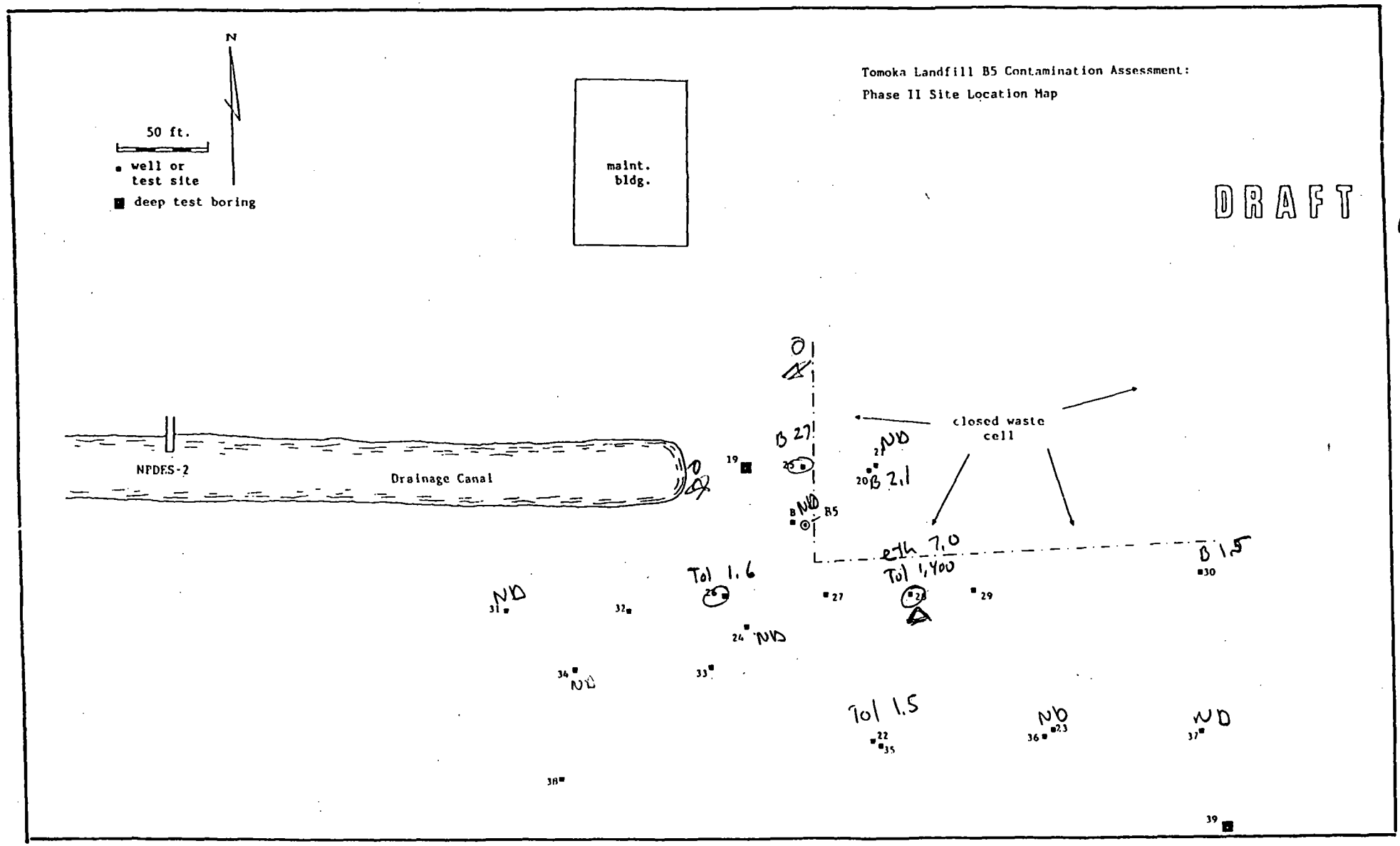


Hydrogeologic Profile, Site B5-19



Hydrogeologic Profile, Site B5-39

Deep / Zone 4


N
50 ft.
well or test site
deep test boring
maint. bldg.
Tomoka Landfill B5 Contamination Assessment:
Phase II Site Location Map
DRAFT
NPDES-2
Drainage Canal
closed waste cell
B 27
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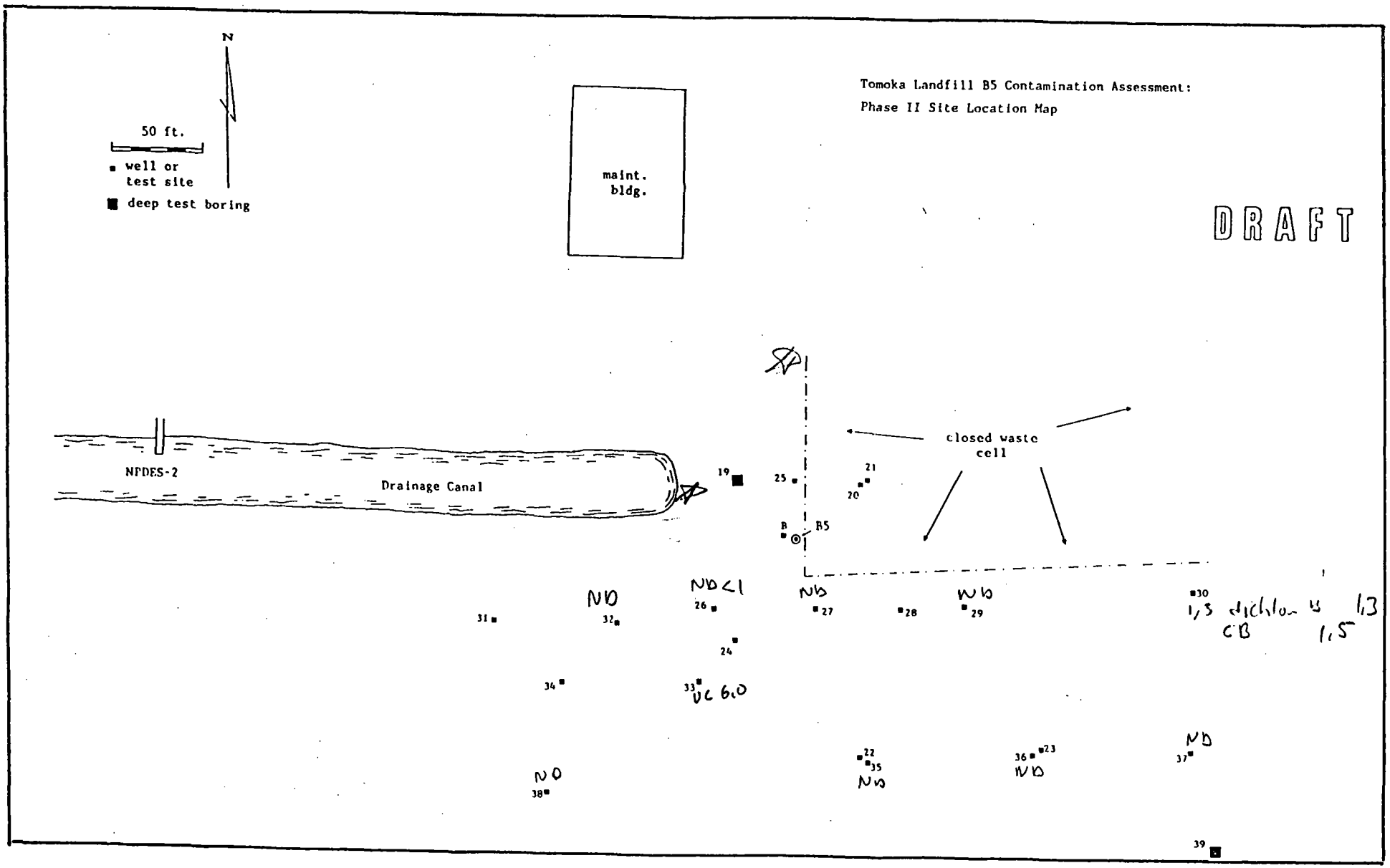
Zone 1-2



Tomoka Landfill B5 Contamination Assessment:
Phase II Site Location Map
DRAFT
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50 ft.
well or test site
deep test boring
maint. bldg.
closed waste cell
NPDES-2
Drainage Canal
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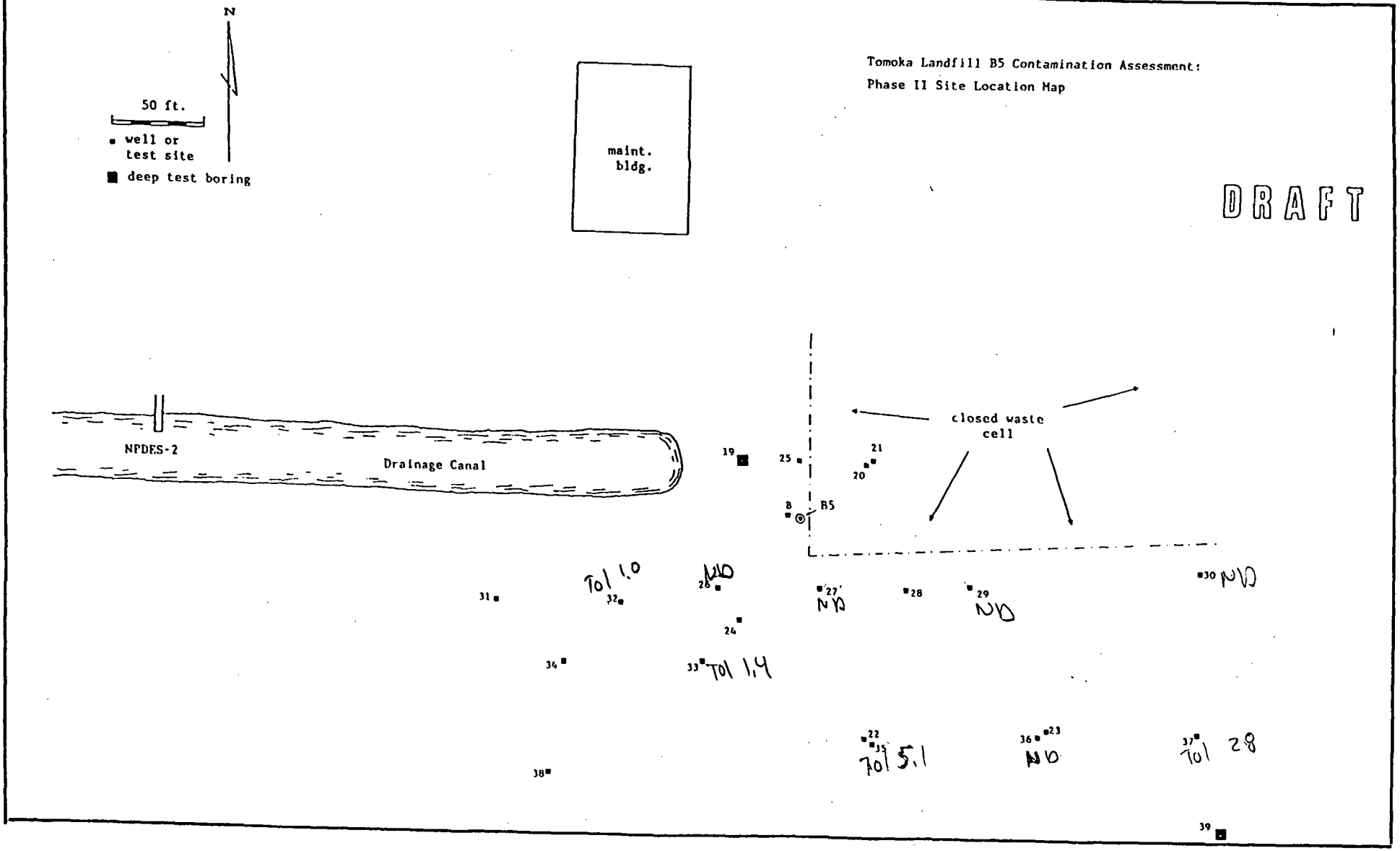
Shallow Petroleum distillate
Zone 1-2



Department of Environmental Protection

Lawton Chiles
Governor

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Virginia B. Wetherell
Secretary

September 10, 1996

McKim & Creed
483 S. Nova Road
Ormond Beach, Florida 32174

OCD-SW-96-0289

Attention: Lee A. Powell, P.E.

Volusia County - SW
Tomoka Farms Road Landfill - Contamination Assessment

Dear Mr. Powell:

Enclosed for your response is an August 3 memorandum from Jim Russell of our Waste Cleanup Section commenting on your March 24 letter. Please provide responses to these comments.

Sincerely,

Dan R. Morrical, P.E.
Program Manager
Solid Waste

DRM/ew

cc: Mr. James L. Griffin, Volusia County

State of Florida
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Interoffice Memorandum

CENTRAL DISTRICT

TO: Dan Morrical, P.E.
Solid Waste Program Manager

OCD-WCU-96-0275

THROUGH: G. Bret LeRoux P.G. GBL
Waste Cleanup Program Manager

FROM: James B. Russell P.E.
Waste Cleanup Program

DATE: August 3, 1996

SUBJECT: Volusia County - Waste Cleanup
Tomoka Farm Road Landfill
Contamination Assessment

I have completed the review of the response to the Department's February 1, 1995 letter received March 27, 1995, and the supplemental monitoring data which was received on October 23, 1995, January 12, 1996, and June 17, 1996, and have the following comments:

1. Based on the concentration of Vinyl Chloride detected in monitoring well B5-28 during monthly ground water monitoring events, a deeper monitoring well needs to be installed adjacent to B5-28. This well should be completed in the lithologic zone identified as Zone 6.

2. Based on the concentration of Trichloroethene and Vinyl Chloride in monitoring well B5-25 during the November 1994 ground water sampling event, the following monitoring well clusters are needed to determine the lateral and vertical extent of contamination: one (1) cluster should be installed due north of monitoring well B5-25 and one (1) cluster due west of monitoring well B5-25. Well clusters should include a shallow (Zone 1 & 2) and an intermediate (Zone 4) monitoring well. Additionally, one (1) deep (zone 6) monitoring well should be installed adjacent to monitoring well B5-25.

3. Please provide monitoring well design details for the Department's review and approval, prior to monitoring well installation of the new wells discussed in comments #1 and 2. Please bear in mind, in order to properly design ground water monitoring wells, continuous exploratory borings using split spoon samplers should be performed at all of the proposed well locations. Soil samples should be collected in each boring, for grain size distribution analysis, using split spoon samplers, from the depth interval in which the well screen will be set. This lithologic and grain size data should be used to design the filter pack(s) and screen slot size(s) using established EPA or ASTM design criteria. The proposed well designs incorporating these criteria or other technically justifiable criteria, should

be provided the Department for approval prior to well installation. If Tomoka Farm Road Landfill chooses not to design and construct the ground water monitoring wells based upon site specific conditions, the Department recommends that the filter pack grain size and well screen slot size be as conservative as possible. If turbidity values during purging and sampling are high and the monitoring wells were not designed for site specific conditions, the Department may require the well(s) to be abandoned and replacement wells, designed for site specific conditions, installed.

4. Ground water from all of the new assessment monitoring wells should be collected and laboratory analyzed by USEPA methods 601 and 602. In addition to the newly proposed monitoring wells, the following existing monitoring wells need to be sampled to provide current site conditions: B5-23, B5-24, B5-25, B5-31, B5-33, and B5-36.

5. Dissolved oxygen and turbidity should be included in the field parameters to be collected during ground water sampling of the monitor wells. Should dissolved oxygen exceed 20 percent of saturation, resampling should be considered, since aeration of the sample may have occurred. Turbidity for a properly designed, constructed, developed and sampled well should not exceed 20 NTUs. These parameters as well as pH, temperature and specific conductivity should be collected during well purging and sampling. Care should be taken during sampling events to ensure that neither the water column in the wells nor the samples are agitated prior to or while filling sample containers. If wells are purged by pumping, low flow rates 0.5 to 2 liters per minute should be used. If the wells are bailed, during either purging or sampling, the bailer should be lowered and raised slowly to minimize disturbing the water column in the well. Field data sheets should be submitted in conjunction with the laboratory analytical reports.

6. Ground water levels in all wells, whether sampled or not, and all piezometers must be measured to the nearest 0.01 foot and reported. All water level measurements must be made within a one (1) day period. These measurements must be referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Please provide this data in a table detailing the ground water elevation data for all monitoring wells and/or piezometers. The table should include monitoring well name, date ground water measured, top of casing elevation referenced to NGVD, depth to ground water, and ground water elevation calculated to NGVD. Additionally, these data should be used to generate ground water elevation contour maps. These maps should include monitoring well and piezometer locations, ground water elevation at each monitoring well location referenced to NGVD, a bar scale, ground water contour interval, date of measurement and ground water flow direction.

7. Based on the hydrologic data presented to date, the ground water flow rate does not warrant monthly monitoring of the on-site monitoring wells. Monthly ground water monitoring may be discontinued at the discretion of Tomoka Farms Road Landfill/Volusia County.

The facility status will be reevaluated upon receipt of the requested information. Should you have any questions, please feel free to contact me.

Attachments

Memorandum

Florida Department of
Environmental Protection

TO: Bret Leroux, P.G., Waste Cleanup

FROM: Scott Wesson, Solid Waste

DATE: June 20, 1996

SUBJECT: County Volusia Permit #: C.O. OGC-91-0845

Facility Tomoka Farms Road Landfill

Attachment Contamination Assessment Information along with additional analytical data from 1995 not previously reviewed

The attached is being sent to you for:

_____ Information only

__X__ Review and comments

If review and comments are needed, please respond:

_____ By_____
(Solid Waste deadline date is _____)

__X__ As soon as posible for your schedule.

Comments:_____

David N. Gomberg, Ph.D.
Water Resources Consultant
3006 Surfside Blvd.
Cape Coral, FL 33914
(941) 549-1297

June 12, 1996

Memo to: Susan Gaze

cc: Jim Griffin - Volusia Co.
Scott Spooner, P.E. - McKim & Creed
Bob Sullivan - Karr Environmental
Bret LeRoux, P.G. - FDEP

Re: Tomoka Landfill - Revised sampling schedule for wells near B5

1. We have been sampling 10 wells near B5 monthly since Jan., 1995. This sampling has been voluntary while we await DEP review of the situation.

2. Volatile Organic Compounds (VOC's) were present in 7 wells at the start of monitoring. The number of wells with VOC's gradually decreased to where, in Oct., 1995, only one well had detectable VOC's. This has been the case for the past 7 monthly samplings - only well B5-28 has VOC's greater than 1 part per billion.

3. The attached table summarizes the 16 months of sampling. The attached map shows the well locations.

4. While VOC's in B5-28 continue high and may be increasing, concentrations in nearby wells (within a few hundred feet) remain less than 1 ppb. This supports our long-held interpretation that groundwater in this area moves extremely slowly.

5. Because of the slow groundwater flow and continued stability of wells other than B5-28, I believe we can reduce the frequency of sampling.

6. As a cost-saving measure, I am recommending by this memo that we begin sampling every other month instead of every month.

DRM
Looks OK to me. Scott discuss w/ Bret & draft a response.
SW

Total VOC's in monitor wells near B5,
January - November, 1995
(values in micrograms/liter)

1996

Well	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April
B5-B	10	13	1.3	*	*	*	*	*	39	*	*	*	*	*	*	*
B5-22	2	9	2	1.2	*	*	*	*	*	*	*	*	*	*	*	*
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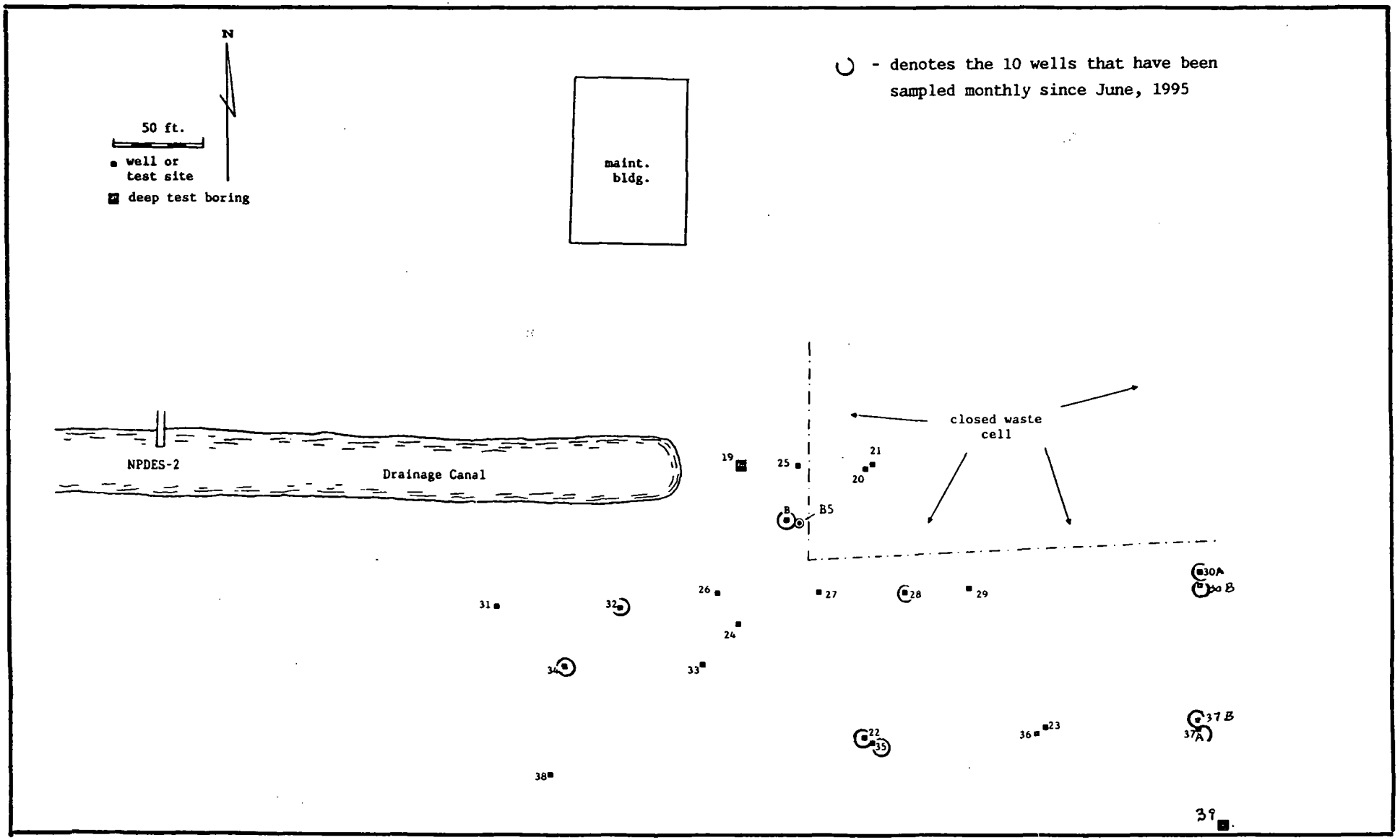
B5-32	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B5-34	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B5-35	*	21	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B5-37A	2	7	3	2	*	*	*	*	*	*	*	*	*	*	*	*
B5-37B	79	35	19	7	*	*	*	*	*	*	*	*	*	*	*	*

*no VOC detected at greater than 1 ug/l


N
50 ft.
well or test site
deep test boring
maint. bldg.
- denotes the 10 wells that have been sampled monthly since June, 1995
NPDES-2
Drainage Canal
closed waste cell
B5
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)rida Department of

Memorandum **Environmental Protection**

Entered

REC'D WCU
JAN 23 1995

TO: Bret LeRoux, P.G.

FROM: Scott Wesson

DATE 1/19/96

SUBJECT: County Volusia Permit #: SO64-198377

Facility Tomoka Farms Road Landfill

Attachment Contamination Assessment Monitoring update

The attached is being sent to you for:

✓ Information only

✓ Review and comments

If review and comments are needed, please respond:

_____ By_____
(Solid Waste deadline date is _____)

_____ As soon as posible for your schedule.

Comments:_____

David N. Gomberg, Ph.D.
Water Resources Consultant
3006 Surfside Blvd.
Cape Coral, FL 33914
(941) 549-1297

January 9, 1996

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Dept. of Environmental Protection
3319 Maguire Blvd. Suite 232
Orlando, FL 32803

Re: Volusia County Tomoka Landfill-Contamination Assessment Monitoring Update

Dear Mr. Morrical:

While we await FDEP review of our Contamination Assessment field work at Tomoka Landfill, we have been monitoring VOC's each month in ten wells near site B5. This is where vinyl chloride and other VOC's were detected in the past. Our water quality data through August, 1995 were sent to you in October. The table accompanying this letter updates those data, through November, 1995.

You may observe that conditions continue to improve; for the last two months, VOC's were detected only in well B5-28, which is about 20 feet from the edge of the closed waste cell. There is no indication of continued migration away from the waste, which is consistent with our earlier observations of a very low hydraulic gradient.

Based on these results, we may want to consider careful monitoring as the most cost-effective way to deal with this situation.

Very truly yours,

David

David N. Gomberg

encl.: water quality table, site map

cc: Jim Griffin, Susan Gaze - Vol. Co.
Scott Spooner, P.E. - McKim & Creed
Bret LeRoux, P.G. - FDEP

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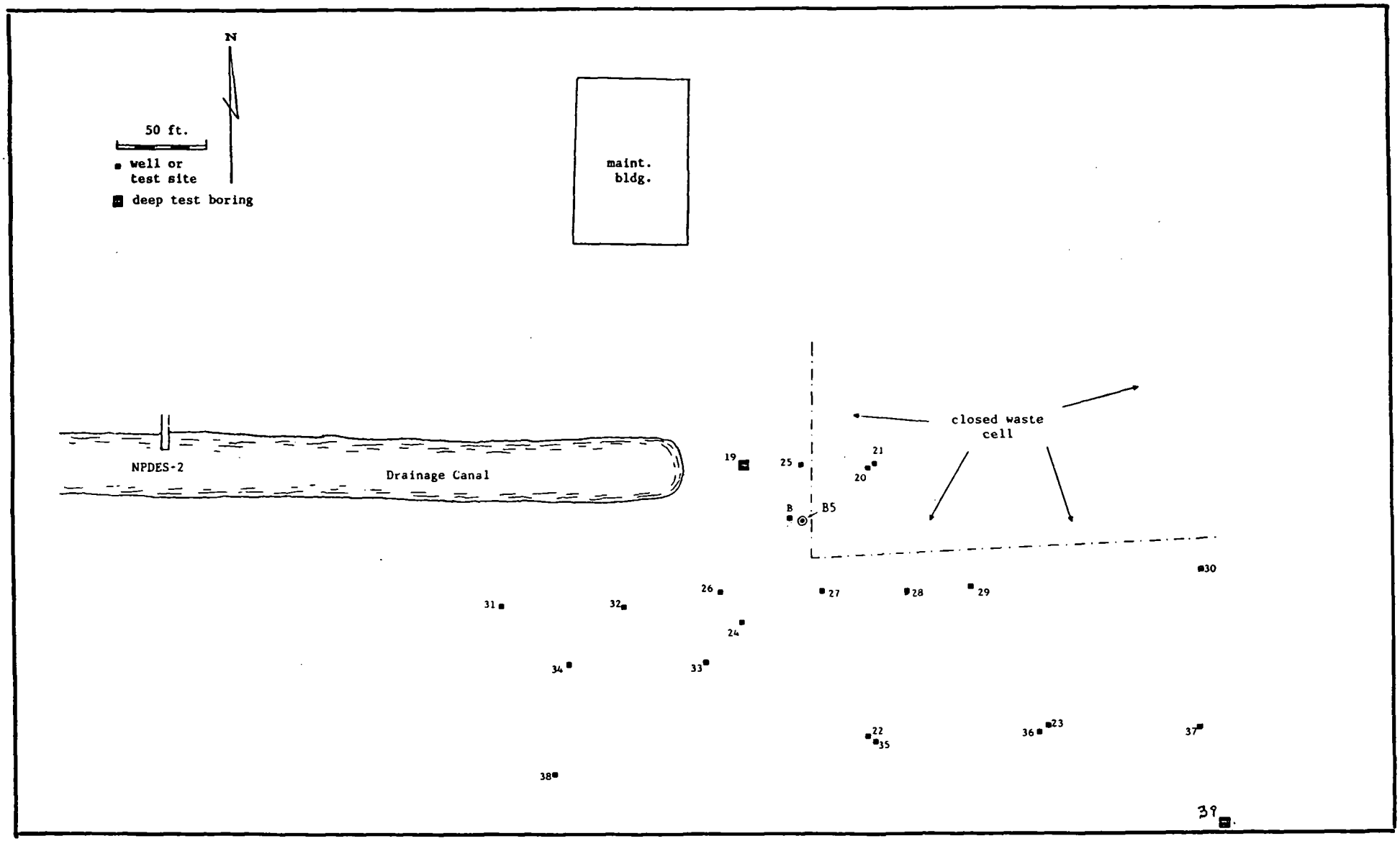
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David N. Gomberg, Ph.D.
Water Resources Consultant
3006 Surfside Blvd.
Cape Coral, FL 33914
(941) 549-1297

SW → BL

January 9, 1996

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Dept. of Environmental Protection
3319 Maguire Blvd. Suite 232
Orlando, FL 32803

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Very truly yours,

David

David N. Gomberg

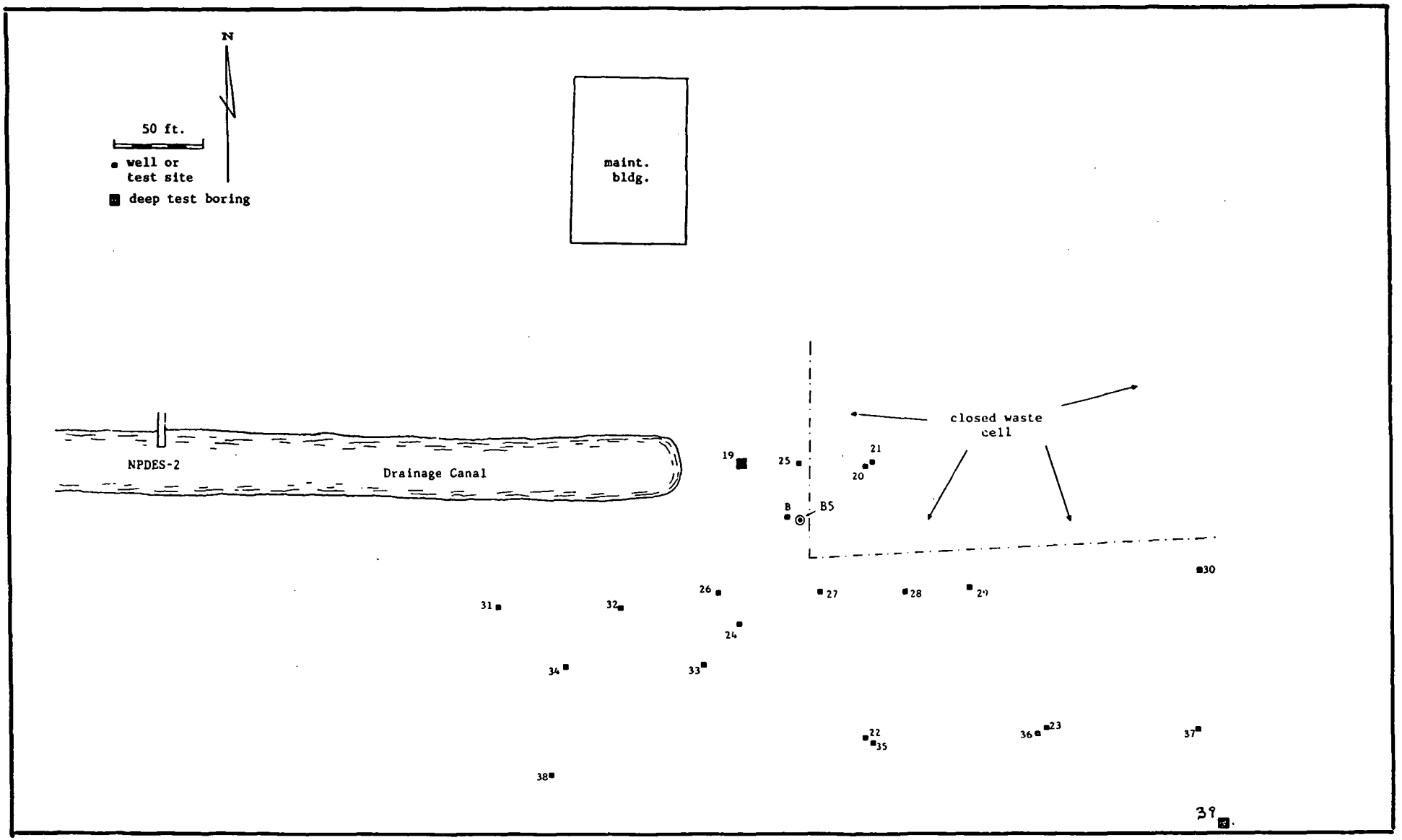
encl.: water quality table, site map

cc: Jim Griffin, Susan Gaze - Vol. Co.
Scott Spooner, P.E. - McKim & Creed
Bret LeRoux, P.G. - FDEP

Total VOC's in monitor wells near B5,
January - November, 1995
(values in micrograms/liter)

Well	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
B5-B	10	13	1.3	*	*	*	*	*	39	*	*
B5-22	2	9	2	1.2	*	*	*	*	*	*	*
B5-28	6916	4724	10720	16120	704	14793	12684	4054	6521	14050	17300
B5-30A	11	33	15	11	*	1.3	24	*	3	*	*
B5-30B	3	38	14	*	*	1.3	*	1.3	*	*	*
B5-32	*	*	*	*	*	*	*	*	*	*	*
B5-34	*	*	*	*	*	*	*	*	*	*	*
B5-35	*	21	*	*	*	*	*	*	*	*	*
B5-37A	2	7	3	2	*	*	*	*	*	*	*
B5-37B	79	35	19	7	*	*	*	*	*	*	*

*no VOC detected at greater than 1 ug/l


N
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deep test boring
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NPDES-2
Drainage Canal
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SW 422

McKIM&CREED

October 19, 1995 M&C 10410002.0F COORD

ENGINEERS

SURVEYORS

PLANNERS

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Blvd. Suite 232
Orlando, FL 32803

Re: Volusia County Tomoka Farms Road Landfill
Contamination Assessment

Dear Mr. Morrical:

On March 24, 1995, we submitted the data that you had requested related to our work on the assessment of the ground water contamination near monitor well B-5 at the Tomoka Landfill. Since that time, we have continued to monitor Volatile Organic Compounds at ten wells near well B-5 on a monthly basis to help track trends or movement in the contaminant plume. Enclosed is a memo prepared by Dr. Gomberg describing the results of that monitoring to date.

If you have any questions on this project please let me know.

Sincerely,

McKIM & CREED ENGINEERS, P.A.

Lee A. Powell, P.E.
Engineer

Enclosure

cc: Mr James L. Griffin, Volusia County
Ms. Susan Gaze, Volusia County
Dr. David Gomberg

NORTH CAROLINA

FLORIDA

483 S. NOVA ROAD

ORMOND BEACH, FL 32174

904/672-5660

FAX 904/673-8264

601 CLEVELAND STREET

SUITE 205

CLEARWATER, FL 34615

813/442-7196

FAX 813/461-3827

Q:\1041\0002\10195DM1.LAP

DEP ROUTING AND TRANSMITTAL SLIP

TO: (NAME, OFFICE, LOCATION)

1. Brett LeRoux
2. _____
3. _____
4. _____
5. _____

PLEASE PREPARE REPLY FOR:

____ SECRETARY'S SIGNATURE

____ DIV/DIST DIR SIGNATURE

____ MY SIGNATURE

____ YOUR SIGNATURE

____ DUE DATE _____

ACTION/DISPOSITION

____ DISCUSS WITH ME

____ COMMENTS/ADVISE

____ REVIEW AND RETURN

____ SET UP MEETING

____ FOR YOUR INFORMATION

____ HANDLE APPROPRIATELY

____ INITIAL AND FORWARD

____ SHARE WITH STAFF

____ FOR YOUR FILES

COMMENTS:

Contamination Assessment
Preliminary Results:
Tomoka Landfill
For your review

FROM: Scott Wesson DATE: 10/26/95 PHONE: _____

DEP 15-026 (12/93)

David N. Gomberg, Ph.D.
Water Resources Consultant

5331 Skyline Blvd.
Cape Coral, FL 33914
(941) 549 - 8842 or
542 - 4551

October 10, 1995

Memo to: Lee A. Powell, P.E.

Re: Tomoka Landfill Contamination Assessment - VOC results near Well B5

1. Recall that we completed the B5 field investigation described in the Contamination Assessment Plan (CAP) in late 1994.
2. Recall that DEP requested that we send our data and results to them, for evaluation, prior to our completing the Contamination Assessment Report (CAR).
3. Because we anticipated a substantial delay in moving ahead with the CAR, we selected 10 wells near well B5 for monthly samplings and analyses for Volatile Organic Compounds (VOC's). This has allowed us to determine trends in contaminant concentrations and to assess whether there is any movement or enlargement of the contaminant plumes.
4. A summary of the analytical results is given in the accompanying table. Also included here is a map of the investigation site, showing where the monitoring wells are located.

Total VOC's in monitor wells near B5,
January - August, 1995
(values in micrograms/liter)

Well	Jan.	Feb.	Mar.	April	May	June	July	Aug.
B5-B	10	13	1.3	*	*	*	*	*
B5-22	2	9	2	1.2	*	*	*	*
B5-28	6916	4724	10720	16120	704	14793	12684	4054
B5-30R	11	33	15	11	*	1.3	24	*
B5-30B	3	38	14	*	*	1.3	*	1.3
B5-32	*	*	*	*	*	*	*	*
B5-34	*	*	*	*	*	*	*	*
B5-35	*	21	*	*	*	*	*	*
B5-37A	2	7	3	2	*	*	*	*
B5-37B	79	35	19	7	*	*	*	*

*no VOC detected at greater than 1 ug/l

5. The conclusion to be drawn from the table and map is that the areal extent and magnitude of VOC contamination are quite stable. Conditions are, in fact, somewhat improved from those encountered at the onset of sampling. For example,

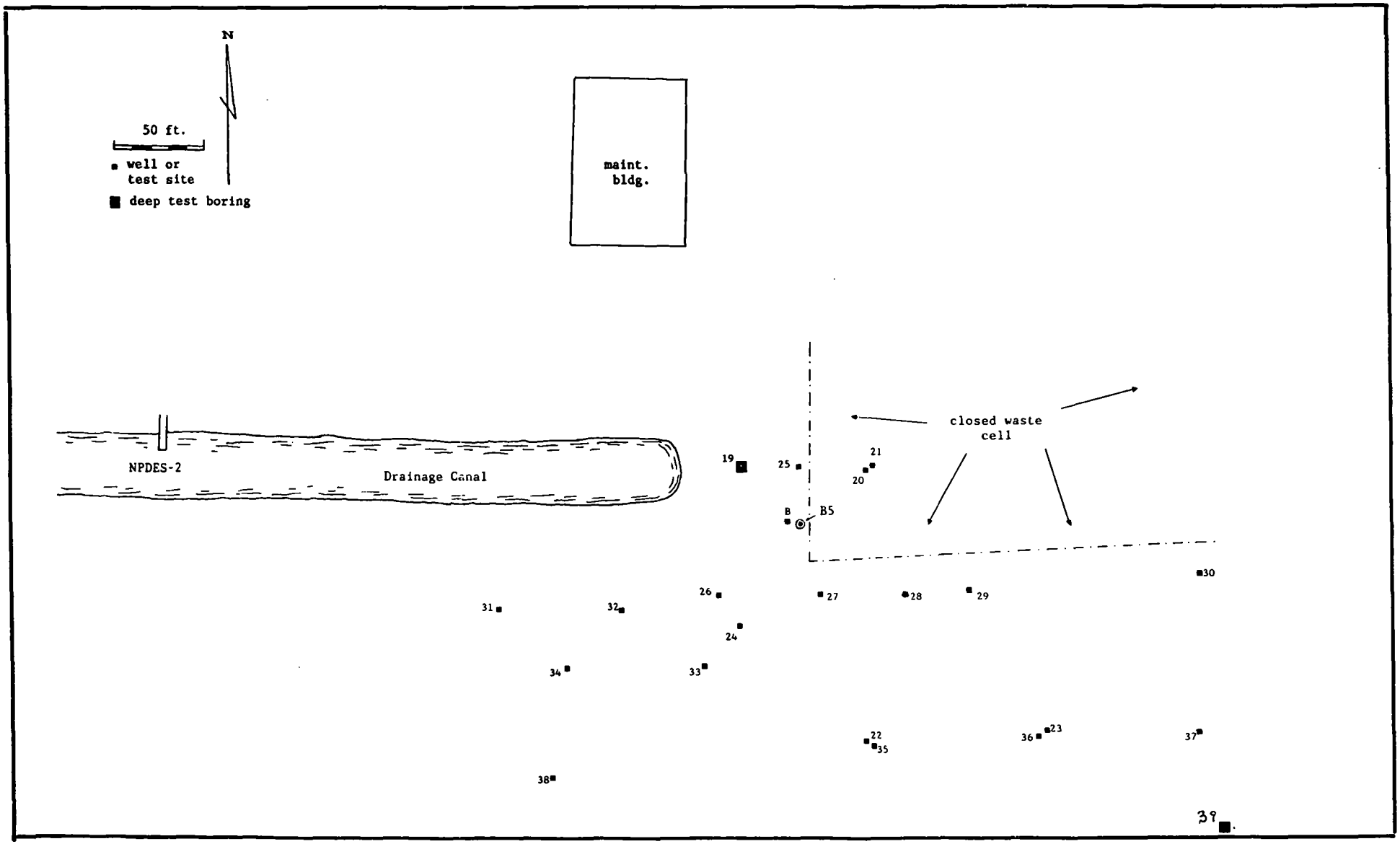
   a) no VOC's have been found in well B5-B for the past 5 months;

   b) VOC's in well B5-28, a few feet from the closed waste cell, continue at concentrations of several thousand ppm;

   c) wells B5-32 and B5-34, west of the defined contamination, continue to be free from VOC's;

   d) wells B5-30A and B5-30B, at the eastern edge of contamination, periodically show VOC's of a few ppm's, but there has been no increase in concentration;

   e) wells B5-37A and B5-37B, at the southeastern edge of contamination and at the zone of discharge boundary, have had no detectable VOC's for the past 4 months.


N
50 ft.
well or test site
deep test boring
maint. bldg.
NPDES-2
Drainage Canal
closed waste cell
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Flor. a Department of

Memorandum

Environmental Protection

TO: Bret LeRoux, P.G.

FROM: Laxsamee Levin

DATE: April 4, 1995

SUBJECT: County Volusia ~~Permit~~ / OGC 91-0845

Facility Tomoka Farm Road Landfill

Attachment Contamination Assessment Information.

The attached is being sent to you for:

_____ Information only

_____ Review and comments

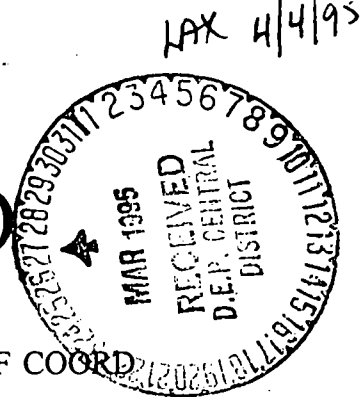
If review and comments are needed, please respond:

_____ By _____
(Solid Waste deadline date is _____)

✓ As soon as possible for your schedule.

Comments: Per your memo dated 2/20/95, the attached is provided prior to DEP approval to prepare CAR.

FAX 4/4/95



McKIM & CREED

March 24, 1995 10410002.OF COORD

Bret

ENGINEERS
SURVEYORS
PLANNERS

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

RE: Volusia County
Tomoka Farms Road Landfill

Dear Mr. Morrical:

Enclosed is the information on the Tomoka Farms Road Landfill contamination assessment as requested in your letter of February 21, 1995.

Very truly yours,

McKIM & CREED ENGINEERS, P.A.

Lee A. Powell, P.E.

/ct

Enclosure

cc: Mr. James L. Griffin, Volusia County
Dr. David Gomberg
Ms. Susan Gaze

q:\1041\0002\morr.ltr

NORTH CAROLINA
FLORIDA

483 S. NOVA ROAD
ORMOND BEACH, FL 32174
904/672-5660
FAX 904/673-8264

601 CLEVELAND STREET
SUITE 335
CLEARWATER, FL 34615
813/442-7195
FAX 813/461 3827

David N. Gomberg, Ph.D.
Water Resources Consultant

2247 S.E. 27th ST.
CAPE CORAL, FL 33904
(813) 574-6196

March 23, 1995

Memo To: Lee A. Powell, P.E.

Re: Tomoka Landfill - Contamination Assessment Near Well B5

1. This memo and the accompanying data respond to the 2/21/95 letter to you from Dan R. Morrical, P.E. of the FDEP. That letter requested data collected during Phase II of the investigation conducted to assess contamination in the vicinity of well B5.

2. Data submitted with this cover memo include the following:

   a. a map showing the location of site features, wells, and test borings in the vicinity of B5;

   b. geologic logs and the hydrogeologic profiles associated with deep test borings B5-19 and B5-39;

   c. completion reports and as-built diagrams for the 17 wells installed as part of the Phase II investigation. Lithologic logs for these wells were not prepared, because the two nearby deep test borings give a more accurate picture of the subsurface. On each of the as-builts, the upper part of the lithologic profile of boring B5-39 is shown next to the screened interval of the well.

   d. water quality results. For each of 5 items, there is a cover sheet summarizing the lab data for:

      1) 4 monthly samplings of the canal near B5;

      2) Sept., '94 sampling for VOC's of Phase II wells except B5-26A and B5-26B;

      3) Oct., '94 sampling of all "B5" wells for Primaries, Secondaries and VOC's;

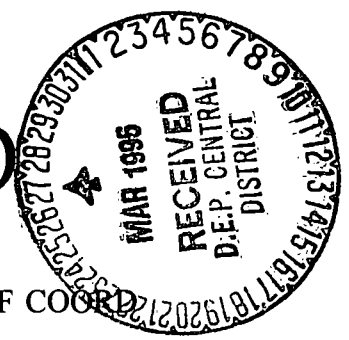
      4) Nov., '94 sampling of 13 selected wells, for VOC's;

      5) Dec. '94 sampling of 13 selected wells, for VOC's.

   e. Water level data for all "B5" wells, collected by me on 11/22/94. These water levels are shown on two maps, one for Layer 1-2 and one for Layer 4. The data are not contoured, because of the extremely small head change across the project area.

3. I anticipate that all of the data accompanying this memo will also be included in the CAR.

FAX 4/4/95



McKIM & CREED

March 24, 1995 10410002.OF COORD

Bret

ENGINEERS

SURVEYORS

PLANNERS

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

RE: Volusia County
Tomoka Farms Road Landfill

Dear Mr. Morrical:

Enclosed is the information on the Tomoka Farms Road Landfill contamination assessment as requested in your letter of February 21, 1995.

Very truly yours,

McKIM & CREED ENGINEERS, P.A.

Lee A. Powell, P.E.

/ct

Enclosure

cc: Mr. James L. Griffin, Volusia County
Dr. David Gomberg
Ms. Susan Gaze

q:\1041\0002\morr.ltr

NORTH CAROLINA

FLORIDA

483 S. NOVA ROAD

ORMOND BEACH, FL 32174

904/672-5660

FAX 904/673-8264

601 CLEVELAND STREET

SUITE 205

CLEARWATER, FL 34615

813/442-7196

FAX 813/461-3827

Department of Environmental Protection

Lawton Chiles
Governor

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767
February 21, 1995

Virginia B. Wetherell
Secretary

McKim & Creed Engineers, P.A.
483 S. Nova Road
Ormond Beach, Florida 32174

OCD-SW-95-0061

Attn: Lee A. Powell, P.E.

OGC # 91-0845

Volusia County - SW
Tomoka Farms Road Landfill

Dear Mr. Powell:

In your letter of February 9, 1995, you stated that a Contamination Assessment Report (CAR) is in preparation. However, the Department has not received any data from the additional work that was done as a result of the Department's review of the Site Screening Investigation Report. Prior to preparation of the CAR, the Department needs to receive and review the following:

1) Lithologic logs from the borings into Layer 6.

2) Lithogic logs of all wells installed during this phase of work.

3) Well construction diagrams of newly installed wells.

4) Laboratory analytical reports for samples collected from any wells sampled during this phase of work. This data should also be summarized in tabular form.

5) Ground water elevation data collected during sampling of the newly installed wells. Updated ground water elevation contour maps of each monitored zone.

Upon review of these data, the Department will make a determination, pursuant to Paragraph 28 of Exhibit I (Corrective Actions for Ground Water Contamination Cases) of the Consent Order, if it is appropriate to prepare a CAR at this time.

Sincerely,

Dan R. Morrical, P.E.
Program Manager
Solid Waste

DRM/ew
cc: Dr. David Gomberg
James L. Griffin - Volusia County

State of Florida
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Interoffice Memorandum

TO: Dan Morrical, P.E. OCD-WCU-95-0047

FROM: G. Bret LeRoux, P.G. GBL

DATE: February 20, 1995

SUBJECT: Volusia County - Waste Cleanup
Tomoka Farms Road Landfill
Project Status

on February 9, 1995

The letter received from McKim & Creed, consultant for Volusia County, states that a Contamination Assessment Report (CAR) is in preparation. However, the Department has not received any data from the additional work that was done as a result of the Department's review of the Site Screening Investigation report. Prior to preparation of the CAR the Department needs to receive and review the following:

1. Lithologic logs from the borings into Layer 6.
2. Lithologic logs of all wells installed during this phase of work.
3. Well construction diagrams of newly installed wells.
4. Laboratory analytical reports for samples collected from any wells sampled during this phase of work. This data should also be summarized in tabular form.
5. Ground water elevation data collected during sampling of the newly installed wells. Updated ground water elevation contour maps of each monitored zone.

Upon review of these data, the Department will make a determination, pursuant to Paragraph 28 of Exhibit I (Corrective Actions for Ground Water Contamination Cases) of the Consent Order, if it is appropriate to prepare a CAR at this time.

McKIM & CREED

ENGINEERS

SURVEYORS

PLANNERS

FEB 1995
RECEIVED
D.E.P. CENTRAL
DISTRICT

February 9, 1995

10410002.OR.COORD

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

BL CBL
LL ___
SW ___
File ___

RE: Volusia County
Tomoka Farms Road Landfill
Groundwater Contamination Assessment
Project Status Report

Dear Mr. Morrical:

The purpose of this letter is to keep you informed on the status of the above project. The sampling required for this project has been completed and the Contamination Assessment Report (CAR) is in preparation. Monitoring is continuing for water levels and VOC's on a monthly basis.

Very truly yours,

McKIM & CREED ENGINEERS, P.A.

Lee A. Powell, P.E.

/ct

cc: Mr. James L. Griffin, Volusia County
Dr. David Gomberg

q:\1041\0002\status2.ltr

483 S. NOVA ROAD

ORMOND BEACH, FL 32174

904/672-5660

FAX 904/673-8264

601 CLEVELAND STREET

SUITE 205

CLEARWATER, FL 34615

813/442-7196

FAX 813/461-3827

NORTH CAROLINA

FLORIDA

DRM LAK
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File
Volusia Tomoka (enforcement)

McKIM & CREED

November 9, 1994 10410002.OF COORD

ENGINEERS
SURVEYORS
PLANNERS

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

RE: Volusia County
Tomoka Farms Road Landfill
Groundwater Contamination Assessment
Monthly Status Report

Dear Mr. Morrical:

As indicated in our October monthly status report, submitted on November 7th, we have completed fieldwork on the above project. Enclosed is a survey drawing of the wells installed during that effort.

If you have any questions, please let me know.

Very truly yours,

McKIM & CREED ENGINEERS, P.A.

Do we have Well Completion Report?

Lee A. Powell, P.E.

/ct

cc: Mr. James L. Griffin, Volusia County
Mr. Susan Gaze
Dr. David Gomberg

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NORTH CAROLINA
FLORIDA

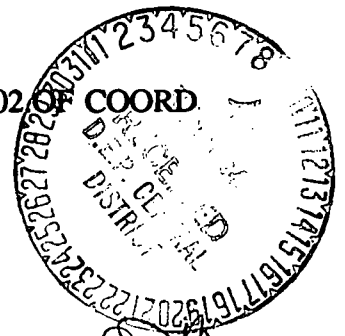
483 S. NOVA ROAD
ORMOND BEACH, FL 32174
904/672-5660
FAX 904/673-8264

601 CLEVELAND STREET
SUITE 205
CLEARWATER, FL 34615
813/442-7196
FAX 813/461-3827

McKIM & CREED

November 7, 1994

10410002.OF COORD



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ENGINEERS

SURVEYORS

PLANNERS

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

RE: Volusia County
Tomoka Farms Road Landfill
Groundwater Contamination Assessment

Dear Mr. Morrical:

NORTH CAROLINA

FLORIDA

The fieldwork on the above project is now complete, include well installation and testing. We will be collecting water quality data and water level measurement, from these wells for a three month period, as required by the approved CAP. Data collection should therefore be complete by early January. Allowing six weeks for data evaluation and report preparation, the Contamination Assessment Report should be complete and submitted to the Department by the end of February.

Very truly yours,

McKIM & CREED ENGINEERS, P.A.

Lee A. Powell, P.E.

/ct

cc: Mr. James L. Griffin, Volusia County
Dr. Dave Gomberg

q:\wc\gwater.ltr

483 S. NOVA ROAD

ORMOND BEACH, FL 32174

904/672-5660

FAX 904/673-8264

601 CLEVELAND STREET

SUITE 205

CLEARWATER, FL 34615

813/442-7196

FAX 813/461-3827

Department of Environmental Protection

Lawton Chiles
Governor

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Virginia B. Wetherell
Secretary

September 13, 1994

McKim & Creed Engineers, P.A.
Post Office Box 607
Ormond Beach, Florida 32175

OCD-SW-94-0319

Attn: Mr. Lee Powell

Volusia County - SW
Tomoka Farms Road Landfill
Contamination Assessment Report

Dear Mr. Powell:

Thank you for your June 24, 1994 letter response to the Department's January 15, 1994, questions. The Department has reviewed these responses and considers them adequate. Please continue with the assessment of the extent of contamination at the Tomoka Farms Road Landfill.

Please contact Bret LeRoux or myself with any questions at (407) 894-7555 or the letterhead address.

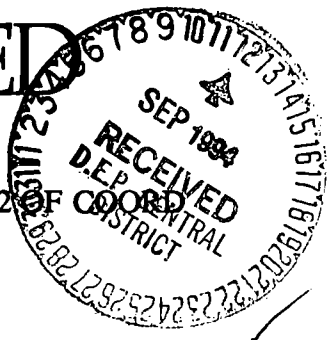
Sincerely,

Dan R. Morrical, P.E.
Program Manager
Solid Waste

DRM/ew

cc: Mr. James L. Griffin, Volusia County
Ms. Susan Gaze, Volusia County

McKIM & CREED



September 8, 1994

10410002 OF COORD

SEP 1994 RECEIVED D.E.P. CENTRAL DISTRICT

DRM
LL LAX
GJD
SW
BL
File Enforcement

ENGINEERS

SURVEYORS

PLANNERS

NORTH CAROLINA

FLORIDA

483 S. NOVA ROAD

ORMOND BEACH, FL 32174

904/672-5660

FAX 904/673-8264

601 CLEVELAND STREET

SUITE 205

CLEARWATER, FL 34615

813/442-7196

FAX 813/461-3827

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

RE: Volusia County
Tomoka Farms Road Landfill
Groundwater Contamination Assessment

Dear Mr. Morrical:

Based on the Contamination Assessment Plan and the additional work requested in your letter of June 15, 1994, we have prepared specifications for our drillers and subcontractors, who are now preparing budgets for this work. We intend to begin field work in the near future.

We will continue to endeavor to keep you informed on the progress of this work.

If you have any questions in the mean time, please let me know.

Very truly yours,

McKIM & CREED ENGINEERS, P.A.

Lee A. Powell, P.E.

/lmh

cc: Mr. James L. Griffin, Director of Solid Waste Management, Volusia Cty.

q:\wc\morrical.dep

PRM ✓
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McKIM & CREED

ENGINEERS

SURVEYORS

PLANNERS

RECEIVED
AUG 1994
D.E.P. CENTRAL DISTRICT

August 2, 1994

10410002.OFCOORD

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

RE: Volusia County
Tomoka Farms Road Landfill
Groundwater Contamination Assessment

Dear Mr. Morrical:

On July 21, 1994, the Volusia County Council authorized us to continue the field investigation described in the Contamination Assessment Plan, including the work requested in your letter of June 15, 1994.

We will continue to endeavor to keep you informed on the progress of this work.

If you have any questions in the meantime, please let me know.

Very truly yours,

McKIM & CREED ENGINEERS, P.A.

Lee A. Powell, P.E.

/mbj

cc: Mr. James L. Griffin, County of Volusia

NORTH CAROLINA

FLORIDA

P.O. BOX 607

ORMOND BEACH, FL 32175

904/672-5660

FAX 904/673-8264

1421 COURT STREET

SUITE C

CLEARWATER, FL 34616

813/442-7196

FAX 813/461-3827

Department of Environmental Protection

Lawton Chiles
Governor

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Virginia B. Wetherell
Secretary

June 15, 1994

Mr. Lee A. Powell, P.E.
Assistant Director of Engineering
Briley, Wild and Associates
Post Office Box 607
Ormond Beach, Florida 32175

OCD-SW-94-0206

Volusia County - SW
Tomoka Farms Road Landfill
Contamination Assessment Report

Dear Mr. Powell:

Thank you for your April 22, 1994 submittal of the results of the Phase 1 screening investigation for the referenced site. The Department has reviewed this submittal and we have the following comments:

1. Laboratory analytical reports were not included in the Screening Investigation Report. They should be submitted to the Department.

2. While performing the test boring into layer 6, soil samples for lithologic description should be collected continuously with a slip spoon sampler.

3. While boring prior to installation of zone 4 monitoring wells, consideration should be given to collecting split spoon samples for lithologic description to ensure that the wells are installed into the zone 4 flow zone.

4. Although the Department approved Contamination Assessment Plan (CAP) states that 20/30 graded sand will be used as filter pack material, it may be prudent to use a finer filter pack material to ensure representativeness of ground water samples. Further, even though the CAP indicates that REVERT drilling mud will be used to perform borings into layer 6 prior to well installation, Department policy is that drilling muds should consist of only native bentonite containing no additives. Further, consideration should be given to measuring turbidity in the field as an aid in determining if representative ground water samples are being collected.

5. Additional well locations and adjustment to well location.

   Zone 1-2: A well should be installed west of B5. Wells should be installed adjacent to B5-23 and in the vicinity of P11.

Zone 4: Wells should be installed to the west of B5 and to the southwest of P12. The proposed well near P18 should be moved slightly east.

Pursuant to Paragraph 28 of Exhibit I (Corrective Actions for Ground Water Contamination Cases) of the Consent Order, Volusia County is required to submit written progress reports to the Department on the first working day of the month. Volusia County has failed to provide the Department with monthly progress reports.

Please contact Mr. Bret LeRoux or myself at (407) 894-7555 with any questions.

Sincerely,

Dan R. Morrical, P.E.
Program Manager
Solid Waste

DRM/blw

cc: David Gomberg, Ph.D.
Mr. James L. Griffin, Director - Volusia County Solid Waste Management
Ms. Susan Gaze, Volusia County

ate of Florida
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Interoffice Memorandum

TO: Dan Morrical, P.E. OCD-WCU-94-0156

FROM: G. Bret LeRoux, P.G. GBL

DATE: June 3, 1994

SUBJECT: Volusia County - Waste Cleanup
Tomoka Farms Road Landfill
Review of Screening Investigation Report

I have reviewed the contamination assessment Screening Investigation Report for the above referenced facility and have in telephone conversation with Dave Gomberg discussed the following comments.

1. Laboratory analytical reports were not included in the Screening Investigation Report. They should be submitted to the Department.

2. While performing the test boring into layer 6, soil samples for lithologic description should be collected continuously with a slip spoon sampler.

3. While boring prior to installation of zone 4 monitoring wells, consideration should be given to collecting split spoon samples for lithologic description to ensure that the wells are installed into the zone 4 flow zone.

4. Although the Department approved Contamination Assessment Plan (CAP) states that 20/30 graded sand will be used as filter pack material, it may be prudent to use a finer filter pack material to ensure representativeness of ground water samples. Further, even though the CAP indicates that REVERT drilling mud will be used to perform borings into layer 6 prior to well installation, Department policy is that drilling muds should consist of only native bentonite containing no additives. Further, consideration should be given to measuring turbidity in the field as an aid in determining if representative ground water samples are being collected.

5. Additional well locations and adjustment to well location.

   Zone 1-2: A well should be installed west of B5. Wells should be installed adjacent to B5-23 and in the vicinity of P11.

   Zone 4: Wells should be installed to the west of B5 and to the southwest of P12. The proposed well near P18 should be moved slightly east.

Pursuant to Paragraph 28 of Exhibit I (Corrective Actions for Ground Water Contamination Cases) of the Consent Order, Volusia County is required to submit written progress reports to the Department on the first working day of the month. Volusia County has failed to provide the Department with monthly progress reports.

State of Florida
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Interoffice Memorandum

TO: Bret LeRoux

FROM: ~~Richard B. Tedder, P.E.~~ Dan Morneau

DATE: 4/26

SUBJECT: County Volusia Permit No. _____

Facility Tomoka Farms Rd. Landfill

Attachment 4/22 letter from Briley Wild ~~from~~ &
Phase I Screening investigation

The attached is being sent to you for:

_____ Information only

✓ Review and comments

If review and comments are needed, please respond:

_____ By _____

(Solid Waste deadline date is _____)

✓ As soon as possible for your schedule.

Comments: _____

BRILEY, WILD
AND ASSOCIATES

April 22, 1994

VC 92097-6R

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

Re: Volusia County
Tomoka Farms Road Landfill
Contamination Assessment Report

Dear Mr. Morrical:

Enclosed is a copy of Dr. Gomberg's report on the results of the Phase 1 screening investigation, conducted as part of the approved Contamination Assessment Plan (CAP) for the above site. The results of this screening investigation are consistent with and support the assumptions that the CAP was based on, and we are now able to proceed with the steps necessary to complete the CAP.

We would be pleased to receive any comments you might have on this report or on the work remaining to be accomplished. We hope to begin fieldwork within a few weeks.

Very truly yours,

BRILEY, WILD & ASSOCIATES, INC.
CONSULTING ENGINEERS & PLANNERS

Lee A. Powell, P.E.
Assistant Director of Engineering

LAP/lmh
cc: Dr. David Gomberg
Mr. Jim Griffin, Volusia County

Briley, Wild and Associates, Inc.
Consulting Engineers and Planners
1040 North U.S. Highway One
P.O. Box 607
Ormond Beach, FL 32175
904/672-5660 • FAX 904/673-8264
Offices in Bradenton, Clearwater, Daytona Beach, Orlando & Ormond Beach, FL

FAX 3/14/94
GJD
Enforcement File

BRILEY, WILD AND ASSOCIATES

March 7, 1994

VC 92097-6R

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

Re: Volusia County
Tomoka Farms Road Landfill
Contamination Assessment Report

Dear Mr. Morrical:

Thank you for your letter of February 25, 1994 on the subject project. The Quality Assurance project Plan was approved by the FDEP in August, 1993. The first phase of the field work including subsurface screening by geo-probe, has been completed. A summary of the results of this work is being prepared and will be sent to you shortly.

As indicated on page 3-5 of the approved Contamination Assessment Plan, the locations for installing monitoring wells will be chosen based on the results of the field work described above. We are completing our technical evaluation of the geo-probe assessment and selecting locations for the monitor wells. We will proceed to install the wells, evaluate the data, and complete the other tasks remaining for completion of the CAR.

We will continue to keep you informed on the progress of this investigation. If you have any questions in the meantime, please let me know.

Very truly yours,

BRILEY, WILD & ASSOCIATES, INC.
CONSULTING ENGINEERS & PLANNERS

Lee A. Powell, P.E.
Assistant Director of Engineering

LAP/lmh
cc: Dr. David Gomberg
Mr. James L. Griffin, Director Solid Waste Management, Volusia County
Ms. Susan Gaze, Volusia County

Briley, Wild and Associates, Inc.
Consulting Engineers and Planners
1040 North U.S. Highway One
P.O. Box 607
Ormond Beach, FL 32175
904/672-5660 • FAX 904/673-8264
Offices in Bradenton, Clearwater, Daytona Beach, Orlando & Ormond Beach, FL

FAX 3/14/94
GJD
Enforcement File

BRILEY, WILD AND ASSOCIATES

March 7, 1994

VC 92097-6R

Mr. Dan R. Morrical, P.E.
Solid Waste Program Manager
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

Re: Volusia County
Tomoka Farms Road Landfill
Contamination Assessment Report

Dear Mr. Morrical:

Thank you for your letter of February 25, 1994 on the subject project. The Quality Assurance project Plan was approved by the FDEP in August, 1993. The first phase of the field work including subsurface screening by geo-probe, has been completed. A summary of the results of this work is being prepared and will be sent to you shortly.

As indicated on page 3-5 of the approved Contamination Assessment Plan, the locations for installing monitoring wells will be chosen based on the results of the field work described above. We are completing our technical evaluation of the geo-probe assessment and selecting locations for the monitor wells. We will proceed to install the wells, evaluate the data, and complete the other tasks remaining for completion of the CAR.

We will continue to keep you informed on the progress of this investigation. If you have any questions in the meantime, please let me know.

Very truly yours,

BRILEY, WILD & ASSOCIATES, INC.
CONSULTING ENGINEERS & PLANNERS

Lee A. Powell, P.E.
Assistant Director of Engineering

LAP/lmh
cc: Dr. David Gomberg
Mr. James L. Griffin, Director Solid Waste Management, Volusia County
Ms. Susan Gaze, Volusia County

Briley, Wild and Associates, Inc.
Consulting Engineers and Planners
1040 North U.S. Highway One
P.O. Box 607
Ormond Beach, FL 32175
904/672-5660 • FAX 904/673-8264
Offices in Bradenton, Clearwater, Daytona Beach, Orlando & Ormond Beach, FL

Florida Department of
Environmental Protection

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

February 25, 1994

Certified
P 123 350 865

James L. Griffin
Director of Solid Waste Management
Volusia County Department of Solid Waste
123 West Indiana Avenue
DeLand, Florida 32720-4617

OCD-SW-94-0058

Volusia County - SW/GW
Tomoka Landfill
Contamination Assessment Report

Dear Mr. Griffin:

According to the Paragraph #7 of Exhibit I of Consent Order; OGC # 91-0845,executed on November 20, 1991 and amended on June 28, 1993, a written Contamination Assessment Report ("CAR") , addressing hydrocarbon contaminants detected in Well B-5 and dewatering discharge event during November 24, 1992, has not been submitted to the Department. The Contamination Assessment Plan ("CAP") was approved on 12/4/92 and the Quality Assurance Project Plan ("QAPP") was approved on 8/5/93.

Please submit the Contamination Assessment Report within 45 days of receipt of this letter. If you have further questions, please contact Mrs. Levin at (407) 894-7555.

Sincerely,

Dan R. Morrical, P.E.
Program Manager
Solid Waste

LAK
DRM/ll
cc: Susan Gaze, Volusia County
David Gomberg, PhD, Cape Coral, FL
Lee Powell, P.E., Briley, Wild & Assoc.

Printed on recycled paper.

Florida Department of
Environmental Protection

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

August 5, 1993

Bill
Attachment sent

CERTIFIED
P-123 350 782

Volusia County Solid Waste Management
123 West Indiana Avenue
DeLand, Florida 32720-4262

OCD-SW-93-0375

Attn: James Griffin

Volusia County - SW
Tomoka Farms Road Landfill
OGC Case No. 91-0845
QAPP # 920130C
Quality Assurance Project Plan Approval

Dear Mr. Griffin:

The subject Quality Assurance Project Plan has been approved by the Department's Quality Assurance Section in Tallahassee. Documents relating to this approval are attached for your review. Since the Contamination Assessment Plan for this project was approved on December 4, 1992, you are now authorized to begin the Contamination Assessment work at this site.

If you have any questions, please feel free to contact me at 407/894-7555. Thank you for your cooperation in this matter.

Sincerely,

Richard B. Tedder, P.E.
Program Manager
Solid Waste

RBT/ew

Enclosure

cc: Lee Powell, P.E.- Briley, Wild and Associates, Inc.
David Gomberg, Ph.D. - Water Resource Consultant

Printed on recycled paper.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To _____ Location _____
To _____ Location _____
To _____ Location _____
From _____ Date: _____

Interoffice Memorandum

TO: William McKenty, Project Manager
Division of Waste Management - Orlando

THROUGH: Andrew R. Tintle, Environmental Supervisor II ART
Quality Assurance Section

FROM: Deborah S. Koren, Environmental Specialist II DSK
Quality Assurance Section

DATE: June 7, 1993

SUBJECT: Quality Assurance Review; Tomoka Farms Road L/F
QAPP #920130C
Submitted by; Envirolab, Inc.

The subject document pages, received on December 28, 1993, have been reviewed and **approved.** Further detail on the status of this plan is explained in the enclosed guidance document (DER QAS #90-03).

A copy of this approval sheet (attached) should be forwarded to the consultant for their records. The referenced plan will be retained in the QA Sections permanent records.

Project sampling and analysis may proceed as planned and stipulated in the above document, provided that other DER approvals necessary to initiate this project have been granted.

If you have any questions concerning this matter, please call me at SC 278-2796.

ART/dsk

Attachments (3): DER QAS #90-03 (Explanation of Status)
Copy of Annotated QAPP Page
Copy of Project Plan Approval Page

EXPLANATION OF PLAN STATUS

DER QAS #90-03
12/18/90

1) RETURNED: The revised document or pages, addressing the comments on the attached review sheets and/or annotated pages, must be resubmitted for review.

a) CompQAPs: must be resubmitted and approved before referencing it in site-specific documents (QAPPs) or before sampling and/or analysis can begin for projects requiring an approved CompQAP.

b) QAPPs: must be resubmitted and approved before sampling and/or analysis can begin. The required revisions must be sent through the DER Project Manager in the appropriate Program Office. The revisions will then be forwarded to the QA Section for review.

2) APPROVED-PENDING: The revised document or pages, addressing the comments on the review sheets and/or annotated pages, must be resubmitted within SIX WEEKS from the date on the attached cover letter. If the required revisions are not received by the above due date, this conditional approval will expire. The revised pages will be reviewed and incorporated with the copy of the QAP submitted for review, which is being retained. This provisional approval means you must comply with these review comments for all sampling and analytical activities proposed between this pending approval and the final approval of the QA Plan, and that:

a) CompQAPs: are approved to begin referencing in QAPPs or sampling and/or analysis can begin for projects requiring an approved CompQAP.

b) QAPPs: are approved to begin sampling and/or analysis (provided all other Department requirements have been met).

3) APPROVED:

a) CompQAPs: Future QAPPs or other environmental monitoring projects may reference this document. Pursuant to 17-160.210(5), the CompQAP must be renewed annually in order to maintain approval status. If the amendments are not submitted, approval for this CompQAP will expire on the anniversary date of approval. Amendments may be submitted separately or may accompany a particular project plan. All amendments must be formatted such that they may be incorporated into your approved CompQAP by page addition or replacement. References to EPA or any other externally-derived Quality Assurance Objectives must be replaced by historical (internally-generated) data within one calendar year of the approval date, for any and all parameters.

References to your CompQAP by other parties must specify section, page numbers, and revision date. This will require supplying the involved party with a copy of the latest revised document, so that they are fully aware of its contents.

b) QAPPs: Final approval to begin sampling and analysis (provided all other Department requirements have been met).

Periodically, DER may request amendments or further clarification of information for an ongoing project or newly submitted project plans, or to accommodate rule or policy changes. Your cooperation in this regard is greatly appreciated.

NOTE: Please include your QA Plan number with all correspondence. This number does not denote approval, but is used as a means of tracking the QA Plan and its amendments.

	Audit Type	Frequency/Date	Description
1.	System	Quarterly / 8/15/92	QA/QC Inspection
2.			
3.			

6.2.2 Laboratory Activities

a. Routine preformance and system audits are discusse in CompQAP# G860198 Section 14, page 2 to 3, revised 10/18/91.

b. Specific audits planned for this project are:

	Audit Type	Frequency/Date	Description
1.	Performance	Quarterly / 7/15/92	QA/QC Blind (VOC's)
2.	System	Quarterly / 7/31/92	QA/QC Inspection
3.			

ALL INVOLVED PARTIES WILL CONSENT TO AUDITS BY DER IF DEEMED NECESSARY.

6.3 Quality Assurance Reports

QA Reports will be submitted to Robert L. Sullivan, and Lee A. Powell at a frequency of One Final Report, and One report every two years (if project extends over two years).

Note: Frequency must comply with Table IV, Appendix D of the DER Manual for Preparing Quality Assurance Plans or Table 6 of Chapter 17-160, F.A.C., Quality Assurance.

RECEIVED
DEC 28 1992
Dept. of Environmental Regulation
Quality Assurance Section

920130C/D

7728-728

DSK
McKenty
TPA

Revision No. 0
Section 1.0
Date: 3/18/92
Page: 1 of 1

QUALITY ASSURANCE PROJECT PLAN

For

VOLUSIA COUNTY DEPARTMENT OF
SOLID WASTE MANAGEMENT
TOMOKA LANDFILL
123 WEST INDIANA AVENUE
DELAND, FL 32720-4262

RECEIVED
APR 28 1992
Dept. of Environmental Regulation
Quality Assurance Section

Prepared by

ENVIROLAB, INC.
1030 U.S. HIGHWAY 1 NORTH
ORMOND BEACH, FL 32174
(904) 672-5668

J. L. Griffin — Date: 4-16-92
James L. Griffin
Director of Solid Waste Management

Leo A. Powell — Date: 15 Apr 92
Leo A. Powell, P.E.
Project Manager

Robert L. Sullivan — Date: 4/15/92
Robert L. Sullivan
Laboratory Vice President

Harold F. Acosta — Date: 4-15-92
Harold F. Acosta
QA/QC Officer

DER Oversight:

Deborah S. Koren — Date: 6-7-93
~~Sylvia S. Labie~~ Deborah S. Koren
DER QA Officer

William W. M... — Date: 4/27/92
DER Project Manager

APPROVED

For Routing Other Than to Addressee			
To:		Location:	
To:		Location:	
To:		Location:	
From:		Date:	

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

TO: R. Tedder OCD-WCU-93-0186

FROM: A. Hubbard

DATE: June 28, 1993

SUBJECT: Tomoka Farms Road LF QAPP Approval

QAS has reviewed and approves the referenced QAPP per the attached memo.

attachment

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

TO: Richard Tedder, P.E., OCD-WCU-93-0169

FROM: G. Bret LeRoux, P.G. GBL

DATE: May 27, 1993

SUBJECT: Volusia County - Waste Cleanup
Tomoka Farms road Landfill
QAPP

There is a discrepancy between the analysis mentioned in the Contamination Assessment Plan (CAP) and that mentioned in the Quality Assurance Project Plan (QAPP). The CAP indicates that ground water will be analyzed by EPA Methods 601 and 602 however the QAPP in Table 3.2 lists analysis by EPA Method 624. The analytical stated in the CAP and QAPP must be consistent. If EPA Method 624 is used the detection limits **must** be at or below the G-II Ground Water Standards.

QUALITY ASSURANCE PROJECT PLAN

For

VOLUSIA COUNTY DEPARTMENT OF
SOLID WASTE MANAGEMENT
TOMOKA LANDFILL
123 WEST INDIANA AVENUE
DELAND, FL 32720-4262
(904) 239-7766

Prepared by

ENVIROLAB, INC.
1030 U.S. HIGHWAY 1 NORTH
ORMOND BEACH, FL 32174
(904) 672-5668

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SECTION	TITLE	# OF PAGES	REVISION DATE
1.0	Title Page	1	3/6/92
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	3.2 Project Scope and Purpose		
	3.3 Project Organization		
	3.4 Project Objectives		
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	4.3 Field Equipment Cleaning and Decontamination Procedures		
	4.4 SampleContainers		
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	4.12 Field QC Checks and Routines to Assess Precision and Accuracy		
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	5.2 Laboratory Analytical Procedures		
	5.3 Waste Disposal		
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	5.5 Preventive Maintenance		
	5.6 Laboratory QC Checks, Routines to Assess Precision and Accuracy, and Calculation of Method Detection Limits		
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6.0	**Quality Assurance Management**	1	4/14/93
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	6.2 Performance and System Audits		
	6.3 Quality Assurance Reports		
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FIGURES

FIGURE #	DESCRIPTION	PAGE #	REVISION DATE
3.1	Project Organization Chart	9	4/14/93
3.2	Site Map	10	3/6/92

TABLES

TABLE #	DESCRIPTION	PAGE #	REVISION DATE
3.1	Historical Data Summary	1	3/6/92
3.2	Project Sample Summary	7	4/14/93
3.3	Method Identification and QA Objectives	8	4/14/93
4.1	Sampling Protocols	6	4/14/93
4.2	Equipment Decontamination and Cleaning Protocols	7	4/14/93
5.1	Laboratory QC Checks	5	4/14/93

3.0 Project Description

3.1 Site Identification and History

Site Name: **Tomoka Landfill**

Site Address: **1990 Tomoka Farms Road**
Daytona Beach, FL 32114

3.1.1 Site History

Historical data is primarily referenced from memoranda to Lee A. Powell, P.E., Briley, Wild and Associates, from David N. Gomberg, Ph.D. concerning the contamination discovered at Tomoka Landfill and subsequent measures implemented.

Vinyl Chloride, Toluene, Dichloroethylene and Methyl-tert-Butyl Ether were detected in well B5 during routine quarterly sampling, in June, 1990. The well is located in the south side of the landfill, a few feet from a closed waste cell. The location is shown in Figure 3.2 . B5 is screened from 18-23 feet below ground, and was probably installed ungrouted, in a former test boring hole.

Because of the toxicity Vinyl Chloride exhibits, most of the analytical work has focused on its analysis. A preliminary filed investigation was undertaken in August, 1990, in order to obtain an initial determination of the extent of the contamination. As a consequence of the report generated from the August, 1990 study, further field work was performed in March, 1991. The results led Dr. Gomberg to determine that the contamination was vertically confined to the top of the underlying confining bed, which begins at a depth of 37 feet.

3.1.2 Summary of Historical Data

Table 3.1 Summary of Historical Data

Parameter	Concentration Range (µg/L)
Vinyl Chloride	<1 - 22,000
Toluene	<1 - 398
Cis-1,2-Dichloroethylene	<1 - 521
Methyl-tert-Butyl Ether	<1 - 1314

3.2 Project Scope and Purpose

The purpose of this project is to define the extent of the contamination.

3.2.1 Intended use of the data:

____ Permit Compliance

____ Feasibility Study

____ Consent Order Compliance

____ Remedial Action

____ Contamination Assessment

____ Water Quality Data Base (Specify which Data Base:_____
_____).

____ Facility Operating Report

__X__ Other: **Letter of Stipulation # 91-0845**

3.2.3 Project Schedule and Scope of Work

June 1, 1992
Beginning Date

September 20, 1992
Project Ending Date

3.2.3 Project Schedule and Scope of Work (Cont'd)

Major Project Tasks

	Specific Project Activity	Scheduled Date
1.	Well(s) Placement	30 Days after CAP approval
2.	Sample Collection	One Week after well placement
3.	Laboratory report to Project Manager	2 weeks after sample collection
4.	Project Manager report to Respondee	30 days after Laboratory report
5.	Respondee report to DER	15 days after Project Manager report
6.		

3.3 Project Organization

3.3.1 Field Operations

Field Operations for this Project will be conducted by: Envirolab Inc., 1030 US Hwy 1 N, Ormond Beach, FL 32174.

using Comprehensive Quality Assurance Plan No. : G860198

The Organization and personnel duties of the field consultant are described in Section 4, page 1, to 3, revised 10/18/91.

3.3.2 Laboratory Analytical Work

The Laboratory Analytical work for this Project will be conducted by: Envirolab Inc., 1030 US Hwy 1 N , Ormond Beach, FL 32174.

using Comprehensive Quality Assurance Plan No. : G860198

The Organization and personnel duties are described in Section 4 , page 1 , to 3 , revised 10/18/91 .

3.3.3 Project Organization

Refer to figure 3.1 for the specific organization of this project.

3.3.4 Modifications or Additions

The following personnel and their duty descriptions are not included in the referenced CompQAPs:

A. Field Personnel

1. Mark Sullivan
2. Keith Doyens
3. Peter Shneider

B. Laboratory Personnel

1. Lisa R. Gued
2. Martha Montero
3.

3.4 Project Objectives

3.4.1 Data Quality Objectives

The standards criteria outlined in DER Rule 17 - 3

are the detection limit criteria for this project. The detection limits reported for this project shall at least meet, or be lower than the standards.

X The data quality objectives for this project are the routine QA targets listed in the Laboratory CompQAP.

____ The minimum detection limits to be achieved for this study differ from the routine limits specified in the Laboratory CompQAP and are included as part of Table 3.3 .

____ The precision and accuracy requirements differ from the routine targets specified in the Laboratory CompQAP and are included as part of Table 3.3 .

3.4.2 Proposed Samples for this Project

a. See Table 3.2 of this Section for a summary of the sampling and analysis activities.

b. See Figure 3.2 for a map of the project site.

3.4.3 QA Targets for Precision and Accuracy and Minimum Detection Limits

a. Field Analytical Measurements

Field measurements to be performed by Envirolab Inc. are listed below:

3.4.3 QA Targets for Precision and Accuracy and Minimum Detection Limits (Cont'd)

	Parameter	Method #
1.	Specific Conductance	120.1
2.	Hydrogen, pH	150.1
3.	Temperature	170.1
4.		
5.		

Refer to CompQAP # G860198 , Section 5 , page 3 , to 3 , revised 10/18/91 .

The following deviations from the stated CompQAP objectives for field measurements are note as follows: NONE

	Method Number	Precision	Accuracy
1.			
2.			
3.			

b. Laboratory Analysis

Laboratory analyses to be performed by Envirolab Inc. are listed on Table 3.3 by specific citation.

Table 3.2 Proposed Samples for the Project (Summary)

Frequency	Sample Matrix	Sample Source	Analytical Method #	#of Samples	QC Summary EB	TB	FD	Other
One Time*	Water	Monitoring Well	EPA 624	2/well	1**	1**	1**	
One Time*	Water	Monitoring Well	EPA 206.2	1/well	1**		1**	
One Time*	Water	Monitoring Well	EPA 208.1	1/well	1**		1**	
One Time*	Water	Monitoring Well	EPA 213.2	1/well	1**		1**	
One Time*	Water	Monitoring Well	EPA 218.1	1/well	1**		1**	
One Time*	Water	Monitoring Well	EPA 239.2	1/well	1**		1**	
One Time*	Water	Monitoring Well	EPA 245.1	1/well	1**		1**	
One Time*	Water	Monitoring Well	EPA 270.2	1/well	1**		1**	
One Time*	Water	Monitoring Well	EPA 272.1	1/well	1**		1**	

* - The project may require additional samples from each selected site, depending on the analytical results obtained.

** - Blanks and duplicates will be collected in conformance with Envirolab's CompQAP #860198G, Section 11, page 1, revised 10/18/92.

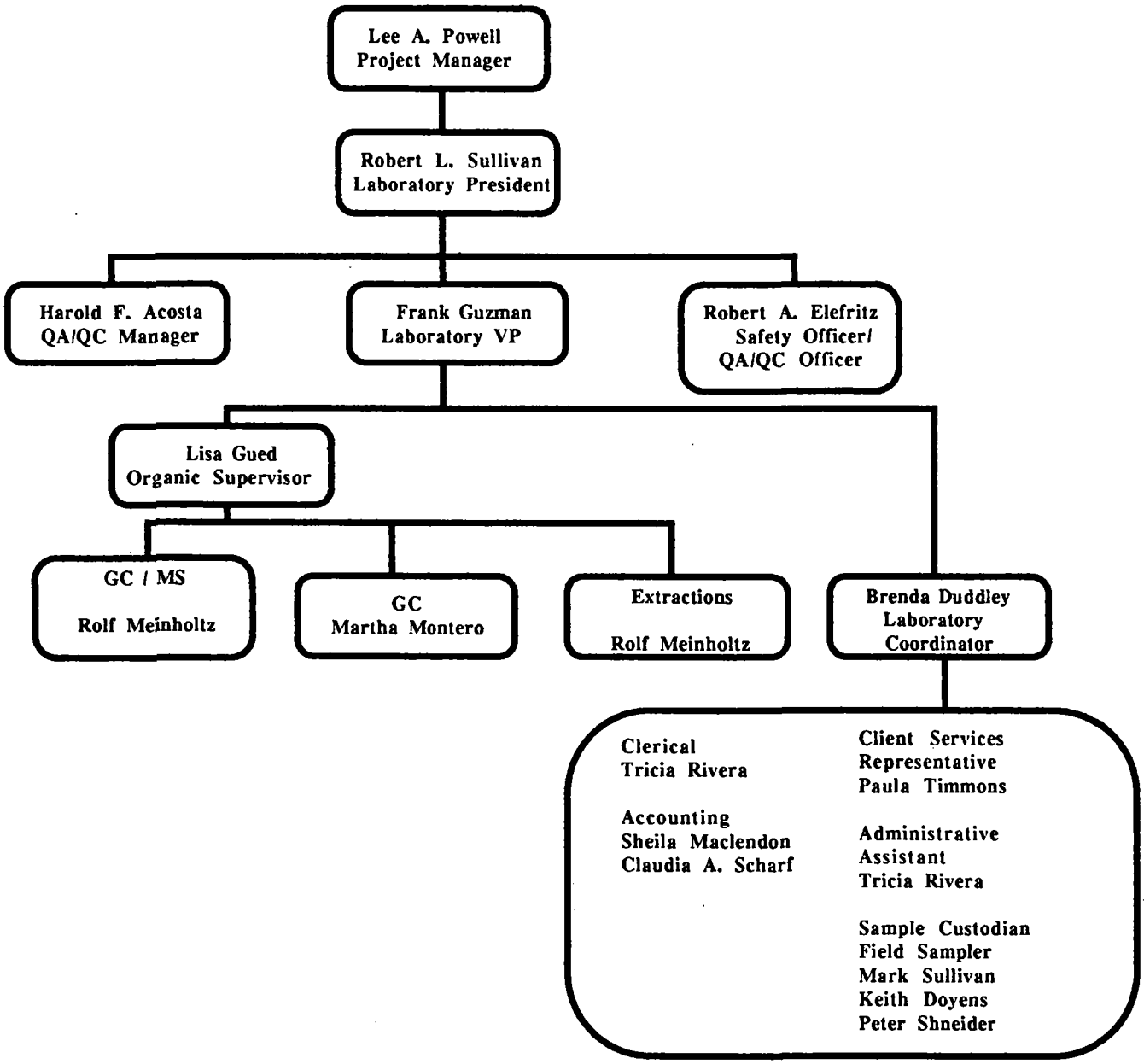
EB - Equipment Blank
TB - Trip Blank
FD - Field Duplicate
Other - State type
GW - Ground Water
MW - Monitoring Well

Table 3.3 Method Identification and QA Objectives

Laboratory Name: Envirolab Inc. CompQAP#: G860198

Method #	Matrix	Component	CompQAP Section #	CompQAP Rev. Date	CompQAP Page #
624	Water	Purgeable Organics	5	10/18/91	22
206.2	Water	Arsenic	5	10/18/92	5
208.1	Water	Barium	5	10/18/92	5
213.2	Water	Cadmium	5	10/18/92	5
218.1	Water	Chromium	5	10/18/92	5
239.2	Water	Lead	5	10/18/92	5
245.1	Water	Mercury	5	10/18/92	5
270.2	Water	Selenium	5	10/18/92	5
272.1	Water	Silver	5	10/18/92	5

Figure 3.1 **Project Organization**



4.0 Field Procedures and Quality Control

CompQAP citations in this Section refer to CompQAP#: G860198 unless otherwise specified.

4.1 Sampling Equipment

The following is a list of the equipment to be used for this project:

Equipment Description	Construction Materials	Use
Purging Equipment		
Centrifugal Pump (Gas Powered)	Aluminium housing with Mylar impeller and Teflon®hose	Purging
Peristaltic Pump	Teflon® sampling tube, silicon pump tubing	Purging
Bailer	All Teflon®	Purging/ Sampling
Sampling Equipment		
Bailer	All Teflon®	Purging/ Sampling
Field Measurement Equipment		
pH/Temperature Meter		
Conductivity/Temperature Meter		
Depth Meter (accurate to 0.01inch)		

Refer to CompQAP Section 6, page 53 to 58, revised 1018/91 for specific discussions on construction and use.

4.1 Sampling Equipment (Cont'd)

Additional equipment not addressed in the CompQAP will include: NONE

Equipment Description	Construction Materials	Use
1.		
2.		
3.		
4.		

4.2 Sampling Protocols

See Table 4.1

4.3 Field Equipment and Decontamination Procedures

Refer to Table 4.2 for specific references.

4.4 Sample Containers

Containers will be provided by Envirolab Inc. . Container preparation procedures are found in CompQAP# G860198 , Section 6 , page 56 to 56 , revised 1018/91 .

4.5 Preservation Protocols

Preservatives will be provided by Envirolab Inc. . Documentation for reagents are found in CompQAP# G860198 , Section 6 , page 3 to 4 , revised 1018/91 .

Preservation will be done by Envirolab Inc. following protocols listed in CompQAP# G860198 , Section 6 , page 3 to 4 , revised 1018/91 .

4.6 Sample Dispatch

Procedures for transporting the samples to the laboratory are listed in CompQAP# G860198 , Section 6 , page 49 to 49 , revised 1018/91 .

4.7 Waste Disposal

Procedures for handling wastes from equipment cleaning and from sampling are listed in CompQAP# G860198 , Section 6 , page 50 to 50 , revised 1018/91 .

4.8 Field Sample Custody

Procedures for sample custody are found in CompQAP# G860198 , Section 7 , page 1 to 1 , revised 1018/91 .

Further discussions on field documentation and notebooks are included in CompQAP# G860198 , Section 7 , page 1 to 2 , revised 1018/91 .

Deviations or modifications to the field custody procedures are listed below:
NONE

1.

2.

3.

4.9 Field Measurements

Field measurements are listed in Section 3.4.3 of this QAPP. Deviations or modifications to the procedures listed are as follows : NONE

1.
2.
3.

Other field measurements that will be made are: NONE

1.
2.
3.

4.10 Field Calibration Procedures

Calibration protocols for field analytical measurements are listed in CompQAP# G860198 , Section 9 , page 8 to 8 , revised 1018/91 .

Deviations to the procedures outlined in the above reference are : NONE

Calibration Procedure	Deviation
1.	
2.	
3.	

Project specific field measurement equipment not mentioned in the above reference are as follows: NONE

1.

2.

3.

Calibration procedures for equipment listed above are outlined on Table 4.3

4.11 Preventive Maintenance

Field equipment preventive maintenance protocols are discused in CompQAP# G860198 , Section 10 , page 1 to 3 , revised 1018/91 .

The following additions or modifications to field equipment preventive maintenance procedures are as follows: NONE

1.

2.

3.

4.12 Field Quality Control Checks and Routines to Assess Precision and Accuracy

The proposed schedule of field QC checks are summarized on Table 3.2 of Section 3.4 .

Routines to assess precision and accuracy of field measurements are found in CompQAP# G860198 , Section 11 , page 1 to 2 , revised 1018/91 .

4.13 Data Reduction, Validation and Reporting

Field Activities relative to this Section are found in CompQAP# G860198 , Section 12 , page 1 to 8 , revised 1018/91 .

Table 4.1 **Sampling Protocol**

These citations refer to CompQAP#: G860198

Topic	Section#	Page#'s	Revision Date
1. Equipment Decontamination	6	59-63	10/18/91
2. Groundwater Sampling Procedures	6	12-21	10/18/91
3. Field Filtration Protocols	6	2	10/18/91
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Deviations or modifications to the above-referenced procedures are: NONE

Protocol	Modification	Justification
1.		
2.		
3.		

Table 4.2 **Equipment Decontamination and Cleaning Procedures**

These citations refer to CompQAP#: G860198

Equipment Category	Where Cleaned	Section#	Page#	Revision Date
Teflon® Tubing and Bailers	Laboratory / Field	6	61	10/18/91
Silastic Rubber Tubing - Peristaltic Pump	Laboratory / Field	6	60	10/18/91
Centrifugal Pump Stainless Steel Casing	Laboratory / Field	6	62	10/18/91
Teflon® Coated Lanyard	Laboratory / Field	6	62-63	10/18/91
All Other Field Equipment	Laboratory / Field	6	59-60	10/18/91

Deviations or modifications to the procedures referenced above: NONE

Equipment Category	Modification
1.	
2.	
3.	
4.	
5.	

Note: All equipment must be precleaned prior to on-site arrival.

5.0 Laboratory Procedures and Quality Control

References in this section refer to the Envirolab Inc. Laboratory CompQAP#: G860198 .

5.1 Laboratory Custody Procedures

Laboratory sample custody procedures and documentation are found in CompQAP Section 7 , page 3 to 4 , revised 10/18/91 .

Deviations or modifications to the laboratory procedures are listed below: NONE

1.
2.
3.

5.2 Laboratory Analytical Procedures

5.2.1 Laboratory Glassware Cleaning Protocols

Refer to CompQAP Section 8 , page 1 to 2 , revised 10/18/91 .

Deviations or modifications to the referenced protocols are listed below: NONE

1.
2.
3.

5.2.2 Method Modifications and/or Deviations

Deviations or modifications to the listed analytical procedures are listed below: NONE

1.
2.
3.

5.3 Waste Disposal

Waste disposal practices in the laboratory are listed in CompQAP Section 8 , page 3 to 3 , revised 10/18/91 .

5.4 Calibration Procedures and Frequency

Laboratory calibration protocols are listed in CompQAP Section 9 , page 1 to 15 , revised 10/18/91 .

Deviations or modifications to the listed analytical procedures are listed below: NONE

Calibration Procedure	Modification
1.	
2.	
3.	

Project specific measurement and/or analytical equipment not mentioned in the above reference are as follows: NONE

1.
2.
3.

Calibration procedures for the above equipment are outlined on Table 5.1

5.5 Preventative Maintenance

Laboratory instrument peventative maintenance protocols are discussed in CompQAP Section 10 , page 1 to 7 , revised 10/18/91 .

The following modifications to or deviations from the referenced protocols are listed below: NONE

1.
2.
3.

5.6 Quality Control Checks, Routines to Assess Precision and Accuracy, and Calculation of Method Detection Limits

5.6.1 Laboratory Quality Control Measures

The types of Laboratory controlchecks outlined on Table 5.2 will be used when analyzing samples for this project.

5.6.2 Routine Procedures to Assess Precision and Accuracy

Routine procedures to assess precision and accuracy of laboratory parameters are found in CompQAP Section 11 , page 4 to 5 , revised 10/18/91 .

Deviations to the referenced procedures to assess precision and accuracy are as follows:
NONE

1.
2.
3.

5.6.3 Method Detection Limits

Method detection Limit determinations are discussed in the laboratory CompQAP Section 11 , page 5 to 7 , revised 10/18/91 .

Deviations to the calculations of method detection limits are as follows: NONE

1.
2.
3.

5.7 Data Reduction, Validation and Reporting

Laboratory activities relative to this section are found in CompQAP Section 12 , page 1 to 3 , revised 10/18/91 .

Deviations or revisions to the above reference are sa follows: NONE

1.
2.
3.

Table 5.1 **Laboratory Quality Control Checks**

Refer to Laboratory CompQAP# G860198 for frequency and description.

QC Check	Section #	Page #	Revision Date
1. Reagent Blank	11	2	10/18/91
2. Duplicate Samples	11	2-3	10/18/91
3. Matrix Spikes	11	2	10/18/91
4. QC Check Samples	11	2	10/18/91
5. QC Check Standards	11	2	10/18/91
6. Reagent Purity Cehcks	11	3	10/18/91
7. Internal Standards	11	3	10/18/91
8. Surrogate Standards	11	3	10/18/91
9.			

Deviations (or additions) to the types of laboratory QC checks or frequency are listed below:
NONE

1.
2.
3.

6.0 Quality Assurance Management

6.1 Corrective Action

6.1.1 Field Corrective Action

Protocols to initiate corrective actions by field personnel are listed in CompQAP# G860198 Section 13 , page 2 to 4 , revised 10/18/91 .

Revisions to these procedures are listed below : NONE

1.
2.
3.

6.1.2 Laboratory Corrective Action

Protocols to initiate corrective actions by laboratory personnel are listed in CompQAP# G860198 Section 13 , page 1 to 4 , revised 10/18/91 .

Revisions to these procedures are listed below : NONE

1.
2.
3.

ALL INVOLVED PARTIES WILL INITIATE ANY CORRECTIVE ACTION DEEMED NECESSARY BY DER .

6.2 Performance and System Audits

6.2.1 Field Activities

a. Routine preformance and system audits are discusse in CompQAP# G860198 Section 14 , page 1 to 1 , revised 10/18/91 .

b. Specific audits planned for this project are:

	Audit Type	Frequency/Date	Description
1.	System	Quarterly / 8/15/92	QA/QC Inspection
2.			
3.			

6.2.2 Laboratory Activities

a. Routine preformance and system audits are discusse in CompQAP# G860198 Section 14 , page 2 to 2 , revised 10/18/91 .

b. Specific audits planned for this project are:

	Audit Type	Frequency/Date	Description
1.	Performance	Quarterly / 7/15/92	QA/QC Blind
2.	System	Quarterly / 7/31/92	QA/QC Inspection
3.			

ALL INVOLVED PARTIES WILL CONSENT TO AUDITS BY DER IF DEEMED NECESSARY .

6.3 Quality Assurance Reports

QA Reports will be submitted to Robert L. Sullivan , and Lee A. Powell at a frequency of One final report, and one report every two years (if project extends over two years) .

7.0 Resumes

7.1 Field Activities

Refer ot CompQAP # G860198 , Section 16 , page 1 to 6 , revised 10/18/91 .

Additional, or new resumes are as follows: NONE

1.
2.
3.

7.2 Laboratory Activities

Refer ot CompQAP # G860198 , Section 16 , page 1 to 6 , revised 10/18/91 .

Additional, or new resumes are as follows: NONE

1.
2.
3.

BRILEY, WILD
AND ASSOCIATES

RBO
LL LAX.
GJD
SW

JAN 1993
RECEIVED
CENTRAL FLORIDA
DISTRICT

January 6, 1993

VC 92097-6CE

Mr. Richard B. Tedder, P.E.
Solid Waste Program Manager
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Re: Volusia County
Tomoka Farms Road Landfill
OGC Case No. 91-0845

Dear Mr. Tedder:

In your letter of July 17, 1992, you requested that the County submit monthly status reports regarding site activities once the CAP and QAPP have been approved. The CAP was approved by the Department of Environmental Regulation on December 4, 1992. This letter is the first monthly status report submitted in response to your request.

We have not yet begun field activities at the site. A culvert pipe was discovered near well B-5 which would divert water from the discharge swale to an area southwest of well B-5. This culvert pipe has been plugged at both ends.

? where is approval?

Based on the comments received from the DER and on the approved CAP and QAPP we are now putting together a cost proposal to the County to execute the work authorized by the DER.

If you need further information please let me know.

Very truly yours,

BRILEY, WILD & ASSOCIATES, INC.
CONSULTING ENGINEERS & PLANNERS

Lee A. Powell, P.E.
Assistant Director of Engineering

LAP/seg
cc: Mr. James Griffin
Dr. David N. Gomberg

Briley, Wild and Associates, Inc.
Consulting Engineers and Planners
1040 North U.S. Highway One
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Offices in Bradenton, Clearwater, Daytona Beach, Orlando & Ormond Beach, FL

Florida Department of Environmental Regulation

Central District • 3319 Maguire Boulevard, Suite 232 • Orlando, Florida 32803-3767

Lawton Chiles, Governor

Carol M. Browner, Secretary

December 4, 1992

CERTIFIED
P-810 426 745

Volusia County Public Works
123 West Indiana Avenue
DeLand, Florida 32720-4262

OCD-SW-92-0471

Attention: Thomas M. McClelland
Assistant County Manager for Public Works

Volusia County - SW
Tomoka Farms Road Landfill
Contamination Assessment Plan Approval
OGC Case No. 91-0845

Dear Mr. McClelland:

Revisions to the Contamination Assessment Plan for the subject landfill were received on November 30, 1992. They have been reviewed by the Department and are found to be acceptable. The Contamination Assessment Plan for the subject site is approved.

In accordance with the Stipulation executed on November 20, 1991, the Contamination Assessment Report for this site should be submitted within 45 days of completion of the tasks of the Contamination Assessment Plan. Also, the Quality Assurance Project Plan must be approved prior to conducting field and laboratory analytical work under the approved Contamination Assessment Plan.

If you have any questions, please feel free to contact Mr. Richard B. Tedder, P.E. at 407/894-7555.

Sincerely,

A. Alexander, P.E.
District Director

AA/rtw

cc: James Griffin, Volusia County
David N. Gomberg, Ph.D.
Lee A. Powell, P.E., Briley, Wild & Associates
William McKenty, P.G. - FDER - Waste Cleanup
Jamie Seaman, Assistant County Attorney

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Interoffice Memorandum

TO: *Richard Tedder, P.E.* *OCD-WCU-92-0388*

THROUGH: *G. Bret LeRoux, P.G.* GBL

FROM: *William McKenty, III, P.G.* WMM

DATE: **December 4, 1992**

Volusia County - WCU/SW
Tomoka Road Landfill
OGC Case No.: 91-0845
CONTAMINATION ASSESSMENT PLAN APPROVAL

I have reviewed the revisions to the Contamination Assessment Plan (CAP) received by the Department on November 30, 1992. The revisions are acceptable and the CAP is approved.

Volusia County and their consultants should be reminded that Turbididty is not required for the assessment investigation but that it remains a requirement of the solid waste permit related ground water monitoring plan and should be performed as scheduled on wells within the study area that are part of the ground water monitoring plan network.

Should you have any questions regarding this matter please feel free to contact me at Extension 316.

WWM/wwm

David N. Gomberg, Ph.D.
Water Resources Consultant

2247 S.E. 27th ST.
CAPE CORAL, FL 33904
(813) 574-6196

WCU Copy

September 29, 1992
revised November 19, 1992

Memo to: Lee A. Powell, P.E.
Re: Tomoka Landfill Contamination Assessment Plan;
DER letter of 7/17/92

This memo addresses comments made by DER on the Tomoka Landfill Contamination Assessment Plan (CAP). I use the same numbering as in the DER letter of 7/17/92, but do not repeat all of their comments, some of which are quite lengthy. Our meeting with DER on 7/28/92 clarified or modified several of the comments, and I have used my notes from that meeting in preparing these remarks. This revision to my original memo incorporates changes and additions suggested by William McKenty of DER, who received the original version and discussed it with me on 10/20/92.

1. Well B5 - hydraulic connection, abandonment. Well B5 is described briefly in section 3.10 (p. 3-1) of the CAP and also in section 3.60 (p. 3-9). Based on incomplete records concerning the construction of this well, we suggested that, when it is pumped, water furnished to the well may come from layer 1-2 or from layer 4, or from both. Circumstantial evidence for this suggestion is that there is probably no grout in the annular space, and that the well screen extends from very near the bottom of layer 2 to near the top of layer 4. For illustration, the screened interval can be drawn in on the left side of Figure 3.1 (p. 3-2), which is done on exhibit A accompanying this memo. This shows the reported screened interval in relation to the sedimentary profile at the site.

   Another indication that B5 may intersect more than one permeable stratum is given in a 4/30/91 letter from Robert Sullivan of Envirolab. (The letter is in App. A of the CAP, at the beginning of the water quality data.) The letter reports the results of pumping B5 at low and high rates, with major differences in water chemistry at the two rates. This suggests that the water is derived from more than one source, with the relative contribution from each dependent on pumping stress.

   Regarding abandonment of well B5, this will be accomplished using

DNG 11/19/92

procedures and materials acceptable to the St. Johns River Water Management District. OK

2. Figure showing relationship between wells and geologic cross-section. We agreed with DER at our 7/28/92 meeting that this would be routinely accomplished for any future wells or future submittals, but that no CAP revisions were required. Figure 3.1 of the CAP shows several existing wells in relation to the sedimentary profile. OK

3. Details regarding mobile laboratory and hydraulic probing equipment. The following annotated list coincides with the items noted in item 3 of the DER letter.

   a) decontamination procedures - The one-inch hardened steel rods used in hydraulic probing will be pressure-cleaned free of visible sediment following each sampling event. For sites where VOC's are below detection limits, there will be no formal decontamination. For sites where VOC's are detected, the rods will be washed inside and out with a trisodium phosphate (TSP) solution, followed by a potable water rinse. Note that virgin Tygon tubing will be used for the actual sample collection, and that this tubing will be discarded after each sampling event. OK

   b) quality assurance/quality control - These procedures are lengthy and are described in Exhibit B of this memo. OK

   c) laboratory confirmation of field results - At least 25% of samples in which VOC's are below detection limits (as determined by the field unit) will be confirmed by laboratory analyses. At least 10% of samples in which VOC's are detected will be confirmed with lab analyses. OK

   d) sample blanks - One sample blank per day will be run on the down-hole tools and analytical train. Duplicate analyses will be done on no less than 10% of the samples collected. OK

   e) standards - Commercially prepared standards that meet EPA specifications will be used to calibrate the gas chromatograph (GC). OK

Standards will be employed for each of the specific VOC's identified at the site, and for common VOC's that have not been detected (e.g. trichloroethene). The upper calibration limit for each VOC will exceed the maximum concentration previously determined at the site. OK

f) detection limits - For each VOC, the detection limit will be equal to or less than 1 part per billion (ppb). OK

g) sampling method - One-inch, hardened steel rods are hydraulically advanced to the desired (sampling) depth. These are threaded and flush joint, with a pointed, sacrificial tip. The rods are pulled back 4"-6", separating the tip and exposing the formation interval. Tygon tubing is sent down the inside of the rods and attached with a reverse-threaded fitting to the bottom. Formation water is withdrawn and fed to a purge-and-trap unit, and then injected into the GC using a gas-tight syringe. Samples destined for the laboratory are fed directly from the tubing into a Teflon-lined VOC vial. OK

For layer 6 (beginning at about 47 feet depth), the procedure will be as described, with the following modification. Hollow-stem auger with a wooden plug in the bottom will be advanced to approximately 44 feet (into confining layer 5). The hydraulic probe will be inserted in the auger, used to push away or break the plug, and then advanced to the sampling depth. OK

h) preservation - There will be no preservation of samples analyzed in the field. Analyses will be done within minutes of sample collection. Duplicate samples for laboratory analysis will be acidified with HCl (to EPA standards), then placed on ice. OK

i) holding times - For samples analyzed in the field, there will be effectively no holding time. For samples delivered to the laboratory, holding times will be no longer than required to meet EPA standards. Samples will be stored and transported under appropriate chain-of-custody procedures. OK

j) analytical methods - The concentration of VOC's analyzed in the field will be determined by gas chromatography, using EPA 601/602 procedures. OK

k) materials - Samples will be collected through virgin Tygon tubing. ok

l) hole abandonment - Holes used to sample layers 1-2 or 4 will be abandoned by pumping a bentonite slurry through the probe rods, as the rods are withdrawn. The slurry will consist of Hole Plug, Volclay or similar abandonment materials, mixed to manufacturer's specifications. Abandonment of holes that penetrate layer 6 (see item g above) will be accomplished by pumping bentonite through the probe rods until the rods have been raised from the sampling depth to the inside of the hollow-stem auger. The rods will then be removed and the auger hole filled with slurry, also emplaced by pumping. ok

m) waste handling - There are three types of waste to consider: sample water and materials used in sampling and analysis, wash water used to clean equipment, and auger cuttings generated during sampling of layer 6. Sample water and materials will consist of a few liters of liquid and a few hundred feet of Tygon tubing. These will be delivered to the County-operated hazardous waste collection center at the landfill. Wash water will consist of a few hundred gallons of TSP solution and water from pressure or steam cleaning. This water will be generated in smaller increments over the course of the probing work, and may temporarily contain low concentrations of the eight VOC's found at the site. These will be volatilized quickly during the washing process. To facilitate this volatilization, a wash site will be designated on a part of the closed waste cell, within the area of presumed contamination, at least 100 feet north of the fence line. Auger cuttings are expected to consist of less than a 55-gallon drum of sediment. These will be temporarily stored on plastic sheeting at the auger site, then removed and spread thinly in the same area used for disposal of wash water. mod ok ok

n) field parameters - Samples collected for GC analysis will also be analyzed for dissolved oxygen, conductivity, pH and temperature.

o) cross-contamination - Collection and analytical procedures are designed to minimize the potential for cross-contamination between samples. The GC unit is purged and heated between analyses, and the collection tubing is not reused. Periodic blanks and duplicate analyses are run to insure acceptable quality control.

Cross-contamination between sedimentary zones is not a realistic threat. The down-hole tools will be cleaned after every site where VOC's are detected. Individual holes will be used for each sample (i.e. at the same site, separate holes will be used to obtain samples from layer 1-2 and from layer 4). Layer 1-2 is uppermost, and thus cannot be cross-contaminated by deeper layers. Layer 6 will be sampled through hollow-stem auger, and is in that way isolated. Layer 4, where the highest concentrations of VOC's have been found, will be sampled after the probe has penetrated layer 1-2. However, the probe is flush-joint, is not rotated as it is advanced, and has a tip that makes a smooth connection with the rod. No significant material will be carried downward as the probe advances. The tight seal between the formation and the rod will preclude water from layer 1-2 being transported downward to layer 4. This would not occur anyway under static conditions, because there is no downward gradient. Pumping from layer 4 will be brief and at low rates (a few ml/second), also minimizing the opportunity for cross-contamination.

4. Sampling grid for mobile laboratory. The sampling grid shown in Figure 3.3 of the CAP (p. 3-6) is conceptual. For example, if contaminants were to be detected at the last sampling point shown on a grid line, that grid line would be extended and more sampling points added. Similarly, if no contaminants were found in a particular layer along one of the grid lines, that layer would not be sampled along grid lines farther from the closed waste cell. Because of its conceptual nature and because of our agreement with DER that the number and length of grid lines will be determined by analytical results, we are not revising Figure 3.3.

As discussed in section 3.30 of the CAP, the hydraulic probe will be used for screening of layers 1-2 and layer 4. It will also be used to sample layer 6 (p. 3-7), if it can be successful at that depth. If it cannot, at least two double-cased wells will be installed into layer 6, as described below in response to item 13.

Regarding criteria for cessation of sampling along a grid line, we will continue with the hydraulic probing and sampling until, at two adjacent sites, concentrations of VOC's are below detection limits. ok This criterion will be applied independently to layer 1-2 and layer 4; that is, if layer 1-2 meets the criterion for cessation but layer 4 does not, sampling will be discontinued in layer 1-2 and continued in layer 4.

5. Status reports. Monthly status reports will be submitted to DER once the CAP and QAPP have been approved. ok

6. Vertical extent of fill. Information regarding the depth of fill is based on the recollection of landfill personnel, and there are some differences in what is recalled. The closed waste area was excavated using a dragline, commonly to a depth of about 10 feet below the grade existing at that time (1969-1981). The operators were not restricted to a specific depth, however, and may have excavated 20 feet or more in some areas. ok

7. Analyses of well and surface water. The CAP proposes sampling surface water from the nearby drainage ditch and analyzing for priority pollutants (p. 3-7). For the many comprehensive analyses that have been done on water in the vicinity of B5, however, only VOC's have been identified as contaminants. Consequently, we and DER agreed at our meeting that analytical parameters should be changed from all priority pollutants to VOC's on the EPA list of priority pollutants. The reason for analyzing water from the drainage ditch is to determine if VOC's are present in detectable concentrations. This is important because water in the ditch is periodically pumped eastward and discharged to offsite wetlands. We want to be confident that contaminants are not leaving the site. ok

Regarding analytical parameters for groundwater samples, we will sample each of the wells installed as part of the Contamination Assessment for both Primary and Secondary drinking water parameters. If possible, this will be done during quarterly sampling of other monitor wells at the landfill.

8. Field parameters. Field parameters to be determined at the time of sampling wells and surface waters are dissolved oxygen, conductivity, pH, and temperature. We agreed at our meeting with DER that, since metals were not constituents of concern in this particular assessment, turbidity is not a parameter that needs to be determined in the field. If not done in the field, however, turbidity will be determined on all well water samples analyzed in the laboratory.

9. Exploratory borings. Page 3-8 of the CAP describes the anticipated borings, which will number at least one, and possibly several. These will be Standard Penetration Test (SPT) borings (ASTM #D-1586), modified in that samples will be collected from 2.0 rather than 1.5 feet out of each 5-foot interval. Borings will be taken inside hollow-stem auger, to eliminate the need for drilling fluids and minimize the volume of drill cuttings. Samples of fine-grained sediments will be collected via the Shelby tube method (D-1587) since clayey intervals have been identified during previous exploration. Selected SPT and Shelby tube samples will be analyzed for vertical permeability (D-2434), grain-size distribution (D-421, D-422 and D-1140) and moisutre (D2216). Down-hole equipment will be steam-cleaned between borings. Test boring holes will be abandoned using a bentonite slurry as described in item 31 (above). Auger cuttings will be disposed of as described in item 3m (above).

10. Slug tests. Slug tests will be performed on existing wells B5-20, 23 and 24, and on new wells constructed in the vicinity of B5. Tests will not be conducted in wells B5 or B5-B (because these wells are not screened against a single permeable interval), B5-21 (because this well

is screened into refuse) or B5-1 through B5-18 (because these are unsealed, temporary wells unlikely to yield reliable data). The method will consist of both a slug-out and a slug-in test. An overview of the method is as follows. A pressure transducer coupled to a data logger will be installed in the test well. Several gallons of water will be withdrawn from the well into a clean bucket, using a peristaltic pump. Recovery of the water level in the well will be measured and recorded. Water from the bucket will be poured into the well, and again the recovery - in this case of a declining water level - will be monitored. No waste materials will be generated. The DER will be supplied with a diskette of the data, as requested. OK

11. Water level recorders. Stevens Type F water level recorders will be used. Water level data will be recorded graphically and, as needed, transposed manually. The sensitivity of these recorders is approximately .01 feet. OK

12. Rainfall data. The raingage near the maintenance building will be maintained throughout the assessment. Measurable rain data will be collected daily and kept in a logbook. OK

13. Well construction. As discussed in our meeting with DER, the construction and development of monitor wells is simplified by the fact that elevated concentrations of metals have not been detected at the assessment site. As a result, we agreed that sophisticated well and filter pack design can be omitted, because turbidity control and metals analyses are not critical elements of the assessment.

    Monitor wells completed into layers 1-2 and 4 will be installed through hollow-stem auger with an inside diameter of approximately $6\frac{1}{4}$ inches. Casing and screen will be 2-inch diameter, Sch. 40, flush-joint, threaded PVC. The screen will be .01 slot size and 5 feet long. The filter pack will be DOT 20/30 silica sand, emplaced by pouring to one foot above the top of the screen. Two feet of fine sand will then be added atop the filter pack. (The reason that the filter pack and fine sand seal are slightly shorter than normal is that the aquitard separating layers 1-2 and 4 is only about 5 feet thick. If the screen in layer 4 is near the top of that layer, a long filter pack/fine sand seal

has the potential to provide a more-permeable bridge across the aquitard.) The annulus above the fine sand seal will then be filled with cement grout, emplaced by pouring as the augers are withdrawn. The grout will consist of 6 gallons of water per bag of cement plus approximately 4% bentonite. If field conditions (such as excessive caving or "washing-in") indicate that hand-pouring of annular materials is inappropriate, filter packs, seals, or grout will, as needed, be emplaced using a tremie.

Wells screened into layer 6 will be double-cased. The outer casing will be 6-inch diameter, Sch. 40 PVC, with glueless joints, installed to approximately the top of layer 6 (47 feet below ground). This casing will be installed by the mud-rotary drilling method (bentonite drilling mud) in a 10-inch hole. Three centralizers will be used, and the casing will be pressure-grouted with grout as described above. After the grout has set, it will be drilled out from the inside of the casing with biodegradable drilling mud (e.g. Revert), which will also be used to advance the open hole to the selected screen interval. This will be a 6-inch diameter hole, into which 2-inch screen and riser will be emplaced, as previously described. Filter pack, fine sand seals and grout will follow, also as described above. In this case, the seal will be at least 3 feet long.

Well development will be by the "surge and purge" technique, meaning that a centrifugal pump and drop pipe will be used to alternately disturb and evacuate water from inside the casing. This will be continued until the formation water is sand-free and relatively clear. Wells will be finished with the installation of a 2'x2'x4" cement pad and a locking protective steel cover.

Auger cuttings, drill cuttings, and drilling mud will be temporarily stored at the well sites, on plastic sheeting, or in a plastic-lined shallow pit. These will be removed by heavy equipment at the landfill, and disposed of as described in item 3m (above). Formation water generated during well development activities will be pumped to a tank truck, tested by EPA method 624 for VOC's, diluted or aerated as necessary, and, if required, transported for disposal to a municipal wastewater treatment plant.

14. Disposition of wastes. Wastes generated as a consequence of hydraulic probing will be dealt with in the manner described in item 3m (above). Item 9 above addresses wastes generated during test boring. No waste water is expected to be produced during slug tests (see item 10 above). Waste water and auger cuttings resulting from well construction and development are discussed in item 13 (above).

15. Water quality analyses. Parameters to be determined on water samples collected by hydraulic probing are described in item 3 (above). These include VOC's analyzed according to EPA 601/602 procedures, plus field determinations of dissolved oxygen, conductivity, pH and temperature. Analysis of surface water from the drainage ditch is addressed in item 7 (above). As discussed and agreed to at our meeting with DER, analytical parameters will include VOC's (determined by EPA 624 methodology), but not other classes of priority pollutants. Surface water will also be analyzed for dissolved oxygen, temperature, conductivity, Primary, and Secondary drinking water parameters. Well water will be analyzed for the same constituents and parameters as surface water. The rationale for this analytical suite is that VOC's are the contaminants identified at the site, so these must be included. Other synthetic organic compounds have not been detected, so there is no rationale for including them. Primary and Secondary drinking water parameters include most commonly employed indicator parameters, and are useful in the evaluation of site hydrology. In addition, their determination provides evidence regarding compliance with zone-of-discharge standards.

OK but turbidity must be run as compliance with associated w/ permit required sampling

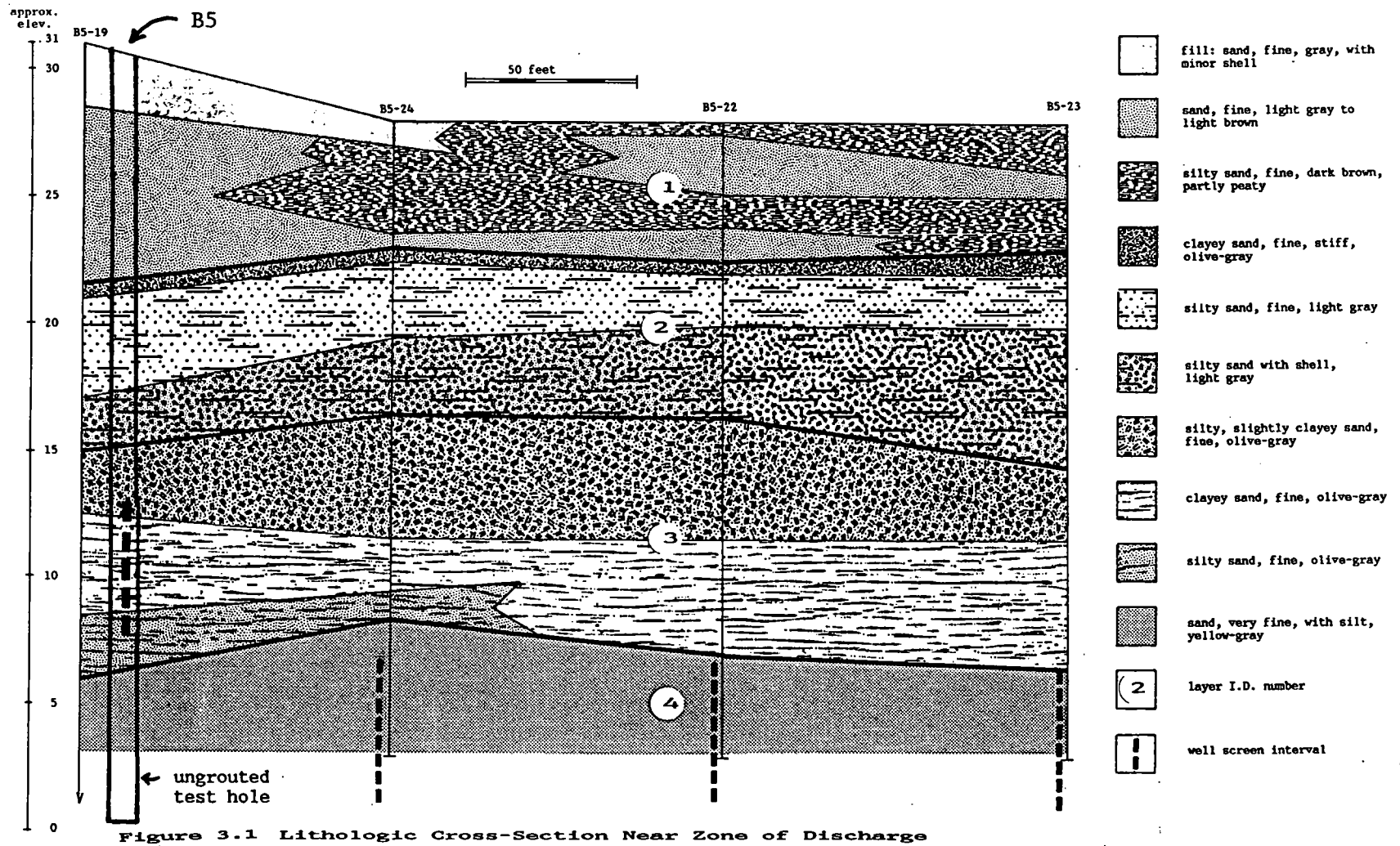

Figure 3.1 Lithologic Cross-Section Near Zone of Discharge

Exhibit A

Exhibit B: QA/QC for mobile lab and hydraulic probe

METHODS FOR THE COLLECTION AND DETERMINATION OF VOLATILE HYDROCARBONS

1.0 SAMPLE COLLECTION

1.1 Soil vapor samples are collected from the vadose zone through steel rods driven to the desired sampling depth. Each sample is collected by drawing at least three volumes of soil vapor through 1/4 inch inside diameter polyethylene tubing inserted through the center of the rods. The pressure inside the tubing is allowed to drop to atmospheric before withdrawing a sample into a gastight glass syringe and injecting a representative sample into a gas chromatograph.

1.2 Groundwater samples are collected by driving steel rods to the desired sampling depth and allowing surficial groundwater to flow into the rods. A stainless steel bottom loading bailer or 1/4 inch polyethylene tubing is lowered through the rods to collect groundwater for chemical analysis. Samples are immediately transferred to a teflon capped container for laboratory analysis or loaded into the purge-and-trap sample concentrator for chemical analysis.

1.3 A hollow sampling tube, with a piston rod held in place by a pin, is driven down to the desired depth. The pin is then removed, allowing the piston rod to yield to the soil, and is pushed down an additional foot. The sample is then retrieved, extruded into a clean teflon-capped sampling jar, and prepared for analysis and/or sent into a laboratory for analysis.

2.0 SCOPE AND APPLICATION

2.1 This method may be used to determine the concentration of volatile organic compounds in air, water, and soil. Compounds of interest include: benzene, toluene, ethylbenzene, meta-, para-, and ortho-xylene, and other petroleum related hydrocarbons; as well as trichloroethylene, tetrachloroethylene, etc. The concentrations of other volatile organic hydrocarbons may be determined as long as the appropriate performance requirements of this method are met.

2.2 This method relies on the purge and trap sample concentration technique for water and soil matrices. Air or vapor samples may be quantified by direct injection of the sample onto the gas chromatograph (GC) column.

2.3 This method is restricted to use by or under the direct supervision of analysts experienced in the operation of a gas chromatograph, a purge-and-trap sample concentrator, and in the interpretation of chromatograms. Each analyst must demonstrate the ability to generate acceptable results (Section 5.X).

3.0 SUMMARY OF METHOD

3.1 Water: An inert gas (helium) is purged through a 5 mL water sample contained in a sealed glass chamber at ambient temperature. Volatile compounds are efficiently transferred from the aqueous phase into the vapor phase. The vapor is swept through a sorbent trap by the purge gas. When purging is complete, the trap is heated and backflushed with helium to desorb the compounds of interest. They are then carried by the desorb gas directly onto the GC column for chromatographic separation.

Soil: A soil sample is weighed into a purge and trap vial and approximately 3 to 4 mL of distilled water is added to wet and break up the soil matrix. The sample is then purged with the same procedure as a water sample.

Air/Vapor: Vapor from a soil probe or soil venting system is sampled directly with a gastight syringe. The sample is then injected directly onto the GC column through an injection port.

4.0 INTERFERENCES

4.1 Impurities in the purge gas and organic compounds outgassing from the plumbing ahead of the trap can cause contamination problems with water and soil samples.

4.2 Contamination by carry-over whenever high level and low level samples are sequentially analyzed. This is true for water, soil, and vapor samples. For water and soil, it is essential to run a reagent water blank after highly contaminated samples to check for cross contamination in the purging apparatus. For vapor samples, it may be necessary to run a reagent vapor or ambient air sample to insure that no carry-over contamination is present in the syringe.

4.3 Samples collected at or near petroleum distribution sites can contain higher boiling components such as diesel fuel and fuel oil. Passage of these mixtures through the purge and trap system may require extensive cleaning before the system is contaminant free. Cleaning may be accomplished by running reagent blanks until the system is contaminant free.

5.0 SAFETY

5.1 The toxicity or carcinogenicity of each reagent used in this method has not been precisely defined; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. The laboratory operator is responsible for maintaining a current awareness file of OSHA regulations regarding the safe handling of the chemicals used in this method.

6.0 APPARATUS AND MATERIALS

6.1 Gas Chromatograph: Shimadzu GC-14A with two injection ports - one for direct injection and the other linked to the purge and trap sample concentrator. A 4-port valve to allow switching between either injection port to either of two GC columns.

6.2 Purge and Trap Sample Concentrator: OI-Analytical Model 4460A equipped with an external heater for the analysis of soil.

6.3 Trap: A suitable trap for the desired compounds to be analyzed. Tenax (diphenylene oxide) polymer should be used for the determination of petroleum hydrocarbons and many other volatile organics. In any case, a suitable packing material to sorb the compounds of interest must be chosen.

6.4 GC Column: A 30 meter by 0.53 mm (Megabore) fused silica capillary column with 3 μm of polydimethylsiloxane stationary phase (J&W DB-1). This column works well for petroleum hydrocarbons and chlorinated organics. The

column chosen must give sufficient resolution between the compounds of interest.

6.5 Detector: Flame-ionization (FID) and photo-ionization (PID) detectors work well for petroleum hydrocarbons and other volatile organic hydrocarbons. An electron capture detector (ECD) is preferred for halogenated hydrocarbons. For the analysis of both petroleum hydrocarbons and chlorinated hydrocarbons, either a FID or PID may be used in series with an ECD.

6.6 Syringes: 5 mL glass with luerlock tip for water samples. 1 mL gastight syringes with valve (Precision Sampling Model A-2) for vapor samples. Various gastight and liquid syringes for diluting highly contaminated samples and spiking standards.

6.7 Balance: Analytical balance capable of weighing to the nearest 0.1 g

6.8 Spatulas: Stainless steel micro-spatula.

7.0 STANDARDS

7.1 Gas-Phase Standard: Certified gas standards may be obtained from Scott Specialty Gases. For petroleum hydrocarbons, a benzene, toluene, ethylbenzene, and xylene (BTEX) standard of 1.0 to 10 ppm (volume/volume) is suitable. Gas-phase standards of other hydrocarbons may be custom ordered.

7.2 Liquid Standards: BTEX in methanol - 25 ng/µL to 1 µg/µL. Gasoline in methanol - 0.1 to 10 µg/µL. For analysis of other compounds not listed above, custom standards may be purchased.

7.3 A maximum volume of 2 µL may be injected onto the GC column when a direct injection of a standard in methanol or some other solvent is made.

8.0 PROCEDURE

8.1 Volatile compounds are introduced into the GC by either direct injection (in the case of soil vapor) or purge-and-trap. The purge-and-trap method may be used directly on water and soil samples that are moderately contaminated. For soil samples that are highly contaminated, a methanolic extraction (dilution) may be necessary prior to analysis. In the case of highly contaminated vapor or water samples, direct injection of smaller volumes is utilized.

8.2 Gas Chromatography Conditions: Set in accordance to one or more of the following EPA methods 8000, 8010, 8020, 8100, 601, and 602 which correspond to the compounds being analyzed for.

8.3 Calibration: For each method, an initial and periodic check must be made to verify accuracy. To ensure the instrument response is linear, at least three calibration standards must be run at different concentrations: one at

or near the detection limit; one at the maximum expected concentration range; and one midway between the two.

Tabulate peak area versus mass injected. The results can be used to prepare a calibration curve for the detector. Alternatively, the ratio of the response factor (RF) can be calculated for each analyte at each standard

$$\text{Response Factor} = \frac{\text{Mass Analyte}}{\text{Total area of peak}}$$

concentration. If the percent relative standard deviation is less than 20% over the working concentration range, linearity can be assumed (between the upper and lower calibration limits) and an average response factor can be used in place of a calibration curve. Where gasoline is the analyte, the response factor can be calculated by the ratio of mass gasoline to the total area under all peaks.

The response factor for each analytical method used must be verified each working day by injection of one or more calibration standards. A log should be kept to compare the response of the instrument over time. A difference between the response factors generated during successive days greater than 15% indicates a significant change in the response of the instrument and should be investigated by recalibration and a check on the standard used.

8.4 Sample Analysis: **Aqueous samples** - use a clean 5 mL syringe to withdraw approximately 1 mL sample. Pull the plunger back in the syringe and rinse the walls with the sample. Expel the rinseate and withdraw a full 5 mL sample into the syringe. Expel the sample into the purge vial and connect the vial to the purge and trap unit.

The process of taking an aliquot from a purge and trap vial creates headspace in the vial and alters the validity of the sample for future analysis. The analyst can circumvent this problem by initially filling an additional syringe. The use of a larger syringe (20 mL) allows the analyst to make 4 analyses of a sample from a single vial. If a second analysis is needed from a syringe, it must be analyzed within 24 hours. Care must be taken to prevent air from leaking into the syringe. Dilutions of highly contaminated samples can be accomplished by adding a fraction of the required volume (5mL) to the purge flask. The remainder of the volume should be made up with reagent water. The amount of sample dilution needed for highly contaminated samples is variable. The analyst must dilute the sample sufficiently to bring its concentration within the linear range of the detector. After the purge cycle of the sample is complete, the purge vessel may be loaded with the next sample.

Soil samples: Use the same purge-and-trap time and temperature parameters as for aqueous samples. Weigh out approximately 2 to 5 grams of soil into a preweighed purge vessel with a clean microspatula. Care must be taken to select a representative sample. Weigh the sample and add sufficient reagent water to bring the total liquid and solid volume to approximately 4 to 5 mL. Samples that are not readily wetted such as clays must be broken up with a microspatula before analysis. This may be accomplished by gently grinding the sample against the vessel side walls until it is suspended or broken up in the water. Wipe the outside of the vessel and attach it to the purge chamber. Care must be taken to minimize the time between weighing of the sample and attachment to the purging chamber to prevent loss of volatiles from the sample. It may be necessary to cover the top of the vessel with parafilm during the above process. A microspatula can easily be inserted through the parafilm coating.

Highly contaminated soil samples may be analyzed by a methanolic extraction. Weigh approximately 5 grams of sample into a preweighed 40 mL teflon capped purge-and-trap vial. Add 5 mL of purge-and-trap grade methanol into the vial and cap it tightly. Shake and agitate the sample until it is completely broken up (it may be necessary to mix the sample with a spatula) and allow the suspended particles to settle. Add an aliquot of the extract with a clean microliter syringe into a purge vessel filled with 5 mL reagent water. The volume of aliquot added will depend on the concentration of the contaminated soil. A good volume to start is approximately 50 µL. The following table can be used to determine the amount of methanol extract to add to the purge vessel.

Approximate Concentration Range	Volume of Methanol Extract
0.5 - 10 mg/kg	50 µL
1.0 - 20 mg/kg	25 µL
5.0 - 100 mg/kg	5 µL

Calculate appropriate dilution factor for concentrations exceeding this table

9.0 CALCULATIONS

9.1 External standard calibration: The concentration of each analyte in the sample may be determined from the peak response for individual analytes or a summation of peak response for mixtures, such as gasoline. The calibration curve or calibration factor determined that day is used and the concentration of a specific analyte is calculated

as follows:

Aqueous Samples:

Concentration ($\mu g/L$) = $(Area_X)$ (RF) (F) / $(Volume_S)$

where: $Area_X$ = Peak area of the analyte in the sample
RF = Response factor for the analyte of interest (mass (μg)/area)
$Volume_S$ = Volume of the sample in liters
F = Dilution Factor

Soil Samples:

The equation above is used except the mass of the sample is inserted in the place of the sample volume.

10.0 QUALITY CONTROL

10.1 Each mobile laboratory that uses this method is required to operate a formal quality control program. The minimum requirements of this program consist of an initial demonstration of laboratory capability and an ongoing analysis of spiked samples to evaluate and document data quality. Records must be kept to document the quality of data generated. Ongoing data quality checks are compared with established performance criteria to determine if the results of analyses meet the performance characteristics of the method. When results of sample spikes indicate atypical method performance, a quality control check standard must be analyzed to confirm that the measurements were performed in an in-control mode of operation.

10.2 Before processing any samples, the analyst should demonstrate, through the analysis of a reagent water blank or syringe blank, that interferences from the analytical system, glassware, and reagents are under control. Each time a set of samples is analyzed or there is a change in reagents, a reagent water blank should be processed as a safeguard against chronic laboratory contamination. The blank samples should be carried through all stages of sample preparation and measurement.

10.3 Approximately 10% blank samples, spike samples and duplicate analyses must be analyzed (the frequency of spikes may vary).

10.4 The experience of the analyst performing gas chromatography is invaluable to the success of the methods. Each day that analysis is performed, the daily calibration samples should be evaluated to determine if the chromatographic system is operating properly. Questions that should be asked are: Do the peaks look normal? Is the response obtained comparable to that of the previous calibrations? Careful examination of the

standard chromatogram can indicate whether the column is still good, the injection port septum is leaking, the gastight syringes are actually gastight, etc. If any changes are made to the system (e.g. column changed, detector/s cleaned, trap changed), recalibration of the system must take place.

10.5 Check surrogate standard recoveries in samples, blanks, and spikes. Determine if recoveries are within acceptable limits.

10.6 Along with the mobile laboratory analysis, samples are sent to other laboratories periodically for comparison.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To. _____ Location _____
To. _____ Location _____
To. _____ Location: _____
From: _____ Date. _____

Interoffice Memorandum

TO: Bill McKenty, PG

FROM: Richard B. Tedder, P.E.

DATE: 11-30-92

SUBJECT: County Volusia Permit No. NA

Facility Tomoka Farms Road LF

Attachment Response to 7-17-92 RAI on CAP
Consent Order OGC 91-0845

The attached is being sent to you for:

_____ Information only

✓ Review and comments

If review and comments are needed, please respond:

_____ By _____

✓ (Solid Waste deadline date is _____)

_____ As soon as possible for your schedule.

Comments: _____

BRILEY, WILD AND ASSOCIATES

November 24, 1992

VC 92097-6CE

Richard B. Tedder, P.E.
Program Manager For Solid Waste
FDER
3319 Maguire Blvd. Suite 232
Orlando, FL 32803-3767

Re: Volusia County
Tomoka Landfill
Contamination Assessment Plan
OCG No. 91-0845

Dear Mr. Tedder:

Enclosed are three copies of our response to your comment letter dated July 17, 1992 on the subject Contamination Assessment Plan.

We appreciate Bill McKenty reviewing this response with us. If you need anything further please let me know.

Very truly yours,

BRILEY, WILD & ASSOCIATES, INC.
CONSULTING ENGINEERS & PLANNERS

Lee A. Powell, P.E.
Assistant Director of Engineering

LAP/seg
Enclosures

cc: Dr. David N. Gomberg
Mr. James Griffin
Ms. Susan Gaze

Briley, Wild and Associates, Inc.
Consulting Engineers and Planners
1040 North U.S. Highway One
P.O. Box 607
Ormond Beach, FL 32175
904/672-5660 • FAX 904/673-8264
Offices in Bradenton, Clearwater,
Daytona Beach, Orlando & Ormond Beach, FL

SW Copy

David N. Gomberg, Ph.D.
Water Resources Consultant

2247 S.E. 27th ST.
CAPE CORAL, FL 33904
(813) 574-6196

September 29, 1992
revised November 19, 1992

Memo to: Lee A. Powell, P.E.
Re: Tomoka Landfill Contamination Assessment Plan;
DER letter of 7/17/92

This memo addresses comments made by DER on the Tomoka Landfill Contamination Assessment Plan (CAP). I use the same numbering as in the DER letter of 7/17/92, but do not repeat all of their comments, some of which are quite lengthy. Our meeting with DER on 7/28/92 clarified or modified several of the comments, and I have used my notes from that meeting in preparing these remarks. This revision to my original memo incorporates changes and additions suggested by William McKenty of DER, who received the original version and discussed it with me on 10/20/92.

1. Well B5 - hydraulic connection, abandonment. Well B5 is described briefly in section 3.10 (p. 3-1) of the CAP and also in section 3.60 (p. 3-9). Based on incomplete records concerning the construction of this well, we suggested that, when it is pumped, water furnished to the well may come from layer 1-2 or from layer 4, or from both. Circumstantial evidence for this suggestion is that there is probably no grout in the annular space, and that the well screen extends from very near the bottom of layer 2 to near the top of layer 4.
For illustration, the screened interval can be drawn in on the left side of Figure 3.1 (p. 3-2), which is done on exhibit A accompanying this memo. This shows the reported screened interval in relation to the sedimentary profile at the site.

Another indication that B5 may intersect more than one permeable stratum is given in a 4/30/91 letter from Robert Sullivan of Envirolab. (The letter is in App. A of the CAP, at the beginning of the water quality data.) The letter reports the results of pumping B5 at low and high rates, with major differences in water chemistry at the two rates. This suggests that the water is derived from more than one source, with the relative contribution from each dependent on pumping stress.

Regarding abandonment of well B5, this will be accomplished using

DNG 11/19/92

procedures and materials acceptable to the St. Johns River Water Management District.

2. Figure showing relationship between wells and geologic cross-section. We agreed with DER at our 7/28/92 meeting that this would be routinely accomplished for any future wells or future submittals, but that no CAP revisions were required. Figure 3.1 of the CAP shows several existing wells in relation to the sedimentary profile.

3. Details regarding mobile laboratory and hydraulic probing equipment. The following annotated list coincides with the items noted in item 3 of the DER letter.

   a) decontamination procedures - The one-inch hardened steel rods used in hydraulic probing will be pressure-cleaned free of visible sediment following each sampling event. For sites where VOC's are below detection limits, there will be no formal decontamination. For sites where VOC's are detected, the rods will be washed inside and out with a trisodium phosphate (TSP) solution, followed by a potable water rinse. Note that virgin Tygon tubing will be used for the actual sample collection, and that this tubing will be discarded after each sampling event.

   b) quality assurance/quality control - These procedures are lengthy and are described in Exhibit B of this memo.

   c) laboratory confirmation of field results - At least 25% of samples in which VOC's are below detection limits (as determined by the field unit) will be confirmed by laboratory analyses. At least 10% of samples in which VOC's are detected will be confirmed with lab analyses.

   d) sample blanks - One sample blank per day will be run on the down-hole tools and analytical train. Duplicate analyses will be done on no less than 10% of the samples collected.

   e) standards - Commercially prepared standards that meet EPA specifications will be used to calibrate the gas chromatograph (GC).

Standards will be employed for each of the specific VOC's identified at the site, and for common VOC's that have not been detected (e.g. trichloroethene). The upper calibration limit for each VOC will exceed the maximum concentration previously determined at the site.

f) detection limits - For each VOC, the detection limit will be equal to or less than 1 part per billion (ppb).

g) sampling method - One-inch, hardened steel rods are hydraulically advanced to the desired (sampling) depth. These are threaded and flush joint, with a pointed, sacrificial tip. The rods are pulled back 4"-6", separating the tip and exposing the formation interval. Tygon tubing is sent down the inside of the rods and attached with a reverse-threaded fitting to the bottom. Formation water is withdrawn and fed to a purge-and-trap unit, and then injected into the GC using a gas-tight syringe. Samples destined for the laboratory are fed directly from the tubing into a Teflon-lined VOC vial.

For layer 6 (beginning at about 47 feet depth), the procedure will be as described, with the following modification. Hollow-stem auger with a wooden plug in the bottom will be advanced to approximately 44 feet (into confining layer 5). The hydraulic probe will be inserted in the auger, used to push away or break the plug, and then advanced to the sampling depth.

h) preservation - There will be no preservation of samples analyzed in the field. Analyses will be done within minutes of sample collection. Duplicate samples for laboratory analysis will be acidified with HCl (to EPA standards), then placed on ice.

i) holding times - For samples analyzed in the field, there will be effectively no holding time. For samples delivered to the laboratory, holding times will be no longer than required to meet EPA standards. Samples will be stored and transported under appropriate chain-of-custody procedures.

j) analytical methods - The concentration of VOC's analyzed in the field will be determined by gas chromatography, using EPA 601/602 procedures.

k) materials - Samples will be collected through virgin Tygon tubing.

l) hole abandonment - Holes used to sample layers 1-2 or 4 will be abandoned by pumping a bentonite slurry through the probe rods, as the rods are withdrawn. The slurry will consist of Hole Plug, Volclay or similar abandonment materials, mixed to manufacturer's specifications. Abandonment of holes that penetrate layer 6 (see item g above) will be accomplished by pumping bentonite through the probe rods until the rods have been raised from the sampling depth to the inside of the hollow-stem auger. The rods will then be removed and the auger hole filled with slurry, also emplaced by pumping.

m) waste handling - There are three types of waste to consider: sample water and materials used in sampling and analysis, wash water used to clean equipment, and auger cuttings generated during sampling of layer 6. Sample water and materials will consist of a few liters of liquid and a few hundred feet of Tygon tubing. These will be delivered to the County-operated hazardous waste collection center at the landfill. Wash water will consist of a few hundred gallons of TSP solution and water from pressure or steam cleaning. This water will be generated in smaller increments over the course of the probing work, and may temporarily contain low concentrations of the eight VOC's found at the site. These will be volatilized quickly during the washing process. To facilitate this volatilization, a wash site will be designated on a part of the closed waste cell, within the area of presumed contamination, at least 100 feet north of the fence line. Auger cuttings are expected to consist of less than a 55-gallon drum of sediment. These will be temporarily stored on plastic sheeting at the auger site, then removed and spread thinly in the same area used for disposal of wash water.

n) field parameters - Samples collected for GC analysis will also be analyzed for dissolved oxygen, conductivity, pH and temperature.

o) cross-contamination - Collection and analytical procedures are designed to minimize the potential for cross-contamination between samples. The GC unit is purged and heated between analyses, and the collection tubing is not reused. Periodic blanks and duplicate analyses are run to insure acceptable quality control.

Cross-contamination between sedimentary zones is not a realistic threat. The down-hole tools will be cleaned after every site where VOC's are detected. Individual holes will be used for each sample (i.e. at the same site, separate holes will be used to obtain samples from layer 1-2 and from layer 4). Layer 1-2 is uppermost, and thus cannot be cross-contaminated by deeper layers. Layer 6 will be sampled through hollow-stem auger, and is in that way isolated. Layer 4, where the highest concentrations of VOC's have been found, will be sampled after the probe has penetrated layer 1-2. However, the probe is flush-joint, is not rotated as it is advanced, and has a tip that makes a smooth connection with the rod. No significant material will be carried downward as the probe advances. The tight seal between the formation and the rod will preclude water from layer 1-2 being transported downward to layer 4. This would not occur anyway under static conditions, because there is no downward gradient. Pumping from layer 4 will be brief and at low rates (a few ml/second), also minimizing the opportunity for cross-contamination.

4. Sampling grid for mobile laboratory. The sampling grid shown in Figure 3.3 of the CAP (p. 3-6) is conceptual. For example, if contaminants were to be detected at the last sampling point shown on a grid line, that grid line would be extended and more sampling points added. Similarly, if no contaminants were found in a particular layer along one of the grid lines, that layer would not be sampled along grid lines farther from the closed waste cell. Because of its conceptual nature and because of our agreement with DER that the number and length of grid lines will be determined by analytical results, we are not revising Figure 3.3.

As discussed in section 3.30 of the CAP, the hydraulic probe will be used for screening of layers 1-2 and layer 4. It will also be used to sample layer 6 (p. 3-7), if it can be successful at that depth. If it cannot, at least two double-cased wells will be installed into layer 6, as described below in response to item 13.

Regarding criteria for cessation of sampling along a grid line, we will continue with the hydraulic probing and sampling until, at two adjacent sites, concentrations of VOC's are below detection limits. This criterion will be applied independently to layer 1-2 and layer 4; that is, if layer 1-2 meets the criterion for cessation but layer 4 does not, sampling will be discontinued in layer 1-2 and continued in layer 4.

5. Status reports. Monthly status reports will be submitted to DER once the CAP and QAPP have been approved.

6. Vertical extent of fill. Information regarding the depth of fill is based on the recollection of landfill personnel, and there are some differences in what is recalled. The closed waste area was excavated using a dragline, commonly to a depth of about 10 feet below the grade existing at that time (1969-1981). The operators were not restricted to a specific depth, however, and may have excavated 20 feet or more in some areas.

7. Analyses of well and surface water. The CAP proposes sampling surface water from the nearby drainage ditch and analyzing for priority pollutants (p. 3-7). For the many comprehensive analyses that have been done on water in the vicinity of B5, however, only VOC's have been identified as contaminants. Consequently, we and DER agreed at our meeting that analytical parameters should be changed from all priority pollutants to VOC's on the EPA list of priority pollutants. The reason for analyzing water from the drainage ditch is to determine if VOC's are present in detectable concentrations. This is important because water in the ditch is periodically pumped eastward and discharged to offsite wetlands. We want to be confident that contaminants are not leaving the site.

Regarding analytical parameters for groundwater samples, we will sample each of the wells installed as part of the Contamination Assessment for both Primary and Secondary drinking water parameters. If possible, this will be done during quarterly sampling of other monitor wells at the landfill.

8. Field parameters. Field parameters to be determined at the time of sampling wells and surface waters are dissolved oxygen, conductivity, pH, and temperature. We agreed at our meeting with DER that, since metals were not constituents of concern in this particular assessment, turbidity is not a parameter that needs to be determined in the field. If not done in the field, however, turbidity will be determined on all well water samples analyzed in the laboratory.

9. Exploratory borings. Page 3-8 of the CAP describes the anticipated borings, which will number at least one, and possibly several. These will be Standard Penetration Test (SPT) borings (ASTM #D-1586), modified in that samples will be collected from 2.0 rather than 1.5 feet out of each 5-foot interval. Borings will be taken inside hollow-stem auger, to eliminate the need for drilling fluids and minimize the volume of drill cuttings. Samples of fine-grained sediments will be collected via the Shelby tube method (D-1587) since clayey intervals have been identified during previous exploration. Selected SPT and Shelby tube samples will be analyzed for vertical permeability (D-2434), grain-size distribution (D-421, D-422 and D-1140) and moisutre (D2216). Down-hole equipment will be steam-cleaned between borings. Test boring holes will be abandoned using a bentonite slurry as described in item 31 (above). Auger cuttings will be disposed of as described in item 3m (above).

10. Slug tests. Slug tests will be performed on existing wells B5-20, 23 and 24, and on new wells constructed in the vicinity of B5. Tests will not be conducted in wells B5 or B5-B (because these wells are not screened against a single permeable interval), B5-21 (because this well

is screened into refuse) or B5-1 through B5-18 (because these are unsealed, temporary wells unlikely to yield reliable data). The method will consist of both a slug-out and a slug-in test. An overview of the method is as follows. A pressure transducer coupled to a data logger will be installed in the test well. Several gallons of water will be withdrawn from the well into a clean bucket, using a peristaltic pump. Recovery of the water level in the well will be measured and recorded. Water from the bucket will be poured into the well, and again the recovery - in this case of a declining water level - will be monitored. No waste materials will be generated. The DER will be supplied with a diskette of the data, as requested.

11. Water level recorders. Stevens Type F water level recorders will be used. Water level data will be recorded graphically and, as needed, transposed manually. The sensitivity of these recorders is approximately .01 feet.

12. Rainfall data. The raingage near the maintenance building will be maintained throughout the assessment. Measurable rain data will be collected daily and kept in a logbook.

13. Well construction. As discussed in our meeting with DER, the construction and development of monitor wells is simplified by the fact that elevated concentrations of metals have not been detected at the assessment site. As a result, we agreed that sophisticated well and filter pack design can be omitted, because turbidity control and metals analyses are not critical elements of the assessment.

    Monitor wells completed into layers 1-2 and 4 will be installed through hollow-stem auger with an inside diameter of approximately 6¼ inches. Casing and screen will be 2-inch diameter, Sch. 40, flush-joint, threaded PVC. The screen will be .01 slot size and 5 feet long. The filter pack will be DOT 20/30 silica sand, emplaced by pouring to one foot above the top of the screen. Two feet of fine sand will then be added atop the filter pack. (The reason that the filter pack and fine sand seal are slightly shorter than normal is that the aquitard separating layers 1-2 and 4 is only about 5 feet thick. If the screen in layer 4 is near the top of that layer, a long filter pack/fine sand seal

has the potential to provide a more-permeable bridge across the aquitard.) The annulus above the fine sand seal will then be filled with cement grout, emplaced by pouring as the augers are withdrawn. The grout will consist of 6 gallons of water per bag of cement plus approximately 4% bentonite. If field conditions (such as excessive caving or "washing-in") indicate that hand-pouring of annular materials is inappropriate, filter packs, seals, or grout will, as needed, be emplaced using a tremie.

Wells screened into layer 6 will be double-cased. The outer casing will be 6-inch diameter, Sch. 40 PVC, with glueless joints, installed to approximately the top of layer 6 (47 feet below ground). This casing will be installed by the mud-rotary drilling method (bentonite drilling mud) in a 10-inch hole. Three centralizers will be used, and the casing will be pressure-grouted with grout as described above. After the grout has set, it will be drilled out from the inside of the casing with biodegradable drilling mud (e.g. Revert), which will also be used to advance the open hole to the selected screen interval. This will be a 6-inch diameter hole, into which 2-inch screen and riser will be emplaced, as previously described. Filter pack, fine sand seals and grout will follow, also as described above. In this case, the seal will be at least 3 feet long.

Well development will be by the "surge and purge" technique, meaning that a centrifugal pump and drop pipe will be used to alternately disturb and evacuate water from inside the casing. This will be continued until the formation water is sand-free and relatively clear. Wells will be finished with the installation of a 2'x2'x4" cement pad and a locking protective steel cover.

Auger cuttings, drill cuttings, and drilling mud will be temporarily stored at the well sites, on plastic sheeting, or in a plastic-lined shallow pit. These will be removed by heavy equipment at the landfill, and disposed of as described in item 3m (above). Formation water generated during well development activities will be pumped to a tank truck, tested by EPA method 624 for VOC's, diluted or aerated as necessary, and, if required, transported for disposal to a municipal wastewater treatment plant.

14. Disposition of wastes. Wastes generated as a consequence of hydraulic probing will be dealt with in the manner described in item 3m (above). Item 9 above addresses wastes generated during test boring. No waste water is expected to be produced during slug tests (see item 10 above). Waste water and auger cuttings resulting from well construction and development are discussed in item 13 (above).

15. Water quality analyses. Parameters to be determined on water samples collected by hydraulic probing are described in item 3 (above). These include VOC's analyzed according to EPA 601/602 procedures, plus field determinations of dissolved oxygen, conductivity, pH and temperature. Analysis of surface water from the drainage ditch is addressed in item 7 (above). As discussed and agreed to at our meeting with DER, analytical parameters will include VOC's (determined by EPA 624 methodology), but not other classes of priority pollutants. Surface water will also be analyzed for dissolved oxygen, temperature, conductivity, Primary, and Secondary drinking water parameters. Well water will be analyzed for the same constituents and parameters as surface water. The rationale for this analytical suite is that VOC's are the contaminants identified at the site, so these must be included. Other synthetic organic compounds have not been detected, so there is no rationale for including them. Primary and Secondary drinking water parameters include most commonly employed indicator parameters, and are useful in the evaluation of site hydrology. In addition, their determination provides evidence regarding compliance with zone-of-discharge standards.

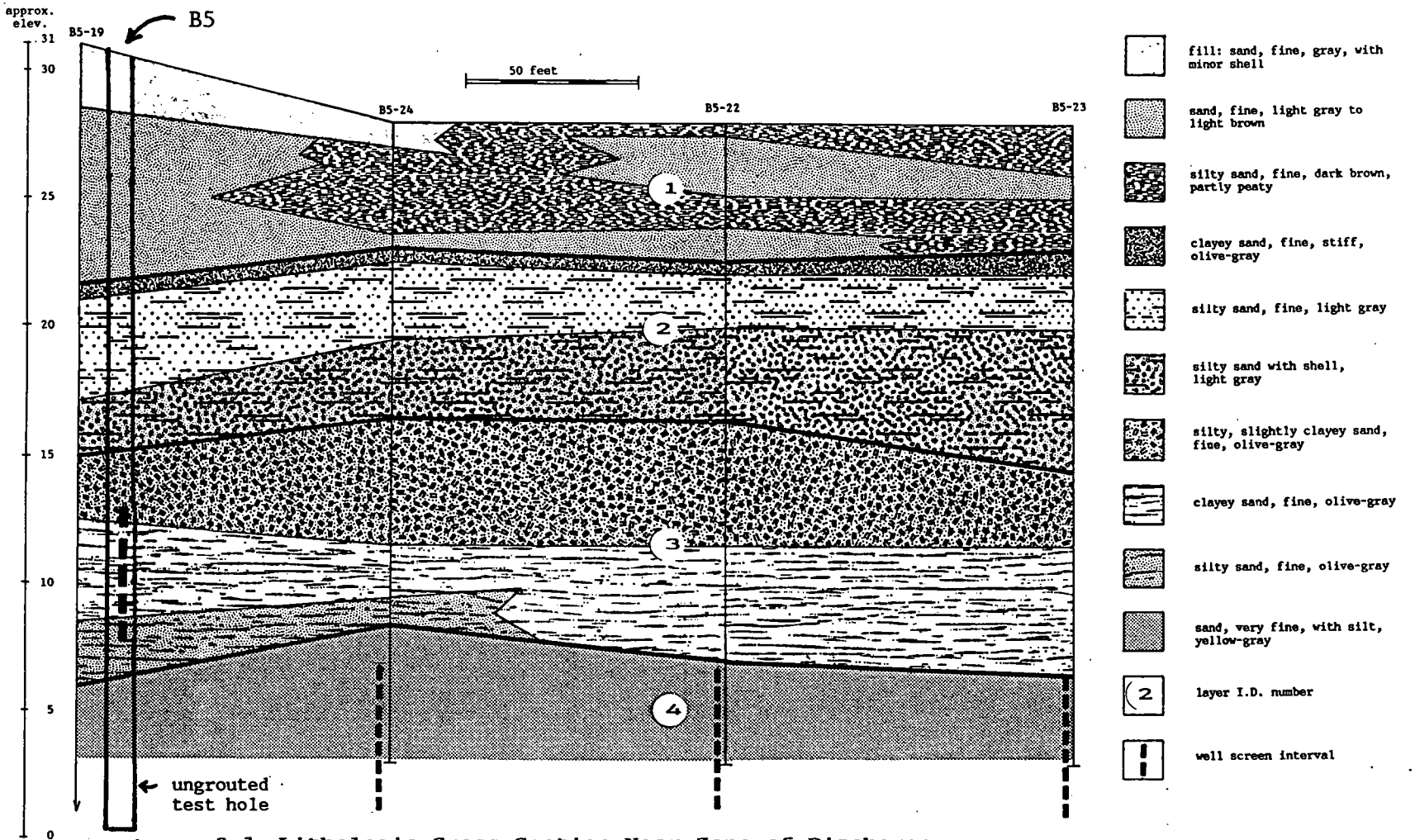

Figure 3.1 Lithologic Cross-Section Near Zone of Discharge

Exhibit A

Exhibit B: QA/QC for mobile lab and hydraulic probe

METHODS FOR THE COLLECTION AND DETERMINATION OF VOLATILE HYDROCARBONS

1.0 SAMPLE COLLECTION

1.1 Soil vapor samples are collected from the vadose zone through steel rods driven to the desired sampling depth. Each sample is collected by drawing at least three volumes of soil vapor through 1/4 inch inside diameter polyethylene tubing inserted through the center of the rods. The pressure inside the tubing is allowed to drop to atmospheric before withdrawing a sample into a gastight glass syringe and injecting a representative sample into a gas chromatograph.

1.2 Groundwater samples are collected by driving steel rods to the desired sampling depth and allowing surficial groundwater to flow into the rods. A stainless steel bottom loading bailer or 1/4 inch polyethylene tubing is lowered through the rods to collect groundwater for chemical analysis. Samples are immediately transferred to a teflon capped container for laboratory analysis or loaded into the purge-and-trap sample concentrator for chemical analysis.

1.3 A hollow sampling tube, with a piston rod held in place by a pin, is driven down to the desired depth. The pin is then removed, allowing the piston rod to yield to the soil, and is pushed down an additional foot. The sample is then retrieved, extruded into a clean teflon-capped sampling jar, and prepared for analysis and/or sent into a laboratory for analysis.

2.0 SCOPE AND APPLICATION

2.1 This method may be used to determine the concentration of volatile organic compounds in air, water, and soil. Compounds of interest include: benzene, toluene, ethylbenzene, meta-, para-, and ortho-xylene, and other petroleum related hydrocarbons; as well as trichloroethylene, tetrachloroethylene, etc. The concentrations of other volatile organic hydrocarbons may be determined as long as the appropriate performance requirements of this method are met.

2.2 This method relies on the purge and trap sample concentration technique for water and soil matrices. Air or vapor samples may be quantified by direct injection of the sample onto the gas chromatograph (GC) column.

2.3 This method is restricted to use by or under the direct supervision of analysts experienced in the operation of a gas chromatograph, a purge-and-trap sample concentrator, and in the interpretation of chromatograms. Each analyst must demonstrate the ability to generate acceptable results (Section 5.X).

3.0 SUMMARY OF METHOD

3.1 Water: An inert gas (helium) is purged through a 5 mL water sample contained in a sealed glass chamber at ambient temperature. Volatile compounds are efficiently transferred from the aqueous phase into the vapor phase. The vapor is swept through a sorbent trap by the purge gas. When purging is complete, the trap is heated and backflushed with helium to desorb the compounds of interest. They are then carried by the desorb gas directly onto the GC column for chromatographic separation.

Soil: A soil sample is weighed into a purge and trap vial and approximately 3 to 4 mL of distilled water is added to wet and break up the soil matrix. The sample is then purged with the same procedure as a water sample.

Air/Vapor: Vapor from a soil probe or soil venting system is sampled directly with a gastight syringe. The sample is then injected directly onto the GC column through an injection port.

4.0 INTERFERENCES

4.1 Impurities in the purge gas and organic compounds outgassing from the plumbing ahead of the trap can cause contamination problems with water and soil samples.

4.2 Contamination by carry-over whenever high level and low level samples are sequentially analyzed. This is true for water, soil, and vapor samples. For water and soil, it is essential to run a reagent water blank after highly contaminated samples to check for cross contamination in the purging apparatus. For vapor samples, it may be necessary to run a reagent vapor or ambient air sample to insure that no carry-over contamination is present in the syringe.

4.3 Samples collected at or near petroleum distribution sites can contain higher boiling components such as diesel fuel and fuel oil. Passage of these mixtures through the purge and trap system may require extensive cleaning before the system is contaminant free. Cleaning may be accomplished by running reagent blanks until the system is contaminant free.

5.0 SAFETY

5.1 The toxicity or carcinogenicity of each reagent used in this method has not been precisely defined; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. The laboratory operator is responsible for maintaining a current awareness file of OSHA regulations regarding the safe handling of the chemicals used in this method.

6.0 APPARATUS AND MATERIALS

6.1 Gas Chromatograph: Shimadzu GC-14A with two injection ports - one for direct injection and the other linked to the purge and trap sample concentrator. A 4-port valve to allow switching between either injection port to either of two GC columns.

6.2 Purge and Trap Sample Concentrator: OI-Analytical Model 4460A equipped with an external heater for the analysis of soil.

6.3 Trap: A suitable trap for the desired compounds to be analyzed. Tenax (diphenylene oxide) polymer should be used for the determination of petroleum hydrocarbons and many other volatile organics. In any case, a suitable packing material to sorb the compounds of interest must be chosen.

6.4 GC Column: A 30 meter by 0.53 mm (Megabore) fused silica capillary column with 3 μm of polydimethylsiloxane stationary phase (J&W DB-1). This column works well for petroleum hydrocarbons and chlorinated organics. The

column chosen must give sufficient resolution between the compounds of interest.

6.5 Detector: Flame-ionization (FID) and photo-ionization (PID) detectors work well for petroleum hydrocarbons and other volatile organic hydrocarbons. An electron capture detector (ECD) is preferred for halogenated hydrocarbons. For the analysis of both petroleum hydrocarbons and chlorinated hydrocarbons, either a FID or PID may be used in series with an ECD.

6.6 Syringes: 5 mL glass with luerlock tip for water samples. 1 mL gastight syringes with valve (Precision Sampling Model A-2) for vapor samples. Various gastight and liquid syringes for diluting highly contaminated samples and spiking standards.

6.7 Balance: Analytical balance capable of weighing to the nearest 0.1 g

6.8 Spatulas: Stainless steel micro-spatula.

7.0 STANDARDS

7.1 Gas-Phase Standard: Certified gas standards may be obtained from Scott Specialty Gases. For petroleum hydrocarbons, a benzene, toluene, ethylbenzene, and xylene (BTEX) standard of 1.0 to 10 ppm (volume/volume) is suitable. Gas-phase standards of other hydrocarbons may be custom ordered.

7.2 Liquid Standards: BTEX in methanol - 25 ng/µL to 1 µg/µL. Gasoline in methanol - 0.1 to 10 µg/µL. For analysis of other compounds not listed above, custom standards may be purchased.

7.3 A maximum volume of 2 µL may be injected onto the GC column when a direct injection of a standard in methanol or some other solvent is made.

8.0 PROCEDURE

8.1 Volatile compounds are introduced into the GC by either direct injection (in the case of soil vapor) or purge-and-trap. The purge-and-trap method may be used directly on water and soil samples that are moderately contaminated. For soil samples that are highly contaminated, a methanolic extraction (dilution) may be necessary prior to analysis. In the case of highly contaminated vapor or water samples, direct injection of smaller volumes is utilized.

8.2 Gas Chromatography Conditions: Set in accordance to one or more of the following EPA methods 8000, 8010, 8020, 8100, 601, and 602 which correspond to the compounds being analyzed for.

8.3 Calibration: For each method, an initial and periodic check must be made to verify accuracy. To ensure the instrument response is linear, at least three calibration standards must be run at different concentrations: one at

or near the detection limit; one at the maximum expected concentration range; and one midway between the two.

Tabulate peak area versus mass injected. The results can be used to prepare a calibration curve for the detector. Alternatively, the ratio of the response factor (RF) can be calculated for each analyte at each standard

$$\text{Response Factor} = \frac{\text{Mass Analyte}}{\text{Total area of peak}}$$

concentration. If the percent relative standard deviation is less than 20% over the working concentration range, linearity can be assumed (between the upper and lower calibration limits) and an average response factor can be used in place of a calibration curve. Where gasoline is the analyte, the response factor can be calculated by the ratio of mass gasoline to the total area under all peaks.

The response factor for each analytical method used must be verified each working day by injection of one or more calibration standards. A log should be kept to compare the response of the instrument over time. A difference between the response factors generated during successive days greater than 15% indicates a significant change in the response of the instrument and should be investigated by recalibration and a check on the standard used.

8.4 Sample Analysis: **Aqueous samples** - use a clean 5 mL syringe to withdraw approximately 1 mL sample. Pull the plunger back in the syringe and rinse the walls with the sample. Expel the rinseate and withdraw a full 5 mL sample into the syringe. Expel the sample into the purge vial and connect the vial to the purge and trap unit.

The process of taking an aliquot from a purge and trap vial creates headspace in the vial and alters the validity of the sample for future analysis. The analyst can circumvent this problem by initially filling an additional syringe. The use of a larger syringe (20 mL) allows the analyst to make 4 analyses of a sample from a single vial. If a second analysis is needed from a syringe, it must be analyzed within 24 hours. Care must be taken to prevent air from leaking into the syringe. Dilutions of highly contaminated samples can be accomplished by adding a fraction of the required volume (5mL) to the purge flask. The remainder of the volume should be made up with reagent water. The amount of sample dilution needed for highly contaminated samples is variable. The analyst must dilute the sample sufficiently to bring its concentration within the linear range of the detector. After the purge cycle of the sample is complete, the purge vessel may be loaded with the next sample.

Soil samples: Use the same purge-and-trap time and temperature parameters as for aqueous samples. Weigh out approximately 2 to 5 grams of soil into a preweighed purge vessel with a clean microspatula. Care must be taken to select a representative sample. Weigh the sample and add sufficient reagent water to bring the total liquid and solid volume to approximately 4 to 5 mL. Samples that are not readily wetted such as clays must be broken up with a microspatula before analysis. This may be accomplished by gently grinding the sample against the vessel side walls until it is suspended or broken up in the water. Wipe the outside of the vessel and attach it to the purge chamber. Care must be taken to minimize the time between weighing of the sample and attachment to the purging chamber to prevent loss of volatiles from the sample. It may be necessary to cover the top of the vessel with parafilm during the above process. A microspatula can easily be inserted through the parafilm coating.

Highly contaminated soil samples may be analyzed by a methanolic extraction. Weigh approximately 5 grams of sample into a preweighed 40 mL teflon capped purge-and-trap vial. Add 5 mL of purge-and-trap grade methanol into the vial and cap it tightly. Shake and agitate the sample until it is completely broken up (it may be necessary to mix the sample with a spatula) and allow the suspended particles to settle. Add an aliquot of the extract with a clean microliter syringe into a purge vessel filled with 5 mL reagent water. The volume of aliquot added will depend on the concentration of the contaminated soil. A good volume to start is approximately 50 µL. The following table can be used to determine the amount of methanol extract to add to the purge vessel.

Approximate Concentration Range	Volume of Methanol Extract
0.5 - 10 mg/kg	50 µL
1.0 - 20 mg/kg	25 µL
5.0 - 100 mg/kg	5 µL

Calculate appropriate dilution factor for concentrations exceeding this table

9.0 CALCULATIONS

9.1 External standard calibration: The concentration of each analyte in the sample may be determined from the peak response for individual analytes or a summation of peak response for mixtures, such as gasoline. The calibration curve or calibration factor determined that day is used and the concentration of a specific analyte is calculated

as follows:

Aqueous Samples:

Concentration ($\mu g/L$) = $(Area_X)$ (RF) (F) / $(Volume_S)$

where: $Area_X$ = Peak area of the analyte in the sample
RF = Response factor for the analyte of interest (mass (μg)/area)
$Volume_S$ = Volume of the sample in liters
F = Dilution Factor

Soil Samples:

The equation above is used except the mass of the sample is inserted in the place of the sample volume.

10.0 QUALITY CONTROL

10.1 Each mobile laboratory that uses this method is required to operate a formal quality control program. The minimum requirements of this program consist of an initial demonstration of laboratory capability and an ongoing analysis of spiked samples to evaluate and document data quality. Records must be kept to document the quality of data generated. Ongoing data quality checks are compared with established performance criteria to determine if the results of analyses meet the performance characteristics of the method. When results of sample spikes indicate atypical method performance, a quality control check standard must be analyzed to confirm that the measurements were performed in an in-control mode of operation.

10.2 Before processing any samples, the analyst should demonstrate, through the analysis of a reagent water blank or syringe blank, that interferences from the analytical system, glassware, and reagents are under control. Each time a set of samples is analyzed or there is a change in reagents, a reagent water blank should be processed as a safeguard against chronic laboratory contamination. The blank samples should be carried through all stages of sample preparation and measurement.

10.3 Approximately 10% blank samples, spike samples and duplicate analyses must be analyzed (the frequency of spikes may vary).

10.4 The experience of the analyst performing gas chromatography is invaluable to the success of the methods. Each day that analysis is performed, the daily calibration samples should be evaluated to determine if the chromatographic system is operating properly. Questions that should be asked are: Do the peaks look normal? Is the response obtained comparable to that of the previous calibrations? Careful examination of the

standard chromatogram can indicate whether the column is still good, the injection port septum is leaking, the gastight syringes are actually gastight, etc. If any changes are made to the system (e.g. column changed, detector/s cleaned, trap changed), recalibration of the system must take place.

10.5 Check surrogate standard recoveries in samples, blanks, and spikes. Determine if recoveries are within acceptable limits.

10.6 Along with the mobile laboratory analysis, samples are sent to other laboratories periodically for comparison.

Florida Department of Environmental Regulation

Central District • 3319 Maguire Boulevard, Suite 232 • Orlando, Florida 32803-3767

Lawton Chiles, Governor — Carol M. Browner, Secretary

November 6, 1992

CERTIFIED
P-810 426 730

Mr. James Griffin
Volusia County Solid Waste Management
123 West Indiana Avenue
DeLand, Florida 32720-4262

OCD-SW-92-0436

Volusia County - SW
Tomoka Farms Road Landfill
OGC Case No. 91-0845
QAPP #920130C
Approved Pending Status

Dear Mr. Griffin:

The above referenced document has been reviewed by the Department's Quality Assurance Section. The QAPP is approved pending revisions. Attached are the review comments which must be addressed for final approval.

Please note that the revisions must be received on or before December 10, 1992, or the approved-pending status will automatically expire.

Should you have any questions regarding this matter, please contact Mr. William McKenty, P.G. at 407/894-7555 or at the above address.

Sincerely,

Richard B. Tedder, P.E.
Program Manager
Solid Waste

RBT/gdw

Enclosures

cc: William McKenty, P.G. - DER - Waste Cleanup Section

Recycled Paper

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

For Routing To Other Than The Addressee
To:
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To:
From:

NOV 1992 RECEIVED CENTRAL DISTRICT

TO: William McKenty, Project Manager
Division of Waste Management - Orlando

THROUGH: Andrew R. Tintle, Environmental Supervisor II ART
Quality Assurance Section

FROM: Deborah S. Koren, Environmental Specialist II DSK
Quality Assurance Section

DATE: October 24, 1992

SUBJECT: Quality Assurance Review; Tomoka Farms Road L/F
QAPP **#920130C**
Submitted by; Envirolab, Inc.
First Submittal

The subject document, received on April 28, 1992, has been reviewed and is approved-pending revisions. Further detail on the status of this plan is explained in the enclosed guidance document (DER QAS #90-03) and enclosed review comments. The following review comments must be addressed:

1) Table 3.2:
-List the total number of samples and field QC checks to be collected.

2) Table 4.1:
-Volatiles can not be field filtered.

3) Please respond to all comments on the annotated pages.

Please forward this correspondence and all attachments (or copies) to the consultant or the respondent. The required revisions must be submitted by December 10, 1992. Approval pending will automatically expire on that date unless the QA Section is advised of any delays. Since revised pages are required, they must be sent directly to your office for technical review and forwarded to the QA Section for QA review.

If you have any questions concerning this matter, please call me at SC 278-2796.

ART/dsk

Attachments (2): DER QAS #90-03 (Explanation of Status)
Copy of Annotated QAPP pages

cc: Richard Tedder w/copy of attachments
Division of Waste Management - Orlando

EXPLANATION OF PLAN STATUS

DER QAS #90-03
12/18/90

1) **RETURNED:** The revised document or pages, addressing the comments on the attached review sheets and/or annotated pages, must be resubmitted for review.

a) CompQAPs: must be resubmitted and approved before referencing it in site-specific documents (QAPPs) or before sampling and/or analysis can begin for projects requiring an approved CompQAP.

b) QAPPs: must be resubmitted and approved before sampling and/or analysis can begin. The required revisions must be sent through the DER Project Manager in the appropriate Program Office. The revisions will then be forwarded to the QA Section for review.

2) **APPROVED-PENDING:** The revised document or pages, addressing the comments on the review sheets and/or annotated pages, **must be resubmitted within SIX WEEKS from the date on the attached cover letter.** If the required revisions are not received by the above due date, this conditional approval will expire. The revised pages will be reviewed and incorporated with the copy of the QAP submitted for review, which is being retained. This provisional approval means you must comply with these review comments for all sampling and analytical activities proposed between this pending approval and the final approval of the QA Plan, and that:

a) CompQAPs: are approved to begin referencing in QAPPs or sampling and/or analysis can begin for projects requiring an approved CompQAP.

b) QAPPs: are approved to begin sampling and/or analysis **(provided all other Department requirements have been met).**

3) **APPROVED:**

a) CompQAPs: Future QAPPs or other environmental monitoring projects may reference this document. Pursuant to 17-160.210(5), the CompQAP must be renewed annually in order to maintain approval status. If the amendments are not submitted, approval for this CompQAP will expire on the anniversary date of approval. Amendments may be submitted separately or may accompany a particular project plan. All amendments must be formatted such that they may be incorporated into your approved CompQAP by page addition or replacement. References to EPA or any other externally-derived Quality Assurance Objectives must be replaced by historical (internally-generated) data within one calendar year of the approval date, for any and all parameters.

References to your CompQAP by other parties must specify section, page numbers, and revision date. This will require supplying the involved party with a copy of the latest revised document, so that they are fully aware of its contents.

b) QAPPs: Final approval to begin sampling and analysis **(provided all other Department requirements have been met).**

Periodically, DER may request amendments or further clarification of information for an ongoing project or newly submitted project plans, or to accommodate rule or policy changes. Your cooperation in this regard is greatly appreciated.

NOTE: Please include your QA Plan number with all correspondence. This number does not denote approval, but is used as a means of tracking the QA Plan and its amendments.

FIGURES

FIGURE #	DESCRIPTION	PAGE #	REVISION DATE
3.1	Project Organization Chart	9	3/6/92
3.2	Site Map	10	3/6/92

TABLES

TABLE #	DESCRIPTION	PAGE #	REVISION DATE
3.1	Historical Data Summary	1	3/6/92
3.2	Project Sample Summary	7	3/6/92
3.3	Method Identification and QA Objectives	8	3/6/92
4.1	Sampling Protocols	6	3/6/92
4.2	Equipment Decontamination and Cleaning Protocols	7	3/6/92
5.1	Laboratory QC Checks	5	3/6/92

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5.1	Laboratory QC Checks	5	3/6/92

Table 3.2 Proposed Samples for the Project (Summary)

Frequency	Sample Matrix	Sample Source	Analytical Method #	#of Samples	QC Summary EB	TB	FD	Other
One Time*	Water	Monitoring Well	EPA 624	2/well	√	√	√	

How many wells are to be sampled?

* - The project may require additional samples from each selected site, depending on the analytical results obtained.

EB - Equipment Blank
TB - Trip Blank
FD - Field Duplicate
Other - State type

Total # of samples?
Total # of Field QC checks (EB, TB, FD) must follow those listed in Envirolab's CompQAP 860198G section II, page 1 revised 10/18/91

Table 4.1 **Sampling Protocol**

These citations refer to CompQAP#: G860198

Topic	Section#	Page#'s	Revision Date
1. Equipment Decontamination	6	59-63	10/18/91
2. Groundwater Sampling Procedures	6	12-21	10/18/91
3. Field Filtration Protocols	6	2	10/18/91
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Not For volatiles?

Deviations or modifications to the above-referenced procedures are: NONE

Protocol	Modification	Justification
1.		
2.		
3.		

5.3 Waste Disposal

Waste disposal practices in the laboratory are listed in CompQAP Section 8, page 3 to 3, revised 10/18/91.

5.4 Calibration Procedures and Frequency

Laboratory calibration protocols are listed in CompQAP Section 9, page 1 to 15, revised 10/18/91.

Deviations or modifications to the listed analytical procedures are listed below: NONE

Calibration Procedure	Modification
1.	
2.	
3.	

Project specific measurement and/or analytical equipment not mentioned in the above reference are as follows: NONE

1.
2.
3.

Calibration procedures for the above equipment are outlined on Table 5.1

5.5 Preventative Maintenance

Laboratory instrument peventative maintenance protocols are discussed in CompQAP Section ~~9~~ 10, page ~~1~~ 4 to ~~15~~ 5, revised 10/18/91.

The following modifications to or deviations from the referenced protocols are listed below: NONE

1.
2.
3.

5.6 Quality Control Checks, Routines to Assess Precision and Accuracy, and Calculation of Method Detection Limits

5.6.1 Laboratory Quality Control Measures

The types of Laboratory controlchecks outlined on Table 5.2 will be used when analyzing samples for this project.

5.6.2 Routine Procedures to Assess Precision and Accuracy

Routine procedures to assess precision and accuracy of laboratory parameters are found in CompQAP Section 11, page 4 to 5, revised 10/18/91.

Deviations to the referenced procedures to assess precision and accuracy are as follows:
NONE

1.
2.
3.

5.6.3 Method Detection Limits

Method detection Limit determinations are discussed in the laboratory CompQAP Section ~~9~~ 11, page ~~1~~ 5 to ~~15~~ 7, revised 10/18/91.

Deviations to the calculations of method detection limits are as follows: NONE

1.
2.
3.

5.7 Data Reduction, Validation and Reporting

Laboratory activities relative to this section are found in CompQAP Section 8/12, page 1 to 15/8, revised 10/18/91.

Deviations or revisions to the above reference are sa follows: NONE

1.
2.
3.

	Audit Type	Frequency/Date	Description
1.	System	Quarterly / 8/15/92	QA/QC Inspection
2.			
3.			

6.2.2 Laboratory Activities

a. Routine preformance and system audits are discusse in CompQAP# G860198 Section 14, page 2 to ~~2~~ 3, revised 10/18/91.

b. Specific audits planned for this project are:

	Audit Type	Frequency/Date	Description
1.	Performance	Quarterly / 7/15/92	QA/QC Blind (VOC's)
2.	System	Quarterly / 7/31/92	QA/QC Inspection
3.			

ALL INVOLVED PARTIES WILL CONSENT TO AUDITS BY DER IF DEEMED NECESSARY .

6.3 Quality Assurance Reports

QA Reports will be submitted to Robert L. Sullivan, and Lee A. Powell at a frequency of Quarterly or when requested by DER.

Note: Frequency must comply with Table IV, Appendix D of the DER Manual for Preparing Quality Assurance Plans or Table 6 of Chapter 17-160, F.A.C., Quality Assurance.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To: _____ Location: _____

To: _____ Location: _____

To: _____ Location: _____

From: _____ Date: _____

Interoffice Memorandum

TO: *Richard Tedder, P.E.* OCD-WCU-92-364
Program Manager

THROUGH: *G. Bret LeRoux, P.G* GBL
Professional Geologist I

FROM: *William W. McKenty, III, P.G.*
Environmental Specialist III

DATE: November 5, 1992

Brevard County - SW
Tomoka Farms Road Landfill
OGC Case No.: 91-0845
QAPP APPROVED PENDING STATUS

Attached please find the Quality Assurance Review for the Tomoka Farms Road Landfill (QAPP #920130C). The plan is approved-pending. Note that the QA correspondence and all attachments or copies thereof should be forwarded to the Respondent and/or consultant as soon as possible. The revisions requested by QA must be received by December 10, 1992 or the approved-pending status will expire. Should you have any questions or comments regarding this matter please feel free to contact me at Extension 316.

WWM/wwm

State of Fl
Department of Environmental Regulation

District Routing Slip

To: Mr. Richard Tedder Date: 10-26-92
Division of Waste Management C.C. To:

	Pensacola	**Northwest District**	
	Panama City	Northwest District Branch Office	
	Tallahassee	Northwest District Branch Office	
	Apalachicola	Northwest District Satellite Office	
	Tampa	**Southwest District**	
	Bartow	Southwest District Satellite Office	
	Venice	Southwest District Satellite Office	
✓	**Orlando**	**Central District**	
	Melbourne	Central District Satellite Office	
	Jacksonville	**Northeast District**	
	Gainesville	Northeast District Branch Office	
	Fort Myers	**South District**	
	Punta Gorda	South District Branch Office	
	Marathon	South District Branch Office	
	West Palm Beach	**Southeast District**	
	Port St. Lucie	Southeast District Branch Office	

Reply Optional ☐ Reply Required ☐ Info Only ☐
Date Due _____ Date Due _____

Comments:

From: Deborah S. Rover Tel.: SC 278-2796
Quality Assurance

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

For Routing To Other Than The Addressee
To: Location
To: Location
To: Location
From: Date

RECEIVED OCT 1992

TO: William McKenty, Project Manager
Division of Waste Management - Orlando

THROUGH: Andrew R. Tintle, Environmental Supervisor II ART
Quality Assurance Section

FROM: Deborah S. Koren, Environmental Specialist II DSK
Quality Assurance Section

DATE: October 24, 1992

SUBJECT: Quality Assurance Review; Tomoka Farms Road L/F
QAPP **#920130C**
Submitted by; Envirolab, Inc.
First Submittal

The subject document, received on April 28, 1992, has been reviewed and is approved-pending revisions. Further detail on the status of this plan is explained in the enclosed guidance document (DER QAS #90-03) and enclosed review comments. The following review comments must be addressed:

1) Table 3.2:
-List the total number of samples and field QC checks to be collected.

2) Table 4.1:
-Volatiles can not be field filtered.

3) Please respond to all comments on the annotated pages.

Please forward this correspondence and all attachments (or copies) to the consultant or the respondent. The required revisions must be submitted by December 10, 1992. Approval pending will automatically expire on that date unless the QA Section is advised of any delays. Since revised pages are required, they must be sent directly to your office for technical review and forwarded to the QA Section for QA review.

If you have any questions concerning this matter, please call me at SC 278-2796.

ART/dsk

Attachments (2): DER QAS #90-03 (Explanation of Status)
Copy of Annotated QAPP pages

cc: Richard Tedder w/copy of attachments
Division of Waste Management - Orlando

EXPLANATION OF PLAN STATUS

DER QAS #90-03
12/18/90

1) **RETURNED:** The revised document or pages, addressing the comments on the attached review sheets and/or annotated pages, must be resubmitted for review.

a) CompQAPs: must be resubmitted and approved before referencing it in site-specific documents (QAPPs) or before sampling and/or analysis can begin for projects requiring an approved CompQAP.

b) QAPPs: must be resubmitted and approved before sampling and/or analysis can begin. The required revisions must be sent through the DER Project Manager in the appropriate Program Office. The revisions will then be forwarded to the QA Section for review.

2) **APPROVED-PENDING:** The revised document or pages, addressing the comments on the review sheets and/or annotated pages, **must be resubmitted within SIX WEEKS from the date on the attached cover letter.** If the required revisions are not received by the above due date, this conditional approval will expire. The revised pages will be reviewed and incorporated with the copy of the QAP submitted for review, which is being retained. This provisional approval means you must comply with these review comments for all sampling and analytical activities proposed between this pending approval and the final approval of the QA Plan, and that:

a) CompQAPs: are approved to begin referencing in QAPPs or sampling and/or analysis can begin for projects requiring an approved CompQAP.

b) QAPPs: are approved to begin sampling and/or analysis **(provided all other Department requirements have been met).**

3) **APPROVED:**

a) CompQAPs: Future QAPPs or other environmental monitoring projects may reference this document. Pursuant to 17-160.210(5), the CompQAP must be renewed annually in order to maintain approval status. If the amendments are not submitted, approval for this CompQAP will expire on the anniversary date of approval. Amendments may be submitted separately or may accompany a particular project plan. All amendments must be formatted such that they may be incorporated into your approved CompQAP by page addition or replacement. References to EPA or any other externally-derived Quality Assurance Objectives must be replaced by historical (internally-generated) data within one calendar year of the approval date, for any and all parameters.

References to your CompQAP by other parties must specify section, page numbers, and revision date. This will require supplying the involved party with a copy of the latest revised document, so that they are fully aware of its contents.

b) QAPPs: Final approval to begin sampling and analysis **(provided all other Department requirements have been met).**

Periodically, DER may request amendments or further clarification of information for an ongoing project or newly submitted project plans, or to accommodate rule or policy changes. Your cooperation in this regard is greatly appreciated.

NOTE: Please include your QA Plan number with all correspondence. This number does not denote approval, but is used as a means of tracking the QA Plan and its amendments.

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	3.3 Project Organization		
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	4.1 Sampling Equipment		
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5.0	**Laboratory Procedures and Quality Control**	5	3/6/92
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FIGURES

FIGURE #	DESCRIPTION	PAGE #	REVISION DATE
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TABLES

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	6.3 Quality Assurance Reports		
7.0	**Resumes**	1	3/6/92

FIGURES

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Table 3.2 Proposed Samples for the Project (Summary)

Frequency	Sample Matrix	Sample Source	Analytical Method #	#of Samples	QC Summary EB	TB	FD	Other
One Time*	Water	Monitoring Well	EPA 624	2/well	√	√	√	

How many wells are to be sampled?

* - The project may require additional samples from each selected site, depending on the analytical results obtained.

EB - Equipment Blank
TB - Trip Blank
FD - Field Duplicate
Other - State type

Total # of samples?
Total # of Field QC checks (EB, TB, FD) must follow those listed in Envirolab's CompQAP 8601986 section II, page 1 revised 10/18/91

Table 4.1 **Sampling Protocol**

These citations refer to CompQAP#: G860198

Topic	Section#	Page#'s	Revision Date
1. Equipment Decontamination	6	59-63	10/18/91
2. Groundwater Sampling Procedures	6	12-21	10/18/91
3. Field Filtration Protocols	6	2	10/18/91
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Not for volatiles?

Deviations or modifications to the above-referenced procedures are: NONE

Protocol	Modification	Justification
1.		
2.		
3.		

5.3 Waste Disposal

Waste disposal practices in the laboratory are listed in CompQAP Section 8, page 3 to 3, revised 10/18/91.

5.4 Calibration Procedures and Frequency

Laboratory calibration protocols are listed in CompQAP Section 9, page 1 to 15, revised 10/18/91.

Deviations or modifications to the listed analytical procedures are listed below: NONE

Calibration Procedure	Modification
1.	
2.	
3.	

Project specific measurement and/or analytical equipment not mentioned in the above reference are as follows: NONE

1.
2.
3.

Calibration procedures for the above equipment are outlined on Table 5.1

5.5 Preventative Maintenance

Laboratory instrument peventative maintenance protocols are discussed in CompQAP Section ~~9~~ 10, page ~~1~~ 4 to ~~15~~ 5, revised 10/18/91.

The following modifications to or deviations from the referenced protocols are listed below: NONE

1.
2.
3.

5.6 Quality Control Checks, Routines to Assess Precision and Accuracy, and Calculation of Method Detection Limits

5.6.1 Laboratory Quality Control Measures

The types of Laboratory controlchecks outlined on Table 5.2 will be used when analyzing samples for this project.

5.6.2 Routine Procedures to Assess Precision and Accuracy

Routine procedures to assess precision and accuracy of laboratory parameters are found in CompQAP Section 11, page 4 to 5, revised 10/18/91.

Deviations to the referenced procedures to assess precision and accuracy are as follows:
NONE

1.
2.
3.

5.6.3 Method Detection Limits

Method detection Limit determinations are discussed in the laboratory CompQAP Section 9 (11), page 1 (5) to 15 (7), revised 10/18/91.

Deviations to the calculations of method detection limits are as follows: NONE

1.
2.
3.

5.7 Data Reduction, Validation and Reporting

Laboratory activities relative to this section are found in CompQAP Section 9/12, page 1 to 15/8, revised 10/18/91.

Deviations or revisions to the above reference are sa follows: NONE

1.
2.
3.

	Audit Type	Frequency/Date	Description
1.	System	Quarterly / 8/15/92	QA/QC Inspection
2.			
3.			

6.2.2 Laboratory Activities

a. Routine preformance and system audits are discusse in CompQAP# G860198 Section 14, page 2 to ~~2~~ 3, revised 10/18/91.

b. Specific audits planned for this project are:

	Audit Type	Frequency/Date	Description
1.	Performance	Quarterly / 7/15/92	QA/QC Blind (VOC's)
2.	System	Quarterly / 7/31/92	QA/QC Inspection
3.			

ALL INVOLVED PARTIES WILL CONSENT TO AUDITS BY DER IF DEEMED NECESSARY.

6.3 Quality Assurance Reports

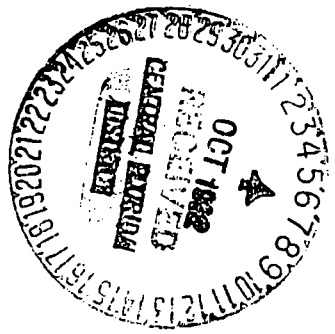
QA Reports will be submitted to Robert L. Sullivan, and Lee A. Powell at a frequency of Quarterly or when requested by DER.

Note: Frequency must comply with Table IV, Appendix D of the DER Manual for Preparing Quality Assurance Plans or Table 6 of Chapter 17-160, F.A.C., Quality Assurance.

BRILEY, WILD
AND ASSOCIATES

10/6/92

Bill —
Do you know
any thing about
this? We have
no notice of
response.
Thanks
RBTedder



October 5, 1992

VC 92097-6CE

Mr. Richard B. Tedder, P.E.
Program Manager for Solid Waste
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

Re: Volusia County
Tomoka Landfill
Contamination Assessment Plan
OCG No.: 91-0845

Dear Mr. Tedder:

On September 29, 1992, we submitted to the Department a draft response to your July 17, 1992 letter on the above contamination assessment plan. It was directed to Mr. William W. McKenty in the Waste Cleanup Section.

If you need further information at this time please let me know.

Very truly yours,

BRILEY, WILD & ASSOCIATES, INC.
CONSULTING ENGINEERS & PLANNERS

Lee A. Powell, P.E.
Assistant Director of Engineering

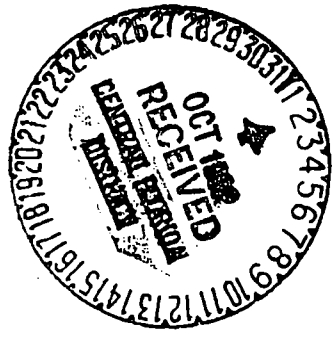
LAP/lhm
cc: Mr. James Griffin, Volusia County

Briley, Wild and Associates, Inc.
Consulting Engineers and Planners
1040 North U.S. Highway One
P.O. Box 607
Ormond Beach, FL 32175
904/672-5660 • FAX 904/673-8264
Offices in Bradenton, Clearwater,
Daytona Beach, Orlando & Ormond Beach, FL

David N. Gomberg, Ph.D.
Water Resources Consultant

2247 S.E. 27th ST.
CAPE CORAL, FL 33904
(813) 574-6196

September 29, 1992



Mr. William W. McKenty, III
Waste Cleanup Section
Dept. of Environmental Regulation
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767

Re: Tomoka Landfill, DER letter of 7/17/92 regarding Contamination Assessment Plan

Dear Mr. McKenty:

On behalf of Volusia County, I accept the very gracious offer extended at our meeting on 7/28/92. In case you have forgotten, that offer was to provide an informal review of draft submittals. Such a review has the potential to effect significant savings in energy and time. In energy because we may be able to avoid report revisions; in time because we may save the lengthy delays that always seem to accompany an exchange of correspondence.

Enclosed is a draft response to your 7/17/92 letter concerning the proposed CAP for Tomoka Landfill. At some point, I will be sending it in final form to Lee Powell of Briley-Wild, who will then probably send it to you for evaluation. If I have your informal comments before I finalize the response, I can incorporate them and perhaps eliminate the need for a further revision. You might also avoid having to prepare a lengthy critique of my response.

I would appreciate it if you would review my memo, and then either mark it up and send it back, or give me a call with your comments. Please don't feel obliged to recommend changes if you don't find anything that needs attention.

Sincerely,

David N. Gomberg

David N. Gomberg, Ph.D.
Water Resources Consultant

2247 S.E. 27th ST.
CAPE CORAL, FL 33904
(813) 574-6196

September 29, 1992

DRAFT

Memo to: Lee A. Powell, P.E.
Re: Tomoka Landfill Contamination Assessment Plan;
DER letter of 7/17/92

This memo addresses comments made by DER on the Tomoka Landfill Contamination Assessment Plan (CAP). I use the same numbering as in the DER letter of 7/17/92, but do not repeat all of their comments, some of which are quite lengthy. Our meeting with DER on 7/28/92 clarified or modified several of the comments, and I have used my notes from that meeting in preparing these remarks.

1. Well B5 - hydraulic connection, abandonment. Well B5 is described briefly in section 3.10 (p. 3-1) of the CAP and also in section 3.60 (p. 3-9). Based on incomplete records concerning the construction of this well, we suggested that, when it is pumped, water furnished to the well may come from layer 1-2 or from layer 4, or from both. Circumstantial evidence for this suggestion is that there is probably no grout in the annular space, and that the well screen extends from very near the bottom of layer 2 to near the top of layer 4. For illustration, the screened interval can be drawn in on the left side of Figure 3.1 (p. 3-2), which is done on exhibit A accompanying this memo. This shows the reported screened interval in relation to the sedimentary profile at the site.

   Another indication that B5 may intersect more than one permeable stratum is given in a 4/30/91 letter from Robert Sullivan of Envirolab. (The letter is in App. A of the CAP, at the beginning of the water quality data.) The letter reports the results of pumping B5 at low and high rates, with major differences in water chemistry at the two rates. This suggests that the water is derived from more than one source, with the relative contribution from each dependent on pumping stress.

   Regarding abandonment of well B5, this will be accomplished using

procedures and materials acceptable to the St. Johns River Water Management District.

2. Figure showing relationship between wells and geologic cross-section. We agreed with DER at our 7/28/92 meeting that this would be routinely accomplished for any future wells or future submittals, but that no CAP revisions were required. Figure 3.1 of the CAP shows several existing wells in relation to the sedimentary profile.

3. Details regarding mobile laboratory and hydraulic probing equipment. The following annotated list coincides with the items noted in item 3 of the DER letter.

   a) decontamination procedures - The one-inch stainless steel rods used in hydraulic probing will be pressure-cleaned free of visible sediment following each sampling event. For sites where VOC's are below detection limits, there will be no formal decontamination. For sites where VOC's are detected, the rods will be washed inside and out with a trisodium phosphate (TSP) solution, followed by a potable water rinse. Note that virgin Tygon tubing will be used for the actual sample collection, and that this tubing will be discarded after each sampling event.

   b) quality assurance/quality control - These procedures are lengthy and are described in Exhibit B of this memo.

   c) laboratory confirmation of field results - At least 25% of samples in which VOC's are below detection limits (as determined by the field unit) will be confirmed by laboratory analyses. At least 10% of samples in which VOC's are detected will be confirmed with lab analyses.

   d) sample blanks - One sample blank per day will be run on the down-hole tools and analytical train. Duplicate analyses will be done on no less than 10% of the samples collected.

   e) standards - Commercially prepared standards that meet EPA specifications will be used to calibrate the gas chromatograph (GC).

Standards will be employed for each of the specific VOC's identified at the site, and for common VOC's that have not been detected (e.g. trichloroethene). The upper calibration limit for each VOC will exceed the maximum concentration previously determined at the site.

f) detection limits - For each VOC, the detection limit will be equal to or less than 1 part per billion (ppb).

g) sampling method - One-inch, stainless-steel rods are hydraulically advanced to the desired (sampling) depth. These are threaded and flush joint, with a pointed, sacrificial tip. The rods are pulled back 4"-6", separating the tip and exposing the formation interval. Tygon tubing is sent down the inside of the rods and attached with a reverse-threaded fitting to the bottom. Formation water is withdrawn and fed to a purge-and-trap unit, and then injected into the GC using a gas-tight syringe. Samples destined for the laboratory are fed directly from the tubing into a Teflon-lined VOC vial.

For layer 6 (beginning at about 47 feet depth), the procedure will be as described, with the following modification. Hollow-stem auger with a wooden plug in the bottom will be advanced to approximately 44 feet (into confining layer 5). The hydraulic probe will be inserted in the auger, used to push away or break the plug, and then advanced to the sampling depth.

h) preservation - There will be no preservation of samples analyzed in the field. Analyses will be done within minutes of sample collection. Duplicate samples for laboratory analysis will be acidified with HCl (to EPA standards), then placed on ice.

i) holding times - For samples analyzed in the field, there will be effectively no holding time. For samples delivered to the laboratory, holding times will be no longer than required to meet EPA standards. Samples will be stored and transported under appropriate chain-of-custody procedures.

j) analytical methods - The concentration of VOC's analyzed in the field will be determined by gas chromatography, using EPA

601/602 procedures.

k) materials - Samples will be collected through virgin Tygon tubing.

l) hole abandonment - Holes used to sample layers 1-2 or 4 will be abandoned by pumping a bentonite slurry through the probe rods, as the rods are withdrawn. The slurry will consist of Hole Plug, Volclay or similar abandonment materials, mixed to manufacturer's specifications. Abandonment of holes that penetrate layer 6 (see item g above) will be accomplished by pumping bentonite through the probe rods until the rods have been raised from the sampling depth to the inside of the hollow-stem auger. The rods will then be removed and the auger hole filled with slurry, also emplaced by pumping.

m) waste handling - There are three types of waste to consider: sample water and materials used in sampling and analysis, wash water used to clean equipment, and auger cuttings generated during sampling of layer 6. Sample water and materials will consist of a few liters of liquid and a few hundred feet of Tygon tubing. These will be delivered to the County-operated hazardous waste collection center at the landfill. Wash water will consist of a few hundred gallons of TSP solution and water from pressure or steam cleaning. This water will be generated in smaller increments over the course of the probing work, and may temporarily contain low concentrations of the eight VOC's found at the site. These will be volatalized quickly during the washing process. To facilitate this volatilization, a wash area will be designated on a flat area of the closed waste cell, at least 100 feet north of the fence line. Auger cuttings are expected to consist of less than a 55-gallon drum of sediment. These will be temporarily stored on plastic sheeting at the auger site, then removed and taken to the nearby active disposal area.

n) field parameters - Samples collected for GC analysis will also be analyzed for dissolved oxygen, conductivity, pH and temperature.

o) cross-contamination - Collection and analytical procedures are designed to minimize the potential for cross-contamination between samples. The GC unit is purged and heated between analyses, and the collection tubing is not reused. Periodic blanks and duplicate analyses are run to insure acceptable quality control.

Cross-contamination between sedimentary zones is not a realistic threat. The down-hole tools will be cleaned after every site where VOC's are detected. Individual holes will be used for each sample (i.e. at the same site, separate holes will be used to obtain samples from layer 1-2 and from layer 4). Layer 1-2 is uppermost, and thus cannot be cross-contaminated by deeper layers. Layer 6 will be sampled through hollow-stem auger, and is in that way isolated. Layer 4, where the highest concentrations of VOC's have been found, will be sampled after the probe has penetrated layer 1-2. However, the probe is flush-joint, is not rotated as it is advanced, and has a tip that makes a smooth connection with the rod. No significant material will be carried downward as the probe advances. The tight seal between the formation and the rod will preclude water from layer 1-2 being transported downward to layer 4. This would not occur anyway under static conditions, because there is no downward gradient. Pumping from layer 4 will be brief and at low rates (a few ml/second), also minimizing the opportunity for cross-contamination.

4. Sampling grid for mobile laboratory. The sampling grid shown in Figure 3.3 of the CAP (p. 3-6) is conceptual. For example, if contaminants were to be detected at the last sampling point shown on a grid line, that grid line would be extended and more sampling points added. Similarly, if no contaminants were found in a particular layer along one of the grid lines, that layer would not be sampled along grid lines farther from the closed waste cell. Because of its conceptual nature and because of our agreement with DER that the number and length of grid lines will be determined by analytical results, we are not revising Figure 3.3.

As discussed in section 3.30 of the CAP, the hydraulic probe will be used for screening of layers 1-2 and layer 4. It will also be used to sample layer 6 (p. 3-7), if it can be successful at that depth. If it cannot, at least two double-cased wells will be installed into layer 6, as described below in response to item 13.

Regarding criteria for cessation of sampling along a grid line, we will continue with the hydraulic probing and sampling until, at two adjacent sites, concentrations of VOC's are below detection limits. This criterion will be applied independently to layer 1-2 and layer 4; that is, if layer 1-2 meets the criterion for cessation but layer 4 does not, sampling will be discontinued in layer 1-2 and continued in layer 4.

5. Status reports. Monthly status reports will be submitted to DER once the CAP and QAPP have been approved.

6. Vertical extent of fill. Information regarding the depth of fill is based on the recollection of landfill personnel, and there are some differences in what is recalled. The closed waste area was excavated using a dragline, commonly to a depth of about 10 feet below the grade existing at that time (1969-1981). The operators were not restricted to a specific depth, however, and may have excavated 20 feet or more in some areas.

7. Analyses of well and surface water. The CAP proposes sampling surface water from the nearby drainage ditch and analyzing for priority pollutants (p. 3-7). For the many comprehensive analyses that have been done on water in the vicinity of B5, however, only VOC's have been identified as contaminants. Consequently, we and DER agreed at our meeting that analytical parameters should be changed from all priority pollutants to VOC's on the EPA list of priority pollutants. The reason for analyzing water from the drainage ditch is to determine if VOC's are present in detectable concentrations. This is important because water in the ditch is periodically pumped eastward and discharged to

offsite wetlands. We want to be confident that contaminants are not leaving the site.

Regarding analytical parameters for groundwater samples, we will sample each of the wells installed as part of the Contamination Assessment for both Primary and Secondary drinking water parameters. If possible, this will be done during quarterly sampling of other monitor wells at the landfill.

8. Field parameters. Field parameters to be determined at the time of sampling wells and surface waters are dissolved oxygen, conductivity, pH, and temperature. We agreed at our meeting with DER that, since metals were not constituents of concern in this particular assessment, turbidity is not a parameter that needs to be determined in the field.

9. Exploratory borings. Page 3-8 of the CAP describes the anticipated borings, which will number at least one, and possibly several. These will be Standard Penetration Test (SPT) borings (ASTM #D-1586), modified in that samples will be collected from 2.0 rather than 1.5 feet out of each 5-foot interval. Borings will be taken inside hollow-stem auger, to eliminate the need for drilling fluids and minimize the volume of drill cuttings. Samples of fine-grained sediments will be collected via the Shelby tube method (D-1587) since clayey intervals have been identified during previous exploration. Selected SPT and Shelby tube samples will be analyzed for vertical permeability (D-2434), grain-size distribution (D-421, D-422 and D-1140) and moisture (D-2216). Down-hole equipment will be steam-cleaned between borings. Test Boring holes will be abandoned using a bentonite slurry as described in item 31 (above). Auger cuttings will be disposed of as described in item 3m (above).

10. Slug tests. Slug tests will be performed on existing wells B5-20, 23 and 24, and on new wells constructed in the vicinity of B5. Tests will not be conducted on wells B5 or B5-B (because these wells are not screened against a single permeable interval), B5-21 (because this well

is screened into refuse) or B5-1 through B5-18 (because these are unsealed, temporary wells unlikely to yield reliable data). The method will consist of both a slug-out and a slug-in test. An overview of the method is as follows. A pressure transducer coupled to a data logger will be installed in the test well. Several gallons of water will be withdrawn from the well into a clean bucket, using a peristaltic pump. Recovery of the water level in the well will be measured and recorded. Water from the bucket will be poured into the well, and again the recovery - in this case of a declining water level - will be monitored. No waste materials will be generated. The DER will be supplied with a diskette of the data, as requested.

11. Water level recorders. Stevens Type F water level recorders will be used. Water level data will be recorded graphically and, as needed, transposed manually. The sensitivity of these recorders is approximately .01 feet.

12. Rainfall data. The raingage near the maintenance building will be maintained throughout the assessment. Measurable rain data will be collected daily and kept in a logbook.

13. Well construction. As discussed in our meeting with DER, the construction and development of monitor wells is simplified by the fact that elevated concentrations of metals have not been detected at the assessment site. As a result, we agreed that sophisticated well and filter pack design can be omitted, because turbidity control and metals analyses are not critical elements of the assessment.

    Monitor wells completed into layers 1-2 and 4 will be installed through hollow-stem auger with an inside diameter of approximately $6\frac{1}{4}$ inches. Casing and screen will be 2-inch diameter, Sch. 40, flush-joint, threaded PVC. The screen will be .01 slot size and 5 feet long. The filter pack will be DOT 20/30 silica sand, emplaced by pouring to one foot above the top of the screen. Two feet of fine sand will then be added atop the filter pack. (The reason that the filter pack and fine sand seal are slightly shorter than normal is that the aquitard separating

layers 1-2 and 4 is only about 5 feet thick. If the screen in layer 4 is near the top of that layer, a long filter pack/fine sand seal has the potential to provide a more-permeable bridge across the aquitard.) The annulus above the fine sand seal will then be filled with cement grout, emplaced by pouring as the augers are withdrawn. The grout will consist of 6 gallons of water per bag of cement plus approximately 4% bentonite.

Wells screened into layer 6 will be double-cased. The outer casing will be 6-inch diameter, Sch. 40 PVC, with glueless joints, installed to approximately the top of layer 6 (47 feet below ground). This casing will be installed by the mud-rotary drilling method (bentonite drilling mud) in a 10-inch hole. Three centralizers will be used, and the casing will be pressure-grouted with grout as described above. After the grout has set, it will be drilled out from the inside of the casing with biodegradable drilling mud (e.g. Revert), which will also be used to advance the open hole to the selected screen interval. This will be a 6-inch diameter hole, into which 2-inch screen and riser will be emplaced, as previously described. Filter pack, fine sand seals and grout will follow, also as described above. In this case, the seal will be at least 3 feet long.

Well development will be by the "surge and purge" technique, meaning that a centrifugal pump and drop pipe will be used to alternately disturb and evacuate water from inside the casing. This will be continued until the formation water is sand-free and relatively clear. Wells will be finished with the installation of a 2'x2'x4" cement pad and a locking protective steel cover.

Auger cuttings, drill cuttings, and drilling mud will be temporarily stored at the well sites, on plastic sheeting, or in a plastic-lined shallow pit. These will be removed by heavy equipment at the landfill, and taken for disposal to the active disposal area. Formation water generated during well development activities will be pumped to a tank truck, tested by EPA method 624 for VOC's, diluted or aerated as necessary, and transported for disposal to a municipal wastewater treatment plant.

14. Disposition of wastes. Wastes generated as a consequence of hydraulic probing will be dealt with in the manner described in item 3m (above). Item 9 above addresses wastes generated during test boring. No waste water is expected to be produced during slug tests (see item 10 above). Waste water and auger cuttings resulting from well construction and development are discussed in item 13 (above).

15. Water quality analyses. Parameters to be determined on water samples collected by hydraulic probing are described in item 3 (above). These include VOC's analyzed according to EPA 601/602 procedures, plus field determinations of dissolved oxygen, conductivity, pH and temperature. Analysis of surface water from the drainage ditch is addressed in item 7 (above). As discussed and agreed to at our meeting with DER, analytical parameters will include VOC's (determined by EPA 624 methodology), but not other classes of priority pollutants. Surface water will also be analyzed for dissolved oxygen, temperature, conductivity, Primary, and Secondary drinking water parameters. Well water will be analyzed for the same constituents and parameters as surface water. The rationale for this analytical suite is that VOC's are the contaminants identified at the site, so these must be included. Other synthetic organic compounds have not been detected, so there is no rationale for including them. Primary and Secondary drinking water parameters include most commonly employed indicator parameters, and are useful in the evaluation of site hydrology. In addition, their determination provides evidence regarding compliance with zone-of-discharge standards.

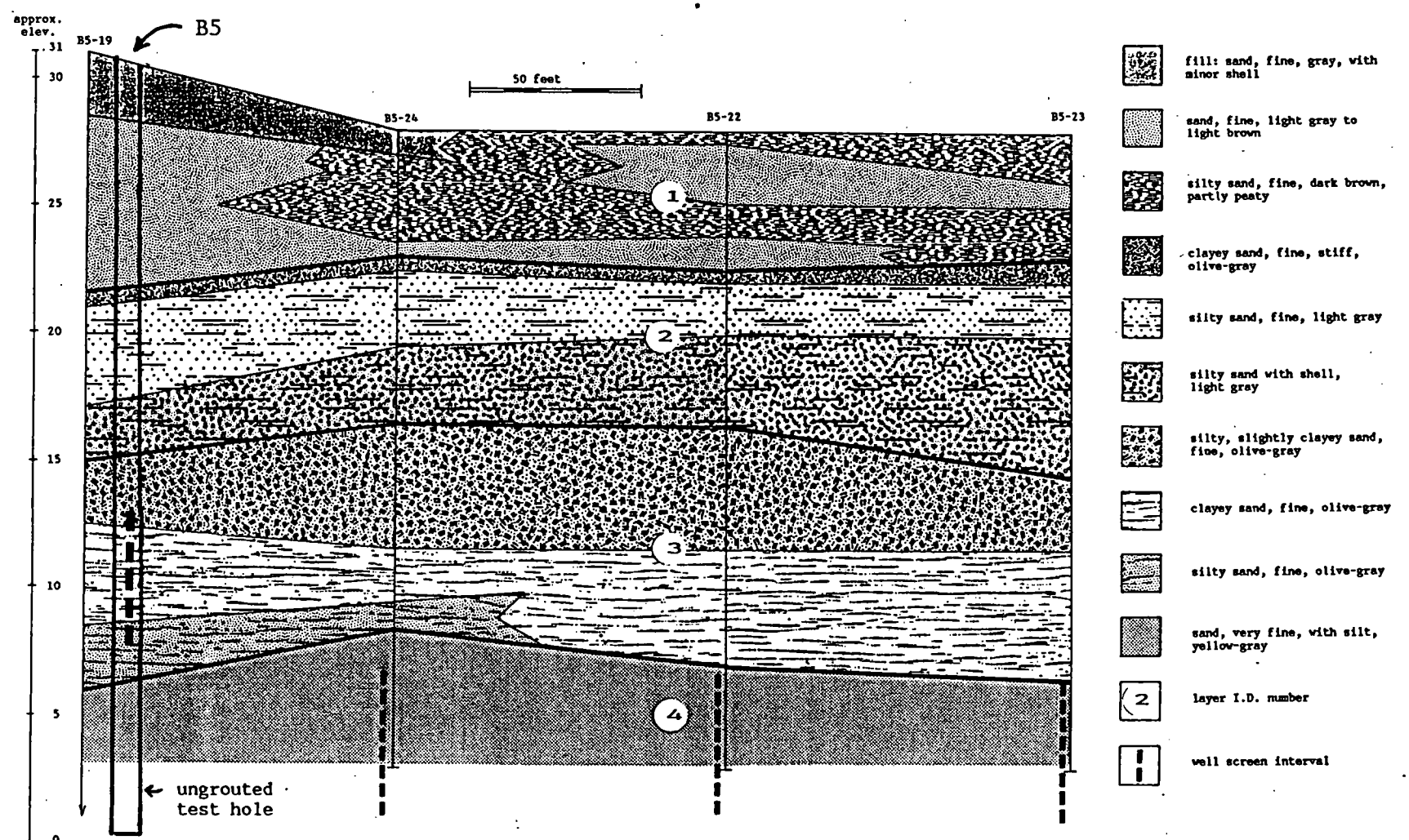


Figure 3.1 Lithologic Cross-Section Near Zone of Discharge

Exhibit A

METHODS FOR THE COLLECTION AND DETERMINATION OF VOLATILE HYDROCARBONS

1.0 SAMPLE COLLECTION

1.1 Soil vapor samples are collected from the vadose zone through steel rods driven to the desired sampling depth. Each sample is collected by drawing at least three volumes of soil vapor through 1/4 inch inside diameter polyethylene tubing inserted through the center of the rods. The pressure inside the tubing is allowed to drop to atmospheric before withdrawing a sample into a gastight glass syringe and injecting a representative sample into a gas chromatograph.

1.2 Groundwater samples are collected by driving steel rods to the desired sampling depth and allowing surficial groundwater to flow into the rods. A stainless steel bottom loading bailer or 1/4 inch polyethylene tubing is lowered through the rods to collect groundwater for chemical analysis. Samples are immediately transferred to a teflon capped container for laboratory analysis or loaded into the purge-and-trap sample concentrator for chemical analysis.

1.3 A hollow sampling tube, with a piston rod held in place by a pin, is driven down to the desired depth. The pin is then removed, allowing the piston rod to yield to the soil, and is pushed down an additional foot. The sample is then retrieved, extruded into a clean teflon-capped sampling jar, and prepared for analysis and/or sent into a laboratory for analysis.

2.0 SCOPE AND APPLICATION

2.1 This method may be used to determine the concentration of volatile organic compounds in air, water, and soil. Compounds of interest include: benzene, toluene, ethylbenzene, meta-, para-, and ortho-xylene, and other petroleum related hydrocarbons; as well as trichloroethylene, tetrachloroethylene, etc. The concentrations of other volatile organic hydrocarbons may be determined as long as the appropriate performance requirements of this method are met.

2.2 This method relies on the purge and trap sample concentration technique for water and soil matrices. Air or vapor samples may be quantified by direct injection of the sample onto the gas chromatograph (GC) column.

2.3 This method is restricted to use by or under the direct supervision of analysts experienced in the operation of a gas chromatograph, a purge-and-trap sample concentrator, and in the interpretation of chromatograms. Each analyst must demonstrate the ability to generate acceptable results (Section 5.X).

3.0 SUMMARY OF METHOD

3.1 Water: An inert gas (helium) is purged through a 5 mL water sample contained in a sealed glass chamber at ambient temperature. Volatile compounds are efficiently transferred from the aqueous phase into the vapor phase. The vapor is swept through a sorbent trap by the purge gas. When purging is complete, the trap is heated and backflushed with helium to desorb the compounds of interest. They are then carried by the desorb gas directly onto the GC column for chromatographic separation.

Soil: A soil sample is weighed into a purge and trap vial and approximately 3 to 4 mL of distilled water is added to wet and break up the soil matrix. The sample is then purged with the same procedure as a water sample.

Air/Vapor: Vapor from a soil probe or soil venting system is sampled directly with a gastight syringe. The sample is then injected directly onto the GC column through an injection port.

4.0 INTERFERENCES

4.1 Impurities in the purge gas and organic compounds outgassing from the plumbing ahead of the trap can cause contamination problems with water and soil samples.

4.2 Contamination by carry-over whenever high level and low level samples are sequentially analyzed. This is true for water, soil, and vapor samples. For water and soil, it is essential to run a reagent water blank after highly contaminated samples to check for cross contamination in the purging apparatus. For vapor samples, it may be necessary to run a reagent vapor or ambient air sample to insure that no carry-over contamination is present in the syringe.

4.3 Samples collected at or near petroleum distribution sites can contain higher boiling components such as diesel fuel and fuel oil. Passage of these mixtures through the purge and trap system may require extensive cleaning before the system is contaminant free. Cleaning may be accomplished by running reagent blanks until the system is contaminant free.

5.0 SAFETY

5.1 The toxicity or carcinogenicity of each reagent used in this method has not been precisely defined; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. The laboratory operator is responsible for maintaining a current awareness file of OSHA regulations regarding the safe handling of the chemicals used in this method.

6.0 APPARATUS AND MATERIALS

6.1 Gas Chromatograph: Shimadzu GC-14A with two injection ports - one for direct injection and the other linked to the purge and trap sample concentrator. A 4-port valve to allow switching between either injection port to either of two GC columns.

6.2 Purge and Trap Sample Concentrator: OI-Analytical Model 4460A equipped with an external heater for the analysis of soil.

6.3 Trap: A suitable trap for the desired compounds to be analyzed. Tenax (diphenylene oxide) polymer should be used for the determination of petroleum hydrocarbons and many other volatile organics. In any case, a suitable packing material to sorb the compounds of interest must be chosen.

6.4 GC Column: A 30 meter by 0.53 mm (Megabore) fused silica capillary column with 3 μm of polydimethylsiloxane stationary phase (J&W DB-1). This column works well for petroleum hydrocarbons and chlorinated organics. The

column chosen must give sufficient resolution between the compounds of interest.

6.5 Detector: Flame-ionization (FID) and photo-ionization (PID) detectors work well for petroleum hydrocarbons and other volatile organic hydrocarbons. An electron capture detector (ECD) is preferred for halogenated hydrocarbons. For the analysis of both petroleum hydrocarbons and chlorinated hydrocarbons, either a FID or PID may be used in series with an ECD.

6.6 Syringes: 5 mL glass with luerlock tip for water samples. 1 mL gastight syringes with valve (Precision Sampling Model A-2) for vapor samples. Various gastight and liquid syringes for diluting highly contaminated samples and spiking standards.

6.7 Balance: Analytical balance capable of weighing to the nearest 0.1 g

6.8 Spatulas: Stainless steel micro-spatula.

7.0 STANDARDS

7.1 Gas-Phase Standard: Certified gas standards may be obtained from Scott Specialty Gases. For petroleum hydrocarbons, a benzene, toluene, ethylbenzene, and xylene (BTEX) standard of 1.0 to 10 ppm (volume/volume) is suitable. Gas-phase standards of other hydrocarbons may be custom ordered.

7.2 Liquid Standards: BTEX in methanol - 25 ng/µL to 1 µg/µL. Gasoline in methanol - 0.1 to 10 µg/µL. For analysis of other compounds not listed above, custom standards may be purchased.

7.3 A maximum volume of 2 µL may be injected onto the GC column when a direct injection of a standard in methanol or some other solvent is made.

8.0 PROCEDURE

8.1 Volatile compounds are introduced into the GC by either direct injection (in the case of soil vapor) or purge-and-trap. The purge-and-trap method may be used directly on water and soil samples that are moderately contaminated. For soil samples that are highly contaminated, a methanolic extraction (dilution) may be necessary prior to analysis. In the case of highly contaminated vapor or water samples, direct injection of smaller volumes is utilized.

8.2 Gas Chromatography Conditions: Set in accordance to one or more of the following EPA methods 8000, 8010, 8020, 8100, 601, and 602 which correspond to the compounds being analyzed for.

8.3 Calibration: For each method, an initial and periodic check must be made to verify accuracy. To ensure the instrument response is linear, at least three calibration standards must be run at different concentrations: one at

or near the detection limit; one at the maximum expected concentration range; and one midway between the two.

Tabulate peak area versus mass injected. The results can be used to prepare a calibration curve for the detector. Alternatively, the ratio of the response factor (RF) can be calculated for each analyte at each standard

$$\text{Response Factor} = \frac{\text{Mass Analyte}}{\text{Total area of peak}}$$

concentration. If the percent relative standard deviation is less than 20% over the working concentration range, linearity can be assumed (between the upper and lower calibration limits) and an average response factor can be used in place of a calibration curve. Where gasoline is the analyte, the response factor can be calculated by the ratio of mass gasoline to the total area under all peaks.

The response factor for each analytical method used must be verified each working day by injection of one or more calibration standards. A log should be kept to compare the response of the instrument over time. A difference between the response factors generated during successive days greater than 15% indicates a significant change in the response of the instrument and should be investigated by recalibration and a check on the standard used.

8.4 Sample Analysis: **Aqueous samples** - use a clean 5 mL syringe to withdraw approximately 1 mL sample. Pull the plunger back in the syringe and rinse the walls with the sample. Expel the rinseate and withdraw a full 5 mL sample into the syringe. Expel the sample into the purge vial and connect the vial to the purge and trap unit.

The process of taking an aliquot from a purge and trap vial creates headspace in the vial and alters the validity of the sample for future analysis. The analyst can circumvent this problem by initially filling an additional syringe. The use of a larger syringe (20 mL) allows the analyst to make 4 analyses of a sample from a single vial. If a second analysis is needed from a syringe, it must be analyzed within 24 hours. Care must be taken to prevent air from leaking into the syringe. Dilutions of highly contaminated samples can be accomplished by adding a fraction of the required volume (5mL) to the purge flask. The remainder of the volume should be made up with reagent water. The amount of sample dilution needed for highly contaminated samples is variable. The analyst must dilute the sample sufficiently to bring its concentration within the linear range of the detector. After the purge cycle of the sample is complete, the purge vessel may be loaded with the next sample.

Soil samples: Use the same purge-and-trap time and temperature parameters as for aqueous samples. Weigh out approximately 2 to 5 grams of soil into a preweighed purge vessel with a clean microspatula. Care must be taken to select a representative sample. Weigh the sample and add sufficient reagent water to bring the total liquid and solid volume to approximately 4 to 5 mL. Samples that are not readily wetted such as clays must be broken up with a microspatula before analysis. This may be accomplished by gently grinding the sample against the vessel side walls until it is suspended or broken up in the water. Wipe the outside of the vessel and attach it to the purge chamber. Care must be taken to minimize the time between weighing of the sample and attachment to the purging chamber to prevent loss of volatiles from the sample. It may be necessary to cover the top of the vessel with parafilm during the above process. A microspatula can easily be inserted through the parafilm coating.

Highly contaminated soil samples may be analyzed by a methanolic extraction. Weigh approximately 5 grams of sample into a preweighed 40 mL teflon capped purge-and-trap vial. Add 5 mL of purge-and-trap grade methanol into the vial and cap it tightly. Shake and agitate the sample until it is completely broken up (it may be necessary to mix the sample with a spatula) and allow the suspended particles to settle. Add an aliquot of the extract with a clean microliter syringe into a purge vessel filled with 5 mL reagent water. The volume of aliquot added will depend on the concentration of the contaminated soil. A good volume to start is approximately 50 µL. The following table can be used to determine the amount of methanol extract to add to the purge vessel.

Approximate Concentration Range	Volume of Methanol Extract
0.5 - 10 mg/kg	50 µL
1.0 - 20 mg/kg	25 µL
5.0 - 100 mg/kg	5 µL

Calculate appropriate dilution factor for concentrations exceeding this table

9.0 CALCULATIONS

9.1 External standard calibration: The concentration of each analyte in the sample may be determined from the peak response for individual analytes or a summation of peak response for mixtures, such as gasoline. The calibration curve or calibration factor determined that day is used and the concentration of a specific analyte is calculated

as follows:

Aqueous Samples:

Concentration ($\mu g/L$) = $(Area_X)$ (RF) (F) / $(Volume_S)$

where: $Area_X$ = Peak area of the analyte in the sample
RF = Response factor for the analyte of interest (mass (μg)/area)
$Volume_S$ = Volume of the sample in liters
F = Dilution Factor

Soil Samples:

The equation above is used except the mass of the sample is inserted in the place of the sample volume.

10.0 QUALITY CONTROL

10.1 Each mobile laboratory that uses this method is required to operate a formal quality control program. The minimum requirements of this program consist of an initial demonstration of laboratory capability and an ongoing analysis of spiked samples to evaluate and document data quality. Records must be kept to document the quality of data generated. Ongoing data quality checks are compared with established performance criteria to determine if the results of analyses meet the performance characteristics of the method. When results of sample spikes indicate atypical method performance, a quality control check standard must be analyzed to confirm that the measurements were performed in an in-control mode of operation.

10.2 Before processing any samples, the analyst should demonstrate, through the analysis of a reagent water blank or syringe blank, that interferences from the analytical system, glassware, and reagents are under control. Each time a set of samples is analyzed or there is a change in reagents, a reagent water blank should be processed as a safeguard against chronic laboratory contamination. The blank samples should be carried through all stages of sample preparation and measurement.

10.3 Approximately 10% blank samples, spike samples and duplicate analyses must be analyzed (the frequency of spikes may vary).

10.4 The experience of the analyst performing gas chromatography is invaluable to the success of the methods. Each day that analysis is performed, the daily calibration samples should be evaluated to determine if the chromatographic system is operating properly. Questions that should be asked are: Do the peaks look normal? Is the response obtained comparable to that of the previous calibrations? Careful examination of the

standard chromatogram can indicate whether the column is still good, the injection port septum is leaking, the gastight syringes are actually gastight, etc. If any changes are made to the system (e.g. column changed, detector/s cleaned, trap changed), recalibration of the system must take place.

10.5 Check surrogate standard recoveries in samples, blanks, and spikes. Determine if recoveries are within acceptable limits.

10.6 Along with the mobile laboratory analysis, samples are sent to other laboratories periodically for comparison.

Florida Department of Environmental Regulation

Central District • 3319 Maguire Boulevard, Suite 232 • Orlando, Florida 32803-3767

Lawton Chiles, Governor — Carol M. Browner, Secretary

August 7, 1992

Briley, Wild & Associates, Inc.
Post Office Box 607
Ormond Beach, Florida 32175

OCD-SW-92-0314

Attn: Lee Powell, P.E.

Volusia County - SW
Tomoka Farms Road Landfill
Contamination Assessment Plan
OGC No. 91-0845

Dear Mr. Powell:

This is in response to your letter dated August 3, 1992 asking for an extension in time to respond to my July 17, 1992 letter for the subject plan.

We have no objection to you submitting a response by October 6, 1992.

If you have any questions, please contact me at 407/894-7555.

Sincerely,

Richard B. Tedder, P.E.
Program Manager
Solid Waste

RBT/ew

cc: James L. Griffin - Volusia County
W. McKenty - FDER - Waste Cleanup

Recycled Paper

County of Volusia

Department of Engineering and Utilities
123 West Indiana Avenue • DeLand, Florida 32720-4262

RBB
GJD
LL
to Tomoka LF
CO File ?

August 11, 1992

Mr. Richard Tedder, P.E,
Solid Waste Management Section
Department of Environmental Regulation
3319 MaGuire Boulevard, Suite 232
Orlando, Florida 32803

RE: July Sampling B_5 Tomoka Landfill

Dear Mr. Tedder:

Enclosed you will find analysis for the B_5 monitoring wells located at the Tomoka Landfill. Please advise if additional information is needed.

Respectfully submitted,

Susan M. Gaze
Environmental Specialist
for Solid Waste Management

SMG:mb
SW-92-3206

Enclosure (4)

c: James L. Griffin, Director of Solid Waste Management

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Drinking Water Certification
HRS #83160

VOLUSIA COUNTY DPW

1990 TOMOKA FARMS RD
DELAND FL 32114
ATTN: SUSAN GAZE

Description: 9 WATER SAMPLES Samples Received on 06/25/92

Sampled By: ENVIROLAB Client Job/PO Number: NC24353

Reference Number: 923777 Reported Date : 07/02/92
Invoice Number: 92-3777

Sample	Description	Client Id
0001	TOMOKA LANDFILL	B-5
0002	TOMOKA LANDFILL	B5-B
0003	TOMOKA LANDFILL	B5-20
0004	TOMOKA LANDFILL	B5-21
0005	TOMOKA LANDFILL	B5-22
0006	TOMOKA LANDFILL	B5-23
0007	TOMOKA LANDFILL	B5-24
0008	TOMOKA LANDFILL	EQUIPMENT BLANK
0009	TOMOKA LANDFILL	TRIP BLANK

PARAMETER		SAMPLE NUMBER 0001	0002	0003	0004	0005	0006	0007	0008
PROFILE: GC/MS VOLATILES									
1,1,1-TRICHLOROETHANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
1,1,2,2-TETRACHLOROETHANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
1,1,2-TRICHLOROETHANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
1,1-DICHLOROETHANE	UG/L	1.9	< 1	< 100	< 1	< 1	< 1	< 1	< 1
1,1-DICHLOROETHENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
1,2-DICHLOROBENZENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1

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HRS #83160

Reference Number: 923777

PARAMETER		SAMPLE NUMBER 0001	0002	0003	0004	0005	0006	0007	0008
1,2-DICHLOROETHANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
1,2-DICHLOROPROPANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
1,3-DICHLOROBENZENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
1,4-DICHLOROBENZENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
2-CHLOROETHYLVINYL ETHER	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
BENZENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
BROMODICHLOROMETHANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
BROMOFORM	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
BROMOMETHANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
CARBON TETRACHLORIDE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
CHLOROBENZENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
CHLOROETHANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
CHLOROFORM	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
CHLOROMETHANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
CIS-1,3-DICHLOROPROPENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
DIBROMOCHLOROMETHANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
ETHYLBENZENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
METHYLENE CHLORIDE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
TETRACHLOROETHENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
TOLUENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	19	< 1
TRANS-1,2-DICHLOROETHENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
TRANS-1,3-DICHLOROPROPENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
TRICHLOROETHENE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
TRICHLOROFLUOROMETHANE	UG/L	< 1	< 1	< 100	< 1	< 1	< 1	< 1	< 1
VINYL CHLORIDE	UG/L	< 1	< 1	1800	< 1	< 1	< 1	< 1	< 1

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HRS #E83079

Drinking Water Certification
HRS #83160

Reference Number: 923777

PARAMETER		SAMPLE NUMBER 0009
PROFILE: GC/MS VOLATILES		
1,1,1-TRICHLOROETHANE	UG/L	< 1
1,1,2,2-TETRACHLOROETHANE	UG/L	< 1
1,1,2-TRICHLOROETHANE	UG/L	< 1
1,1-DICHLOROETHANE	UG/L	< 1
1,1-DICHLOROETHENE	UG/L	< 1
1,2-DICHLOROBENZENE	UG/L	< 1
1,2-DICHLOROETHANE	UG/L	< 1
1,2-DICHLOROPROPANE	UG/L	< 1
1,3-DICHLOROBENZENE	UG/L	< 1
1,4-DICHLOROBENZENE	UG/L	< 1
2-CHLOROETHYLVINYL ETHER	UG/L	< 1
BENZENE	UG/L	< 1
BROMODICHLOROMETHANE	UG/L	< 1
BROMOFORM	UG/L	< 1
BROMOMETHANE	UG/L	< 1
CARBON TETRACHLORIDE	UG/L	< 1
CHLOROBENZENE	UG/L	< 1
CHLOROETHANE	UG/L	< 1
CHLOROFORM	UG/L	< 1
CHLOROMETHANE	UG/L	< 1
CIS-1,3-DICHLOROPROPENE	UG/L	< 1
DIBROMOCHLOROMETHANE	UG/L	< 1
ETHYLBENZENE	UG/L	< 1
METHYLENE CHLORIDE	UG/L	< 1
TETRACHLOROETHENE	UG/L	< 1
TOLUENE	UG/L	< 1
TRANS-1,2-DICHLOROETHENE	UG/L	< 1
TRANS-1,3-DICHLOROPROPENE	UG/L	< 1
TRICHLOROETHENE	UG/L	< 1

ENVIROLAB

ENVIROLAB, INC.

P.O. Box 607
Ormond Beach, Florida 32175
(904) 672-5668 • FAX (904) 673-8264

Environmental Certification
HRS #E83079

Drinking Water Certification
HRS #83160

Reference Number: 923777 Page: 4

PARAMETER		SAMPLE NUMBER 0009
TRICHLOROFLUOROMETHANE	UG/L	< 1
VINYL CHLORIDE	UG/L	< 1

APPROVED BY: Frank Guzman

F. Guzman/R. Sullivan
Laboratory Contact

QC ACCEPTABLE
JUL 28 1992
H.F. ACOSTA
QA/QC OFFICER

BRILEY, WILD
AND ASSOCIATES

August 3, 1992

VC 92067-6CE

Mr. Richard Tedder, P.E.
Solid Waste Program Manager
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

Re: Tomoka Farms Road Landfill
Volusia County
OGC Case No.: 91-0845

Dear Mr. Tedder:

We appreciated the opportunity to meet with you on July 28, 1992 to discuss the proposed groundwater contamination investigation. Based on that meeting we may begin preparation of the response to your July 17, 1992 letter. Your July 17 letter gave the County 30 days from receipt of the letter to respond. We received the letter on July 23, 1992 which gives the County until August 22, 1992 to complete the the response.

We are hereby requesting an additional 45 days until October 6, 1992, to allow us to more thoroughly evaluate and respond to your comments. We will in any case respond as quickly as possible, as we are very anxious to proceed with the investigation.

We appreciate your consideration in this matter.

Very truly yours,

BRILEY, WILD & ASSOCIATES, INC.
CONSULTING ENGINEERS & PLANNERS

Lee A. Powell, P.E.
Assistant Director of Engineering

LAP/lhm
cc: Mr. Jim Griffin
Dr. David Gomberg

Briley, Wild and Associates, Inc.
Consulting Engineers and Planners
1040 North U.S. Highway One
P.O. Box 607
Ormond Beach, FL 32175
904/672-5660 • FAX 904/673-8264
Offices in Bradenton, Clearwater,
Daytona Beach, Orlando & Ormond Beach, FL

Florida Department of Environmental Regulation

Central District • 3319 Maguire Boulevard, Suite 232 • Orlando, Florida 32803-3767

Lawton Chiles, Governor — Carol M. Browner, Secretary

MEETING ATTENDANCE RECORD	
Purpose: TOMOKA FARMS ROAD L/F, GWMP	Date: July 28, 1992
Name (please print)	Affiliation
GEORGE CHERYAN	DER
LAXSAMEE LEVIN	DER.
J. L. GRIFFIN	VOLUSIA COUNTY
S. M. GAZE	Volusia County
Gloria-Jean Dothadine	DER.
Lee Powell	Bailey Wild & Assoc
William W. [illegible]	FDER 407-894-7555
Richard Tedder	FDER
DAVE Gomberg	with Vol. Co.
BILL BOSTWICK	DER

Continued on reverse side

Recycled Paper

7/28/92 Donaldson LF Issues

Re: CAP discussions and GWMP issues

GWMP Issues 6/23/92

1) Response will be pooled.
2) Bob Sullivan Envirolab will do Sampling & analysis, Parameters & freq will be specified in permit changes
3) Surface waters ⇒ Class III
Don't worry about # DOT borrow pits off-site.
not (Elevations of surface & bottom of ponds on-site only, not within 1 mile radius. To be done w/ Item #7 Contour Map.
7) March 91 is the most complete set of data
Put 12 more piezometers to get better definition (4 lines of 3 piezometers) Put the piezometers on, as specifications require.

4) will provide more info.
5) Drop. O/A. Specified on Figures
6) Question on methods to determine Kv. Dr Gomberg submitted info on the struggles to do Kv. We (DER) did not receive. Seismic, Heat Pulse Flow meter
Agree to look at info sent to Bill McKenty.
Agree to do slug tests after wells installed. Dr Gomberg prefers constant head test.
8) Will provide more language.
Best guess language.
9) 25' head maintained. Will describe in more detail in connection with submittal.
10) Will look more at detention pond impact on gw flow from Class I.
Can monitor this. Will also look at deep wells in that area.
Also, Dr Gomberg says we should agree to require Floridan monitoring at the site. *Agreed to require Floridan well monitoring.
B-5 is being addressed in monitoring.

Elaborate on screens on Zone 4 and add some in upper surficial

11) SW-1 & SW-9 were used some time in the distant past

12) Will prepare a draft and give to Bill for preliminary review.

13) Will survey will give info
14) Accept existing figures
15) Enviro Lab Report 1991 Report has been submitted.
16) Already do this. Will do so state.

CAP Issues

1) Will think about this more May recommend to abandon
2) Show this in future for existing wells and any removes.
3) Screening techniques description must be in the CAP. DO does not apply in the screening modes.

4) Dr Somberg [illegible] call Bill
[illegible] on [illegible] [illegible] pts.
Dr Somberg will answer

5) [illegible] on [illegible]
when work is going on
on CAP. [illegible] to [illegible] [illegible]

6) 10-15 [illegible] will discuss in
CAP.

7) VOC sampling is needed not
all priority pollutants.

8) drop turbidity.

9) Will ~~[illegible]~~ respond to.
4% bentonite cement
6 gallons [illegible] to 80 lb. bag.

10) ~~[illegible]~~ will respond to.

11) Will use Stevens type with
chart recorder. Will purchase
one additional Stevens Type F
recorder.

12) Have rain gauges.

13) 2" well, 10 [illegible], 20/30 Sand,
Filter pack to [illegible] 30% or
greater of formation
Use fine grained sand ~~[illegible]~~ for seal.

Surge & purge ok for well development. Double cased wells below Level 5.

14) OK, well provide

15) Analytical ~~[illegible]~~ suite = Epa 60.1

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To: _____ Location: _____
To: _____ Location: _____
To: _____ Location: _____
From: _____ Date: _____

Interoffice Memorandum

TO: Bret LeRoux, PG

FROM: Richard B. Tedder, P.E.

DATE: 4-20-92

SUBJECT: County Volusia Permit No. ____

Facility Tomoka Farms Rd LF

Attachment QAPP for Contamination at well B-5.
Has Consent Order # DOC 91-0845

The attached is being sent to you for:

____ Information only

✓ Review and comments

If review and comments are needed, please respond:

____ By _____

(Solid Waste deadline date is _____)

____ As soon as possible for your schedule.

Comments: Project Manager - WWM

---

cc: GJD ✓

Florida Department of Environmental Regulation

Central District • 3319 Maguire Boulevard, Suite 232 • Orlando, Florida 32803-3767

Lawton Chiles, Governor — Carol M. Browner, Secretary

July 17, 1992

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
P810 426 684

Lee A. Powell, P.E.
Assistant Director of Engineering
Briley, Wild and Associates, Inc.
1040 North U. S. Highway One
Post Office Box 607
Ormond Beach, FL 32175

OCD-SW-92-0278

Volusia County - SW
Tomoka Farms Road Landfill
OGC Case No.: 91-0845
Review and Comments Contamination Assessment Plan

Dear Mr. Powell:

The Department has reviewed the above referenced document and has the following comments, which should be addressed within thirty (30) days from reciept of the this letter.

1. Section 3.10 refers to well B5 as being hydraulically connected to two separate permeable zones. Please detail how this was determined. Well B5 should be properly abandoned as per St. Johns River Water Management District specifications.

2. A figure should be provided which graphically illustrates the interaction between screened interval of all assessment wells in the vicinity of well B5 and the geologic cross-section.

3. Section 3.30 and Appendix C refer to the use of a mobile laboratory and hydraulic probing and sampling. The Department encourages such screening methods for the preliminary determination of vertical and horizontal extent of contaminant. However, the CAP does not provide sufficient details or specifications in regards to the proposed use. The CAP should include a description of the entire functional use of screening method. This should

Recycled Paper

include, decontamination procedures, quality assurance/quality control procedures, laboratory confirmation of a percentage of samples, use of sample blanks, analytical standards to be employed, detection limits, sampling method, preservation, holding times, analytical method(s) to be employed, materials used in sampling, methods used to abandon hole, waste handling and any other relevant facts pertaining to the screening methods use. Please stipulate what field parameters will be collected in association with this screening method. Dissolved oxygen should be taken at a minimum on all samples collected. What procedures will be employed to eliminate the potential for cross contamination?

4. The proposed sampling grid spacing for the mobile laboratory and hydaulic probing is sufficient except to the north of the drainage canal. Sampling points should be added in this area. In addition, the CAP should propose to continue screening based upon a criteria or indicator limit. The screening method should sample at all possible zones likely to be impacted to determine vertical extent and should perform sampling starting in areas of known contamination and advance radially out to determine its extent. The CAP should provide a criteria for the cessation of sampling along a grid line, such as two (2) consecutive sampling points below detectable limits.

5. The CAP should stipulate that monthly status reports will be submitted to the Department regarding site activities once the CAP and QAPP have been approved.

6. What is the vertical extent of fill in the cell(s) bordering the area of investigation?

7. Please explain the rationale for sampling of surface waters periodically for priority pollutants. Sampling of wells should include primary and secondary drinking water standards as well as landfill indicator parameters. This may be performed in conjunction with sampling of landfill wells for compliance with landfill permit requirements.

8. Please list in the CAP the field parameters to be collected during sampling of the wells and surface waters. These should include, at a minimum, dissolved oxygen, turbidity, conductivity, pH, temperature, depth to water or surface water elevation.

9. Please detail the type of exploratory boring(s) to be performed and their associated ASTM method numbers. This should include method and intervals

of sampling, method for determination of hydraulic conductivity, permeability, grain size analyses, hole abandonment, decontamination procedures, waste handling, etc.

10. Slug tests should be performed on selected wells both shallow, deep, existing and newly installed which characterize the formations monitored. The CAP should propose the slug test method, procedure and equipment to be used. Should a data logger be used in the collection of data the Department should be supplied with a computer diskette of the data.

11. Please describe the type, manufacturer, data collection method and sensitivity for the proposed water level recorders proposed in the CAP (page 3-9).

12. Raingauges should be employed and measurable rain data collected daily and kept in a logbook.

13. Section 3.60 Well Construction and Abandonment, is insufficient in regards to the design, installation, construction, development of proposed monitor wells and the abandonment of existing wells. The CAP should specify the methods employed to design both the filter pack and well screen slot size. This design should be based upon grain size analyses of the formation(s) (zone) to be monitored. This information should be collected and the design completed prior to the installation of new monitor wells. The well construction specifications do not refer to the use of seals. Shallow wells should be constructed with fine grain sand seals which are designed based upon the aforementioned grain size analyses. The fine grain sand seals should be at a minimum three (3) feet in thickness. Bentonite seals should be at minimum one (1) foot in thickness and should only be installed in wells where the seal will remain hydrated. The well filter packs should be installed to a minimum of two (2) feet above the screened interval. The CAP should be specific in regards to well development. This should include materials and equipment used in development, method of development, criteria for the completion of development and handling and disposal of development water. What percent bentonite will be used in the grout? What is the formulation of the grout (cement to water to bentonite)? What are the dimensions of the concrete surface Pad? What diameter is proposed for the new wells? For wells that are to be installed below a confining unit(s) double casing of wells should be performed. The CAP does not propose this and therefore is insufficient. The revised CAP must include a complete description of the construction of both shallow well construction and deep double cased wells. What type of drill rig will be used in the installation of the

wells? What will be the diameter of the bore hole? What are the dimension of the hollow stem augers if they are planned to be used in drilling? The augers must be at least six and a quarter (6-1/4) inches inside diameter for the construction of two (2) inch monitor wells. Will drilling muds be used in the installation of monitor wells, if so what types?

14. The CAP should describe practices to be used in the storage, disposal and handling of wastes generated during drilling, development and sampling. The practices should conform to the attached "Guidelines for Disposal of Waste Material Generated During Assessment Work at Contaminated Sites".

15. The CAP should document the analytical suite to be employed in the assessment. This should include EPA methods and rationale. The CAP refers to VOCs, SOCs, trace metals etc. but never identifies what individual parameters or methods will be analyzed.

If you have any questions, please contact me or William McKenty at (407) 894-7555.

Sincerely,

Richard B. Tedder, P.E.
Program Manager
Solid Waste

Enclosure

cc: William McKenty - FDER - Waste Cleanup Section
James L. Griffin - Volusia County
Susan M. Gaze - Volusia County

RT/wwm

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To: _____ Location: _____
To: _____ Location: _____
To: _____ Location: _____
From: _____ Date: _____

Interoffice Memorandum

Sent to S. Labie on 4/27/92 RBB

TO: *Richard Tedder*, P.E. OCD-WCU-92-0139

THROUGH: *Allen Hubbard*, P.E.

FROM: *William W. McKenty, III*

DATE: April 27, 1992

SUBJECT: TRANSMITTAL OF TOMOKA FARMS ROAD LANDFILL QAPP

Attached please find the above referenced document which is ready to be submitted to the Department's Quality Assurance Section in Tallahassee. I have reviewed the plan and have completed QAS form 2-90 which is attached to the plan. Please forward this plan to QAS for their review.

Should you have any questions regarding this matter please feel free to contact me at extension 316.

WWM/aph/wwm

Department of Environmental Regulation

Routing and Transmittal Slip

To: (Name, Office, Location)

1. Silkie Cabie QAS Tallahassee
2.
3.
4.

Remarks:

FOR Review QAPP

Tomoka Farms Road Landfill

OCG # 91-0845

From: Richard Tedder FPER-OCD-SW

Date: 4/27/92

Phone: SC 325-1011

Quality Assurance Project Plan
Transmittal Form
(DER Internal Use Only)

QAS FORM 2-90
QAP Transmittal Form
Revision 1/11/91

I. PROGRAM FUNCTION

Permit Related [ ] | Enforcement Related [ ] | Project QA#:(if known)

Permit# _____ | OGC# 91-0845 | _____

Direct Contract [ ] | Other [ ] | List Rule applicable to QAP:

Contract # _____ | _____ | FAC 17- _____

II. SITE-SPECIFIC INFORMATION

Site name: Tomoka Farms Road L.F.

Address: 1990 Tomoka Farms Road
Daytona Beach, FL. 32114

III. PROJECT MANAGEMENT

District Offices:

DER District/Section OCD-SW-

DER Coordinator William McEnty (WCW)

Phone# 813 325-1316

Date received 4/20/92

Date Forwarded to QA Section 4/27/92

Tallahassee Offices:

DER Section _____

DER Coordinator _____

Phone# _____

Date received _____

Date Forwarded to QA Section _____

IV. QA PLAN CONTENTS

The QAPP is submitted on DER Form 17-160.900 or other DER formatted QAPP:
Yes [✓] No [ ]

The QAPP Project Description, Sampling Matrices and Parameter List coincides with the requirements of the Permit, Consent Order, or Direct Contract:
Yes [✓] No [ ] *If not, return the plan to preparer with specific requirements*

V. COMMENTS

VI. ROUTING

Copies of correspondence should be sent to:
Richard Tedder - SW

James Griffin
Volusia County
Dept. of Solid Waste Management
123 W. Indiana Ave.
Deland, FL 32720

Susan M. Gaze
Volusia County
Public Works Dept.
136 North Florida Ave.
Deland, FL 32720

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

TO: *Ricahrd Tedder, P.E.* OCD-WCU-92-0191

THROUGH: *Bret Leroux, P.G.* GBL

FROM: *William W. McKenty, III* WWM

DATE: June 2, 1992

Volusia County - SW
Tomoka Farms Road Landfill
OGC Case No.: 91-0845
REVIEW OF CONTAMINATION ASSESSMENT PLAN (CAP)

I have reviewed the above referenced document and have the following comments:

1. Section 3.10 refers to well B5 as being hydraulically connected to two separate permeable zones. Please detail how this was determined. Well B5 should be properly abandoned as per St. Johns River Water Management District specifications.

2. A figure should be provided which graphically illustrates the interaction between screened interval of all assessment wells in the vicinity of well B5 and the geologic cross-section.

3. Section 3.30 and Appendix C refer to the use of a mobile laboratory and hydraulic probing and sampling. The Department encourages such screening methods for the preliminary determination of vertical and horizontal extent of contaminant. However, the CAP does not provide sufficient details or specifications in regards to the proposed use. The CAP should include a description of the entire functional use of screening method. This should include, decontamination procedures, quality assurance/quality control procedures, laboratory confirmation of a percentage of samples, use of sample blanks, analytical standards to be employed, detection limits, sampling method, preservation, holding times, analytical method(s) to be employed, materials used in sampling, methods used to abandon hole, waste handling and any other relevant facts pertaining to the screening methods use. Please stipulate what field parameters will be collected in association with this screening method. Dissolved

oxygen should be taken at a minimum on all samples collected. What procedures will be employed to eliminate the potential for cross contamination?

4. The proposed sampling grid spacing for the mobile laboratory and hydaulic probing is sufficient except to the north of the drainage canal. Sampling points should be added in this area. In addition, the CAP should propose to continue screening based upon a criteria or indicator limit. The screening method should sample at all possible zones to determine vertical extent and should perform sampling starting in areas of known contamination and advance radially out to determine its extent. The CAP should provide a criteria for the cessation of sampling along a grid line, such as two (2) consecutive sampling points below detectable limits.

5. The CAP should stipulate that monthly status reports will be submitted to the Department regarding site activities once the CAP and QAPP have been approved.

6. What is the status of the landfill cell which is suspected of being the source of contamination? Is it closed? What is the vertical extent of fill in this cell?

7. Please explain the rationale for sampling of surface waters periodically for priority pollutants. Sampling of wells should include primary and secondary drinking water standards as well as landfill indicator parameters. This may be performed in conjunction with sampling of landfill wells for compliance with landfill permit requirements.

8. Please list in the CAP the field parameters to be collected during sampling of the wells and surface waters. These should include, at a minimum, dissolved oxygen, turbidity, conductivity, pH, temperature, depth to water or surface water elevation.

9. Please detail the type of exploratory boring(s) to be performed and their associated ASTM method numbers. This should include method and intervals of sampling, method for determination of hydraulic conductivity, permeability, grain size analyses, hole abandonment, decontamination procedures, waste handling, etc.

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11. Please describe the type, manufacturer, data collection method and sensitivity for the proposed water level recorders proposed in the CAP (page 3-9).

12. Raingauges should be employed and measurable rain data collected daily and kept in a logbook.

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15. The CAP should document the analytical suite to be employed in the assessment. This should include EPA methods and rationale. The CAP refers to VOCs, SOCs, trace metals etc. but never identifies what individual parameters or methods will be analyzed.

Attachment

WWM/wwm

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Bret LeRoux, PG

FROM: Richard B. Tedder, P.E. RBT

DATE: 3-20-92

SUBJECT: County Volusia OGC ~~Permit~~ No. 91-0845

Facility Tomoka Landfill

Attachment CAP Submittal dated March 1992
includes QAPP for site.

The attached is being sent to you for:

____ Information only

✓ Review and comments

If review and comments are needed, please respond:

____ By _____

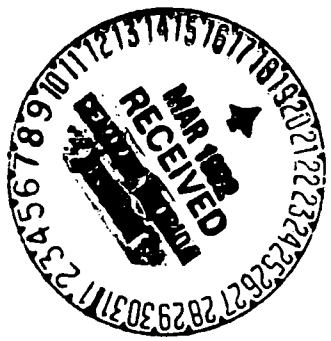
(Solid Waste deadline date is _____)

✓ As soon as possible for your schedule.

Comments: Gloria Jean DePrading has the enforcement file for this case. If you need more details. Please let us ~~g~~ know your comments so we can forward them to facility. This CAP also includes QAPP which needs to go to Tallahassee. Thanks for your help. WWM was assigned this case according to my records.

RBT

BRILEY, WILD
AND ASSOCIATES



March 18, 1992

VC 92097-6CE

Mr. Richard B. Tedder, P.E.
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

Re: Volusia County
Tomoka Landfill
Contamination Assessment Plan
OGC No. 91-0845

Dear Mr. Tedder:

Enclosed for your review are three copies of the draft Contamination Assessment Plan (CAP), prepared in compliance with the Letter of Stipulation regarding the reported presence of vinyl chloride in groundwater monitoring well B-5. Also enclosed with the CAP is the draft Quality Assurance Project Plan (QAPP).

We appreciate your review and look forward to receiving your comments on the proposed plan. Please call me if you have any questions.

Yours very truly,

BRILEY, WILD & ASSOCIATES, INC.
CONSULTING ENGINEERS & PLANNERS

Lee A. Powell, P.E.
Assistant Director of Engineering

LAP/dma
Enclosures
cc: D. Gomberg
J. Griffin
S. Gaze

Briley, Wild and Associates, Inc.
Consulting Engineers and Planners
1040 North U.S. Highway One
P.O. Box 607
Ormond Beach, FL 32175
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Offices in Bradenton, Clearwater,
Daytona Beach, Orlando & Ormond Beach, FL